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THE SPATIAL DIFFERENTIATION OF INFORMAL ACTIVITIES ACROSS THE URBAN HIERARCHY AND IMPLICATIONS FOR THEORY

The Ohio State University

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THE SPATIAL DIFFERENTIATION OF INFORMAL ACTIVITIES
ACROSS THE URBAN HIERARCHY AND IMPLICATIONS FOR THEORY

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
Rickie Sanders, B.A., M.S.

* * * *

The Ohio State University

1980

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Approved By
Advisor
Department of Geography
To my mother, my grandmother, and Ghansah
who never doubted me
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CHAPTER I

INTRODUCTION

This thesis investigates the spatial differentiation in the extent of informal activities across the Ghanaian urban hierarchy. The present chapter introduces this topic by first providing the reader with a statement of the problem. Next, the research objectives and the rationale for the area focus are presented. The final section of the chapter provides an overview of the thesis.

Problem Statement

Informal activities emerged as a research concern in the early 1970s after it had become clear that economic policies directed toward increasing GNP would in no way be a solution to the development problems faced by lesser developed countries (LDCs). Thus, priority was reversed and the goal shifted from macro concerns (growth of GNP) to micro concerns (equity). Employment creation was seen as the most viable way through which equity could be brought about. Consequently, considerable effort was directed toward increasing employment opportunities in LDCs. In spite of the effort, it was found that in most LDCs the labor force was not being absorbed into modern, wage earning employment. Two reasons
are commonly cited to account for this.

The first relates to the unrealistic expectations which accompanied the industrialization effort. Specifically, it was thought that industrial employment would be able to absorb all entrants to the labor force. This was later shown to be unrealistic and expansion of industrial manufacturing alone could in no way be expected to substantially decrease unemployment and underemployment. "A manufacturing sector employing 20% of the labor force would need to increase employment by 15% a year merely to absorb the increment in a total work force growing at an annual rate of 3%." Thus, it is no wonder the contribution of the industrial sector to employment growth over the last decade was so disappointing.

The second reason which helps explain why the labor force was not being absorbed into modern wage earning employment relates to migration; specifically the movement of people from rural areas to cities. During the initial stages of the industrialization effort, the demand for factory produced goods stimulated an increased demand for an urban based labor force. Consequently, many persons migrated from their rural households to the large primate cities in search of work. Each year the problem worsened as more and more people were driven into urban areas by wages policies which favored urban based jobs. Increased mechanization of agriculture and population pressure in rural areas also contributed to the high rates of rural-urban migration and soon, the supply of
workers in urban areas outstripped demand. Faced with no means of sustenance and little or no possibility of securing wage earning employment (in the short run), the hoards of newly arrived migrants and unemployed urban residents engaged in income generating activities outside the formalized structure -- informal activities.

These activities were first addressed in academic research by Keith Hart (1971). Writing on the Ghanaian economy, Hart postulated that "the Ghanaian economy is effectively divided; there is on the one hand a formal sector and on the other hand, an informal sector."³

A typology of informal activities might include:
(a) farming, market gardening, building contracting, self employed artisans, shoemakers, tailors, etc., as primary activities;
(b) housing, transportation, utilities, petty traders, market operatives, street hawkers, caterers in food and drink, bar attendants, carriers, etc., as tertiary activities;
(c) musicians, lauders, shoeshiners, barbers, photographers, vehicle repairers, maintenance workers, ritual services, magic and medicine as other services;
(d) and in miscellaneous areas, flows of money and goods between persons -- borrowing and begging.

Clearly, the distinction between formal and informal is not based on activities themselves and as shown above,
many of the activities classified by Hart as informal could fall on either side of the analytical divide. The critical distinction between the two sectors lies in the conditions under which the work is carried out. Informal activities are both non-institutionalized and unprotected. In other words, these activities are carried on without government sanction, outside the legal system which prescribes hours of work, sick pay, vacation benefits, etc. Because of this, persons carrying out informal activities cannot make bank loans, secure lines of credit, etc. Formal activities on the other hand are both protected and institutionalized.

Informal activities were officially sanctioned as an area of study in the International Labour Organization's Work Employment Program Report on Kenya and have subsequently become a central theme in much recent development research. There are a number of reasons which can be cited to explain the enormous significance these activities have assumed in recent years. First, from an equity perspective at the individual level, informal activities provide employment, goods and services for large numbers of people in Third World cities who would otherwise be deprived. Second, from the aggregate perspective of the total urban economy, since informal activities utilize labor intensive or "outmoded" technologies, they make more efficient use of those factors of production which Third World economies have in abundance, e.g. labor; and minimize that which they do not have in
abundance, e.g. capital.

From a socio-political perspective, informal activities are seen as possessing the capability for remedying the structural imbalances within the existing social, political and economic framework. Were there not some channel through which these imbalances could be rectified, many feel that political upheaval in most cities of the developing world would increase.4

In spite of their importance, most of the research on informal activities has been directed toward definition, measurement and description and/or classification. Knowledge concerning the linkage between these activities and other aspects of development is limited. Even more limited is our knowledge of the spatial dimension, specifically the manner in which the extent of these informal activities vary from one part of a nation to another, and in particular, across the urban hierarchy. Such is the concern of this dissertation.

Research Objectives

As mentioned, the goal of this research is to advance our relatively limited understanding of informal activities by investigating their spatial distribution, a primary concern of geographers. In an attempt to achieve this goal, the dissertation has as its primary objective a description and analysis of the spatial differentiation in the extent of informal activity across the Ghanaian urban hierarchy and the major factors which influence that pattern.
Two aspects of differentiation are addressed. The first focuses on how the absolute magnitude of informal activity varies across the urban hierarchy and the second considers spatial variation in the percent of informal activity. These aspects are important because while a thorough knowledge of the spatial distribution of formal activities has been achieved; our knowledge of similar properties of informal activities in LDCs is zero. This neglect is serious since informal activities comprise approximately sixty percent of all economic activity in LDCs\(^5\), and are therefore very important for both unemployed and underemployed residents.

Knowledge of informal activities is also important for the study of rural-urban migration, since possible employment in informal activities is seen as an important motivating force in the selection of destination.\(^6\) If it is found that these activities bear little resemblance to formal activities in terms of their spatial arrangement across the urban system, a serious re-examination of existing theory and expected patterns of spatial behavior is in order. Therefore, in addition to the substantive goal cited above; this dissertation also seeks to test the applicability of urban geographic theory (which has largely been developed in an Occidental setting) to the study of spatial phenomena in non-Western settings.

Besides contributing to existing theoretical literature, the present investigation also has a methodological concern and illustrates how existing methods of operationalizing
informal activity can be used to expand the potential for future empirical work. To analyze the spatial differentiation of informal activity, this dissertation uses two measures of informal which, taken singly, are both plagued by weaknesses of either over estimation or under estimation. When used in combination with each other however, they improve overall measurement and in fact provide boundaries for the range of expectations, thus lending confidence to the results.

Since the research has specific applicability to Ghana, West Africa; a final goal is to suggest directions that policies regarding informal activity might take.

Rationale for Area Focus

Ghana was selected as the focus of this research for several reasons. First, relative to other black African countries, the Ghanaian economy is advanced both in terms of industrial structure and distribution of industry. With respect to underemployment and unemployment then, Ghana should provide insights into what exists in other African countries or will exist in the future.

The amount and quality of previous research in Ghana provide a second reason for focussing on this country. Past research provides a relatively good understanding of many aspects of informal activity in Ghana and are an excellent foundation for future research on informal activity.

Availability and quality of data was the third reason
for selecting Ghana as the area focus. While most countries do conduct regular censes, the Ghanaian census provides a more abundant supply of data for smaller areal units than most. In addition, given Ghana's relatively small size, it is much more manageable in terms of sample size than larger countries, such as Nigeria.

**Overview of the Thesis**

Chapter Two reviews the literature relating to informal activity. It begins by briefly discussing the origins of the informal concept. This is followed by a discussion of the various descriptions of informal activities. Since most of the controversy surrounding the informal concept has been engendered as a result of attempts to designate certain elements of society as either formal or informal, and define what is meant by informal, the next section outlines the parameters of the debate. Next, the problem of measurement and the limitations of current measures of informal activity is considered. Finally, since current trends in informal sector employment indicate that the significance of informal activities in the development process is likely to increase, the last section discusses the role of informal activities in labor absorption and rural-urban migration.

Chapter Three sets forth a conceptual framework for the investigation. Because much of what we expect in terms of spatial distribution of economic activities is derived from research conducted in more developed countries (MDCs),
this chapter singles out a research paradigm of urban geography and discusses some of the recent research findings which resulted from that paradigm. This section has no specific relevance for informal activity directly, but is important since it lays the groundwork for assessing whether or not models of urban geography can be transferred from the MDC context to the LDC context. This is followed by a discussion of some specific findings which have potential for explaining the spatial differentiation in the extent of informal activity -- the proximity thesis and the generative thesis. These theses are then joined with general findings on process based on urban system effects and economic base considerations to give even further explanation to the spatial differentiation in informal activity. The final section of Chapter Three sets forth a number of expectations regarding the spatial differentiation in the extent of informal activities.

Chapter Four places the problem in a specific geographic setting and provides an overview of the structure of the Ghanaian economy. It begins with a discussion of the administrative divisions of Ghana and the manner in which population is distributed among these regions. Since the spatial differentiation in the extent of informal activity
is closely linked to the spatial distribution of other segments of the economy, the next part of this chapter focuses on the spatial distribution of activities in Ghana. In many ways, this chapter is the first phase of the analysis formally undertaken in the following chapter.

Chapter Five presents and formally analyzes spatial variation in the extent of informal activity across the Ghanaian urban hierarchy. It begins with a discussion of the operational definitions of informal activity used in the analysis. Next, it uses cartographic analysis to describe the relationship between informal activity and selected characteristics of cities. Following this, the analysis proceeds in two phases -- the first phase examines the results of regression analyses and graphical analyses for the entire sample of cities and the second phase disaggregates the sample and describes the importance of functional specialization and level of centrality for informal activity.

Chapter Six summarizes the findings of the previous chapters in light of the conceptualizations advanced earlier, and draws conclusions. The theoretical and methodological contributions of the thesis are also presented in this chapter. The final section provides policy implications of research on informal activities and also puts forth suggestions for future research.
FOOTNOTES TO CHAPTER I

1 In this dissertation, the terms Third World, Less Developed Country (LDC), Underdeveloped Country (UDC), non-Western country, and Occidental country are used interchangeably to refer to the countries of Africa, Asia and Latin America. Likewise, the terms More Developed Country (MDC), developed country, Western countries, and Occidental countries; are also used interchangeably to refer to the countries of Europe and North America.


   Gavin Maasdorf and A. S. B. Humphreys, From Shantytown to Township (Juta and Company, Ltd., 1975), p. 121.


CHAPTER II

SPATIAL DIFFERENTIATION IN THE EXTENT OF INFORMAL ACTIVITIES:
A REVIEW OF THE LITERATURE

In order to provide a basis for this examination of the spatial differentiation in the extent of informal activities across the Ghanaian urban hierarchy, this chapter is designed to give the reader some background on the informal concept. It begins with a discussion of the theoretical and empirical research effort which has been devoted toward describing the activities carried out under the guise of informal activities. Since a large part of the uncertainty regarding the informal concept centers on what is designated as informal and how informal is defined, the next section is devoted to a discussion of the parameters of the debate. This is followed by a discussion of the measurement problems associated with studying this sector and a review of several of the criteria which have been suggested as possible ways of measuring the extent of informal activity. The limitations of these criteria are also discussed.
In addition to description and measurement, a major concern with informal activities is their role in certain aspects of economic development — specifically labor absorption and rural-urban migration. The third part of the chapter then discusses the role of informal activities in the labor absorptive process and rural-urban migration.

The Informal Concept: Origin, Description and Definition

A characteristic of the development process shared by many of today's LDCs is the relatively slow growth (or often-times no growth) of employment opportunities in the industrial wage earning positions in the face of rapid growth of GNP. This weakness of the formal sector is critical in understanding the strength of the informal sector since it gave rise to an imbalance in the labor market structure where wage earning industrial jobs were highly concentrated in the hands of a few. Moreover, this imbalance was exacerbated by large numbers of rural-urban migrants converging in urban areas at unprecedented rates. Because of the limited opportunities, a considerable proportion of the urban population had no alternative except to engage in activities outside the formalized employment structure. Consequently, an economic sector developed in which its members produced and sold anything that would generate an income.

Thus, it was proposed that the urban labor market be divided into two sectors — a formal sector and an informal
sector. According to Hart (1971), the distinction between the formal and informal sectors is "based on whether or not a person earns wages or is self employed."¹ "The key variable distinguishing the two is the degree to which the work is rationalized", in other words, "whether or not labor was recruited on a permanent and regular basis for a fixed reward."² To be more specific, the formal sector contains "organized" economic activities and functions much in keeping with public perceptions of work -- protected by social security legislation, sick leave, employee insurance, legally binding contracts outlining hours and days of work, and union rights, etc. The informal sector, on the other hand consists of activities which are concentrated in the "unorganized" sector of the urban economy and since they occur outside the wage sector, they tend to be "ignored or categorized as part of that large unproductive tertiary sector."³ Although persons dependent on informal income opportunities were labelled "underemployed", "the urban proletariat", the "urban reserve army", the "surplus labor force", etc., for Hart (1971), informal activities were seen as providing a livelihood for new entrants to the urban labor force who were not likely to find employment in the more "organized" formal sector. Thus, while the Hart characterizations appear to portray an actively marginal group of "sellers of matches and underemployed shoeshine boys", at the same time, he stresses the important part
played by these workers in supplying many of the essential services on which life in the city is dependent. In doing so, he questioned the existing research paradigm and called for immediate reassessment of employment strategies and proposals. It should be noted that while Hart stated explicitly that the dichotomy was based on characteristics of activities or enterprises, many of the characteristics he advanced belie that emphasis and in several instances, he refers to the "unorganized sector", "self employed individuals", "industrial reserve army", etc.

Later research was also unclear regarding what should be emphasized. The International Labour Organization, United Nations Development Program, who officially sanctioned the informal sector as an area for future research designated the informal sector as a target group with the following characteristics -- ease of entry, reliance on indigenous resources, use of labor intensive and adapted technology, family owned, small scale and workers whose skills are acquired outside the formal school system.

The formal sector has antipodal characteristics with entry by new enterprises difficult, enterprises relying on Western oriented and derived technologies, corporately owned, operating on a large scale in markets protected by tariffs, quotas, etc., using capital intensive and often imported technology and workers with formally acquired skills. This is consistent with Hart in its use of characteristics of
the enterprise as the basis for the formal/informal dichotomy.

These descriptions are to be contrasted with that rendered by Souza and Tokman (1976). They maintain that the informal sector is "all those engaged in domestic services, casual labor, the self employeds and employees, white collar, blue collar and family workers in enterprises with a total staff of not more than four persons." Given that there would be numerous enterprises which function in the formal sector (e.g. law firms) and employ fewer than four persons; Souza and Tokman suggest that an alternative would be to define the informal sector in terms of income. Specifically, all persons whose income is below a certain minimum level -- typically the legal minimum wage are in all likelihood carrying out informal activities. Note that the emphasis on enterprises has been replaced by an emphasis on individuals.

In a similar vein, Mazumdar (1975) and others at the International Bank for Reconstruction and Development describe the informal sector as the "unprotected" sector. All workers who do not come under the guise of trade union and/or governmental legislation and do not enjoy the conditions of work and wages enjoyed by workers in the formal sector are considered to be part of the informal sector. Thus, the informal sector consists of unregulated markets. Mazumdar then argues that whatever the "productivity of the informal sector in real terms, it competes poorly in financial terms with the protected, formal sector." In fact, the informal
sector manages to survive only because it supplies urgently needed services to a sizeable portion of the urban population. Again, here the emphasis is on individuals who comprise the urban labor market rather than between enterprises or activities.

Harriss (1978) supplements the Mazumdar conceptualization by describing informal activities as a residual. For her, the distinction between the "organized" and "unorganized" sector is based on "scale and technique". The organized (formal) sector is defined as those industries having more than ten workers and electricity, or more than twenty workers, without electricity. It includes public sector concerns as well. The unorganized (informal) sector is the residual. It is not covered by existing regulations.

Clearly the above definitions differ considerably from one another as each emphasizes a different characteristic of informal activity. Even making allowances for their different emphasis, the characteristics frequently lead to confusion and in fact, contribute little to our understanding of informal activity. Harriss (1978) suggests that much of the confusion regarding what constitutes the informal sector results from variations in research objectives. For instance, one purpose of informal sector research has been "to gain an insight into the extent and intensity of non-agricultural poverty"; a second has been to examine the range of opportunity available outside the organized labor market; and
its implications for possible employment policy\(^9\); and a third has been to examine the role of the residual economy in class formation, social upheaval and political mobilization, and its implications for the political technocrat for facilitative or preventative intervention\(^10\)." As a result, while we are clear on what informal means in a specific context, we are unclear what it refers to outside that context. "We are not certain whether or not the informal sector consists of only the self employed\(^11\), or whether it also includes non-unionized wage earners\(^12\). If it is considered to include wage earners, there are disagreements as to how many per firm\(^13\), whether pre-capitalist or capitalist modes of production dominate and whether the informal sector is of marginal or of central importance to the urban economy in terms of capital and labor.\(^14\) Further, differences of opinion relate to whether or not the informal sector evokes economic dualism, whether it is unproductive or productive, whether it is stagnant or flourishing and whether its participants are migrant, poor, revolutionary, socially separated from the formal economy, or stable, not necessarily poor, well integrated socially, or "passively marginal" and without any revolutionary consciousness. Any possible permutation and combination of these attributes is possible.\(^15\) Thus, according to Harriss (1978), "it is for the initiates to spot the informal sector and they know it when they see it." After all, the intellectual validity of the concept was, for many, secondary to its policy
implications.\textsuperscript{16}

Sethurman (1976) argues that all of the definitions of informal can be grouped into two general categories: (1) "those that are characteristics by the income level of the individuals concerned or by variables that depend on the income level (e.g. access to housing or other urban services, adequate food, etc.); and (2) those that are based on variables which determine the individuals' income (e.g. personal characteristics, occupational characteristics, employment status, labor market characteristics, characteristics of the activities or enterprises on which he depends)."\textsuperscript{17} Therefore, all of the definitions are "correct".

Notwithstanding the willingness to suppress analytical uncertainties, various aspects of the informal concept have continued to engender considerable debate. One area of debate centers on what is designated informal -- individuals, households, activities, etc? and a second area of debate centers on how informal is defined. These two problem areas are discussed below.

Designation

The problem of designation results from the fact that "informal" as a concept lies on an ill defined research frontier between employment research and social research.\textsuperscript{18} Since its inception, researchers and policy makers in a number of different disciplines have applied it to a diversity
of empirical data, and in many different contexts. What has resulted, as is clear from the previous section, is complete confusion about what is designated informal.

One area of confusion already alluded to is the debate as to whether or not informal refers to activities or people. Other areas of confusion result from the fact that many have used a "geographic" approach to designating an informal sector, and research relating to geographic areas which are spatially neither urban nor rural, but peripheral to both — zongos, favellas, shantytowns, barrios, etc. — is classified as informal sector research. Two reasons can be given to explain why this is so. The first relates to the idea of marginality imputed by the preceding definitions wherein many of the persons who carry out informal activities are thought to be members of low income households and thus, live in low income communities. The second reason why informal is defined geographically is based on the "aristocracy of labor" notion. Specifically, wage workers (persons engaged in formal activities) are thought to have stable jobs, good salaries, ample social security provision and thus live in higher income communities. Non wage workers, on the other hand, are thought to not have stable jobs, good salaries, social security benefits and therefore, live in areas peripheral (but contiguous) to urban areas.

Along similar lines, there is a tendency to designate only those activities in urban areas as informal activities, and to use alternative terms such as, "rural nonfarm sector or
small scale enterprise sector" to describe informal activities which occur outside the towns and cities. Although one may write specifically about the urban informal sector (as is the case in this dissertation), it is unlikely that informal activities do not exist in rural areas. In addition to the above, since many informal activities are conducted in and for low income communities, it is not uncommon for those concerned with urban housing and basic needs to treat the informal sector as synonymous with the improvement of housing conditions. Likewise, there is also a tendency to treat the informal sector and the migrant population of cities as synonymous since there is a high correlation between migration on the one hand and urban poverty, informal activity, underemployment, slum areas, etc. on the other. Certainly, while there is something to be said for all these views, they have contributed more often than not to uncertainty regarding what constitutes the informal sector, or in general, a weakness of the informal concept.

The second problem area that has provoked considerable debate relates to definition, or defining what an informal activity is. This is discussed below.

Definition

The basic criticism here is that informal activities are frequently defined using characteristics of the activities, e.g. low income, low productivity, small size, etc. While
many argue that several of these characteristics "beggar analysis by assuming what is to be demonstrated"\textsuperscript{22}, others argue that it may be overly critical since most of these characteristics emanate from conditions which exist in the labor market. Consider for example that most of the activities in the informal sector are carried out along side similar activities in the formal sector. In fact, only a few informal activities have no counterpart in the formal sector. Thus, since informal activities cannot be defined based on the nature of the activity itself; the key distinguishing feature must focus on the conditions under which the activity is carried out\textsuperscript{23} and the characteristics of the activities.

The conditions under which the activities are carried out refers to the degree to which an activity is institutionalized. Informal activities are in all aspects, non-institutionalized. This being the case, the relationship between the different systems of production give rise to a differentiated labor market with one sector being favored by high profits, high productivity, large scale, bureaucratic organization, etc., and the other characterized by low income, low productivity, small scale, etc. Therefore, based on the argument presented above, it is not unrealistic to use characteristics of informal activity as definitions.

Recognizing that neither of the problems have been resolved to the satisfaction of all groups, the following section proceeds with a discussion of how informal activity
Measurement: Operational Definitions

Depending on the objectives of the research, there are several approaches to operationally defining informal activity. Below is a discussion of the sectoral, income, size of establishment and formal registration approaches to measurement.

