DETERMINANTS OF EARNINGS IN THE URBAN INFORMAL SECTOR: A CASE STUDY OF MECHANICS IN NAIROBI.

BY

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This Research Paper is my original work and has not been presented for a Degree in another University.

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This Research Paper has been submitted for examination with our approval as University Supervisors.

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ABSTRACT

The aim of this study is to examine informal sector earnings with a view to suggesting appropriate policies to increase employment and earnings.

Econometric methods are applied to data from 120 informal sector operators in Kirinyaga, Burma and Nyayo Engineering works, three locations in Nairobi. The data were obtained through fieldwork undertaken in the three areas in March 1987.

The study has shown that the factors that influence the Informal Sector earnings fall into three main categories:-

(1) Human capital variables, for example, their level of formal education, their training, experience and age.

(2) Demographic variable, for example, family size.

(3) Value of tools.

An interesting result of this study is that institutional factors play an important role in influencing the earnings of the Informal Sector operators. The study recommends the relaxation of these regulations that inhibit the expansion of the Informal Sector and advocate for the provision of basic infrastructure to the Informal Sector.

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CHAPTER ONE

INTRODUCTION

The high rate of urbanization in both developed and developing countries is the result of migration to urban areas in search for jobs. Kenya is experiencing a problem of urban unemployment especially in Nairobi as is evidenced by the expansion of the informal sector which acts as a "last economic resort" for the unemployed. According to a C.B.S[1] report on the Urban Informal Sector in 1981, the Informal sector grew by 38.2 % between 1972 and 1981. During the same period, the sector grew by 28% in Nairobi alone. In 1981, the informal sector in Nairobi accounted for 22% of total employment in the informal sector in Kenya.[2] However, we should be careful when interpreting the above figures because C.B.S uses traditional economy, small scale enterprises and informal sector interchangeably. The above figures mainly relate to small scale enterprises.[3]

In Kenya, the informal sector has recently received much attention from Policy makers and researchers. There are plans to establish a small scale enterprises unit in the Ministry of Planning and National Development to co-ordinate assistance programms to the Informal Sector.[4]

The Government recognizes that the Informal Sector can play an important role in the economy particularly in the provision of employment and the development of entrepreneurial skills. This is confirmed by the fact that the sector has been accorded much prominence in the Sessional Paper Number one of 1986.[5] The paper says that " the

Informal Sector suffers from a negative public image, yet it p ossesses many positive characteristics and has a vital role to play in contributing to renewed economic growth".[6] It also outlines various policies to be used to encourage and promote the informal sector.

1.1 DEFINITION

In most African countries there are, besides, rural, manufacturing and service sectors, certain number of economic activities carried out by individuals or small scale enterprises which generally do not appear in the National Accounts owing to the lack of adequate and reliable statistical data and an accurate knowledge of what is now called the informal sector.

The term Informal sector covers a wide range of activities from the pedlar of current commodities to the shoe polisher, to retail, building, wooden and metal works, electrical and mechanical repairs, transport and miscellaneous services.

Although the informal sector has been existing since long in the African continent and existed in most countries at different stages of their development, it is only recently that African states sociologists and economists took interest in this sector.

It is particularly difficult to accurately define the informal sector as the authors differ in their approach to the issue. In his basic textbook of developmental economics, Higgins (1968) refers to it as the "traditional" or "retarded"

Sector in which techniques of production are traditional and highly labor intensive but with correspondingly low productivity.

The report of a team of experts from the ILO which was published in 1972 had the Kenyan "informal sector" and the "working poor" as it major themes of analysis. The report places great emphasis on low incomes obtained by many, whether in self or wage employment. The report uses the term "Informal Sector" to describe the portion of the urban economy that escapes enumeration in official statistics. The team defined informal activities as a way of doing things characterized by ease of entry, reliance on indigenous resources, family ownership of enterprises, small scale operations, labour intensive and adaptive technology, skills acquired outside the formal school system and unregulated and competitive markets.

Professor Ryan, in a report of the National Council for science and Technology on "Technology Policy and Planning in Kenya's Informal Sector " (1985), defined it as any activity outside the tax net noting that this concept should not be confused with tax evasion by institutions that are registered for tax returns on their incomes for tax purposes.

Steel (1977) defines the sector in his work on Ghana to include those activities which use less capital per worker than the modern sector.

Colin Leys (1973) argues that the Informal Sector is primarily "a system of very intensive exploitation of labour" and the links binding the Informal Sector to the formal sector

are those of "Mutual dependence and Mutual antagonism".[7]

Kaplinsky (1975), argues that the Informal Sector is a parasite of the formal sector in the sense that the Informal Sector uses the waste materials of the formal sector.

Hart (1973), in one of the earliest uses of the term "informal sector" provides a description of the income sources of the FraFra, an ethnic group in Nima a slum area in Accra, Ghana. He divides the Informal activities as legistimate and ilegitimate and makes it clear that a " consideration of income opportunities outside formal employment must include certain kinds of crime".[8]

The authors described above have defined the informal sector in terms of lack of government support, insufficiency or lack of official data and activities not complying with the administrative regulations. In this approach, the only obstacle to the growth and boom of the informal activities would be the negative attitude of the Government towards the sector while the relations of interdependence, subordination or competitiveness which exist between the informal and formal enterprises also play an important role in the support to the growth of the informal sector.

There is a tendency to consider the informal sector as an exclusively urban sector and use the term "traditional rural sector" to describe similar activities in the rural areas. Even if is is rational to study specifically the urban Informal Sector, it is undesirable that there are similar

activities, (craftsmen, small traders etc) in the rural areas.

For the purpose of this study, the Informal sector is defined as one characterized by ease of entry, reliance on indigenous resources, family ownership, small scale operations, labour intensive and in addition, the enterprises are not registered for taxation so that there is no confusion between the informal sector activities with formal small scale activities. The Informal Sector can be said to consist of activities largely undertaken by self employed persons in open areas (without a roof, except for those that have recently benefitted from the Government which has put some roofs in certain areas like Gikomba and Kamkunji), in market stalls, in undeveloped plots (without roads, electricity, water, toilets) or street pavements in both urban and rural areas. They may or may not have licences from local authorities for carrying out such activities as tailoring, carpentry, blacksmithing, grocery, kiosks, meat and maize roasting, open air restaurants, repair of footwear, car repair, (open - air - garages), shoe shinning, hair cutting and others.

1.2. ROLE OF INFORMAL SECTOR

The Informal Sector results mainly rapid urbanization as well as dwindling chances of obtaining employment in the formal sector.

These pheno mena compel a large number of people to join the activities of the Informal Sector to avoid unemployment.

The spontaneous nature of the establishment of this sector and the more or less wandering nature of its people has often led Governments to adopt measures restricting its development sometimes because of hygiene, overcrowding of the public thoroughfare, urban aesthetics and sometimes because of the insecurity of the people, but by these measures, Governments have never succeeded in gaining full control of the informal sector which today is very important in many African towns. Consequently, there is an ever growing need, considering the place occupied by the informal sector in the economy to know better and determine the realities of this sector so as to integrate them into national accounts and planning.

The Informal Sector plays a relatively important role in the production of goods and services of branches in which it operates. However, the importance of the informal sector in the economy varies according to the countries and its weight in the overall value added. The contribution of the informal sector to the national product seems, however, more important if we consider the different production branches separately.

The Informal Sector participates in an important way in income distribution in the economy, not only by paying wages to the apprentices and workers of enterprises but also to the entrepreneurs themselves.

Although the contribution of the Informal Sector to the creation of jobs is very important, it is not very well known because the existing statistical data are rare and not reliable.