Sectoral Approach

When the extent of informal activity is measured using the sectoral approach, certain broad employment categories, e.g. commerce, construction, personal services, etc. are designated informal and the size of the sector is considered to be the number of persons engaged in these activities.

The appeal of this approach is its simplicity. However, it is not without its shortcomings and has obvious drawbacks if used as a primary measure of the extent of informal activity. The major drawback is that it tends to overestimate the size of the sector by failing to consider that there are modern, highly organized, formal sector activities which also operate in the sectors cited above. Another criticism of this approach results from the fact that the activities in the informal sector are, for the most part identical to those in the formal sector, as as mentioned previously, it is seldom an activity which can be classified as formal or informal -- the distinguishing feature is the "conditions
under which the activity is carried out". Given that the data most commonly used to implement this approach are census data, it is impossible to make any determination of conditions under which work is carried out.

On the other hand, research has shown that informal activities tend to be concentrated in certain broad occupational categories moreso than others (personal services, for example) and therefore, the sector approach does have some usefulness.

One of the earliest attempts to operationalize the sectoral approach was carried out by Berry (1951) in Bogota, Colombia. Using this approach, he found that approximately 54% of the labor force could be classified as informal.

Income Approach

The income approach posits that all members of the labor force earning below some minimum wage are carrying out informal activities. The income approach makes use of an education and income component and assumes a direct relationship between earnings and education. It is most frequently seen in those studies concerned with amelioration of poverty.

Aside from being plagued by many of the same difficulties as the sector approach, the income approach carries with it certain theoretical complications. Specifically, it assumes that all persons engaged in informal activity are low income. Whether or not that is the case is a major hypothesis to be
There are however two reasons for using income in operationalizing the informal concept. First, formal sector enterprises are frequently associated with expatriate firms and are therefore subject to governmental regulation regarding minimum wage agreements. Informal sector enterprises on the other hand, function in unregulated and highly competitive markets. Since they are not included under the umbrella of wage legislation, they are not obligated to pay minimum wages and incomes are expected to be low.

A second reason for using income as an operational variable results from the fact that there are economies associated with large scale which make it possible for the formal sector to pay its workers higher wages. Since informal sector enterprises are small scale, they cannot compete in terms of wages with formal sector firms and often find it impossible to pay high wages.

Aside from the theoretical difficulties (whether or not the informal sector is low income), another difficulty with the income approach is that most censes do not have data on income and thus, operationalization must rely on survey data. If adequate data were available, the income approach is seen as being somewhat more accurate in measuring the extent of informal activity than the previous approach since it addresses conditions which emanate from the labor market structure.

Abreu (1975) in his study of Brazilian rural-urban
migrants used the income approach as one measure of informal. Other studies which have used this approach or variations are Merrick (1970), Schaefer (1970), and Aryee (1976).

Size of Establishment Approach

The rationale for the size of establishment criteria is that smaller establishments often exhibit features associated with informality, e.g. labor intensity, low capital/labor ratios, work relations entrenched in custom, kinship, etc. As with the sectoral approach, the appeal of this approach is its simplicity, and enterprises/activities are classified as either formal or informal based simply on the number of workers they employ. All enterprises which employ fewer than some prescribed number of persons are assumed to be in the informal sector.

The cutoff points employed by various authors are not consistent, and therefore any classification scheme must be somewhat arbitrary. In general, firms are classified as small scale or artisinal if they employ less than ten full time employees; and as intermediate if they employ between ten and fifty employees.27

As mentioned, one advantage of the size of establishment approach is the relative ease with which it can be operationalized. Most countries conduct censes of economic activity in which firms are grouped according to various
characteristics -- one of which is number of workers. Thus, operationalization is easy. In spite of this advantage however, the size of establishment approach does have some disadvantages. First, by considering only size of establishment, it completely neglects that part of the informal sector not organized into establishments and since much of the informal sector is self employed, this is a considerable omission. Second, a blanket designation such as "less than ten employees" will invariably include formal sector firms with few employees and thereby over estimate the size of the informal sector.28

Formal Registration Approach

Since this approach addresses the issues of institutionalization and protection and speaks to all of the characteristics mentioned previously, it is considered the most reliable measure of informal activity. The importance of this criterion was made widely recognized through the work of Merrick (1977). According to his work, the informal sector was defined to include "that portion of the urban labor market which is non-institutionalized and non-protected; excluded from the system of social security; not subject to minimum wage laws; and with no formal relationship with lending institutions."29 Since the formal registration approach focuses on the conditions under which work is carried out, operationalization requires survey data which specifically makes inquiries regarding the conditions
under which work is carried out.

Notwithstanding data requirements, the formal registration approach is plagued by other problems as discussed by Abreu (1976). First, it assumes that legislation pertaining to jobs (social security, etc.) is enforced -- a big assumption for most of the developing world. Second governments usually have no direct knowledge of informal activities since they are not covered by existing legislation and are not normally referred to in administrative documents.

The formal registration approach has been used most frequently in research pertaining to non-agricultural poverty.30

Table 1 summarizes estimates of the extent of informal activity observed by various researchers using the four criteria discussed above. A number of things stand out as important in this Table.

First, note that in those instances where several measures were used in one locale, as in the Belo Horizonte study, the "branch" (sector) approach yielded the largest estimate of informal activity (49%). The combined approach estimated only 31 percent of the labor force to be employed in informal activities.31 This is consistent with the earlier observations regarding the degree to which the various approaches over or under estimate the extent of informal activity. The same trend is evident in the work of Schafer,
<table>
<thead>
<tr>
<th>Country, City</th>
<th>Date</th>
<th>Employment Share</th>
<th>Type of Estimate</th>
<th>Source</th>
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<tr>
<td>Colombia, Bogota</td>
<td>1951</td>
<td>56.4</td>
<td>Size</td>
<td>Berry</td>
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<tr>
<td></td>
<td>1964</td>
<td>53.9</td>
<td>Branch</td>
<td></td>
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<tr>
<td>Brazil, Sao Paulo</td>
<td>1970</td>
<td>35</td>
<td>Income</td>
<td>Schaefer</td>
</tr>
<tr>
<td></td>
<td>1970</td>
<td>43</td>
<td>Branch</td>
<td>Merrick</td>
</tr>
<tr>
<td>Belo Horizonte</td>
<td>1970</td>
<td>38</td>
<td>Income</td>
<td>Merrick</td>
</tr>
<tr>
<td></td>
<td>1970</td>
<td>49</td>
<td>Branch</td>
<td></td>
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<tr>
<td></td>
<td>1972</td>
<td>31</td>
<td>Combined</td>
<td></td>
</tr>
<tr>
<td>Salvador</td>
<td>1968</td>
<td>33</td>
<td>Combined</td>
<td>Jelin</td>
</tr>
<tr>
<td>Mexico, Mexico City</td>
<td>1970</td>
<td>22</td>
<td>Size</td>
<td>Munoz</td>
</tr>
<tr>
<td>Peru, Lima</td>
<td>1970</td>
<td>52.9</td>
<td>Size</td>
<td>Webb</td>
</tr>
<tr>
<td></td>
<td>1970</td>
<td>61.9</td>
<td>Branch</td>
<td></td>
</tr>
<tr>
<td>Other cities</td>
<td>1970</td>
<td>64.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venezuela, Caracas</td>
<td>1974</td>
<td>40</td>
<td>Size</td>
<td>Pereira,</td>
</tr>
<tr>
<td>All cities</td>
<td>1974</td>
<td>44</td>
<td>Branch</td>
<td>Zink</td>
</tr>
<tr>
<td>Indonesia, Jakarta</td>
<td>1971</td>
<td>50</td>
<td>Formal Registration</td>
<td>Sethurman</td>
</tr>
<tr>
<td>Ghana, Accra</td>
<td>1973</td>
<td>40</td>
<td>Self Employed</td>
<td>Hart</td>
</tr>
<tr>
<td>Nigeria, Lagos</td>
<td>1978</td>
<td>50</td>
<td>Size</td>
<td>Fapohunda</td>
</tr>
</tbody>
</table>

who estimates the employment share of informal activity to be
43% using the branch (sector) approach and much less -- 35%,
using the income approach.32

A second observation of importance in the Table is based
on the work of Webb (1970) where data are available for
several cities in Peru. From these data, there appear to be
an inverse relationship between city size and percentage of
labor force engaged in informal activity. Informal activity
accounts for only 53% of the total employment in Lima, the
largest city, but increases to 65% in smaller cities. This
pattern was also observed by Pereira (1974) in Venezuela,
where Caracas had a much lower percentage of informal activity
than smaller Venezuelan cities.33

A third observation of importance from Table 2.1 relates
to trends in informal activity over time. Specifically; note
that in those places where estimates were obtained at two time
periods, e.g. Colombia, the percentage of employment in
informal activities decreased from 56.4 in 1961 to 53.9 in
1964. This suggests that these activities experienced a
slight decrease over the three year period and employed
fewer persons in 1964 than in 1961. An alternative
explanation of the decrease over time however may be the
improvements in measurement technique.

While these observations are certainly limited and in no
way conclusive, they do provide several questions worthy of
future research. Of particular interest to the geographer
is the observation pertaining to the relationship between informal activity and city size and several questions arise.
Is the observation valid? Is the relationship between city size and informal activity, or is city size actually a surrogate for other variables, e.g. level of urbanization, extent of industrialization, level of modernity, etc.?
Is the observation unique to the countries of Latin America?
Is the relationship between city size and informal activity linear, curvilinear, etc.? Most important, what are the factors associated with producing such a pattern, or what is the underlying process and what are the implications of such a pattern?

These questions constitute a major theme in the present investigation and will be addressed in the following chapters. For the moment however, attention turns to a discussion of the relationship between informal activity and other aspects of the development process -- specifically urban labor absorption and rural-urban migration.

**Informal Activities in the Development Process -- Urban Labor Absorption and Rural-Urban Migration**

In the process of economic development, one of the more important roles that researchers see for informal activities is their ability to provide a holding place for "new" entrants into the labor force. Although most researchers are in overall agreement regarding the importance of the informal sector in absorbing labor, there are in fact two different
views of the manner in which it functions in the labor absorptive process. The first is the "temporary holding place" view and the second is the "permanent holding place view". The theoretical and empirical literature relating to these two views is discussed in the following sections.

The "Temporary Holding Place" View

In this view of labor absorption, the informal sector absorbs labor temporarily and is a market clearing device through which an over supply of workers in urban areas is "held" in situ until a vacancy occurs in the formal sector. In other words, the informal sector acts as a "funnel" in the system regulating the number of people who enter into modern, formal sector employment.

Since the informal sector only absorbs labor temporarily, it is more a characteristic of a stage of development than a permanent fixture in LDC economies. As LDCs increase their level of industrialization and decrease their birth rates, informal activity of the magnitude witnessed today will be reduced significantly or perhaps will disappear entirely.

Harberger (1971) was perhaps the first to recognize the labor absorptive function of the informal sector. He suggested that an unprotected sector, such as the informal sector, served a labor market clearing function when "migration fed" supply exceeded demand for labor. In other words, the informal sector is an equilibrator in the system, bringing workers and jobs into equilibrium. Harberger did
not specify whether the informal sector acted as a funnel where large numbers of workers are held and gradually channelled through to the formal sector; or whether it acted like a sponge capable of continually absorbing large numbers of people.

Harris and Todaro (1970) however very clearly see the informal sector as a temporary holding place and describe the labor absorption process as consisting of two stages. In Stage I, the unskilled rural worker moves from the rural area where he is engaged in agricultural activities to the urban area. Once in the urban area, the newly arrived migrant joins the unemployed and underemployed migrants who have arrived in town earlier in carrying out urban traditional activities. The second stage of the process is characterized by the "occupational and social promotion" from the urban traditional sector to the modern sector.

Balan, et al. are in agreement with this hypothesis and argue that the labor force entry process does not represent a clean break (from unemployment to employment) and the informal sector provides the context for the more graduated transition process that is more typical.

According to empirical evidence supplied by Merrick (1975), the informal sector in Belo Horizonte functions in much the same way as described previously -- temporarily absorbing labor, but is not limited to the absorption of recent migrants. It provides temporary employment for natives as
well as migrants.\textsuperscript{35} This point is also stressed in Munoz's study of migration and labor force entry in Mexico City and Abreu's study of Brazilian migrants.\textsuperscript{36}

Merrick goes one step further however and suggests that not only does the informal sector perform an absorption function which is not exclusively reserved for migrants; it is not always a "temporary" step on the path to the formal sector. Therefore, while the above studies have emphasized the "transitional" or acclimative function of informal sector employment and suggest that persons engage in informal activities only in preparation for modern, formal sector employment; others have argued that this is not always the case and often informal employment may be preferred to formal employment. In this case, the informal sector no longer absorbs labor temporarily, for specified time periods; but rather absorbs labor into more permanent employment. The "permanent holding place" view is discussed in the following section.

The "Permanent Holding Place" View

In this case, rather than "regulating" or "governing" the flow of workers to the formal sector, the informal sector provides employment for hundreds of workers who have no intention of securing formal sector employment.

This view was perhaps first alluded to in the work of Weeks (1970). He maintained that the informal sector
represented "evolutionary" development, meaning that "it absorbs a continually increasing labor supply in the context of relatively rapid growth of output and capital accumulation". Further, he maintained that there are "advantages in having an evolving and dynamic low wage sector in less developed countries, not simply because accumulation is higher, but because the informal sector has important contribution to make in terms of shifting toward a more labor using form of industrialization." 

This view is supported by Peattie (1976) who found that in Bogota, Colombia, jobs in the informal sector were frequently preferred to organized wage labor (formal sector employment) because of their independence and potential for upward mobility, especially if a major sacrifice in earnings is not required.

In addition, Merrick (1977) points out that it is not uncommon for persons engaged in informal sector employment to earn more than persons engaged in formal sector employment and contrary to popular belief, although the informal sector as a whole may exhibit a flat wage earning profile over time, individuals frequently show a marked increase in wage earnings. If indeed this is the case, the informal sector may certainly be preferred to the formal sector.

Friedman and Sullivan present an interpretation of labor absorption vis-a-vis informal sector employment along similar lines. Unlike the previous work however, they adopt a
neo-Marxist position and emphasize the conflict existing between large scale enterprises and small scale (family owned) enterprises. In general, they agree that the informal sector has the capability for permanently absorbing large numbers of workers, but, the expansion and increased capital intensity of giant multinational corporations has a debilitative effect and actually drives small scale enterprises out of business. The net result is an increasing proletarianization of labor with workers increasingly alienated from owning and/or controlling the means of production.

Regardless of whether the informal sector is a temporary or permanent fixture of LDC economies, it would appear as though it serves two important functions in the development process. First, it equips workers with the occupational and social skills needed for entry into the protected, institutionalized formal sector or for functioning in the modern, urban environment. Second, it provides goods and services for large numbers of persons in urban areas of LDCs who would otherwise be excluded from the benefits of the growth process.

Thus, given the obvious importance of informal activities in generating income for large numbers of people in LDCs, it is quite clear that they figure most prominently in certain types of decisions, e.g. those relating to migration, for instance. This is discussed in the following section.
Relationship Between Informal Activity and Migration

Over the past few decades, the issue of labor migration, particularly the movement of people out of rural areas and into urban areas, has been central to the broader sociological and economic study of development. There are several reasons for this concern with rural urban migration. First, past research has suggested that rural urban migration provides social mobility to the individual and increased income to the economy. Also, by increasing the supply of labor to the receiving area, it permits a higher level of output. Thus, rural urban migration was thought to be an effective way to achieve equilibrium in the distribution of human and economic resources.

More recently, migration has emerged as a central theme in research relating to informal sector activities, and a link has been established between economic development, rural-urban migration and informal activity. Here, the concern has been with articulating the nature of the relationship between various aspects of migration informal activity and the larger issue of economic development. Specifically, many observers see the three as
closely linked and in fact view migration as the major contributing factor to the high levels of informal activity to be found in Third World cities. They argue that the tremendous increase in informal activity during the sixties was certainly the result of the inability of formal sector industrial concerns to expand at rates fast enough to absorb large amounts of labor. This inability however, was caused in large part by the influx of rural urban migrants who converged on the cities in massive numbers.

In addition to that concern, the role of informal activities in the migration decision making process is also important. Here, it is argued that potential migrants make their decision to move (and also decide where to move) based on their knowledge of the amount and kind of informal activity which occurs in a place. Those places which contain high levels of informal activity are decidedly more attractive than places with less informal activity. Consequently, for many, the informal sector constitutes a significant pull for a potential migrant. In fact, many argue that migrants seek to enter into formal sector employment and through this, their integration into the town (and town life) proceeds. Others have questioned
this view and suggested that migrants do not migrate because of the probability of securing employment in the informal sector, but rather, they move in response to formal, modern sector activities. Being unable to obtain positions in the formal sector, they are "absorbed" into the labor intensive informal sector.

Here, the idea of spatial distribution becomes important. Specifically, we need to know whether informal activities are distributed across the urban hierarchy in a manner similar to formal activities. If we find that the two are similar in terms of their spatial distribution, the findings of our models and theories will have been made more credible. If however, we find no similarity between the spatial patterns of formal and informal activity, it may help explain many of the contradictory research findings regarding migration patterns in LDCs.

Before formally addressing this idea of spatial distribution, the next chapter brings the question of "applicability of existing models and theories to the forefront and lays out a conceptual framework."
Chapter II provides the reader with some background on the informal concept. It begins with a discussion of "informal" -- the origin, description and definition of the concept. Important here is the discussion which describes the failure of industry to expand at rates fast enough to absorb the seemingly unlimited supplies of labor and the subsequent emergence of informal activities as dominant employment generating opportunities in LDCs. The formal/informal dichotomy was first addressed by Hart (1971). According to Hart, the distinction between the formal and informal sectors is based on whether or not a person earns a wage or is self employed. For Hart (1971), informal activities were not necessarily "part of that large unproductive tertiary sector." Rather, they were seen as providing a livelihood for new entrants to the urban labor force who were not likely to find employment in formal activities. It should be noted that while Hart stated explicitly that the dichotomy was based on characteristics
of activities or enterprises, many of the characteristics he advanced belie that emphasis and in several instances, he refers to the "unorganized sector," "self employed individuals," "industrial reserve army," etc. Consequently, later research was also unclear regarding what should be emphasized. Souza and Tokman (1976) for instance emphasize individuals rather than enterprises. Mazumdar and the International Bank for Reconstruction and Development agree with Souza and Tokman, and argue that the distinction between formal and informal is based on individuals who comprise the urban labor market rather than enterprises or activities.

Harriss (1978) suggests that much of the confusion regarding what constitutes the informal sector results from variations in research objectives. In the final analysis,"it is for initiates to spot the informal sector and they know it when they see it." After all, the intellectual validity of the concept was, for many, secondary to its policy implications.

Essentially, there are three areas which have been given considerable attention in the literature of informal activity. The first relates to what is designated as informal. The second relates to how informal is defined,
and the third relates to how the concept is operationalized -- or measurement.

In terms of what is designated as informal, there is a tendency to confuse activities with people, as already noted. In addition, many researchers have used a "geographic" approach to designating informal. They argue that research relating to geographic areas which are spatially neither urban nor rural, but peripheral to both -- zongos, favellas, shantytowns, barrios, etc. -- is classified as informal sector research.

In terms of definition, the basic criticism here is that informal activity is frequently defined using characteristics of the activities, e.g. low income, low productivity, small size, etc. There are two views on this problem. On the one hand, many argue that the characteristics "beggar analysis by assuming what is to be demonstrated." On the other hand, others argue that it may be overly critical since most of these characteristics do emanate conditions which exist in the labor market. In the final analysis, it is determined that it is not unrealistic to use characteristics of informal activity as definitions.

The final area of concern relates to measurement. Here, four of the more widely used measures of informal
activity are discussed, as are their weaknesses.

The chapter concludes with a consideration of the varying schools of thought associated with the role of informal activities in the development process, particularly urban labor absorption and rural urban migration. In general, the informal sector is viewed as a holding place by most researchers. They differ however based on whether they see the informal sector as a temporary or permanent holding place. Those upholding the former view suggest that the informal sector acts as a "funnel" in the system regulating the number of people who enter into modern, formal sector employment. Alternatively, those upholding the latter view (the permanent holding place view), argue that the informal sector provides employment for hundreds of workers who have no intention of securing formal sector employment.

Research on the relationship between informal activity and rural urban migration has been concerned with articulating the nature of the linkage between informal activity and the larger issue of economic development. A critical question raised in this literature is whether or not potential migrants move in response to formal or informal activities. Regardless of which is the case, the
discussion clearly points to the spatial distribution of informal activities as a possible factor in the overall migration process. A conceptual framework for examining this spatial pattern is set forth in the following chapter.
FOOTNOTES TO CHAPTER II


2Ibid.


Perlman, 1976, op. cit.


Harriss, 1978, op. cit.


14 Perlman, 1976, op. cit.


15 Although conceptualizations of the informal sector differ widely, the common thread in all the descriptions is their espousal of economic dualism and adherance to the idea that the urban economies of LDCs are two sector economies.

Bromley (1978) notes that the informal classification has numerous deficiencies which are worth emphasizing. First, the dichotomy is overly simplistic in that it divides all economic activities into only two categories and thus continues the tradition of the dualistic school of thought. Further, many investigators using the dualist classification are inclined to assume that the two sectors are separate and independent, when it is more likely that they are in a state of constant interaction. Bromley further argues that in reality, the two sector division advanced by the dualists is often complemented by other "sectors" — e.g. the "state" sector, the "executive" sector, the "rural" sector, etc. Most writings on the formal/informal classification fail to clarify if there are other components to the national system and if so, what they are. Second, since it is assumed that several different variables (e.g. income, scale of operation, productivity, technology, etc.) can be used to categorize a given economic activity into either a formal or informal sector, the use of a multivariate classification technique would be desirable. Not only has such a procedure failed to materialize, but writings on the informal sector differ dramatically as to what criteria they use to define the sector. Third, it is often mistakenly believed that a single policy prescription can be applied to the whole informal sector. The informal sector is large enough to permit and diverse enough to necessitate a wide range of different policy measures. Fourth, when the informal sector is defined in terms of lack of government support, under-recorded, or non-recorded, and operating outside government rules and regulations, government support and recognition will automatically convert informal enterprises into formal enterprises, as they will no longer possess the defining characteristics based on the absence of support.