In general, the importance of the Informal Sector in employment may be attributed to the fact that the modern sector of the economy is unable to provide employment to everybody thus creating an imbalance between the limited number of jobs offered by this sector and the huge number of job seekers in the labour market. This imbalance is worsened by rural depopulation, school dropouts and the maladjustment of the educational system to the needs of the labour market. Finally, the persons who lose their jobs in the modern sector and those who decide to establish and manage their own businesses outside the legislations which govern the establishment of enterprises, increase the extent of the informal sector.

The capacity of the Informal sector to create jobs resides partly in the fact that on the whole, it resorts less to capital-intensive production methods and consequently more to labour and as it does not comply with legislation particularly with regard to minimum wages, it may employ more people from the labour market where the growing number of job seekers tend to lower wages. On the other hand, the enterprises of the modern sector are subjected to rigid constraints at the level of legislations thus making them less flexible than the enterprises of the informal sector.

The basic statistical data, generally inadequate for the development of a genuine planning of the economy were for long nonexistent as regards activities of the informal sector. In fact, it is only since the establishment of the jobs and Skills Programme for Africa (JASPA) by ILO that reliable data has been collected on the basis of specific surveys made on

the activities of the informal sector and at the same time, the attention of the authorities has been drawn to the importance of this sector. But if JASPA has carried out many surveys in Africa to highlight the importance of the informal sector particularly with regard to jobs, there is at present no permanent data bank making it possible to analyse and follow the development of this sector in all African countries.

Since the ILO employment mission to Kenya in 1972, there has been a growing interest in the capacity of the informal sector to provide employment for a sizeable proportion of the urban labour force in Kenya.[9] Consequently, the Government of Kenya has become increasingly interested in assessing the role the informal sector might play in employment promotion. The Presidential Committee on unemployment (refered to as Wanjigi Report) highlighted the role of the sector in Kenya's economy and the measures to be adopted to improve employment performance.[10] In addition, the fifth Development Plan 1984-88 of the Government of Kenya also recognized the employment potential of the sector. The Sessional Paper No. 1 of 1986 also outlines the measures to be taken to enhance the promotion of this sector.[11]

It seems that the sector is gradually becoming part of the official policy. The Wanjigi Report noted that the informal sector in Kenya still remained a largely unexplored source of income earning opportunities and that its employment potential will be greatly expanded if the Government takes a more positive view of the sector. It concluded that unlike the modern sector, the informal sector provides an immediate

avenue for employment creation.[12]

In Kenya, the sector shows considerable ability to adapt in a crisis situation more than the formal sector. Employment in the informal sector grew at an annual rate of nearly 8% during 1981 and 1984 compared with nearly 4.1% for the modern sector. Between 1983 and 1984, when other sectors of the economy were experiencing severe economic decline, informal sector employment increased by 8.2 % compared to 2.6 % in the modern sector.[13]

Despite the impressive performance of the sector, its growth in employment in 1983 was lower compared to 1981 and 1982. This decline causes one to question the high expectation about the sector's ability to create employment. It seems that unless special effort is made to remove the many constraints confronting the sector, this expectation may have to be cautiously defined.

1.3 STATEMENT OF THE PROBLEM

The informal sector is a significant employer particularly of young school leavers who cannot get employment in the formal sector. The research is concerned with the level of the earnings and the determinants in this important sector.

Rempel (1974) says that the City Informal Sector Operators belong to the "Community of the poor.[14] He says that these operators are attached to the City in order to gain entrance to employment in the formal sector. They view their current plight as only temporary and still have hope of admission to the formal sector. Their persistence in job searching may

also be attributable to their lack of alternative opportunity for employment elsewhere. They lack the motivation and perhaps the means to seek informal acitivities with growth potential or to invest and view their current predicament as temporary.

House (1977) on the other hand found that a significant part of Nairobi's Informal Sector generates very reasonable incomes for its participants. According to House, the "Community of the poor" can be found among the younger Informal Sector operators who are not committed to their work.[15]

Ndua and Ng'ethe (1984) found that most Informal Sector operators are there to stay. Many would not even opt to work in the formal sector because the amount they earn, considering their level of education is much more than they would earn in the formal sector in a different activity.

It seems that Rempel, House and Ndua have got contradictory findings of the informal sector. There is need to find out the level of earnings of the informal sector mechanics and compare the results with those of the above authors. There is also need to establish the determinants of these earnings to be able to suggest policies on those factors that seem to inhibit the performance of this sector.

There are some areas in the Informal sector where entrepreneurialship exists especially in mechanical work but there are factors that inhibit the expansion of this sector. It seems there is alot of instability in employment in this sector. The lifespan of enterprises is very short[16] due to factors which have not been identified as yet. Kenya has a problem of

entreprneurial ability in the formal sector because most industries and businesses are owned by foreigners. The informal sector on the other hand is dominated by Africans. With the aim of indigenising our economy in the future, there is need to investigate the factors that inhibit the expansion of this sector.

The Government is also concerned with eradication of Poverty and development of entrepreneurial skills in the informal sector since it has shown a great interest in this sector by providing roofs to some areas of the informal sector. However, not all of the areas where informal activities are performed have benefitted from these roofs and they work under undesirable social conditions, for example, under the hot sun, no water, toilets, electricity and many other facilities. Some activities, especially those that could increase the entrepreneurial ability of the operators, like mechanics need to be encouraged, and , since mechanics are taught in schools, there is need to follow up the school leavers who undertake this career in the informal sector and investigate the level of their earnings and the determinants of these earnings.

1.4. OBJECTIVES OF THE STUDY

The main objective of the study is to determine the level of earnings of the informal sector for reasons already outlined.

A second objective is to establish the determinants of earnings the informal sector mechanics and to estimate

empirically the effects of the identified factors on the level of earnings of these informal sector mechanics and suggest policies aimed at relaxing some of those that inhibit the expansion of this sector.

The world Bank Country Economic Report on Kenya points out very extensively how the Kenyan economy is dominated by the formal sector which is largely controlled by foreigners.[17] The World Bank Mission feels strongly that this should change and they recommend encouragement of African entrepreneuriaship as a way to involve Kenyans in the economy. Therefore, a third objective will be to establish the bottlenecks that inhibit the development of entrepreneurial skills in this formal subsector and suggest the policies to remove them and make them more versatile. Informal sector has the ability to generate its own financial resources for investiment. If we can establish the factors that retard the growth of this sector, , then the potential for investment could be increased.

A fourth objective is to recommend policies aimed at stabilizing employment and earnings in this sector so that the informal sector will be able to absorb more people in the future.

Employment stability in the informal sector has strong implications in the rural urban balance strategy outlined in Sessional Paper No. 1 of 1986.

Savings are an important source of funds for investment and the research aims at establishing determinants of informal

sector earnings with a view to making recommendations on measures to improve the level of earnings to facilitate higher savings ro re-investment.

1.5: SIGNIFICANCE OF THE STUDY

In Kenya, we have a national objective of equity in income distribution and poverty alleviation and the study aims at investigating whether this is an area where poverty prevails and whether greater attention should be directed to it.

Since the Government has already provided some facilities to some areas in the informal sector, there is need to investigate whether these facilities have played a part in improving the earnings of these mechanics as compared to those who have not received any help. The study will get the first reactions of the beneficiaries.

The informal sector has remained elusive to researchers and policy makers for a long time and that is why there are no official statistics regarding this sector. Very little is known about the informal sector operator's earnings and since the Government has now been involved in the development of this sector, then empirical findings are importmant especially if the informal sector is going to be integrated in National Development Plans.

The informal sector is characterized by low and irregular earnings and there is high employment instability. The study will therefore recommend measures to stabilize earnings and therefore employment.