ILO, 1972, op. cit.

Ibid.


Page, 1979, op. cit.


Merrick, 1977, op. cit.

Ibid.

This category consists of some combination of the following approaches: income, self-employment, branch (sector), and size of establishment.


In both the case of Peru and Venezuela, the sectoral measure was used to estimate the percent of informal activity in the smaller cities and the size of establishment approach was used in the larger cities. While certainly some of the difference can be explained by the use of different measures, the observation does provide an interesting line for future study and is addressed in this research.
34 Abreu, 1976, op. cit.


36 Munoz, cited in Merrick, 1977
Abreu, 1976, op. cit.

37 For Weeks, both the formal and informal sectors are capable of absorbing a continually increasing supply of labor. The critical question that must be addressed is whether or not labor is absorbed under involutionary (decreasing output and capital accumulation) or evolutionary (increasing output and capital accumulation) conditions.

38 Weeks, 1975, op. cit.

39 Independence and mobility are not the only reasons for preferring informal sector employment to formal sector employment. Another reason is the additional costs associated with establishing oneself in the formal sector and the associated recurrent expenditures, e.g. employee social security payments, hospitalization, etc.

40 At present, no statistics are available indicating how many persons successfully make the transition from informal to formal sector employment and how many prefer to remain in the informal sector.

41 For instance, see Connell, Das Gupta, Laishley and Lipton, *Migration from Rural Areas: The Evidence from Village Studies*. Delhi: Oxford University Press.
CHAPTER III
THE GEOGRAPHY OF INFORMAL ACTIVITIES: SOME BASIC PREMISES

The primary purpose of this chapter is to set forth a conceptual framework for analyzing spatial differentiation in the extent of informal activity. For the most part, it draws from the literature of urban geography. However, since the informal/formal dichotomy was not explicitly recognized until the late 1960's, much urban geographic literature does not make the distinction between formal and informal. Because of this, another goal of this dissertation is to determine whether or not urban geographic theories regarding spatial distribution which were developed in and for more developed countries (MDCs) can be applied to explain the spatial differentiation in the extent of informal activity in LDCs.

More generally, the question of concern here is whether or not models and theories of urban geography have the potential for providing adequate explanations and
descriptions of expected spatial patterns in non-Western settings.

While certainly informal activity may be similar to formal activities in terms of their spatial distribution and consequently there may be no need to empirically test the applicability of the existing urban geographic theories and models; we have no overwhelming evidence to indicate that this is the case. There are in fact several reasons for suspecting that the spatial distribution of informal activities would differ from that of formal activities. First, their characteristics are in all respects antithetical to the characteristics of formal activities. In other words, where formal activities are protected and institutionalized, informal activities are unprotected and non-institutionalized. Where formal activities are concerned with profit maximization, informal activities are concerned with cost minimization. Where formal activities are capital intensive, informal activities are labor intensive, etc.

A second reason for expecting the spatial pattern of informal activities to differ from the spatial pattern of formal activities relates to the circumstances which brought the two kinds of activities into existence.
Informal activities came into existence as a result of the failure of capital to provide adequate employment opportunities in the formalized sector. Therefore, one might expect informal activities to be most prevalent in those places where capital and capital associated technologies did not penetrate -- rural areas.

Clearly, in developing the conceptual framework for this investigation, there is a need to merge general findings on process with specific findings on informal activity. The chapter is divided into three sections.

The first section reviews some current concepts and recent findings in urban geography. Although the review is designed to acquaint the reader with some of the basic ideas of urban geography, the more substantive purpose is to address the goal stated above and lay the groundwork for assessing whether or not models developed in the MDCs are applicable to LDCs. In more specific terms, this first section discusses some of the paradigms which have guided research in urban geography. Although the research which has resulted from these paradigms has a surface validity, current evidence on urban processes in LDCs suggest that the validity of the paradigms may indeed be only a surface validity and more in-depth analysis is required before
this research can be regarded as constituting theory. This evidence on process is also discussed in this section.

Although this section has no particular relevance for informal activity, it is important because many of our ideas regarding spatial behavior are based on these conceptualizations and if it is found that they apply only to MDCs and cannot accurately explain spatial phenomena in LDCs, a serious reassessment of urban geography is in order.

This section is followed by a discussion of some specific findings on spatial patterns of informal activity. Specifically, in this section some of the theses which have been developed to explain and describe the spatial differentiation of informal activity are considered. The generative and proximity arguments are the two major theses advanced here.

The generative argument posits that since formal sector activities generate informal activities, the spatial pattern of the latter would be identical or at least similar to the former. The proximity thesis on the other hand, is a micro level, behavioral explanation of how activities become spatially differentiated. It argues that persons carrying out informal activities locate in
certain places because of economically rational behavior which calls for profit maximization and cost minimization.

These theses are then joined with general findings on process from urban geography in an attempt to further explain spatial differentiation. This section is crucial because it sets forth the theories and models which are thought to contain explanations of spatial differentiation. As noted, none of these models explicitly recognize the "duality" of the labor market implied by the formal/informal dichotomy; consequently, they may not be capable of explaining spatial patterns in the Third World. Since we have reason to believe that informal activities may not be similar to formal activity in terms of spatial pattern, empirical evidence is critical.

Important in this section is the idea of spatial and temporal location, which is set forth in the accessibility thesis. It posits that there is a "spatial temporal continuum along which cities and the economic activities which they house can be ranked based on how accessible they are to the center of modern innovation. The central place variant of the accessibility thesis is also discussed. Both of these are then joined with other geographic considerations based on urban system effects.
Based on the information presented, the final section of this chapter sets forth a number of expectations regarding the spatial differentiation in the extent of informal activity.

Some Current Concepts and Recent Findings in Urban Geography

The primary concerns of urban geographers are reflected in the two dominant approaches to studying urban geography. The first approach is macro level and related to the system of cities or the urban hierarchy. Here, the concern has been with the overall urbanization process, the evolution and distribution of settlements, their economic interdependencies, functional relationships and linkages, innovation diffusion, interurban migration, etc.²

The second approach is more micro level and is directed toward an examination of the city itself. Unlike the previous approach, the concern here is with intraurban variation in selected phenomena, e.g. population density, income, housing quality, etc.³

Although a voluminous literature has emerged, in many cases, the end result was found to be little more than description and only recently has concern broadened to include explanation.⁴ The question of whether or not a
substantive body of theory has emerged is still unanswered. As noted previously, in large part this depends on how well models, paradigms, conceptualizations, explanations, etc. of urban geography match real world circumstances. With that in mind, the following section examines and discusses some of the basic tenets in urban geography.

**Equifinality: A Paradigm of Urban Geography**

One of the underlying principles on urban structure in geography rests on the idea of equifinality. Equifinality as a concept has its origins in general systems theory.\(^5\) In terms of definition, equifinality is the tendency of all systems regardless of initial conditions, to behave in a manner which ultimately produces the same effect or result.\(^6\) In the case of urban geography, equifinality is the tendency for the processes of growth to yield cities of identical or similar structural form.\(^7\) Therefore, regardless of their cultural milieux, cities (when and if they become large) advance toward similar socio-economic structural form.

Consider for example two cities, Tokyo and New York, with markedly different cultural origins and structural form. The principle of equifinality states that through
continuous growth, both cities will eventually come to resemble one another in terms of socio-economic structure -- proportions of people in various occupations, proportion of land devoted to various activities, patterns of socio-economic status, etc. Thus, two things are implicit in the concept of equifinality. First, is the idea that very large cities are in the equifinal stage of development and second, that the processes of growth and development ultimately leads toward convergence.

Clearly, "... there is (in geographic literature) a conviction that the destinies of ... societies are converging on a common path." In other words, today's Third World cities (when and if they become large) will resemble Occidental cities. In fact, Sjoberg (1965) states,

"... cities over the world are becoming alike in many aspects of their social structure. ... Implicit in (this) is another hypothesis: as technology becomes increasingly complex, a significant number of structural imperatives become more narrowly defined. ... cities share certain values because of their dependencies on scientific method and modern technology. Overemphasis of cultural values as an independent variable leads to historicism and a denial of the possibility of making cross cultural generalizations."
Another example of this line of thought is evident in growth pole theory.10 "Growth pole theory relies heavily on the notion of leading industries with forward and backward linkages within the economic system and on the empirically supported fact that . . . there are agglomeration economies which induce increased locational efficiency at central locations. Further, it accepts that these central locations are merely short term phenomena necessary for accelerated industrial growth. . . in the long run, due to declining marginal returns to labor and capital in the large cities, the process of spatial convergence will occur. . . "11 Extensions of the theory suggest that this process will lead to " . . . a matrix of central places distributed roughly in lognormal fashion according to size."12

Another example of this line of thought is found in the study of city size distributions. Specifically, Berry (1961) sees the "various city size distribution" curves as part of an evolutionary scheme in which lognormal distributions might be expected to evolve from primate ones."13 Portes and Browning (1976) agree and argue that through economic growth, development impulses now concentrated in the primate city will eventually filter down to smaller cities,
as was the case with many of today's MDCs.

The idea of equifinality is prominent not only in urban geography, but also in the literature of economic development. Consider for instance development constructs like LDC/MDC, underdeveloped/developed, developing/developed. They actually suggest that the latter are passing through a phase that has not yet been reached by the former and since the former are "technologically subservient", they are "obliged to follow in the footsteps of the more technologically developed countries.\(^{14}\)

Bendix (1967) presents the broad parameters of the argument. According to him, equifinality can be properly understood only if we introduce two levels of abstraction. First, developing countries and/or their cities must acquire certain traits that are common to developed countries and/or their cities in order to survive in a larger world system. Second, on a more specific level, each country of city is obliged only to invent the concrete social forms and institutions which correspond to its actual conditions.\(^{15}\) In other words, all developing societies of necessity must steadily increase the productivity of their labor and alter the composition of their industrial employment. Only the pace at which the
changes will be introduced; the rate at which different industrial sectors will increase their share of employment; the division of the means of production between public and private ownership; and the forms and methods of distributing the national product is left for each society to decide. To the extent that development implies the spread of industrialization and carries with it certain behavioral prerequisites, the thesis of equifinality or cultural convergence has a certain superficial logic.

In spite of the surface logic, many point to the association that exists between process and pattern, and argue that since similar process gives rise to similar pattern, we would expect the urbanization process in today's LDCs to be at least similar to the urbanization process which characterized Occidental cities in the past, if they are to be "equal" in their final stages of development.

McGee (1967; 1971a; 1971b; and 1971c) argues that it is unlikely that the urbanization processes in today's LDCs will produce cities whose structural form is identical to cities of the Western world. In fact, according to McGee (1971a), the urbanization process in LDCs today is substantially different in terms of its demographic, social and economic components. The following section
reviews some of the recent evidence relating to urban process.

Some General Findings on Urban Processes: Urbanization and Growth

Bearing in mind the preceding discussion which set forth one of the paradigms of urban geography, this section points to the urbanization and growth processes in LDCs as examples of the "lack of fit" between (1) what the paradigm has led us to expect and (2) what we actually observe. Specifically, this section contrasts the urbanization and growth processes of today's LDCs and MDCs.

The most striking contrast between the two groups of countries is the rate of urbanization. Today's LDCs are urbanizing at unprecedented rates. This urbanization is appearing not only in larger magnitude, involving larger numbers of people; but is also taking place in a context peculiar to that which took place in the 18th and 19th century in Western Europe and America.

The first point of divergence in the two processes relates to the pace and scale of urbanization. Western Europe and America witnessed a gradual urbanization involving simultaneously economic and institutional change.
It required more than 100 years for MDCs to reach the level of urbanization that the Third World has reached in less than 20 years.

The urbanization of the Third World is not only greater in volume and more rapid than its Occidental counterpart, but also involves larger and larger units; that is -- not only are there more and more people living in urban areas, but there are also more places which are urban and they are becoming bigger and bigger. As a result, industrialization, which is virtually synomous with Western urbanization has not kept pace with Third World urbanization and is noticeably absent in most of todays LDCs.\(^\text{19}\)

Demographic characteristics within the urban area is another dimension by which the urbanization processes of the two groups of countries differ; and whereas the new industrial cities in the West were initially characterized by high death rates, urban areas in todays LDCs have taken advantage of new medical techniques and have reduced their death rates to the point where they are almost equal to that of the MDCs. In fact, urban areas in LDCs are more healthy than their rural hinterlands. This was not the case in the early days of American and European urbanization.\(^\text{20}\) This fall in death rates that took over one hundred years for MDCs
to acquire, has occurred in less than two decades in the Third World.

Still another contrast between Western and Third World urbanization is in the area of population growth. Cities in early America and Western Europe were areas of squalor, disease and vice, characterized by low life expectancy, high death rates and high infant mortality rates; consequently, total growth of urban areas resulting from natural increase was small. Third World cities, being healthier places to live are experiencing natural increase (population growth due to increase in births relative to decrease in deaths) almost equal to social increase (population growth resulting from migration). This phenomena is exacerbated by the fact that Third World cities are advantaged by the many economic improvements to be found in them -- free education, free medical care, adequate sewerage, etc. The significance of this is that the penalty for having children is less than it was in the early industrialization of Western Europe and America and thus, the incentive to reduce births in LDCs is absent.

Social and institutional change is yet another point of divergence in the urbanization process of LDCs and MDCs. The pace of urbanization in LDCs, coupled with increased
communication networks has created what many refer to as the "revolution of rising expectations". This "revolution" has created aspirations for the "new urban life style", but has not carried with it the incentive mechanisms for accomplishing the required social change. As a result, pressures for rapid social change are greater today in LDCs than they were in the West.

Perhaps the most obvious point of divergence between the urbanization processes in LDCs and MDCs results from the fact that most LDCs experienced long lasting prior colonial status. The recency of their independence carries with it repercussions never experienced by the West. First, most Third World cities were created as overseas metropoles of the mother country. This means that these cities served as purely administrative centers where colonial officials could "man" the shipment of resources out of the country for processing in the mother country. This deliberately created centrality and its concomitant problems was inherited by the post-independence leaders.

Second, in the process of western urbanization, the small scale entrepreneur and cottage craftsman played a major role. In todays LDCs, this entrepreneurial class is largely expatriate and the small scale businessman has
little or no role in urban development. Lacking private development and an indigenous entrepreneurial class, the impetus for industrialization in Third World cities is left in the hands of university educated bureaucrats. As a result, much Third World urbanization is governmental, public oriented and involving foreign financial and technical assistance; as contrasted with Western Europe and North America, where private goals dominated public goals.

Thus, several themes stand out as major points of divergence in the urbanization processes of LDCs and MDCs — scale and pace of urbanization, demographic behavior, population growth, social and institutional change and the recency of independence from previous colonial status. These points of divergence suggest that contrary to what is set forth in the principle of equifinality, many processes which are occurring in LDCs are dramatically different from processes which characterized MDCs and consequently, may lead to radically different patterns.

This apparent conflict between the paradigm which has guided our research and many of the findings of that research point to the necessity of subjecting our models to more rigorous tests in non-Occidental settings. As mentioned previously, if we find that our models fail to
account for spatial patterns in the developing countries, a serious re-assessment of urban geography is in order. On the other hand, if our models perform well in LDCs, we can begin to articulate a theory of urbanization, which at present is lacking.\textsuperscript{28}

Since this dissertation seeks to determine whether or not we can utilize existing urban geographic theories to explain spatial patterns of informal activity in LDCs, the next section sets forth several theses regarding spatial differentiation which appear useful in our effort.

\textbf{The Proximity and Generative Arguments}

Both the proximity and generative arguments are concerned specifically with the spatial patterns of informal activity.

The proximity thesis suggests that there are certain "ecological" prerequisites associated with informal activity and for the most part, these prerequisites are more likely to be satisfied in large urban centers than in smaller centers.\textsuperscript{29}

Specifically, the proximity thesis takes the position that persons carrying out informal activities locate in large urban centers (either inside inner city slums or
squatter settlements on the fringes) because there is more of a market for goods and services, more specialization of activity, demand is more diverse, and; because of the structure of demand, more can be charged for goods and services. Further, since overhead costs -- housing and transport -- are reduced; profits are greater.\textsuperscript{30}

Thus according to the proximity argument, there is a profit maximization goal on the part of the individual and the emphasis is on economic rationality or conscious decision making at the individual level, largely irrespective of the larger spatial context. Because of this, the proximity argument can be regarded as a behavioral explanation of the spatial differentiation in the extent of informal activity.

The proximity thesis can also be rationalized in terms of maximizing a "convenience" function rather than a profit function.\textsuperscript{31} When this is the case, it is suggested that informal activities are concentrated in squatter settlements in or near large urban centers not only because it is there that one finds demand for all types of goods and services; but also the illegality of the squatter settlement itself means that activities can be carried out relatively free from legal restrictions. For instance, in
those informal activities where family labor of all ages is employed; there is less likely to be keen surveillance by officials of the government when these activities are located in densely populated squatter settlements in urban areas. Further, food preparers who are normally subject to very stringent hygiene regulations, find it advantageous on the one hand to prepare and sell food inside their homes away from view, but at the same time, be as close to the market as possible. This locational prerequisite is satisfied most efficiently in large urban areas.\textsuperscript{32}

Of course, not all informal activities are so innocent and for those highly illegal activities, e.g. drug peddling, child slavery, etc., proximity to the city offers excellent potential for concealment. And in keeping with the labor absorptive function of informal activity, the existence of such operations is also employment creating since often there is a concomitant need for an elaborate system of guards to warn of surprise visits by law enforcement agents.

It appears then that proximity to large urban centers provides an environment which is essential for informal activities and we would expect greater numbers to be found in the largest cities and diminishing thereafter.
The generative thesis represents a variation on this theme. It assumes, that certain activities give rise to or generate other activities. In this case, formal activities generate informal activities.

While the generative argument makes no statement regarding spatial pattern, it is probably correct to assume that since formal sector activities give rise to informal sector activities, the spatial dynamics of the former would dictate the spatial dynamics of the latter and in those places where there are large concentrations of formal activity, we can also expect to find large concentrations of informal activity.

Support for the generative thesis has come primarily from Webb (1974), Weeks (1971), and McGee (1974). They contend that informal activities are linked to the rest of the economy through the process of not only buying and selling, but also through the provision of essential services, e.g. transportation and communications. Others have not been so conclusive regarding the generative thesis. Oshima (1971) for instance sees no relationship between formal and informal activity. He argues that there are few if any linkages between the two because "proprietors and their family help and employees work for each other and buy
each other's products." This view is upheld by ILO (1972) and Sethurman (1975).

It is clear that regardless of which of the two views of the generative thesis is correct, it gives rise to a number of expectations regarding the spatial differentiation of informal activity. For instance, if the precepts of the generative argument are accurate and the relationship between formal activity and informal activity is positive, as depicted in Figure 1, we would expect a spatial pattern similar to that associated with the proximity thesis and informal activity would be concentrated in the largest cities and decrease with distance away from these centers (Figure 2).

On the other hand, if the generative thesis is not accurate and there is no relationship between formal and informal activity, as was suggested by Oshima (1971), and shown in Figures 3 through 4; or some other relationship exists (Figures 5, 6, and 7), we would expect entirely different spatial patterns.

For instance, in the case of Figure 6, there is no relationship between formal and informal activity up to some critical mass of formal activity. Beyond that point, $A^*$, there is a very strong positive relationship
FIGURE 1: PLOT OF THE RELATIONSHIP BETWEEN FORMAL AND INFORMAL ACTIVITY AS ARTICULATED IN THE GENERATIVE HYPOTHESIS

FIGURE 2: PLOT OF THE RELATIONSHIP BETWEEN INFORMAL ACTIVITY AND DISTANCE AS IMPLIED BY THE GENERATIVE HYPOTHESIS

FIGURE 3

FIGURE 4

FIGURE 5

FIGURE 6

FIGURE 7

GRAPHS SHOWING NO RELATIONSHIP BETWEEN FORMAL AND INFORMAL ACTIVITIES

POSSIBLE RELATIONSHIPS BETWEEN FORMAL AND INFORMAL ACTIVITIES OTHER THAN THAT IMPLIED BY THE GENERATIVE HYPOTHESIS
between formal and informal activity. In terms of a spatial pattern across city sizes, we would expect no relationship to exist between informal activity and small city sizes, but, when a critical mass of formal activity has been reached, we would expect a strong positive relationship.

Before discussing other expectations, a consideration of urban geographic theory is in order. The reader will recall that the importance of this section is to determine whether or not these theories have the potential for explaining spatial differentiation of informal activity in LDC contexts.

**The Accessibility Thesis and Its Central Place Variant**

The accessibility thesis sets forth basic principles according to which the spatial behavior of all activities should conform. Specifically, it postulates "a spatial temporal continuum in which places furtherest from the center of modern innovation lose their traditional culture more slowly than do places found at lesser distances from the hearth." At any given time then, communities range along the continuum from least to most accessible; from traditional to modern; homogeneous to
heterogeneous, etc. Thus, ideally, there is a "place" from which emanates the ideas, materials and motives that represent modern culture. Other places, by virtue of their proximity to that "place" are physically more directly exposed to the modernization impulses than are other regions. Furthermore, while it is virtually impossible to determine the preconditions of high and low differentiation; simple contact we know is a necessary factor in promoting greater differentiation.\(^\text{38}\)

To examine the importance of contact more closely, consider the spatial pattern of modernization in today's LDCs. For the most part, social and economic development in Third World cities has manifested itself in the large urban areas. The concentration of activities in the cities led to an increase in the spatial concentration of population, as migrants left the rural areas and came to the already burgeoning cities. In addition, since the political and economic pressure exerted on government by urban groups has tended to be better organized than that of rural groups, there was a strong tendency for social services and public activities to become concentrated in urban areas.\(^\text{39}\) This in turn made urban areas even more attractive and the concentration of people and activities was further heightened.
This concentration of population and social and economic activities in large urban areas meant that most changes in the society, particularly those relating to economic organization, technologies, etc. were initiated or adopted first in cities. Thus, according to the accessibility thesis, the rate of change and more importantly, the spatial pattern of change depends largely on how accessible areas are to the large urban areas or the centers of modernization.