Most of the youth migrate to towns because of low earnings in the rural areas. If we are able to improve earnings and stabilize employment in the informal sector, both rural and urban, then the rural urban migration can be curbed which would fit well with the rural urban balance strategy. Related with this is the savings potential of the informal sector. Improving earnings means improving the savings capacity and therefore increase in reinvestible surpluses.

Finally, this is the first study of its kind since no study so far has been done specifically on mechanics. The study will supplement the limited information that we have on the informal sector.

1.6 METHODOLOGY

This study uses primary data. The data were gathered by administering a questionnaire to a sample taken from Nyayo Engineering Works, Kirinyaga Road and Burma.

Nyayo Engineering Works, Gikomba was selected because it is the only informal subsector for vehicle mechanics that has received help from the Government. Sheds have been built and mechanics allocated positions from where they can work. There is water, electricity, toilets and proper roads, i.e. basic

infrastructure has been provided to the mechanics who operate from here. The idea behind selecting Nyayo Engineering Works is to find out whether these facilities have contributed to an increase in the earnings of mechanics.

Kirinyaga Road was selected because the mechanics here work under poor conditions. There are no facilities as there is Nyayo Engineering Works.

Burma was also selected for the same reason as for Kirinyaga. These two areas are prone to City Council harassement every now and then. Therefore, Burma and Kirinyaga Road were to act as control groups to find out whether their earnings were significantly different from those of the operators in Nyayo Engineering works due to the lack of facilities that have been provided in Nyayo.

In Nyayo Engineering Works, a list was available of mechanics working there. In Kirinyaga and Burma, no such list existed. A physical counting of the mechanics was done after convincing them as to the purpose of the exercise. Names of mechanics were listed down and thereafter, random sampling was done with the use of random tables to get a sample of 40 from each study area. A Sample of 40 was considered large and manageable for analysis.

Therefore, the study had a sample of 120 which was considered both large enough and manageable for analysis.

The survey used a questionnaire which was administered to

all respondents. The main aim of this study is to estimate earnings of informal sector mechanics. It is well known among researchers how difficult it is to obtain data on income. For this reason, questions on income as well as on expenditure as a cross check were asked. The assumption was that income is equal to expenditure plus saving. This method was chosen because it is easier to remember how much one spends for example on fees, rent, fuel, and so on, rather than to remember how much one earns per day, since there are no proper records of earnings. The respondent was asked how much he spent on electricity or paraffin for lighting, rent, fees, transport, food and on others, which capture expenditure on cigarettes, beer, entertainment and so on. After this, the respondent was asked how much he saved per month. By adding total expenditure to the amount that the respondent sent home and savings, answers on earnings were cross-checked with questions on business expenditure.

These were answered by the employer only. They were asked about monthly payments in terms of wages, materials, rent of tools and any other expenditure related to business.

There was also another section which sought information on the income of the employer. This was intended to cross-check the information which had been got through the expenditure method. This did not seem to differ very much with what had been got through the expenditure method although the differences were almost 100 shillings on either side.

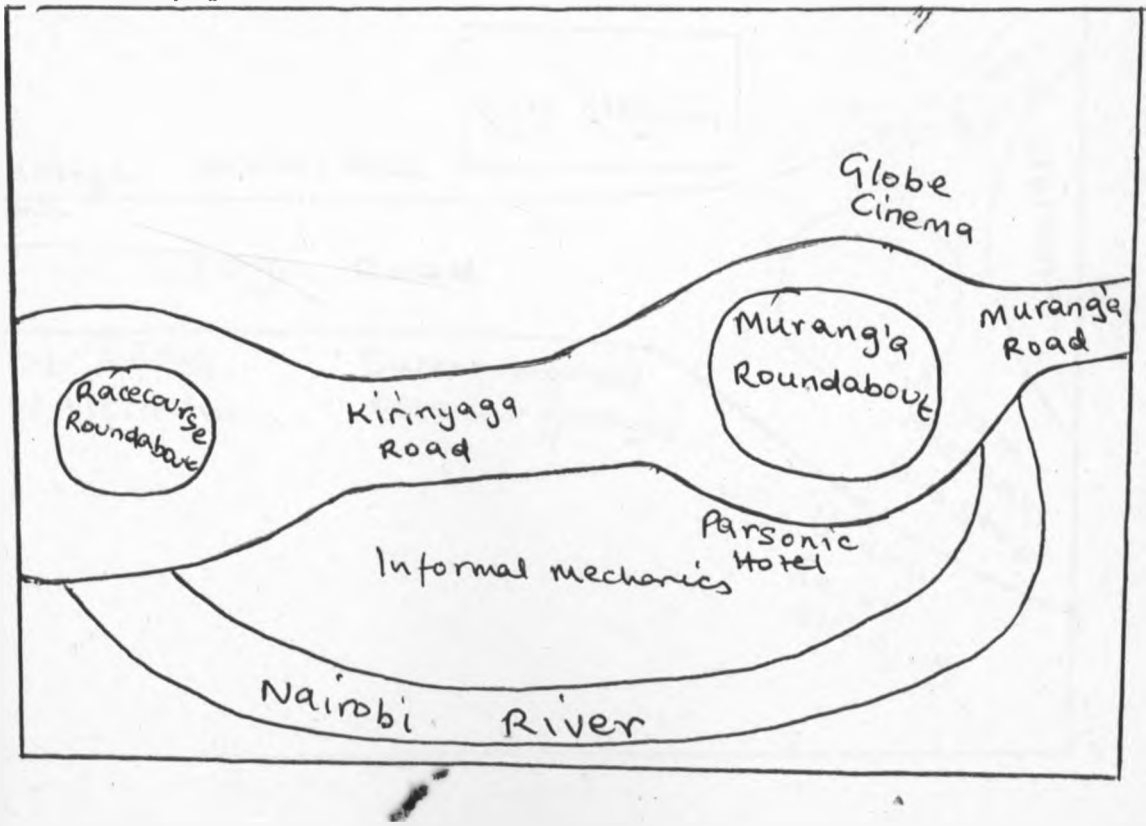
Regression analysis was done on the data and cross tabulation was done when reporting some results.

1.7 DESCRIPTION OF STUDY AREAS

In Nairobi, there are three very well known areas for vehicle maintenance by informal mechanics. These are Kirinyaga Road, Burma and Gikomba.

Kirinyaga Road begins off Murang'a Roundabout near the Parsonic Hotel on one side and Racecourse Road on the other side. It stretches for about 1.2. km. (see map). Most of the open-air garages in Kirinyaga Road operate along the Nairobi River and by the time this study was being done, a road was being constructed in this area which meant that the informal mechanics had to be evicted.

(Below is a map showing where the informal mechanics are found in Kirinyaga Road)