Several authors have demonstrated that this is the case and according to them, spatial differentiation is associated with accessibility to large urban centers. In Kenya, for example, it has been shown that modernity declines with decreasing accessibility to Nairobi, the capital city. Riddell (1970) found similar evidence of a "distance decay" pattern when examining the spatial dynamics of modernization in Sierra Leone. Keynitz (1952) found that families in or near urban areas were significantly smaller than families in rural areas. Fertility levels were seen as indicators of social change.

Even when considering agriculture (a rural based activity), it has been shown that productivity is higher in the vicinity of large cities than in more peripheral areas.
Clearly the accessibility thesis has merit in accounting for spatial differentiation. Significantly however, Hill (1967) rejected the idea of accessibility when he found that "general accessibility as measured by population potential or functional distance and vehicular traffic volume, bore only slight statistical correlation to spatial differentiation in Bogota, Colombia. He concluded, "... there is much evidence in the literature on cultural and economic change to suggest that one should not put much stock in the single variable contact (accessibility). The process of socio-economic differentiation is extremely complex."43

This then suggests that new interpretations and approaches are needed to explain differentiation and he argues that it "might be more realistic to interpret differentiation as evidence of a central place hierarchy rather than as an indicator of cultural and economic change."44 If this is so, the variations in the extent of economic activities are "indicators of the spatial rationalization of central place functions."45 Thus, places near the bottom of the differentiation scale do not represent low levels of contact, but rather may be merely small and at the bottom of their own local urban systems. Consequently,
even after development, they may remain undifferentiated. Hill goes on to argue that one does not impute descriptions of "less advanced" to small communities in say, Iowa. One rather attributes the differentiation found among these communities to "rationalization of central place functions."46

Certainly, this argument is credible. However, it does have limitations when it is used as an interpretation of differentiation in LDCs. Most importantly, central place theory is a static model assuming perfect knowledge. It further assumes that there are no spatial or cultural "gaps" in the urban system. This being the case, it clearly pertains more to MDCs with rank size city distributions than LDCs with primate city distributions. A second reason why central place theory is limited in the LDC context is that it makes no explicit reference to activities other than formal activities, and again, it is an open question the degree to which it applies in LDCs where informal activity is prevalent, if not dominant. The applicability of central place theory in LDC contexts and the effects of the urban system are certainly attractive questions for geographers and will be addressed in the following section.
Effects of the Urban System

The importance of considering the urban system lies in the implications it has for spatial arrangement of economic activities, economic growth and development.

Consider two polar extremes of a continuum expressing city size distributions. On one extreme would be a primate distribution with an urban system dominated by one or two cities; and on the other extreme would be a rank size distribution with cities at all ranks. In terms of growth and development, it has been suggested that primate city distributions give rise to serious problems (e.g. social and physical congestion, economic inefficiency, etc.); problems so serious that they may severely thwart the growth process. The rank size distribution on the other hand, represents a very systematic, efficient, interdependent urban system.

In terms of economic activities, in the primate city distribution, we would expect the greatest proportion of formal activity (manufacturing/industry) to be located in or near the largest cities. There are several reasons for this. First, market forces favor the primate city since the bulk of the middle class and professional class reside there.
Second, locational factors favor the primate city, since usually all transport routes radiate out from it. Third, goods needed for input can be easily obtained in the largest cities and finally, the legacy of colonialism has elevated certain cities to a position of dominance that has been difficult to challenge. This concentration of manufacturing and industry is significant since it generates not only more industrial activity, but also more service related activities. Pred (1965) and Myrdal (1957) have both emphasized the importance of spatial concentration of economic activity.

Consider the following,

"... an isolated city, whose economy is based on commerce and trade, which imports goods not locally produced from other places... imagine that a new large scale factory is constructed in the city. Sooner or later this event evokes chains of reaction..."

First, "... the new factory and the increased purchasing power of its workers create new local demands. This results in the development of a host of new business -- services, trades, construction, transportation, professional, and other jobs."

Second, "... based on the increased amount of interpersonal interaction derived from the expanding city population, the possibilities of technological improvements and inventions, enlarges the likelihood of the adoption of more efficient managerial and financial institutions,"
increases the speed with which locally originating ideas are disseminated and eases the diffusion of skills. . ."49

According to Richardson (1977), Pred and Myrdal have offered implied support for the generative thesis described above and the concentration of large scale manufacturing in or near primate cities has implications for informal activity which generally go unrecognized. Recall that the techniques of production used in large scale manufacturing are for the most part, highly capital intensive, Western derived and Western oriented. The net result is that manufacturing (in LDCs characterized by primacy) has had a very limited impact in terms of absorbing the hoards of migrants arriving in the cities in search of work. Consequently, there are large numbers of people employed outside the formal industrialized structure -- in informal activities. Further, since labor has been more mobile than capital in situations of primacy, (labor polarized towards the core, whereas capital has failed to disperse), the dominance of the primate city has been reinforced, and few, if any manufacturing activities are to be found outside the primate city. Thus, primate cities are characterized by a high level equilibrium trap with more people generating more activity, and more activity generating more people,
and so on. The remaining small towns, lacking the base needed to initiate growth, contain little economic activity.

Alternatively, if the distribution of city sizes conforms to a rank size distribution, we would not expect to find such concentration of economic activities. As noted previously, the rank size distribution has been seen as preferable because growth is channelled throughout the country and not concentrated in one or two cities. Further, interregional levels of welfare are narrowed by more equal provision of services. Most importantly however, the rank size distribution is seen as preferable to the primate distribution because economic activities (manufacturing and industry) would be found at all levels of the urban hierarchy based on some sort of a relationship with city size. Growth would occur throughout the entire system rather than being concentrated in one or two cities.

Although this certainly may be the case, and initially cities in the rank size distribution might contain economic activities in relation to their city size; at some point, other factors operate to halt or impede the growth process and economic activity ceases to be solely a function of city size. Here, notions of economic base and economic multiplier become important.
Economic Base/Economic Multiplier Effects

The economic base notion implies that the reason for the growth of cities lies in the goods and services they produce locally but sell beyond their borders. The more goods and services a settlement can produce and sell beyond the immediate environs of the city, the more income it will earn, and the more growth will be generated. Those goods produced locally but sold elsewhere are referred to as basic goods and those goods which are produced and sold locally are considered to be non-basic. Of importance in the idea of the economic base is the multiplier effect.

The multiplier effect suggests that a unit increase in basic activities can be expected to yield an increase in total economic activity. In other words, changes in the quantity of those activities whose products are sold beyond the settlement (basic) bring about changes in the amount of total economic activity.

While the economic base notion distinguishes between basic and non-basic in terms of goods and services sold within and outside settlement borders, another distinction could be based on whether the final product is a good or a service. Since it is more likely for goods to be traded
outside the settlement border than for services, the
distinction could refer to activities producing goods
as basic and activities producing services as non-basic.
If we go one step further and assume that for the most part,
informal activities are service related activities and
formal activities are manufacturing/industrial activities,
we can use the idea of a multiplier effect to help
explain the spatial differentiation of informal activities.

Specifically, increases in the amount of formal
activity (which are likely to take place in those cities
already containing large amounts of formal activity)
should have a multiplier effect and increase informal
activity. The reader will recall that the generative
argument advanced the same hypothesis.

Taking the economic base notion further, Lo and Salih
(1978) outline a very interesting approach that would
also offer some explanation for spatial differentiation in
the extent of informal activity. They employ a set of
urban sectoral efficiency curves to show varying levels of
efficiency associated with various city sizes. For
simplicity, only two sectors are assumed to exist -- a
manufacturing sector (which includes skilled labor) and a
tertiary or service sector. The efficiency curves are
illustrated in Figure 8.

Lo and Salih argue, based on empirical evidence that the manufacturing curve takes the form of an inverted U. The curve for tertiary activities is drawn beginning at intercept zero because of the direct relationship with population size of the city. The curve increases throughout the various city sizes although at a decreasing rate. It should be noted that the two curves are complementary, indicating complementarity between the basic and non-basic sectors and the formal and informal sectors of the economy.

Clearly, the dominance of various sectors shifts with city size. Towns in the range a-b are central places serving rural areas though the larger ones may have some manufacturing activity. Cities in the b-c range are the potential growth centers with dominant manufacturing and a substantial tertiary sector. Finally, in cities larger than "c", manufacturing efficiency is on the wand and such cities specialize in services, especially high order services though the informal sector also may be large. These observations were borne out in a recent study on urban development in three Asian countries.
FIGURE 8: URBAN SECTORAL EFFICIENCY AND CITY SIZE
Figure 8 can also be used to demonstrate urban system effects. Consider for example a growth pole A* built in the (b-c) range. Comparing the relative urban manufacturing efficiency in the existing primate city A will lead to a decentralization of some industrial activities to A*. However, the comparative efficiency on the tertiary dimension between those two cities still suggests a higher labor absorptive capacity for the primate city A. Thus, labor released from rural areas may continue to locate in the major cities.

These ideas suggest a slight modification in our thinking regarding the spatial variation in the extent of informal activity. Specifically, in our previous formulations we hypothesized that informal activity would be greatest in the largest cities and diminish in smaller cities located some distance from these centers. According to Lo and Salih (1978) however, the relationship is not as depicted above, but rather is "J" shaped as shown in Figure 9, with small cities in the a-b range housing more informal activity than medium sized cities in the b-c range and as always, the largest cities containing the largest amounts of informal activity.
FIGURE 9: SPATIAL VARIATION IN THE EXTENT OF INFORMAL ACTIVITY BASED ON LO AND SALIH (1978) CONCEPTUALIZATION
Given these ideas derived from urban geography, we are now able to postulate relationships according to which the spatial differentiation in the extent of informal activity should conform. This is done in the following section.

**Expectations**

Accepting the very general frameworks laid out in previous sections regarding accessibility, proximity, economic multipliers and economic base considerations, a number of expectations can be advanced regarding the spatial differentiation in the extent of informal activity.

Specifically, it is expected that the extent of informal activity will be directly related to:

1. formal, modern sector economic activity;
2. increased urbanization and the growth of an urban system which facilitates rural-urban interaction;
3. the manner in which the towns and cities of the area under consideration are distributed -- or the urban hierarchy;
4. a city's location in the urban hierarchy, with cities at the top of the urban hierarchy having more informal activity and cities occupying lower positions having less informal activity;
5. distance from the major urban centers; and
6. population size.
Before formally addressing these expectations, it is worthwhile to briefly describe the study area. This is done in the following chapter.

**Synopsis of Chapter III**

Chapter III sets forth some of the basic premises which guide our thinking regarding spatial distributions. What is important here is that much of our thinking has been based on models and theories which were developed in MDCs with formal sector activities in mind. It is therefore an open question the degree to which these models can be applied to informal activities in LDCs.

The chapter begins by discussing the notion of equifinality as an example of a research paradigm in urban geography. Since it is clear that the idea of equifinality leads to expect that ultimately the social structure of all cities will become "equal" or there will be cultural convergence; it is necessary to examine specific research findings to see if this is indeed what is occurring. Research findings relating to urbanization and demographic behavior cast some doubt on the equifinality thesis and suggest that rather than convergence; divergence from the Western model is more likely. This of course makes
it even more compelling to test theories and models of urban geography in contexts other than the Occident.

In pursuit of this objective, two of the schools of thought regarding spatial differentiation in the extent of informal activity are reviewed. This review reveals that we should expect informal activities to (1) be located in close proximity to the centers of modernization and (2) exhibit a spatial pattern similar to formal activity, since formal activities generate informal activities.

Since both of these "schools of thought" were developed specifically for informal activities, it now becomes important to examine some of the spatial differentiation theories of urban geography. Here, the effects of the urban system, economic base considerations and spatial manifestation of urban sectoral efficiency are highlighted. Based on these theories, it appears that urban geographic theory can be used to explain spatial differentiation of informal activities, and a number of expectations are advanced.

Before addressing these expectations, the next chapter describes aspects of the setting in which informal activity is found that might affect its distribution.
FOOTNOTES TO CHAPTER III

1 Owing to the vast scope of the subject matter and the mass of material available this review has had to be selective. It is thought however that the reader is able to grasp some of the more salient features of urban geography.


Phillip Bacon, Editor, Focus on Geography: Key Concepts and Teaching Strategies, (National Council for the Social Studies, 1970)


5 The use of general systems theory in urban geography is not new and increasingly geographers have adopted the precepts of systems theory to explain spatial relationships. The study of systems has even had a "semi official" stamp of approval in the publication The Science of Geography which argues that geography is a field concerned with the study of physical, political and economic systems; with locational analysis as an overall set of tools through which such systems might be understood in their spatial context.

6 For an extensive treatment of the concept of equifinality, see, Bacon, op. cit.; R. J. Chorley and P. Haggett, Socio Economic Models in Geography (University Paperbacks, 1968);

7 Robson, op.cit.


9 Ibid.

11 Ibid.

12 Ibid.


16 Gerald Breese, Urbanization in Newly Developing Countries (Prentice Hall, 1966), pp. 132-158.

17 Berry, op. cit.

18 Mabogunje, op. cit.; Breese, op. cit.; Berry, op. cit.

19 Brian Berry, The Human Consequences of Urbanization (St. Martin's Press, 1973)


20 Berry, 1973, op. cit.


22 McNulty and Horton, op. cit.

Only recently has the informal sector entrepreneur been regarded as an avenue for economic development. Prior to the Kenya Report, persons carrying out informal activities were considered "undesirable" elements to be gotten rid of.

27 Berry, 1973, op. cit.

28 Mabogunje, 1968, op. cit.

29 McGee, 1976, op. cit.

C. Abrams, Man's Struggle for Shelter in an Urbanizing World (Cambridge, 1964)


30 McGee, 1976, op. cit.

31 Friedman, 1969, op. cit.

32 McGee, 1976, op. cit.


37 Ibid.

38 Ibid.

39 Friedman and Wulff, 1976, op. cit.


44 Ibid.

45 Ibid.

46 Ibid.

47 Friedman, 1969, op. cit.

48 H. Richardson, City Size and National Spatial Strategies in Developing Countries, World Bank Staff Working Paper (No. 252), 1977.

49 Ibid.

50 Yeates and Garner, 1971, op. cit.

51 Ibid.

52 Lo and Salih, 1978, op. cit.
53 Ibid.

54 Ibid.
CHAPTER IV

THE SETTING: A DESCRIPTION AND DISCUSSION

Previous chapters reviewed the relevant literature and laid out a conceptual framework for examining spatial variations in the extent of informal activity. It is now useful to highlight various aspects of the setting in which informal activity is found that might affect its distribution.

This chapter then, provides information on the structure of the Ghanaian society and economy. In so doing, it will shed light on the relationship between characteristics of cities and informal activity. The chapter is divided into three sections. Section One is a very general discussion of the administrative and economic events that led up to the present state of affairs in Ghana. This is done mainly to acquaint the reader with the nature of colonial rule and the subsequent efforts to create an economically viable nation state.
The next section is a description of the manner in which various facets of the economy — activities, resources, population, etc. — are organized in space. This section points to the extreme spatial concentration and regional imbalances which characterize the Ghanaian space economy.

The final section isolates two factors — labor force and unemployment — which are thought to have particular relevance in the examination of informal activity. From this, it is then possible to theoretically determine the degree to which characteristics of cities affect the extent of informal activity.

**ANTECEDENTS OF THE PRESENT SITUATION**

A. Administrative

Before the country attained its independence on March 6, 1957 and assumed the name of Ghana, it was known as the Gold Coast. The term Gold Coast applied initially only to the coastal areas, where the Europeans traded in gold supplied to them by the local inhabitants.

By the end of the 19th century, the British had ousted all of the European powers trading in the Gold Coast, and she alone controlled the entire coastal region, including the many forts which had been built by the Portuguese, the Danes
and the Dutch. As British influence spread inland, first in the area known as "Ashanti" and then into the region formerly known as the "Northern Territories", so did the name Gold Coast. Eventually, Gold Coast was the name given to the whole of this British sphere of influence.¹

By 1921, the boundaries of the British territory of the Gold Coast had been determined in their final form. It must be emphasized that these political boundaries drawn by the British joined together peoples who were culturally distinct and had never before constituted a united political entity.²

In 1946, there were approximately 108 Native States in Ghana, ranging in size from 25 to 2000 square miles and in population from 2000 to 228,000 people³ (Figure 10). Few of these states had properly defined boundaries, instead they were separated from each other by vague frontier zones that oscillated from time to time. Groups of these states were joined together to form larger administrative units known as districts. These in turn were grouped together into provinces within the larger divisions of the Colony. The result of all this was to bring the Native States closer together into common administrative divisions with the national government in Accra. Although the Native States
FIGURE 10: NATIVE STATES OF GHANA
remain, their former independence has largely disappeared, and it is significant that the political unit known today as Ghana began largely as an artificial creation defined and administered by European powers.

Today, for purposes of government, the country is divided into nine regions: the Eastern, Central and Western Regions; the Ashanti and Brong-Ahafo Regions; the Upper and Northern Regions; the Volta Region and the Accra (Capital District) Region (Figure 11). Government is centralized in the National Assembly in Accra, but each region has a regional head, who in turn has a number of regional and district officials. The Native States still exist, but for all practical purposes, serve no function within the Ghanaian administrative hierarchy. 4

B. Economic

Prior to the year 1957, the year of independence, Ghana's economy was wholly colonial in pattern and was characterized by the production of raw materials for export to the highly industrialized countries in return for manufactured goods. 5 Most of the items imported were consumer goods (textiles, clothing, food, etc.) rather than capital goods (machines, etc.) which could be used to improve production in the
FIGURE 11: REGIONS AND MAJOR CITIES OF GHANA
Following independence, government policy was deliberately aimed at changing the colonial pattern of the economy and at broadening the basis of production. In 1959, the country launched a Development Plan that had two principle aims: (1) to broaden the infrastructure in order to facilitate development, and; (2) to "tackle" specific projects in both agriculture and industry.

Despite an enthusiastic start, the Plan quickly ran into difficulties, and soon discussions were under way for launching yet another development plan. This new plan, referred to as the Seven Year Development Plan was launched in 1964 and had many of the same objectives as the previous plan, e.g. raise the yields of the cocoa industry, establish state assisted rubber and banana plantations, raise the foundations of the cattle industry; bring the Volta flood plain under irrigation, and diversify the industrial base of the country by establishing no less than 600 factories producing over 100 different products. The distinction between the Seven Year Development Plan and its predecessor was that the Seven Year Plan was overly grandiose in its ambitions and relied heavily on outside borrowing. Needless to say, by the end of 1965 (slightly less than two years
after the inception of the Seven Year Plan), the Ghanaian economy was in shambles, with all of its overseas reserves dissipated and external and internal debts in the millions.\textsuperscript{11}

While certainly, the country's economic disaster cannot be blamed entirely on the Seven Year Plan, there is no doubt that it was overly ambitious and extravagant. In addition to creating financial problems, the plan failed to provide a solution to many of the existing problems -- specifically the problem of spatial concentration and regional disparities.\textsuperscript{12}

The following section gives the reader some insight into the spatial concentration and regional imbalances in Ghana.

**Spatial Concentration and Regional Imbalance in Ghana**

Without a doubt, Ghana is one of the most urbanized countries in West Africa.\textsuperscript{13} Its rate of urban population growth is almost twice its national population increase.\textsuperscript{14} In 1921, only 7.5 percent of Ghana's population lived in urban areas. This number had increased to almost 29 percent in 1970\textsuperscript{15} (Table 2). In 1975, the percent of population living in urban areas had risen to 33% and is expected to reach over 50 percent by the end of the century.\textsuperscript{16} Compare this with estimates of percentage urban for other West
### TABLE 2 GROWTH OF GHANAIAN URBAN POPULATION, 1921-1970

<table>
<thead>
<tr>
<th></th>
<th>1921</th>
<th>1931</th>
<th>1948</th>
<th>1960</th>
<th>1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population (millions)</td>
<td>2.30</td>
<td>3.16</td>
<td>4.12</td>
<td>6.73</td>
<td>8.56</td>
</tr>
<tr>
<td>Rate of Increase (percent)</td>
<td>--</td>
<td>3.20</td>
<td>1.60</td>
<td>4.20</td>
<td>2.40</td>
</tr>
<tr>
<td>Urban Population (millions)</td>
<td>0.18</td>
<td>0.30</td>
<td>0.54</td>
<td>1.56</td>
<td>2.47</td>
</tr>
<tr>
<td>Annual Rate of Urban Population Increase</td>
<td>--</td>
<td>5.20</td>
<td>3.50</td>
<td>4.30</td>
<td>4.80</td>
</tr>
<tr>
<td>Percent Urban</td>
<td>7.50</td>
<td>9.50</td>
<td>13.00</td>
<td>23.10</td>
<td>28.90</td>
</tr>
<tr>
<td>Number of Towns</td>
<td>23</td>
<td>30</td>
<td>98</td>
<td>135</td>
<td></td>
</tr>
</tbody>
</table>

Note: Urban areas are defined as having populations greater than 5,000.

Source: Ewusi, Kodwo, "Urbanization and Migration in Ghana", *Economic and Social Affairs*, Vol. 1, No. 1
West African countries -- Senegal, 32%; Nigeria, 18%; Mauritania, 23%; Liberia, 29%; and Ivory Coast, 32%.  

With the exception of Tamale, capital city of the Northern Region, most of the increase in urban population has occurred in the southern part of the country, primarily in the "Golden Triangle" of Accra-Tema; Kumasi; Cape Coast; and Sekondi-Takoradi. These localities together accounted for over 85 percent of the total urban population of Ghana in 1970. Table 3 shows population statistics for each of the nine regions in Ghana.