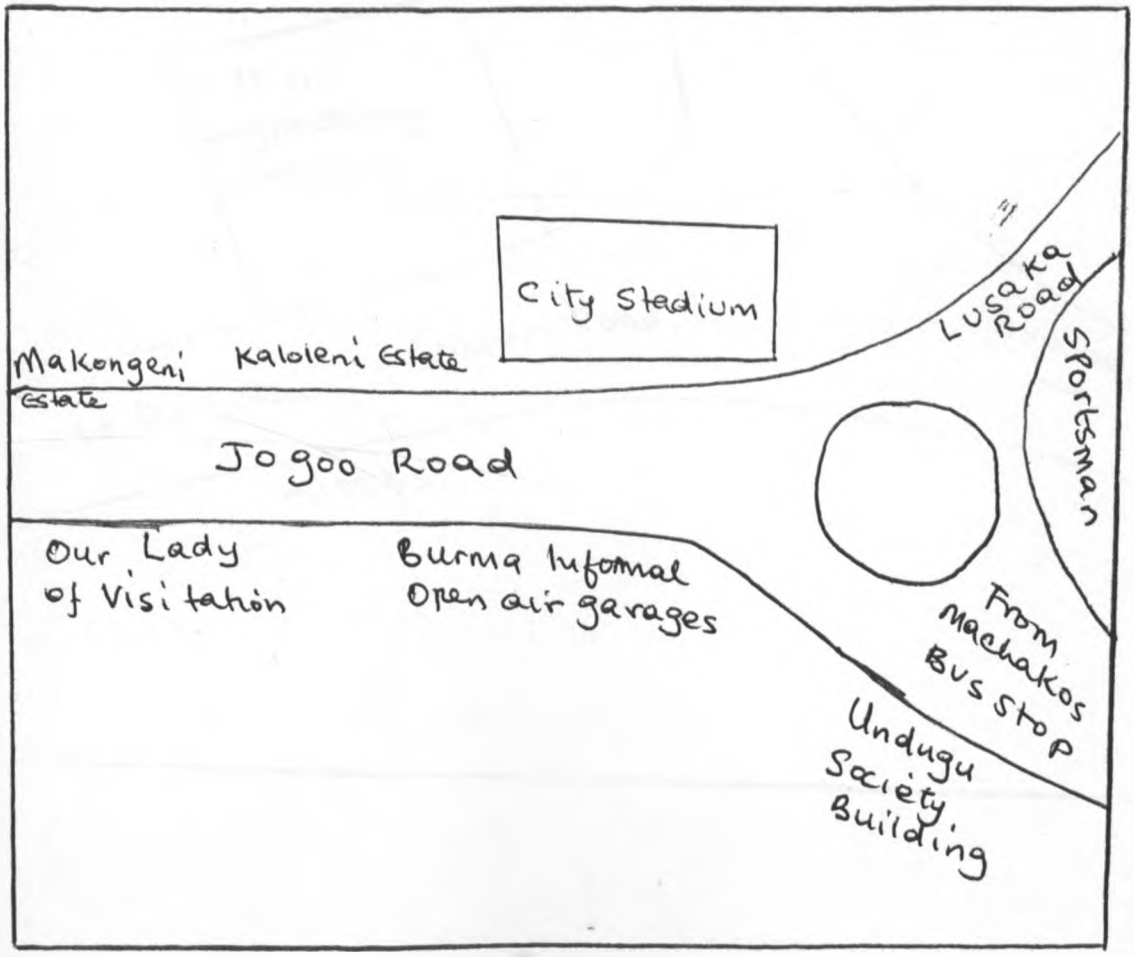


This is one of the problems the informal mechanics have to face because they operate on private land and as such, whenever the authorities feel that the land ought to be put to some other activity, the informal operators are evicted without an alternative.

Burma open air garages are found along Jogoo Road opposite City Stadium.

These garages stretch for almost 1.5 km starting from Undugu Society Building up to Our Lady of Visitation Church.