Southern Ghana also monopolizes a disproportionate share of the country's resources and services and facilities. With only ten percent of the total population in 1970 and less than 10 percent of the total land area of the country, the Golden Triangle contains four of the nine regional capitals (Accra, Kumasi, Sekondi-Takoradi and Cape Coast), both of the international seaports, the one international airport, all of the universities in the country and 58 percent of existing hospital beds.

Between 1969 and 1973, 80 percent of the total government capital expenditures for roads went for highway development in the Golden Triangle area. Almost 20 percent of the hydroelectric power of Ghana is consumed by the
### TABLE 3 REGIONAL POPULATION STATISTICS

<table>
<thead>
<tr>
<th>Region</th>
<th>Area</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Square Miles</td>
<td>Percent</td>
</tr>
<tr>
<td>Western</td>
<td>9236</td>
<td>10</td>
</tr>
<tr>
<td>Central</td>
<td>3794</td>
<td>4</td>
</tr>
<tr>
<td>Accra</td>
<td>1001</td>
<td>1</td>
</tr>
<tr>
<td>Eastern</td>
<td>7713</td>
<td>8</td>
</tr>
<tr>
<td>Volta</td>
<td>7943</td>
<td>8</td>
</tr>
<tr>
<td>Ashanti</td>
<td>9417</td>
<td>10</td>
</tr>
<tr>
<td>Brong-Ahafo</td>
<td>15273</td>
<td>16</td>
</tr>
<tr>
<td>Northern</td>
<td>27175</td>
<td>29</td>
</tr>
<tr>
<td>Upper</td>
<td>10548</td>
<td>11</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>92100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Ghana Census of Population, 1970
urbanized areas of Accra, Tema, Kumasi and Sekondi-Takoradi. Per capita expenditures for health services in the Greater Accra and Central region average 8.1 cedis\(^20\) compared with 5.70 cedis in the Northern and Upper regions.\(^21\)

In 1969, seventy percent of those with university education and over 50 percent of those with some secondary schooling lived in Accra-Tema, Kumasi, Sekondi-Takoradi, and Cape Coast. Data on income distribution among regions show that in 1977, median personal income was 1190 cedis in Accra, 1115 cedis in Kumasi and 1211 cedis in Sekondi-Takoradi as compared with 533 cedis in Tamale in the Northern Region.\(^22\)

In addition to the "natural" attraction of the Golden Triangle, fiscal and industrialization policies have exacerbated the problem of concentration and over 50 percent of Ghana's labor force in large scale capital intensive industries and industrial establishments can be found there. Instead of creating intersectoral and interregional linkages within Ghana, most of the industrial activity was dependent on external suppliers and markets. Capital subsidies, foreign exchange restrictions and protective tariffs, designed to stimulate domestic consumer goods and luxury production, further isolated manufacturing from the other sectors of the economy and added to the spatial concentration in the
Golden Triangle.\textsuperscript{23}

The consequences of this industrial development strategy resulted in a formal sector which has little capacity to generate employment. Between 1960 and 1970, recorded wage employment increased by only 3.2 percent while the urban labor force grew at a rate of 5.2 percent annually. As seen in Table 4, recorded wage employment declined in terms of the percentage of the urban labor force it has been able to absorb. Note that in 1960, recorded wage employment absorbed approximately 37% of the labor force whereas in 1970, it was only able to absorb 31%. If this trend continues and employment in large scale enterprises continues to drop, it is estimated that the formal sector will be able to absorb only 20 percent of the increase in the urban labor force by 1980.\textsuperscript{24}

Such a low absorptive capacity in the modern sector puts a heavy burden on the informal sector. According to the International Labour Organization, the informal sector provides approximately 80 percent of all non-agricultural employment in Ghana (600,000 women and 380,000 men) and clearly plays a dominant role in the economy.

Considering just the magnitude of informal activity, it is ironic that spatial concerns have gone almost totally
### TABLE 4  CHANGE IN TOTAL AND URBAN POPULATION AND LABOR FORCE, 1960 - 1970

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>6.7</td>
<td>8.6</td>
<td>2.7</td>
<td>2,331</td>
</tr>
<tr>
<td>Urban Population</td>
<td>1.5</td>
<td>2.4</td>
<td>5.6*</td>
<td>1,366</td>
</tr>
<tr>
<td>Total Labor Force</td>
<td>2.7</td>
<td>3.3</td>
<td>2.2</td>
<td>745</td>
</tr>
<tr>
<td>Urban Labor Force</td>
<td>0.7</td>
<td>1.0</td>
<td>5.2</td>
<td>519</td>
</tr>
<tr>
<td>Recorded non-primary employment**</td>
<td>0.2</td>
<td>0.3</td>
<td>3.2</td>
<td>102</td>
</tr>
</tbody>
</table>

### Percent

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Population</td>
<td>23.0</td>
<td>28.5</td>
<td>---</td>
<td>58.6</td>
</tr>
<tr>
<td>Total Labor Force</td>
<td>40.4</td>
<td>38.9</td>
<td>---</td>
<td>31.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Labor Force</td>
<td>24.3</td>
<td>31.0</td>
<td>---</td>
<td>69.7</td>
</tr>
<tr>
<td>Recorded non-primary employment</td>
<td>9.0</td>
<td>9.7</td>
<td>---</td>
<td>13.7</td>
</tr>
<tr>
<td>Recorded non-primary employment share of urban labor force</td>
<td>37.2</td>
<td>31.4</td>
<td>---</td>
<td>19.7</td>
</tr>
</tbody>
</table>

**Notes:**

*Defined as having populations greater than 5,000

**Recorded employment is defined by labor statistics as having more than 10 employees

**Recorded employment share of urban labor force

**Source:** Steel, "Small Scale Employment and Production in Developing Countries: Evidence From Ghana." (Praeger Publishers, 1977)
neglected, and many of the issues of importance to the spatial analyst go unaddressed. For instance, we do not have empirical evidence which provides us with information regarding the spatial pattern of informal activity; consequently, we do not know what factors contribute to the pattern. For example, in Ghana we do not know if the spatial pattern of informal activity is consistent with the spatial pattern of people and activities described earlier and concentrated in the Golden Triangle; or, if informal activity is most prevalent in areas which are deficient in economic activity. Further, we do not know what elements of society are important for the sustenance of informal activity nor do we know the extent of their importance.

The final section of this chapter isolates two aspects of the economy which are thought to have bearing on the spatial variation in the extent of informal activity -- labor force and employment/unemployment.25

Regional Distribution of Labor Force

The percentage of persons aged 15 and over has been designated as the available labor force. Since this figure does not differ dramatically across regions in Ghana,26 more insight can be acquired by disaggregating the labor
force based on sex. After disaggregation, evidence indicates that both the Accra Region and the Northern Region are distinct in that the former has an exceptionally high percentage of males in the working age groups (64% — the national average is 55%) and the latter with an unusually high percentage of females in the working age groups. The high percentage of men in the Accra Region can be partially explained by the structure of employment (more industry) and the attractive force this region exerts on persons from other regions and from abroad in search of high incomes and "bright" lights. Despite its high percentage of males aged 15 and over, the Accra Region does have a slightly lower than average male participation rate in the labor force. With the exception of Accra however, the spatial pattern of labor force participation also conforms to the patterns discussed in the previous sections and diminishes as one moves away from the Golden Triangle. Female rates of participation exhibit an opposite pattern and are extremely low in the northern parts of the country, but higher in proximity to the Golden Triangle.

Combining what we know regarding female labor force participation with what we know regarding the spatial distribution of economic activity, we might expect a
relationship between informal activity and female labor force participation. Specifically, we might expect places with high percentages of females in the labor force to have more informal activity, and vice versa.\textsuperscript{30}

The next section considers the spatial distribution of employment/unemployment.

Regional Distribution of Employment/Unemployment

In 1960, 6\% of the labor force of Ghana was unemployed, actively seeking employment.\textsuperscript{31} Ghanaian unemployment seems to have marked structural characteristics and is not determined solely by fluctuations in the aggregate demand for goods and services, rather, it is determined by the employment possibilities created for different types of labor by other resources available in the economy.\textsuperscript{32} In other words, unemployment is likely to be closely related to modern, capital intensive technologies.

It is expected then that unemployment would be highest in those areas which (1) offer opportunities for generating income through formalized employment, and (2) attract a large number of in-migrants. Therefore, those regions which constitute the Golden Triangle -- Accra, Eastern, Western, and Ashanti -- should be characterized by higher rates of
unemployment than the Volta, Brong-Ahafo, Upper, Central and Northern regions. This notion is substantiated in Table 4. As was expected, the highest rates of unemployment are in the Accra, Eastern, Western and Ashanti regions. The one exception is the Upper Region with an unemployment rate of 5.4%. In this case, the high unemployment rate probably suggests that the relationship between unemployment and formal activity is not linear as depicted in Figure 12; but rather is curvilinear as depicted in Figure 13.

Extending these ideas to informal activity, the above discussion suggests that we can expect the extent of informal activity to be directly related to unemployment rates; and places having high rates of unemployment will also have high rates of informal activity. The spatial expectation would be similar to that illustrated in Figure 14.

It does appear, in view of the evidence presented above, that the structure of economic activity in certain regions of Ghana is extremely different from that in other regions and those regions "favored" by their inclusion in the Golden Triangle -- the Accra Capital District, Ashanti, Eastern, and Western -- contain concentrations of skills and activities which are found elsewhere only in small pockets. In many ways, these four regions form a
FIGURE 12: RELATIONSHIP BETWEEN INFORMAL ACTIVITY AND UNEMPLOYMENT

FIGURE 13: NON-LINEAR RELATIONSHIP BETWEEN INFORMAL ACTIVITY AND UNEMPLOYMENT

FIGURE 14: SPATIAL VARIATION IN THE EXTENT OF INFORMAL ACTIVITY
## TABLE 5 REGIONAL LABOR FORCE PARTICIPATION RATES

<table>
<thead>
<tr>
<th>Region</th>
<th>Employed (%)</th>
<th>Total</th>
<th>Agriculture</th>
<th>Unemployed</th>
<th>Homemaker</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>74.3</td>
<td>(55.3)</td>
<td></td>
<td>4.6</td>
<td>9.8</td>
<td>11.3</td>
</tr>
<tr>
<td>Central</td>
<td>75.5</td>
<td>(64.3)</td>
<td></td>
<td>4.0</td>
<td>6.3</td>
<td>14.2</td>
</tr>
<tr>
<td>Accra</td>
<td>67.0</td>
<td>(9.6)</td>
<td></td>
<td>7.1</td>
<td>12.7</td>
<td>13.2</td>
</tr>
<tr>
<td>Eastern</td>
<td>71.9</td>
<td>(56.7)</td>
<td></td>
<td>4.4</td>
<td>8.4</td>
<td>15.3</td>
</tr>
<tr>
<td>Volta</td>
<td>73.3</td>
<td>(60.2)</td>
<td></td>
<td>2.7</td>
<td>7.5</td>
<td>16.5</td>
</tr>
<tr>
<td>Ashanti</td>
<td>72.3</td>
<td>(58.5)</td>
<td></td>
<td>5.4</td>
<td>9.4</td>
<td>12.9</td>
</tr>
<tr>
<td>Brong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ahafo</td>
<td>76.8</td>
<td>(77.2)</td>
<td></td>
<td>3.0</td>
<td>9.2</td>
<td>11.0</td>
</tr>
<tr>
<td>Northern</td>
<td>57.6</td>
<td>(72.2)</td>
<td></td>
<td>1.2</td>
<td>32.7</td>
<td>8.5</td>
</tr>
<tr>
<td>Upper</td>
<td>48.9</td>
<td>(69.1)</td>
<td></td>
<td>5.4</td>
<td>34.8</td>
<td>10.9</td>
</tr>
</tbody>
</table>

Source: Ghana Census of Population, 1970
distinctive economy dominated by activities and patterns of production not present to any significant degree in other areas.

For informal activity, the relevance of the preceding discussion has yet to be formally explored; and constitutes the central theme of this research. The spatial pattern of informal activity and the factors contributing to that pattern are formally addressed in the following chapter.

**Synopsis of Chapter IV**

Previous chapters reviewed the literature and laid out a conceptual framework for examining spatial variation in the extent of informal activity. This chapter highlights various aspects of the setting which might affect the spatial pattern of informal activity.

Present day Ghana can be described as an artificial creation defined and administered by European powers. For purposes of government it is divided into nine regions -- the Eastern, Central and Western; the Ashanti and Brong-Ahafo; the Upper and Northern Regions and the Volta and Accra (Capital District) Regions. Government is centralized in Accra. Following independence, government policy was deliberately aimed at changing the colonial
pattern of the economy and at broadening the basis of production. In 1959, the country launched a Development Plan that aimed to (1) broaden the infrastructure in order to facilitate development and (2) tackle specific projects in both agriculture and industry. Not only was the plan overly ambitious and extravagant, it failed to provide a solution to many of the existing problems -- specifically spatial concentration and regional disparities.

In Ghana, as in most developing countries, people and activities are highly concentrated. This extreme concentration has meant that labor, in order to secure employment, must leave the rural areas and come to the urban areas. The net effect is that the formal sector has little capacity to generate employment and consequently the informal sector emerges as decidedly more important for in-coming, unemployed rural urban migrants.

Considering the magnitude of informal activity, it is ironic that spatial concerns have gone almost totally neglected and issues of importance to the spatial analyst go unaddressed.

The final section of this chapter isolates labor force and employment as two factors which certainly have bearing on informal activity and discusses their regional distribution
across Ghana. From this, it is determined that there is a relationship between informal activity and female labor force participation and also between informal activity and unemployment. Neither of these notions have been formally addressed in the literature and consequently, will be addressed here.
FOOTNOTES TO CHAPTER IV


2 Ibid.

3 Ibid.

4 Ibid.

5 Ibid.

6 Ibid.


8 The difficulties can be grouped into two categories; those pertaining to labor and those pertaining to capital. In terms of the former, post independence Ghana faced severe shortages of skilled labor, technical know-how, and entrepreneurial skill. The supply of capital was even more limited.


10 Ibid.

11 Ibid.

12 It was not until 1975 that the government of Ghana explicitly recognized the severe socio economic problems and strains on national resources created by this over concentration and begin efforts to redress the spatial imbalances.


15 Ibid.
    K. Ewusi, "Urbanization and Migration in Ghana," 
    Economic and Social Affairs, 1, 1, (1976).

17 Population Reference Bureau, World Population Data 


19 Ibid.

20 In 1979, one U.S. dollar equalled 2.40 Ghanaian cedis.


22 Ibid.

23 Ibid.

24 William Steel, Small Scale Employment and Production 
    in Developing Countries: Evidence from Ghana (Praeger 

25 The relationship between informal activity and both 
    labor force and employment/unemployment are subjected to a 
    more formal analysis in the following chapter. For the 
    moment however, the intent is to determine whether the 
    spatial distribution of these two factors will be able to 
    help in explaining spatial differentiation in the extent of 
    informal activity. In addition, these discussions are also 
    expected to give rise to other expectations regarding the 
    spatial differentiation in the extent of informal activity.

26 Birmingham, et. al., 1966, op. cit.

27 Ibid.

28 The Accra Capital District labor force participation 
    rate is lowered owing to the higher incidence of male school 
    attendance. Approximately 50% of the males in the age 
    groups 15-19 in Accra attend school, compared to the 
    national average of 36%.

30 Steel, 1977, op. cit.

31 Birmingham, et. al., 1966, op. cit.

32 Ibid.
CHAPTER V

THE SPATIAL PATTERN OF INFORMAL ACTIVITY -- ANALYSIS

Keeping the research objectives of this dissertation in mind, this chapter uses census and survey data to describe the spatial pattern of informal activities. The chapter is divided into five sections. Section One is a brief statement of the manner in which informal activity is operationally defined in this dissertation. Section Two uses maps as a preliminary means of identifying spatial characteristics of informal activity. This is followed by Section Three; a discussion of specific variables which will be used in the subsequent statistical analyses. In general, the variables were selected because of data availability; however, within that constraint, the variables were selected because they represent dimensions which are thought to be significant in differentiating cities in the Third World -- rank in the urban hierarchy, placement along a rural-urban continuum and level of technological development. After
reducing the large set of variables into a fewer number of statistically independent factors, a formal test of whether or not the dimensions are related to informal activities and the nature of the relationship is also performed.

Sections Four through Six describe the total sample and subgroup analyses respectively. In Sections Four and Six, parallel, multivariate analyses are performed which are designed to assess the statistical correlation between selected variables pertaining to city characteristics and informal activity.

In terms of content, Section Four -- the total sample analyses -- begins with a discussion of the formal analyses which relates specific attributes of cities to the extent of informal activity. Also discussed in this section is the relationship between informal activity and developmental dimensions cited earlier.

Section Five presents the findings of the total sample analyses in graphical form. Important here is the appearance of a few exceptionally large cities which might have biased the results of the statistical analyses. In order to determine the extent of the bias, Section Six disaggregates the total sample based on a classification scheme developed by
Grove and Huszar (1964) and attempts to determine the factors unique to subgroups of cities which might have bearing on the extent of informal activity. Another reason for disaggregating the total sample results from the fact that aggregate analyses typically conceal information that can only be gleaned through subgroup analysis; although the overall pattern is important. A final, more compelling reason for disaggregating results from the idea that cities experience structural changes at various stages of development and while informal activity may be positively related to certain attributes of cities at say, high levels of development; an opposite relationship may prevail for cities at low levels of development.

Before proceeding, it should be noted that there are two issues of concern that override the previous discussion. The first is the manner in which informal activity is measured and the second is the manner in which the measures are expressed. A detailed explanation of the former concern -- the measures of informal activity is provided in Section One of this chapter.

In terms of the latter concern -- the manner in which the two measures are expressed -- both measures of informal activity are analyzed in terms of absolute number or
magnitude and percentage or structure.

Absolute number is important because it says something about the magnitude of occurrence. At the same time, percentage is important because it reflects structural characteristics of a place, indicating something about the role of informal activity relative to formal activity. The most important reasons for using both absolute number and percent however, relate to policy. For many policy decisions, it is important to know not only the total number of persons engaged in informal activity, but also their percentage of the working population. Consider, for example two cities, one with a working population of one million and the other with a working population of one hundred thousand. Both have fifty thousand people engaged in formal activity, but for the former, this figure is only twenty percent of its working population and for the latter, this figure is one half its working population. Clearly, the policy actions to be undertaken in the former will differ radically from those to be undertaken in the latter.

Still another reason for using both absolute number and percent is based on the expectation that the absolute number of informal activities would increase with city size, regardless of other factors. Therefore, maps showing variation in
the absolute number of informal activities would closely resemble maps showing variation in population size and would tell us little beyond what we already know. Whether or not this is in fact the case is an open question and is addressed here.

Operational Definitions of Informal Activity

As noted in Chapter II, there are a number of problems with the informal concept which make operationalization difficult. These problems are exacerbated by the use of census data because such a high degree of subjectivity is required in order to designate an activity as informal. This is because most censes fail to make inquiries regarding conditions of work, whether an individual pays taxes on his income, is protected by labor legislation, etc.; all of which are essential ingredients of "informality".

Consequently, accurate measurement of informal activity in the aggregate is a long sought after goal of many researchers but oftentimes must await more extensive data collection. The present research, while certainly not redressing inadequacies of the conceptualization, makes a methodological advance by combining census data and survey data in order to get a more accurate measurement of informal
activity. More appropriately, the use of the two data allow for a minimum and maximum threshold to be established within which the exact extent of informal activity is certainly to be found.

In doing this, two of the four measures discussed earlier -- the sectoral approach and the formal registration approach -- are used. The two measures and the manner in which they are used is discussed below.

The Sectoral Approach

As discussed previously (Chapter II), the sectoral based approach involves designating the whole of certain broad employment categories as informal. Considering that some sectors, particularly trade, personal services, etc. do in fact contain most of the activities that are likely to be carried on "outside the watchful eye of government", this approach does have a surface validity. Many argue, however, that it is overly simplistic in that it fails to consider that there are modern, highly organized, formal sector activities which also operate in these sectors. As a result, the sectoral based measure has been seen as an overestimate of the extent of informal activity. When the only data available are census data however, the sectoral based
measure is the best way to operationalize the notion of informal activity.

In this research, the manner in which the sectoral based measure is operationalized diverges somewhat from the usual. This is because the broad occupational categories in the Ghanaian census had been disaggregated into several smaller groups and each category contained several specific occupations which could be classified as either formal or informal. For instance, the sales worker category included managers and working proprietors. Of these, the latter were classified as informal and the former were considered to be formal. Thus, while the approach utilized here is plagued by many of the shortcomings previously discussed, it does minimize the over estimation inherent in this measure.

The Formal Registration Approach

This approach is based upon what many consider to be the fundamental difference between formal and informal activities -- the conditions under which work is carried out. The reader will recall that in this approach, informal activities are defined as those carried on outside the system of social security; not subject to minimum wage laws; and with no formal relationship with lending institutions, etc.
Abreu (1976) in criticizing this approach, asserts that enforcement of social security legislation in most LDCs is the exception, certainly not the norm. Therefore, according to Abreu (1975), "some activities, which are unprotected and non-institutionalized may not be informal activities" and while conceptually it gets at critical preconditions for informality, operationalization of the formal registration approach using census data is virtually impossible.

While generally this is an accurate statement, it is possible to derive a measure that addresses formal registration by combining individual interview data with aggregate level census data. This approach was implemented here by using data collected by Milton Harvey in Accra Ghana during 1971-1973. Specifically, persons who described the conditions under which they worked as self employed (petty trader and other) were assumed to be functioning outside the system of formal registration and thus, excluded from legal protection offered by social security legislation, wage legislation, etc. The activities carried out by these people were viewed as non-institutionalized and unprotected — in the strictest sense informal. They are to be contrasted with the activities carried out by persons who described themselves as (1) government
employed or (2) private enterprise employed; which were considered formal sector activities. The list of activities classified as informal in the survey was then matched with the list of occupations contained in the census. There were 18 occupations listed on the survey instrument; and approximately 79 occupations listed in the census. Since only those which were listed on both the census and the survey were used, many activities on the census were excluded from the analysis and thus, this measure represents an underestimate of informal activity.

**Cartographic Analyses**

As a first step in identifying the spatial characteristics of informal activity, cartographic analyses are employed. This involves examination of a series of maps illustrating the distribution of the sectoral and formal registration measures of informal activity. As noted, both measures are expressed in terms of absolute number or magnitude and percentage.

With regard to the magnitude, the maps indicate a fairly strong distance decay pattern centered on both the coastal cities and the larger cities in the interior (Figures 15 and 16). Specifically, the highest absolute
FIGURE 15: SPATIAL VARIATION IN THE
ABSOLUTE AMOUNT OF INFORMAL ACTIVITY
(SECTORAL MEASURE)
FIGURE 16: SPATIAL VARIATION IN THE ABSOLUTE AMOUNT OF INFORMAL ACTIVITY
(FORMAL REGISTRATION MEASURE)
levels of informal activity, whether measured through the sector or formal registration approach, are found in Tamale, Kumasi, Ketekrachi and the coastal megalopolis (the Golden Triangle) extending roughly from Sekondi-Takoradi on the west and Aflao on the east.

Further insights on the magnitude of informal activity is provided by the frequency histograms associated with each map, which indicate the number of towns with less than 1500, 1500-2500, 2500-4500, 4500-7500 and more than 7500 workers in the informal sector. While certainly, the open endedness of the last category must be considered in attempting to explain the concentration of informal activity, a worthwhile hypothesis to pursue is that there is also a set of towns and cities characterized by much more informal activity than others. From the map distribution, this appears to be the case, and clearly Accra, Kumasi, Tamale, Sekondi-Takoradi, and Ketekrachi have much more informal activity than other cities. Another interesting line of inquiry to pursue is that since these cities are also the highest ranking cities in terms of population; there might be some threshold population size in which a relationship between size of town and magnitude of informal activity becomes evident. Both of these notions are investigated through graphical presentations.
(Figures 17 and 18). As the graphs indicate, there does appear to be some minimum threshold level of city size below which there is little or no relationship between size of town and the absolute amount of informal activity; and beyond which there is a very strong positive relationship.

A somewhat similar spatial pattern is found when the extent of informal activity is expressed as a percent, and higher percentages of informal activity are found in larger cities. Moving outward from these cities and northward from the coast, there is again a clearly marked distance decay (Figures 19 and 20).

The interpretation of the histograms underlying the maps showing percentages of population engaged in informal activity is somewhat different from the interpretation given to the previous histograms in that there is less evidence of the extreme concentration in higher level cities. This is confirmed by graphs of population size versus the percent of labor force in informal activity. Here, unlike previously with the absolute measures no threshold effect is evident, and in fact, there is no apparent relationship between the two variables (Figures 21 and 22).

In summary, three findings stand out as important in this analysis. First, variation in the extent of informal
FIGURE 17: PLOT OF ABSOLUTE AMOUNT OF INFORMAL ACTIVITY (SECTORAL MEASURE) AND POPULATION

FIGURE 18: PLOT OF ABSOLUTE AMOUNT OF INFORMAL ACTIVITY (FORMAL REGISTRATION MEASURE) AND POPULATION
FIGURE 20: SPATIAL VARIATION IN THE PERCENT OF INFORMAL ACTIVITY (FORMAL REGISTRATION MEASURE)
FIGURE 21: PLOT OF PERCENT OF INFORMAL ACTIVITY (SECTORAL MEASURE) AND POPULATION

FIGURE 22: PLOT OF PERCENT OF INFORMAL ACTIVITY (FORMAL REGISTRATION MEASURE) AND POPULATION
activity (regardless of whether it is expressed as an absolute number or as a percent) exhibits distinct spatial patterns; in general conforming to a distance decay function and decreasing with distance from the major cities. Second, in terms of the magnitude of occurrence, there is no relationship between informal activity and city size except in the very largest cities where a strong positive relationship is evident indicating some threshold level of population size which serves as a "precondition" for a relationship between the two variables. Third, the "threshold" pattern is not present in the structural measures and variation in the percentage of informal activity has no observable relationship with population size. These findings do not seem to vary according to whether informal activity is measured by the sectoral or the formal registration measure.

In order to elaborate these ideas further, additional data are needed that would assist in defining the relationship between characteristics of cities and spatial variation in informal activity. Addressing this begins in the following section.
Variable Selection and Measurement

This section discussed the variables which will be used in subsequent analyses as predictor or independent variables. These variables obviously represent limitations in the data, but within that constraint, they also represent three general dimensions which are significant in differentiating cities from each other in the developing world -- rank in the urban hierarchy, level of technological development and placement along a rural urban continuum (Table 6).

Rank in the urban hierarchy addresses the issue of city size. Specifically, large urban are thought to occupy higher ranks in the urban hierarchy than do smaller centers. Further, it might be assumed that a city's size has implications for both formal and informal activities since ceteribus paribus more people would generate more demand for all types of goods and services.

The variables in this dissertation which express rank in the urban hierarchy are population size, population density, population increase between 1960 and 1970, number of formal activities and percent of formal activities. All are directly related to rank in the urban hierarchy and are expected to be related to informal activity.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Population</td>
<td>P</td>
<td>Absolute number of persons residing in locality</td>
</tr>
<tr>
<td>2</td>
<td>Population density</td>
<td>P</td>
<td>Number of persons per square mile</td>
</tr>
<tr>
<td>3</td>
<td>Formal activities (absolute)</td>
<td>S</td>
<td>Number of persons employed as architects, accountants, teachers, religious workers, administrators, managers, government executives, sales managers, protective service workers, metal workers, stenographers, jewelers, machinists, chemical workers</td>
</tr>
<tr>
<td>4</td>
<td>Formal activities (percent)</td>
<td>S</td>
<td>Workers in occupations listed above expressed as a percent of the total labor force</td>
</tr>
<tr>
<td>5</td>
<td>Percent of persons born elsewhere</td>
<td>S</td>
<td>Percent of the population enumerated in locality, but born elsewhere. Calculated by adding percent of persons born outside locality, but inside region, percent of persons born outside region and percent of persons born outside Ghana</td>
</tr>
<tr>
<td>6</td>
<td>Percent of persons who have completed secondary school</td>
<td>P</td>
<td>Percent of persons in locality with at least a secondary school education</td>
</tr>
<tr>
<td>7</td>
<td>Percent employed in agriculture</td>
<td>P</td>
<td>Percent of labor force engaged in agricultural activities</td>
</tr>
<tr>
<td>8</td>
<td>Percent of population aged 65 and over</td>
<td>P</td>
<td>Percent of total population aged 65 and above</td>
</tr>
<tr>
<td>9</td>
<td>Primary source of water</td>
<td>S</td>
<td>The source from which the majority of the residents of locality receive their water. Coded 1 through 3. 1=rainwater, borehole, pond, river, spring, or lake 2=well, dugout 3=pipeborne</td>
</tr>
<tr>
<td>10</td>
<td>Secondary source of water</td>
<td>S</td>
<td>The source from which the second largest number of residents receive their water. Coded as above.</td>
</tr>
<tr>
<td>11</td>
<td>Population increase 1960-1970</td>
<td>P</td>
<td>Rate at which the population of the locality grew during the past ten years. Includes both natural and social increase.</td>
</tr>
<tr>
<td>12</td>
<td>Percent of population between 15 and 64</td>
<td>P</td>
<td>Percent of persons in locality aged 16 through 64</td>
</tr>
<tr>
<td>13</td>
<td>Percent of population below fifteen</td>
<td>P</td>
<td>Percent of persons in locality aged 15 and under</td>
</tr>
<tr>
<td>14</td>
<td>Percent female</td>
<td>P</td>
<td>Percent of the population recorded as female in each locality</td>
</tr>
<tr>
<td>15</td>
<td>Dependency ratio (percent)</td>
<td>S</td>
<td>Calculated by adding percent of population below fifteen and percent of population 65 and over</td>
</tr>
<tr>
<td>16</td>
<td>Unemployment (absolute)</td>
<td>S</td>
<td>Absolute number of people unemployed in each locality Calculated by multiplying the percent unemployed times the population of each locality</td>
</tr>
<tr>
<td>17</td>
<td>Unemployment (percent)</td>
<td>P</td>
<td>Percent of persons unemployed in each locality</td>
</tr>
</tbody>
</table>

Notes: *As used here, status refers to the source of the variable. Specifically, all variables which were obtained directly from the census were considered "primary". Variables which required calculation from two or more census data were referred to as "secondary" variables.
A second dimension important for classifying Third World cities relates to level of technological development. This dimension maintains that some cities house a larger number and wider range of "Western" oriented and/or derived technologies than do other cities. Further, this dimension assumes that those cities which are geared toward mechanization of production differ from cities which rely on indigenous forms of production in at least two ways -- first, their economic organization is in all likelihood directed toward non-agricultural pursuits; and, second, these cities will have a more diverse economic base and will house more specialized economic activities. This in turn has implications for informal activity; and one might expect more informal activity in those cities dominated by Western technologies. One reason for higher amounts of informal activity in those cities is the attractive power they exert over large numbers of unskilled rural-urban migrants who are unable to find work in the formal sector. Ideally, variables articulating this dimension would relate to industrial production, consumption of inanimate energy, etc. However, variables of that type were not available in the data set available to this researcher. Consequently, the variables utilized here are slightly less than desired,
but nevertheless do express critical aspects of the technological dimension. Source of water supply for instance, though overall less desirable than some other variables; clearly distinguishes cities in terms of their level of technological development. The percent of persons having completed at least secondary school training also relates to this dimension since it expresses the need for and presence of specialized training which is typically associated with development. The percent of persons employed in agriculture, the number and percent of formal activities and the number and percent of persons unemployed also relate to a city's level of technological development. Clearly, the percentage of persons employed in agriculture would be negatively related to technological development. The number and percent of formal activities is expected to be positively related however, because high levels of technology require economic activities to become more formalized. In fact, formal activity itself is a manifestation of the development process.7 And of course, we would expect unemployment to be higher in more technologically developed cities simply because of the limited ability of the formal sector to provide employment for large numbers of rural-urban migrants.
The last dimension thought to be useful in distinguishing one city from another captures the notion that cities can be placed along a continuum ranging from modern to traditional. This dimension carries with it the assumption that development is not only structural, as implied in the previous dimension, but also is behavioral. As such, the variables which represent this dimension in the present investigation are demographic variables -- percent of population below fifteen, percent of population between 15 and 64, percent of population 65 and over, and dependency ratio. In addition to these "core" variables, other variables are also thought to be useful in determining modernity since they express traits which accompany or characterize behavioral modernization -- primary source of water, number and percent of persons unemployed and again, as with the previous dimensions, number and percent of persons in formal activity. The variables and the dimensions they represent are presented in tabular form in Table 7.

Since many of the variables cited above are related to one another, e.g. percentage employment in agriculture and percentage of persons having completed secondary school (Table 8), interpretation of their association with informal activity is difficult. Before any firm conclusions can be
<table>
<thead>
<tr>
<th>Variable</th>
<th>Rank in the Urban Hierarchy</th>
<th>Level of Technological Development</th>
<th>Placement on R-U Continuum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population increase (1960-1970)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of persons born elsewhere</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary source of water</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Secondary source of water</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Percent of persons who have completed secondary school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent employed in agriculture</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Percent of population below fifteen</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Percent of population between 16-64</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Percent of population 65 and over</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Percent female</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency ratio</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population density</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Formal activities (absolute number)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Formal activities (percent)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Unemployed population (absolute number)</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Unemployed population (percent)</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
## TABLE 8  CORRELATION MATRIX

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>1.00</td>
<td>0.85</td>
<td>0.94</td>
<td>0.23</td>
<td>0.14</td>
<td>0.54</td>
<td>-0.39</td>
<td>0.28</td>
<td>0.22</td>
<td>0.23</td>
<td>0.21</td>
<td>-0.18</td>
<td>-0.21</td>
<td>-0.11</td>
<td>-0.29</td>
<td>0.94</td>
<td>0.17</td>
</tr>
<tr>
<td>(2)</td>
<td>1.00</td>
<td>0.92</td>
<td>0.43</td>
<td>0.16</td>
<td>0.16</td>
<td>0.74</td>
<td>-0.64</td>
<td>0.33</td>
<td>0.45</td>
<td>0.36</td>
<td>0.22</td>
<td>-0.20</td>
<td>-0.23</td>
<td>-0.06</td>
<td>-0.32</td>
<td>0.90</td>
<td>0.34</td>
</tr>
<tr>
<td>(3)</td>
<td>1.00</td>
<td>0.44</td>
<td>0.20</td>
<td>0.70</td>
<td>-0.50</td>
<td>0.32</td>
<td>0.30</td>
<td>0.32</td>
<td>0.25</td>
<td>-0.24</td>
<td>-0.20</td>
<td>-0.18</td>
<td>-0.30</td>
<td>0.95</td>
<td>0.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>1.00</td>
<td>0.22</td>
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<td>0.01</td>
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<tr>
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<td>0.01</td>
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</tr>
<tr>
<td>(15)</td>
<td>1.00</td>
<td>-0.36</td>
<td>-0.35</td>
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<tr>
<td>(16)</td>
<td>1.00</td>
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<td>(17)</td>
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<td></td>
</tr>
</tbody>
</table>
reached, a more complete picture of the structure of the data and the true statistical dimensions represented is needed. This is accomplished through the use of factor analysis and is discussed below.8

**Factor Analysis**

Analyzing the structure of the seventeen original variables reveals that rank, technological development and to a lesser extent, modernity are indeed fairly accurate descriptions of the major factors contained in the data (Table 9). The new set of independent variates derived from the factor analysis account for 71.8% of the total variance of the 17 original variables. Most importantly, however, the new set of variates maintains the ideas contained in the original data and since they are statistically independent, they can be used in multiple regression analyses.

Factor 1 accounts for 23% of the variance and is clearly related to city size. In terms of variable loadings, this factor is almost identical to the rank dimension. The variables loading high on this factor are population, population density, number of formal activities, number of persons unemployed and percent of persons having
<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>0.9486</td>
<td>0.1110</td>
<td>-0.1187</td>
<td>0.0769</td>
</tr>
<tr>
<td>Population density</td>
<td>0.8552</td>
<td>0.0776</td>
<td>-0.1338</td>
<td>0.4163</td>
</tr>
<tr>
<td>Formal activities</td>
<td>0.9251</td>
<td>0.1547</td>
<td>-0.0921</td>
<td>0.2794</td>
</tr>
<tr>
<td>(absolute)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal activities</td>
<td>0.2344</td>
<td>0.1199</td>
<td>0.0452</td>
<td>0.6825</td>
</tr>
<tr>
<td>(percent)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of persons</td>
<td>0.0453</td>
<td>0.8394</td>
<td>-0.0168</td>
<td>0.1718</td>
</tr>
<tr>
<td>born elsewhere</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of persons</td>
<td>0.5177</td>
<td>0.2278</td>
<td>-0.1055</td>
<td>0.6973</td>
</tr>
<tr>
<td>who have completed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>secondary school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent employed in</td>
<td>0.3272</td>
<td>0.0634</td>
<td>0.4271</td>
<td>-0.7059</td>
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<tr>
<td>agriculture</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Percent of population</td>
<td>0.1339</td>
<td>0.3379</td>
<td>-0.7262</td>
<td>0.2187</td>
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<tr>
<td>65 and over</td>
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<td></td>
<td></td>
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<tr>
<td>Primary source of</td>
<td>0.0739</td>
<td>-0.0484</td>
<td>-0.2880</td>
<td>0.7284</td>
</tr>
<tr>
<td>water</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary source of</td>
<td>0.0957</td>
<td>0.1460</td>
<td>-0.1003</td>
<td>0.6587</td>
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<tr>
<td>water</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Population increase</td>
<td>0.1054</td>
<td>0.6747</td>
<td>-0.2031</td>
<td>0.1502</td>
</tr>
<tr>
<td>(1960-1970)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of population</td>
<td>-0.1412</td>
<td>-0.8222</td>
<td>-0.1425</td>
<td>-0.0595</td>
</tr>
<tr>
<td>between 16 and 64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of population</td>
<td>-0.1002</td>
<td>0.1261</td>
<td>0.9535</td>
<td>-0.1099</td>
</tr>
<tr>
<td>below fifteen</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Percent female</td>
<td>-0.0082</td>
<td>-0.8856</td>
<td>0.1130</td>
<td>0.1000</td>
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<tr>
<td>Dependency ratio</td>
<td>-0.1592</td>
<td>-0.1886</td>
<td>0.9366</td>
<td>-0.1375</td>
</tr>
<tr>
<td>Unemployed population</td>
<td>0.9545</td>
<td>0.0509</td>
<td>-0.1991</td>
<td>0.1620</td>
</tr>
<tr>
<td>(absolute)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed population</td>
<td>0.2958</td>
<td>-0.1831</td>
<td>-0.3445</td>
<td>0.2448</td>
</tr>
<tr>
<td>(percent)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>3.91</td>
<td>2.82</td>
<td>2.75</td>
<td>2.76</td>
</tr>
<tr>
<td>Percent of variance</td>
<td>23</td>
<td>16.5</td>
<td>16.1</td>
<td>16.2</td>
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</table>
completed secondary school. If indeed the previous findings are correct regarding the relationship between the magnitude of informal activity and city size, we would expect this factor to behave like the rank dimension and reveal that some minimum threshold level of city size is required before a relationship with informal activity becomes evident. At the same time, we would expect to find no relationship between percent of informal activity and this factor.

Factor 4 is almost identical to the technological development dimension and explains 16.2% of the total variance. The variables loading on this factor are percentage of persons having completed secondary school, percentage employment in agriculture (negatively), primary source of water, secondary source of water and percent of formal activities. This factor would be expected to correlate highly with informal activity regardless of whether informal activity is expressed in absolute terms or in percentage terms. More specifically, percentage employment in agriculture should be negatively related to informal activity and the remaining variables positively related.
Factors 2 and 3 are both clearly related to growth and to a lesser extent, both are related to behavioral modernization. Factor 2 expresses population increase as being closely linked to the in-migration of single and/or unaccompanied males, while Factor 3 is related to the out-migration or loss of the working age population. In the sense that areas growing from in-migration are likely to be the same areas which contain more opportunities for employment; and places losing population from out-migration are likely to be those that contain few opportunities for employment, both factors complement one another.

One would expect both of these factors to be negatively associated with informal activity -- the former because the migration stream is male dominated and available evidence suggests that it is females who carry out most informal activity; and the latter because greater amounts of informal activity are typically found in urban centers that are gaining population rather than losing population.

The following section discusses the results of analyzing the extent of informal activity for the entire sample of cities using both the individual variables and the derived factor scores as independent variables.
Total Sample Analysis

Zero Order Correlations of Individual Variables

As shown in Table 10, the strength of association between variables relating to city size and the magnitude of informal activity is fairly strong. This is not entirely unanticipated and one would expect the absolute amount of informal activity to vary with population size. In addition, since informal activity is seen as being linked to rural-urban migration, the positive relationship between the population growth variables -- population increase 1960-1970 and percent of persons born elsewhere -- was also expected. In general the correlations for the growth variables averages .60.

Percentage employment in agriculture, percent of persons who have completed at least secondary school and primary source of water; the variables relating to level of technological development are the second most important variables for explaining variation in the absolute amount of informal activity, with correlations in the range of .30 to .90. This is the case for both the sectoral and survey based measures. What it suggests is that even when
TABLE 10 ASSOCIATION (CORRELATION COEFFICIENTS) BETWEEN INDEPENDENT VARIABLES AND BOTH MEASURES OF INFORMAL ACTIVITY EXPRESSED AS ABSOLUTE NUMBER AND PERCENT (N=141)*

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Absolute Amount of Informal Activity</th>
<th>Percent of Informal Activity</th>
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<tr>
<td></td>
<td>Sectoral</td>
<td>Formal</td>
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<tr>
<td>Population</td>
<td>.9548</td>
<td>.9578</td>
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<tr>
<td>Population density</td>
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<td>.9334</td>
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<td>Formal activities</td>
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<td>.9651</td>
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<tr>
<td>(absolute)</td>
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<tr>
<td>Formal activities</td>
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<td>.3171</td>
</tr>
<tr>
<td>(percent)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of persons</td>
<td>.1711</td>
<td>.1454</td>
</tr>
<tr>
<td>born elsewhere</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of persons</td>
<td>.6617</td>
<td>.6541</td>
</tr>
<tr>
<td>who have completed</td>
<td></td>
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<tr>
<td>secondary school</td>
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<td></td>
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<tr>
<td>Percent employed in</td>
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<td>-.5583</td>
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<tr>
<td>agriculture</td>
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<tr>
<td>Percent of population</td>
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<td>.3156</td>
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<tr>
<td>between 16 and 64</td>
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<tr>
<td>Primary source of water</td>
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<td>.3433</td>
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<tr>
<td>Population increase</td>
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<td>.2288</td>
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<tr>
<td>(1960-1970)</td>
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<td></td>
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<tr>
<td>Percent of population</td>
<td>-.1577</td>
<td>-.1331</td>
</tr>
<tr>
<td>65 and over</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of population</td>
<td>-.2363</td>
<td>-.2597</td>
</tr>
<tr>
<td>below fifteen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent female</td>
<td>-.0759 (.37)</td>
<td>-.0704 (.50)</td>
</tr>
<tr>
<td>Dependency ratio</td>
<td>-.3073</td>
<td>-.3220</td>
</tr>
<tr>
<td>Unemployed population</td>
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<td>.9471</td>
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<td>(absolute)</td>
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<td></td>
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<tr>
<td>Unemployed population</td>
<td>.2153</td>
<td>.2246</td>
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<tr>
<td>(percent)</td>
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<td>Factor 1</td>
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<td>.9180</td>
</tr>
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<td>Factor 2</td>
<td>.0716</td>
<td>.1021</td>
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<tr>
<td>Factor 3</td>
<td>-.1485</td>
<td>-.1291</td>
</tr>
<tr>
<td>Factor 4</td>
<td>.2402</td>
<td>.2344</td>
</tr>
</tbody>
</table>

Note: *Unless otherwise noted, all relationships are significant at at least the .10 level.
size is held constant, cities which have a diversified economic base and are oriented toward non-agricultural pursuits tend to house more informal activities than other cities. Given that these cities are typically characterized by structural imbalances and high levels of unemployment, the high correlations between these variables and the extent of informal activity is as expected.

For the remaining variables, the correlations range from .0704 to .2597. Interestingly, with the exception of percent of population between 15 and 64; all of the remaining demographic variables (population below 15, population greater than 64, and percent female) are negatively related to the absolute extent of informal activity. This points to the fact that informal activity is greatest in those places with large proportions of their populations in the working age groups.

In terms of the percent of informal activity, all of the correlation coefficients are again significantly different from zero; however here, the order of importance of the variables is different from above. The association between the city size variables and informal activity is not very strong (Table 10). The relationship is in fact very weak with correlations averaging .30. This means that
in terms of employment structure, large cities do not differ dramatically from small cities in terms of the amount of informal activity which they house. This is not the case however for percent of persons having completed secondary school, percentage employed in agriculture, and primary source of water. For these variables, there is a fairly strong relationship with percent of informal activity and correlation coefficients for these variables average .57. The remaining variables do not figure prominently in explaining informal activity.

Interestingly, in the individual variable analysis, percent female and percent of persons born elsewhere did not emerge as strongly related to the extent of informal activity. For the absolute number, percent female is inversely related to informal activity. The insignificance of percent female is probably due to the stronger distance decay which characterizes female migrations; and in small towns the percent female may be closely related to informal activity, but in the large cities where the female migration streams do not reach, the relationship is weak. Taken together however, the net result is a rather weak negative association between percent female and informal activity.
The relative unimportance of the percent of persons born elsewhere variable can be explained similarly and some cities, particularly the largest ones, receive large numbers of in-migrants and probably experience increases in informal activity as a result. For the large numbers of smaller cities that receive fewer in-migrants however, increases in informal activity are smaller; thus reducing the overall strength of association.

The findings above should be interpreted with some degree of caution however, since correlation coefficients are aggregate measures and the presence of a few "above or below average" cities in the sample is likely to yield a numerically stronger (or weaker) relationship than is actually the case. Furthermore, correlation coefficients tell us little about the actual structure of the relationship. It is useful therefore to examine graphs of these variables with levels of informal activity. Before doing so, the next step is to determine how much the four derived factors contribute to the explanation of spatial differentiation in the extent of informal activity. This is done in the following section.11
Factor Score Correlations

In terms of the absolute amount of informal activity, both the sectoral and the formal registration measures are most responsive to Factor 1 — the size factor, correlation coefficients .9247 and .9180 respectively (Table 10). This strong relationship with size is evident whenever the dependent variable has been expressed as an absolute number; and as noted, ceteribus paribus, more people would be expected to generate more informal activity. Factor 4, the technological development factor, is the next most important factor in explaining variation in the absolute amount of informal activity, but is clearly much less important than city size. The correlation coefficient here is .2402 and .2344 for the sectoral and formal registration measures respectively.

Factor 3 — out-migration of the working age population population — is negatively related to the percent of informal activity. This is also expected since as noted previously, it has been shown that informal activity is most prevalent in places that are gaining population rather than losing population. The correlation between absolute amount of informal activity and in-migration of male
dominated migration streams (Factor 2) is quite small; indicating only a very slight increase in the amount of informal activity with increases in this type of in-migration. Although the relationship between percent female and absolute amount of informal activity was weak, the correlation between Factor 2 provides evidence which suggests that informal activities are female dominated.

When the dependent variable is expressed as a percent, the strength of association between informal activity and Factor 4 (technological development) is strongest. The reader will recall that this was also the case in the previous section when individual variables were used and in each case, variables relating to technological development had the strongest relationship with percent of informal activity. This implies that population has little to do with variations in the structure of economic activity and in fact, the structure of economic activity does not change with changes in population size. Changes in the structure of economic activity rather are more closely associated with increases or decreases in technological development or modernity. Factor 2 (in-migration of male dominated migration streams) and Factor 3 (out-migration of working age persons) are both inversely related to
percent of informal activity. The negative relationship between Factor 2 (in-migration) and informal activity is again related to the lack of females in the migration stream. The negative relationship between Factor 3 (out-migration) is also as expected since the active labor force is reduced, thus decreasing the demand for many informal activities (Table 10).

We see from the above that variations in the extent of informal activity are strongly influenced by the four factors cited above. At times the four factors operate separately, but more often, they act in concert with one another. Therefore, the four factor scores were considered simultaneously in their association with informal activity.

When considered together, the degree to which the four factors explain both the absolute and percent of informal activity is fairly good (Table 11). In terms of absolute number, all of the factors considered together account for approximately .93 of the total variance (.9391 for the sectoral based measure and .9242 for the formal registration measure). The factors with the strongest association are Factor 1 and Factor 4. The remaining factors are relatively insignificant. Again, this is the case for both the sectoral and formal registration measures.
TABLE 11 FACTORS INFLUENCING THE SPATIAL DIFFERENTIATION IN THE EXTENT OF INFORMAL ACTIVITY

STANDARDIZED REGRESSION ESTIMATES

<table>
<thead>
<tr>
<th>Factor 1</th>
<th>Formal Sectoral</th>
<th>Formal Registration</th>
<th>Percent of Informal Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>(size)</td>
<td>.9237</td>
<td>.9171</td>
<td>.2367</td>
</tr>
<tr>
<td>Factor 2 (in-migration)</td>
<td>.0719</td>
<td>.1015</td>
<td>-.1949</td>
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<tr>
<td>Factor 3 (out-migration)</td>
<td>-.1470</td>
<td>-.1275</td>
<td>-.3403</td>
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<td>Factor 4 (modernity)</td>
<td>.2464</td>
<td>.2346</td>
<td>.6474</td>
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<tr>
<td>F Value</td>
<td>525.19</td>
<td>414.84</td>
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<td>Significance Level</td>
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<td>.0001</td>
<td>.0001</td>
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<tr>
<td>R²</td>
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<td>.9242</td>
<td>.6272</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.3820</td>
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</table>
Expressing informal activity as a percent produces a somewhat different model. Here, the four factors taken together account for only .50 of the total variance (.6272 for the sectoral measure and .3820 for the formal registration measure). Unlike previously, the most important factors in this model are Factor 4 and Factor 3 (negatively associated). These results are provided in Table 11.

It is evident that the results of the multiple regression confirm ideas presented previously and in very general terms, rank/size and technological development/modernity are the key factors underlying spatial differentiation in the absolute amount of informal activity. This means that the absolute amount of informal activity is very closely associated with increases in population size and in those cases when population size does not increase, the absolute amount of informal activity will increase if more modern techniques are introduced.

Technological development is the most important factor in explaining variation in the percent of informal activity, followed by the out-migration of working age persons.

In specific terms, the key variables in explaining variation in the extent of informal activity are percent employed in agriculture, percent of persons who have
completed at least secondary school, number of persons unemployed and primary source of water. Several other variables, including population, population density, number of formal activities and percent of population below 15 are vital, though less important explanations of variation in the percent of informal activity.

**Synopsis of Total Sample Analyses**

To summarize, several things have emerged as important. First, the three dimensions identified as rationale for variable selection -- rank, technological development and behavioral modernity -- do appear to be important in explaining spatial variation in the absolute magnitude and percent of informal activity. Second, the possibility of some minimum threshold level of city size appears significant. Third, from the analysis of factor scores; when informal activity is expressed as an absolute number, population size is the most important factor for explaining spatial variation. When informal activity is expressed as a percent however, the order of importance shifts and the "modernity" factor ranks as most important. As indicated earlier, this suggests that changes in the structure of economic activity occur most noticeably with varying levels
of technological development, and except for the possibility of a minimum threshold level of population required for informal activity; population tells us little about informal activity beyond what we would expect.

These results do not differ for either the sectoral or the formal registration measures. As noted previously however, correlation coefficients are aggregate measures and can be biased by cities with exceptionally large amounts of informal activity and cities with exceptionally small amounts of informal activity. Since the graphs presented earlier which show the relationship between population and informal activity (Figures 17 and 18) indicate that this might be the case; it is useful to pursue this notion further and examine more graphs of the relationships discussed previously.

**Graphical Analysis**

As indicated in Figures 23 through 54 in Appendix A; many of the ideas set forth previously are borne out and the graphs do suggest that there are a few cities which might be influencing the numerical relationships discussed earlier.
The graphs of the absolute amount of informal activity and the 17 independent variables validate that the association is strongest for those variables relating to rank in the urban hierarchy or population size (Figures 23, 25 and 27). When informal activity is expressed as an absolute number, the threshold is clearly visible and the pattern in many of the graphs clearly suggests some minimum threshold level of city size below which there is little or no variation in the extent of informal activity and above which there are significant increases in the extent of informal activity (Figures 23, 25 and 27).

Percent of persons having completed secondary school, percent unemployed and percent of persons employed in agriculture exhibit the most apparent relationship with informal activity. This is significant because these variables also emerged as important in previous statistical analyses.

The relationship between the variables relating to the behavioral manifestation of development -- percent of population below 15, percent of population between 15 and 64; percent female -- and absolute amount of informal activity is not readily apparent (Figures 35 through 40). There does appear to be a fairly strong, negative
relationship between dependency ratio and absolute amount of informal activity, suggesting that cities with large numbers of people between the ages of 15 and 64 also have more people engaged in informal activity.

When informal activity is expressed as a percent, no apparent relationship exists with population size. This is consistent with findings derived from the summary measures (correlation coefficients and coefficients of determination). As was the case with the absolute magnitude however, percent employed in agriculture and percent of persons who have completed secondary school emerge as much more important than other variables (Figures 30 and 32).

In the case of percent employed in agriculture, a fairly strong inverse relationship is evident indicating that places with higher percentages of persons employed in agriculture have lower percentages of informal activity. In the graph showing the association between percent of persons completing at least secondary school and percent of informal activity, there is a positive relationship and an increase in one is associated with an increase in the other. In the case of percents, again there are some cities that stand apart from other cities and could bias the
results, but the relationship is not always as expected. Consider for example Figure 24, showing the relationship between population density and percent of informal activity. The two outlying observations indicate that there are two cities in the sample with exceptionally high population density and also high percentages of informal activity. More importantly, however, the fact that the relationship is not direct (the city with the highest density does not have the highest percent of informal activity) suggests that factors other than the ones examined here might be important in explaining spatial variation in the percent of informal activity -- perhaps functional specialization or degree of centrality.

In order to see if this is the case, the following section disaggregates the total sample based on attributes relating to functional specialization and considers the implications of these factors.

Subgroup Analysis

Given the previous analysis which pointed to the need for subgrouping, this section divides the total sample into groups based on function and specialization. Since no data were available upon which to divide the total sample
into subgroups, the classification scheme developed by Grove and Huszar (1964) was used. Grove and Huszar contend that "the hierarchy of places is a system in which central places are arranged according to the grade of their centrality, each of the grades having a characteristic combination of functions. To operationalize this notion, and derive a classification based on functional type, they secured information on 17 kinds of goods and services in 285 centers in Ghana. A city's grade or centrality was calculated by "adding up the values of the full variety of services found in each center . . .." The result is the hierarchy of places in Table 12.

To see what this classification means in terms of the data being used in the present investigation, the mean values of each variable and the four factors were calculated for each of the subgroups (Table 13).

Before proceeding however, there are two issues which are worthy of further consideration. First, none of the groups contain enough observations to fulfill the assumption of a normal distribution. Subgroup 1 and Subgroup 2 have only six cities apiece; Subgroup 3 has 14 cities; Subgroup 4, 30; and Subgroup 5, 21. This means that the correlational analyses which were carried out for
TABLE 12  THE HIERARCHY OF PLACES

<table>
<thead>
<tr>
<th>Subgroup 1</th>
<th>Subgroup 2</th>
<th>Subgroup 3</th>
<th>Subgroup 4</th>
<th>Subgroup 5</th>
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<td>Accra</td>
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<td>Nalerigu</td>
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<td>Pusiga</td>
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<td>Lawra</td>
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N=6  N=6  N=14  N=30  N=21
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<th>Subgroup 1</th>
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<th>Subgroup 3</th>
<th>Subgroup 4</th>
<th>Subgroup 5</th>
<th>Total</th>
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<td>47751.66</td>
<td>60882.64</td>
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<td>433.35</td>
<td>145.30</td>
<td>154.30</td>
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<td>1913.50</td>
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<td>646.61</td>
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<td>Formal activities (percent)</td>
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<td>.13</td>
<td>.12</td>
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<td>.06</td>
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<td>Percent of persons born elsewhere</td>
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<td>.53</td>
<td>.40</td>
<td>.42</td>
<td>.35</td>
<td>.41</td>
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<td>Percent of persons who have completed secondary school</td>
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<td>.0004</td>
<td>.0002</td>
<td>.0001</td>
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<td>.0002</td>
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<tr>
<td>Percent employed in agriculture</td>
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<td>.33</td>
<td>.52</td>
<td>.69</td>
<td>.68</td>
<td>.62</td>
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<td>Percent of population between 15 and 64</td>
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<td>.51</td>
<td>.49</td>
<td>.48</td>
<td>.50</td>
<td>.48</td>
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<td>Primary source of water</td>
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<td>.28</td>
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<td>Percent of population below 15</td>
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<td>.46</td>
<td>.45</td>
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<td>.50</td>
<td>.51</td>
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<td>Dependency ratio</td>
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<td>.49</td>
<td>.49</td>
<td>.51</td>
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<td>Unemployed population (absolute number)</td>
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<td>1780.98</td>
<td>2207.26</td>
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<td>Unemployed population (percent)</td>
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<td>.04</td>
<td>.05</td>
<td>.03</td>
<td>.04</td>
<td>.04</td>
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<td>Informal activities (absolute/sectoral)</td>
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<td>6191.16</td>
<td>4994.78</td>
<td>4155.13</td>
<td>3083.00</td>
<td>5537.53</td>
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<td>Informal activities (percent/sectoral)</td>
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<td>.43</td>
<td>.30</td>
<td>.21</td>
<td>.19</td>
<td>.25</td>
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<td>Informal activities (absolute/formal registration)</td>
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<td>2110.28</td>
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<td>Informal activities (percent/formal registration)</td>
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<td>.15</td>
<td>.11</td>
<td>.09</td>
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<td>1.70</td>
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<td>-.3757</td>
<td>-.3917</td>
<td>3.67</td>
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the total sample will be virtually useless here and the results could not be regarded as reliable indicators of the factors which influence informal activity in subgroups of cities.

Second, the results of correlating the individual variables with the two measures of informal activity (both expressed as an absolute number and percent) for the five subgroups, will not be treated formally in this chapter. For the interested reader, these results are provided in Appendix B, Tables 15 and 16.

This section is therefore primarily descriptive but gives particular attention to the role of functional specialization. It is expected that from this we can gain additional insight regarding the spatial extent of informal activity. No formal tests are carried out.

Descriptions

Subgroup 1, the "national centers" are the highest ranking cities in the scheme. The cities falling in this category are Accra, the capital city; Kumasi, Tema, Tamale, and Sekondi-Takoradi. They differ measurably from the other ranks across all variables. For instance, for those variables expressed as absolute numbers -- population
size, population density, absolute amount of formal activity and unemployment -- the difference between their value in Subgroup 1 and the remaining subgroups is an entire order of magnitude. For those variables expressed as percents -- formal activity, persons born elsewhere, secondary school attendance, and persons over 65 -- the difference between the "national centers" and the other groups averages 4 percent in most instances. Percentage employment in agriculture for the top ranking cities is 1/2, 1/3, 1/4 the size of the percentage employment in agriculture for groups 2, 3, and 4 respectively. Population increase for these cities is four times that of the second ranking cities.

All of the cities in this group qualify as communications, administrative and social centers. Of the six possible activities which cities could specialize in, only mining is not represented in this subgroup. All of the activities found in this group are at their highest level. It is significant that four of the six towns in this category, Accra, Sekondi-Takoradi, Cape Coast and Tema; are located along the coast.

Subgroup 2, the "administrative towns" also appear to be markedly different from the remaining subgroups. This is
particularly so for those variables related to structural development -- source of water supply, employment in agriculture, secondary school attendance, population density, persons born elsewhere, and formal activity. Although these administrative centers occupy a higher rank in the urban hierarchy, they are smaller in terms of population size than all of the remaining subgroups. One reason for the smaller population in these administrative centers might be that relative to the national centers, they house fewer central functions which would attract large numbers of people. Note for example in Table 14 that with the exception of Cape Coast, all of the national centers specialize in commerce. Among the administrative centers however, four of the towns have commerce as a secondary specialization and only one has a secondary specialization in industry. Since both of these are activities which attract large numbers of migrants, their absence in the administrative towns would explain the lower populations.

It is noteworthy that three of the six towns in this category -- Koforidua, Ho and Sunyani -- are regional capitals and the remaining three cities in this subgroup all have municipal bus service. It would appear then that the majority of the cities in this category have developed
<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Western</th>
<th>Central</th>
<th>Eastern</th>
<th>Volta</th>
<th>Ashanti</th>
<th>Brong-Ahafo</th>
<th>Northern</th>
<th>Upper</th>
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<tr>
<td>1</td>
<td>Takoradi atcs</td>
<td>Cape Coast atcs</td>
<td>Accra atcs</td>
<td>Kumasi atcs</td>
<td>Tamale atcs</td>
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<td>2</td>
<td>Tarkwa atcs</td>
<td>Koforidua atcs</td>
<td>Ho atcs</td>
<td>Keta atcs</td>
<td>Sunyani atcs</td>
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<tr>
<td>3</td>
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<td>Swedru atcs</td>
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<td>4</td>
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<td>Nyakrom atcs</td>
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<td></td>
<td>Juabeso</td>
<td>Senya atcs</td>
<td>Abetifi atcs</td>
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<td>Gushiegu</td>
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<td>Shama</td>
<td>Abura</td>
<td>Dunkwa atcs</td>
<td>Kwame</td>
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<td></td>
<td></td>
<td></td>
<td>Lambussie</td>
<td>Lambussie</td>
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</tr>
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</table>

Notes: "Since Accra is the only city in the Accra Region, for the sake of convenience, it has been included in the Eastern Region.

"a=administration, i=industry and power, m=ming, s=social services, t=communications, and c=commerce.

based on their location at road junctions or break of bulk points.

The "traditional capitals" (Subgroup 3) are lower than the administrative centers on all variables except population size. Relative to Subgroup 4 however, the traditional capitals grew slightly less (population increase 1960-1970), have a smaller percent of their population less than 15; have a slightly higher percentage of females, and a higher absolute amount of employment. This would suggest that these traditional centers are overall slightly less attractive than other centers. In all likelihood this is due to their traditional character.

The traditional capitals all qualify primarily as commercial and administrative centers. This group has the greatest number of industrial centers and contains two towns which have primary specializations in mining. In general, the pattern appears to be that the cities in the subgroup located in the northern regions specialize in administration. These cities fall strikingly short in terms of social and industrial functions. Alternatively, as one moves nearer the coast, specialization shifts from administration to industry. Interestingly, the distribution of Subgroup 3 cities among the regions is more dispersed
than that of the previous subgroups and whereas the majority of the cities in the previous subgroups are located near the coast; in Subgroup 3, the majority are located in the interior. The fact that few of these cities are located near the coast would explain their lack of attractiveness.

The cities of Subgroup 4, the "small towns" occupy a still lower rank in the system of cities. The reasons for this undoubtedly relate to differences in their functional specialization. Note in Table 14 that unlike the cities in the previous subgroup, the small towns specialize in social services and administration -- neither of which are expected to exert much influence over the typical rural-urban migrant.

These cities are primarily communications centers. There is only one industrial town in this group. The remaining towns in this subgroup nearly all specialize in either administration or communications, and very often in both. Administration is the most prevalent activity in the interior and low density areas in the northern regions. Moving toward the coast, the occurrence of administrative centers gradually diminishes and the number of centers specializing in commerce increases. The
absence of high grade centers in the interior has forced the government to create new centers at lower levels, most of which have administration as their sole function.

Subgroup 5, the "villages" have a higher percentage of their population employed in agriculture than any other subgroup. It also has the lowest percentage of persons who have completed at least secondary school and the lowest rate of population increase of all other cities. This suggests that these cities are very unattractive, growing very little and in terms of overall modernization, they rank very low. The above average percent unemployed indicates very few opportunities for employment outside of agricultural employment.

These villages qualify in only one of the six possible functions discussed previously -- either communications, commerce, administration, social services, industry or mining. Many of the centers in this group specializes on such a low level that they do not qualify in any function at all. In general, it appears that the lower a center in the urban hierarchy, the more narrowly specialized it is likely to be. Conversely, it appears as though the best way to increase the status of a town is to diversify its functions rather than developing only one or a few. Once a town has
qualified in most of the functions, it has acquired the structure on which further development can be based.

In those places where development has been initiated by the government, as in the cities in the northern regions (Subgroup 4 and 5), administration and communications services were first to develop. This is an inevitable course of action in areas where economic forces are not strong enough to generate the infrastructure to attract investment. A local administration and a reasonable system of communications are seen as the minimum condition for setting up viable economic enterprises.

It is now important to assess the relevance of the above discussion for informal activity. This is done in the following section.

Relevance for Informal Activity

From the above, without benefit of empirical analysis, it appears that a city's functional specialization does have a role in determining levels of informal activity. In specific terms, it would appear as though those centers whose primary functional specialization is industry, coupled
with commerce are the fast growing towns and are also the
towns most attractive for informal activity. At the same
time, when administration and social services are the
primary functions in a center, informal activity is
significantly less. From the above, it appears that
centers with administrative and social services as sole
economic functions are in all likelihood on the decline
and therefore would be characterized by out-migration
of working age persons. As was shown previously, this
migration phenomenon is inversely related to informal
activity.

In summary, in addition to the factors identified
earlier -- population, technological modernity, in-migration
of male dominated migration streams and out-migration
of working age population -- the kinds of goods and
services produced in a center is critical. The prevalence
of industry and commerce in cities that have high levels
of informal activity suggest that these activities are
distinguishing characteristics and may have a bearing on
the extent of informal activity. Lack of data prohibited
formal testing of this hypothesis here.

The final chapter discusses the overall implications
of these findings and concludes this research.
Synopsis of Graphical and Subgroup Analysis

Based on graphs illustrating the relationship between informal activity and each of the seventeen independent variables, it does appear that the preceding analysis was "biased" by the presence of a few exceptionally large cities. In addition, when informal activity is expressed as an absolute number, the threshold idea mentioned earlier does appear valid and in many of the graphs it is evident that some level of population size has to be reached before a relationship can be seen between the two variables.

The variables having the most apparent relationship with informal activity were those relating to structural development -- percent of persons having completed at least secondary school, percent unemployed, and percent of persons employed in agriculture. These were also the variables which emerged as important in the statistical analysis.

From the graphs, it is apparent that certain cities are sufficiently unique to be considered as separate subgroups. In addition, the graphs also suggest that
factors other than the ones examined here might be important in explaining spatial variation of informal activity, e.g. functional specialization.

Formal analysis of the subgroups is made impossible because of the small number of cities in each of the groups, however comparison of mean values for each of the variables and the four derived factors reveal significant differences between subgroups. For example, the cities in Subgroup 1 differ from all other groups by an entire order of magnitude. Subgroup 2 cities are also markedly different from the remaining subgroups.

Based on closer examination of these subgroups, it was determined that in those places where development was initiated by the government, as in the cities in Subgroup 4 and Subgroup 5; administration and communications services were developed first since they were seen as the minimum condition for setting up viable economic enterprises. Further, a city's functional specialization appears to have a role in determining levels of informal activity and in those places where industry is dominant, coupled with commerce; informal activity occurs in larger magnitude. Lack of data prohibited more formal testing of this notion.
FOOTNOTES TO CHAPTER V

1 This research relies on two types of data. One type is census data needed to operationalize many of the macro level variables articulating city characteristics. These data are also needed to operationalize the sectoral measure of informal activity.

The source of these data is the Ghanaian Census of 1970. Specifically, Vol. 4; the Ghanaian Census of Population and Vol. 5, the Ghanaian census of economic activity were used. Both censes were prepared and published by the Central Bureau of Statistics, Ministry of Information, Accra, Ghana. Information is provided for the 141 local authorities and then aggregated for regional breakdowns. For each area, the tables provide data on population, population density, population increase, number of persons living in the area, but born elsewhere; percent of population employed in agriculture; past school attendance; present school attendance by region of enumeration; occupations of employed persons by local authority and sex; employment status by local authority and sex.

Another type of data used to carry out this research is survey data. Specially collected survey data is critical in answering questions regarding the conditions under which work is carried out and thus is essential for operationalizing the formal registration measure of informal activity. These data were obtained from Milton E. Harvey of Kent State University, and consist of 889 individual interviews of Accra residents carried out during 1970-1973. The information provided in the surveys includes basic demographic data and a migration history covering five moves beyond the place of birth. For each move, information is provided on length of time in each residence, housing status, occupation, time spent on primary job, time spent on secondary job, conditions under which work was carried out, income, characteristics of house, etc.

2 Theoretical implications of this analysis are discussed in the final chapter — Summary and Conclusions.

3 For a detailed discussion of the problems with the informal concept, the reader is referred back to Chapter II.


6Note that the last category is not open ended, but maintains the same interval as the previous categories. This is not thought to be significant in accounting for the spatial pattern.


8Two points should be pointed out here. First, the term factor analysis is used here to refer generally to a data reduction technique. The specific data reduction technique was a principal components analyses. For a discussion of the differences between classical factor analysis and principal components, the reader is referred to Yeates, *An Introduction to Quantitative Analysis in Human Geography*, 1974, McGraw Hill.

Second, because of confounding influences, the secondary source of water variable was not included in this or any of the subsequent analyses.

9Extent of informal activity, expressed as a percent and an absolute number was the dependent variable. It was first related to each of the explanatory variables by
simple correlation analysis. Although all of the correlation coefficients differ statistically from zero; with the exception of the variables pertaining to size; the association is relatively weak.


Due to the high degree of multicollinearity among the variables, a multiple regression analyses considering the independent variables simultaneously would not aid in explanation of the spatial differentiation of informal activities.

11 This refers to the variety, level and quantity of goods and services. Specifically, variety refers to the number of different goods and services to be found in a city, e.g. education, health, etc. Level refers to the range of the good or service -- the distance a potential client is willing to travel to purchase a good or service. For example, with the health service, a hospital is a higher level establishment than a health center because it has a wider range of facilities that attracts patrons from much further distances. Quantity is in general a function of the number of people served and relates to the amount of activity which is predetermined by the amount of people.

13 Since census data were available for only 77 of the 258 cities listed in the Grove and Huszar classification, only 77 cities were used in the subgroup analysis.


15 Administration, communications, commerce, social services, industry and power and mining constitute the six areas of functional specialization under consideration.
CHAPTER VI

SUMMARY AND CONCLUSIONS

This dissertation sought to advance knowledge of the spatial differentiation in the extent of informal activity across the urban hierarchy in Ghana. The primary objective was to identify and assess both the spatial pattern of informal activity and the major factors which influence that pattern. In pursuit of this substantive objective, the present study also sought to apply and extend existing urban geographic theory and demonstrate the accuracy of current methodologies used to measure the extent of informal activity and how this accuracy can be increased.

This chapter summarizes the research and draws conclusions. It begins with a statement of substantive findings. This is followed by a discussion of the theoretical and methodological contributions of the thesis. Suggestions for future research and implications for policy are also discussed.
Substantive Findings

As noted, the major objective of the thesis was to gain a better understanding of the spatial characteristics of informal activity. Although informal activities are recognized widely as a critical element in the economies of LDCs, there is limited information on their spatial characteristics and manifestation. This thesis partially fills that information void.

Informal Activity

As Chapter II indicates, informal activity emerged as a major concern in the late 1960's when it was found that existing strategies for inducing development in LDCs did not adequately address the critical issue of employment. The prevalence of informal activities increased dramatically in the next decade and most recently, informal activities have grown to constitute the majority of the economic activities in LDCs. The preponderance of informal activities in LDCs persists because of (1) slow growth in employment opportunities in the formal sector and (2) increases in the number of entrants to the labor force. Despite the fact that there is a large volume of research on informal activity, the spatial dimension has been neglected and except for those
studies which seek to link migration and informal activity, the geographer's contribution has been minimal. This neglect is serious for several reasons. First, it constitutes a vacuum in what we know about informal activities, which are clearly increasing in importance. Second, the spatial analyst has a unique contribution to make in terms of illuminating spatial properties of informal activity. Third, the geographic frame of reference is important in urban and regional planning. And fourth, examining the spatial characteristics of informal activity provides an excellent testing ground for existing geographic theories and enhances the status of the discipline in areas previously thought of as outside the purview of geography.

As mentioned previously, this dissertation is a preliminary attempt to increase the geographer's role in informal sector research and our knowledge of the "geography" of informal activities. Although it is a first step, it reveals a number of interesting findings and provides empirical support for several assumptions concerning informal activity. In this regard, the conceptual framework advanced earlier becomes significant.

One of the more interesting findings is related to the relative unimportance of population size as a major factor in
determining spatial variation in the structure of economic activity across the urban hierarchy. Based on this investigation, it appears that level of technological development and/or modernity is a much more viable explanation of spatial variation in the extent of informal activity. This finding can be rationalized based on the ideas purported in the "generative" thesis and also the economic multiplier.

More findings of this sort are discussed below.

Spatial Pattern

The reader will recall that a primary objective was to identify and assess the spatial pattern of informal activity. In an attempt to accomplish this objective, several statistical analyses were performed on census data for 141 Ghanaian local authorities. These analyses indicate that the very large cities contain most of the informal activity that takes place in Ghana, both in terms of absolute amount and percent.¹ In fact, cartographic analyses indicate that 14 cities contain approximately 75% of total informal activity. Only 25% of informal activity takes place in the remaining cities.

In terms of absolute number, graphical analyses indicate
that there is some "minimum threshold" level of city size which is critical before informal activity can be associated with city size. Below that number, there is no apparent relationship with population size and above that number, there is a strong direct relationship between population and the absolute amount of informal activity. This finding clearly points to urban system effects and the six cities in the Ghanaian "Golden Triangle" account for a much larger than average share of informal activity.

When expressed as a percent, informal activity shows no relationship with size whatsoever. This means that we cannot expect to find large cities having higher percentages of informal activity than small cities or vice versa. The threshold pattern which characterized the relationship between absolute amount of informal activity and population size is not evident here. Since no previous studies of this nature have been carried out, it is impossible to compare results.

Major Factors in this Pattern

An additional objective was to identify the major factors that influence the spatial pattern of informal activity.
The statistical analysis of the data suggests that the factors important for explaining the spatial differentiation in the extent of informal activity are — rank in the urban hierarchy, a size consideration; level of technological development, an index of structural modernity, the in-migration of male dominated migration streams and the out-migration of persons in the working age group.

Rank in the urban hierarchy or the size dimension has a very definite impact on the absolute amount of informal activity; and in general, both the sectoral and formal registration measures respond very strongly to a city's rank. The response to this dimension is lowered significantly when informal activity is expressed as a percent.

The most important factor for explaining variation in the percent of informal activity or the structure of the economy vis-a-vis formal and informal activity is level of technological development or structural modernity. The percent of informal activity is generally lowered when level of technological development is lowered. Those areas which provide few economic activities outside subsistence farming have lower rates of informal activity and conversely, those areas with large numbers of people employed outside agriculture
will have higher rates of informal activity. This finding clearly relates to the accessibility and generative theses discussed earlier. These theses would also explain the distance decay pattern that is evident in both the absolute and percentage measures.

The least important of the four factors which explains variation in the absolute amount of informal activity is the in-migration of male dominated migration streams. For both the sectoral and formal registration measures; an influx of male dominated migration streams reduces the absolute amount of informal activity; but the reduction is less than the increase brought on by technological development and the decrease brought on by the out-migration of working age persons.

The in-migration of male dominated migration streams is also the least important factor in explaining variation in the percent of informal activity. Here, the decrease in informal activity associated with male in-migration is less than the decrease in informal activity resulting from the out-migration of working age persons and also less than the increases brought about by increases in population size.
Theoretical Contributions

The review of the literature relating to informal activity in Chapter II and urban geography in Chapter III reveal that most models and theories of spatial differentiation have been developed in a Western world context and may not adequately deal with spatial aspects of phenomena which are most prevalent in non-Western contexts. In fact, one of the paradigms which has guided our research has been based on the assumption that the processes of growth and development leads to social, economic and spatial convergence. The possibility that there might be divergence from the Western world model, rather than convergence had not been entertained until only recently when urban geographers in particular began to recognize the inconsistency between many research findings and the paradigms which guided that research. Therefore, in addition to the substantive goal discussed previously, this dissertation also sought to determine whether or not urban geographic models relating to spatial differentiation and urban systems can be used to explain variation in the extent of informal activity.

The accessibility thesis, one will recall, purported that proximity or remoteness to the center of modernization
is an important factor in explaining why there are spatial differences in the quantity and kind of economic activities. The cartographic analyses undertaken in this thesis provides considerable empirical support for the accessibility hypothesis; and *ceterus paribus*, those places which can be characterized as "centers of modernization" do contain much more informal activity than places some distance away. Further, there is a clearly marked "decay" of informal activity as one moves away from these centers. The fact that these findings are consistent with the accessibility thesis is noteworthy because one will recall that the accessibility thesis was not formulated with informal activity in mind.

The central place variant of the accessibility thesis suggests that proximity or accessibility is a necessary, but not sufficient condition for explaining spatial differentiation. A much more "sufficient" explanation of differentiation rests on a center's location in the system of cities. In other words, there will always be some cities at the bottom of the urban hierarchy. Consequently, some cities will always contain little economic activity and be relatively homogeneous.
As with the accessibility thesis, the present analyses do indicate that the spatial pattern of informal activity closely resembles the urban system. Recall the subgroup analysis which established an urban hierarchy based on functional specialization. Two things emerged as important from the subgrouping. First, the "primate" structure of the Ghanaian urban system, and second, without a doubt, the small group of cities which, taken together were dramatically different from all other cities in terms of all of the development dimensions which had been discussed earlier. Recall also that in terms of the amount of informal activity housed in these cities; it was an entire order of magnitude larger than all of the remaining subgroups. This clearly points to the very strong relationship between the urban system and extent of informal activity. As before, with the accessibility thesis, the applicability of the central place variant to informal activity is enlightening because it makes no explicit reference to informal activities.

Just as the two previous theses can be used to explain why informal activity is distributed across the urban hierarchy as it is, the economic base notion offers still more explanation.
Recall that the central theme in the economic base notion is the idea that city growth is dependent on basic and non-basic activities. Further, the economic base notion postulated an urban multiplier at work wherein increases in the amount of basic activity gave rise to even further increases in the amount of non-basic activity. For purposes here, basic was assumed to refer to formal activities and non-basic was assumed to refer to informal activities.\(^2\) If this analogy is accurate, we would expect formal activity to give rise to informal activities. Indeed, the generative argument has confirmed that this is the case and formal activities do generate informal activities.

Before accepting the economic base notion in its entirety however as being capable of explaining the spatial differentiation in informal activity, the idea of the "economic multiplier" deserves further attention.

As mentioned before, the economic multiplier implies that changes in the quantity of basic activity bring about changes in the amount of total activity. If this is so, we would expect that there should be some regularity in the trend of the basic/non-basic ratio with settlement size. Specifically, as settlements get larger, one would think that more and more of the employed population would be
engaged in non-basic activities. It could therefore be suggested that "the basic proportion of a settlement should get smaller with an increase in population size. Conversely, the non-basic proportion should get larger and larger with increasing population size. This was not the case here and in fact, there was no relationship at all between percent of informal activity and city size. That finding does not mean however that the economic multiplier has no relevance for informal activity. Trends of this sort typically have been difficult to discern even in MDCs where the idea was developed.

As presented here, these reviews reveal that existing urban geographic theories, despite the fact that they were developed in a Western world context, for Western world circumstances, are capable of explaining spatial differentiation in the extent of informal activity in a non-Western context. The present study represents the first known attempt to empirically investigate the applicability of urban geographic theory for informal activity, consequently no formal hypotheses were put forth. As noted, however, empirical tests provided significant support for the relevance of urban geographic theories for the Third World.
Methodological Contributions

A third objective of the thesis was to illustrate how existing measures of informal activity could be used to provide insight into the "geography" of informal activity and at the same time increase the accuracy of measurement. Pursuant to this objective, two existing measures of informal activity were used in combination to establish an upper and lower limit on the extent of informal activity. The rationale for doing this and the manner in which it was done is discussed below.

Measurement

Chapter II outlines many of the difficulties in operationalizing "informal". While this investigation certainly does not remedy the conceptual and methodological shortcomings associated with the informal concept; the position here is that existing methodologies have the potential to significantly increase the predictive power of models. In translating that view into practice, existing methods of estimation were used in combination with one another. The present study of one of the first attempts to employ this strategy of estimation.
Boundaries were established on the extent of informal activity by using (1) an estimate of informal activity that was clearly an over-estimate and (2) an estimate that was recognized as an under-estimate.

In terms of the former, it was assumed that all persons engaged in trading, services, and commerce were carrying out informal activity. Even after making efforts to decrease the over-estimation, this measure is still an over-estimate since it classifies several entire occupations as informal. Certainly, within any given occupation, there are activities which are both formal and informal.

In terms of the under-estimate, only six occupations were classified as informal. This was done based on survey data which identified those six occupations as ones in which activities were most likely to occur outside government rules and regulations. Because these occupations are also those which the survey listed as having over 75% of their workers engaged in informal activity; occupations having less than this percentage were excluded from the analysis. Consequently, this measure is considered to be an under-estimate.

When used together, the two provide an upper and lower limit (respectively) in which the extent of informal activity
would fall. The results of using the two measures in combination emerged as remarkably similar and no significant difference was evident in any of the analyses. In fact, in every case, results were practically identical. This represents significant empirical support for using existing methodologies in combination with one another. Even more important, however, it provides preliminary findings which suggests that in terms of results, there are no significant differences between measures.

Given the substantive, theoretical and methodological findings; the next section points to lines of inquiry that future research might take.

**Future Research**

This dissertation provided an overview of the manner in which the extent of informal activity varies across the urban hierarchy and the factors which affect that variation. It has also pointed to the richness of this area of research for the spatial analyst, and laid the foundation for additional lines of inquiry that might prove enlightening. It is now clear that geographers should approach the study of informal activity more intensively. Specifically, we need to determine whether or not the spatial pattern
observed here is unique to Ghana or if it characterizes other LDCs. In other words, future comparisons of these findings is crucial both for development of theory and to add to our knowledge of informal activity.

In addition to the above, we need information on the implications of the spatial arrangement of informal activity for other aspects of society, e.g. migration, regional development, modernization, etc. Questions of interest here are: To what extent does the spatial pattern of informal activity direct the migration flow? Is the decision to migrate based on the probability of securing formal sector employment or is it rather based on the likelihood of securing employment in the informal sector? Do informal activities bring about equalization of individual incomes or are existing inequalities aggravated?, etc.

While this dissertation has identified five factors which are critical in determining variations in the extent of informal activity at a point in time, we do not know the relative importance of the factors over time. Specifically, in addition to the lines of inquiry identified above, more research is needed to determine the dynamics of the spatial pattern of informal activity. The pattern observed here is
obviously the result of what has occurred in the past and will certainly influence the future and it is important to know whether or not population size becomes more or less important as a factor influencing informal activity over time; or whether functional specialization outweighs the other four factors at higher (or lower) levels of development. Undoubtedly, there are a number of difficulties with "historical" studies, but it should be possible to study in detail the spatial pattern of informal activity in selected countries which represent varying levels of development.

In addition to more intensive research, in the future a new approach to research is also warranted; and research guided by policy considerations should take precedence over research for pedantic purposes. In keeping with the concern for policy oriented research, the following section sets forth the implications of this research for policy.

Implications for Policy

Development in rural areas and secondary cities is critical to alleviating the problems created by the spatial distribution of informal activity described above.
Employment opportunities should be provided in secondary cities for persons who would otherwise move to major cities in the Golden Triangle. Policies such as these which promote development in service centers and secondary cities can both generate employment and at the same time stimulate rural development. In general, policies which focus on employment generation in major cities are not recommended, as evidence suggests that such employment generation projects actually increase unemployment and encourage rural urban migration.

It should be noted that this section has deliberately avoided offering policy suggestions which pertain specifically to informal activity. There were two primary reasons for this: (1) the category "informal" is not sufficiently homogeneous as to warrant a single policy prescription and (2) most importantly, the "policy" toward informal activity is a decision to be made by each individual government based on information not considered here. Since however, it has been shown that there is a very strong relationship between formal and informal activities, it is important to recognize that policies developed for the former will undoubtedly affect the latter.
FIGURE 10: PLOTS OF PERCENT OF PERSONS ACTIVITY AND PERCENT OF POPULATION BETWEEN 21 AND 44.

Legend: A = 1 OBS; B = 2 OBS, ETC.
APPENDIX B
TABLE 15 ASSOCIATION (CORRELATION COEFFICIENTS) BETWEEN INDEPENDENT VARIABLES AND BOTH MEASURES OF INFORMAL ACTIVITY BY SUBGROUPS (ABSOLUTE NUMBER)

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<th>Sectoral Measure</th>
<th>Formal Registration Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(S1)</td>
<td>(S2)</td>
</tr>
<tr>
<td>Population</td>
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<td>-.3582</td>
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<tr>
<td>Population density</td>
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<td>Formal activities (absolute number)</td>
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</tr>
<tr>
<td>Formal activities (percent)</td>
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<td>.0849</td>
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<tr>
<td>Percent of persons born elsewhere</td>
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<tr>
<td>Percent of persons who have completed secondary school</td>
<td>.0858</td>
<td>.3155</td>
</tr>
<tr>
<td>Percent employed in agriculture</td>
<td>-.3782</td>
<td>-.8313</td>
</tr>
<tr>
<td>Percent of population 65 and over</td>
<td>.3779</td>
<td>-.0831</td>
</tr>
<tr>
<td>Primary source of water</td>
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<td>.3133</td>
</tr>
<tr>
<td>Secondary source of water</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Percent of population between 16 and 64</td>
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<td>.6626</td>
</tr>
<tr>
<td>Percent of population below 15</td>
<td>-.1133</td>
<td>-.6779</td>
</tr>
<tr>
<td>Percent female</td>
<td>-.7913</td>
<td>.8222</td>
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<tr>
<td>Dependency ratio (percent)</td>
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<tr>
<td>Unemployed population (absolute number)</td>
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<tr>
<td>Unemployed population (percent)</td>
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<tr>
<td>Factor 2</td>
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<tr>
<td>Factor 3</td>
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<tr>
<td>Factor 4</td>
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<td>.6426</td>
</tr>
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TABLE 16  ASSOCIATION (CORRELATION COEFFICIENTS) BETWEEN INDEPENDENT VARIABLES
AND BOTH MEASURES OF INFORMAL ACTIVITY BY SUBGROUPS

(Percent)

<table>
<thead>
<tr>
<th></th>
<th>Sectoral Measure</th>
<th>Formal Registration Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>(S2)</td>
</tr>
<tr>
<td>Population</td>
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<tr>
<td>Population density</td>
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<td>Formal activities (absolute number)</td>
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<tr>
<td>Formal activities (percent)</td>
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<tr>
<td>Percent of persons born elsewhere</td>
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<td>Percent of persons who have completed secondary school</td>
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<td>.6800</td>
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<td>Percent employed in agriculture</td>
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<td>Percent of population 65 and over</td>
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<td>Secondary source of water</td>
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<tr>
<td>Percent of population below 15</td>
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</tr>
<tr>
<td>Percent female</td>
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<td>-.1813</td>
</tr>
<tr>
<td>Dependency ratio (percent)</td>
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<td>Unemployed population (absolute number)</td>
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<td>Unemployed population (percent)</td>
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