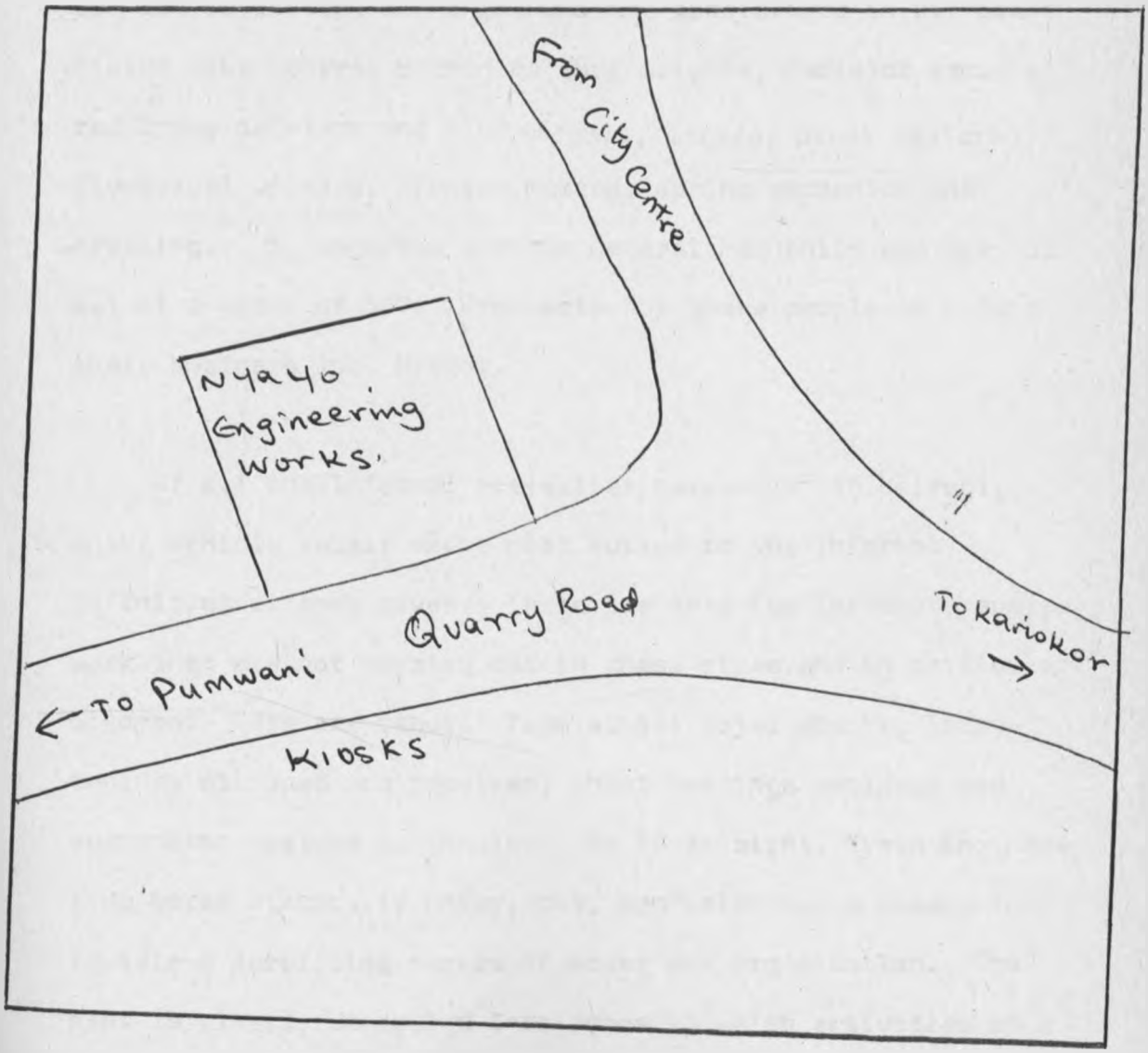
BURMA OPEN AIR GARAGES.



In Burma and Kirinyaga Road, there is evident lack of social amenities like toilets, water and electricity. The mechanics work under the hot sun and when it rains, they work in the thick mud.

Nyayo Engineering Works Gikomba is found along Quarry Road near Kariokor.

NYAYO ENGINEERING WORKS: GIKOMBA



Gikomba is an area lying approximately 2 km from the Nairobi City Centre. The area is approximately four acres. It was officially opened in January 1986 by the President after having ordered that sheds be built for all those informal mechanics who were operating there. All those working in this area have identity cards or permits allowing them to operate from here legally unlike their counter parts in Burma and Kirinyaga Road who do not have licences and are subject to City Council harassement. In Gikomba, there are 527 registered mechanics who are specialized in different fields like General mechanics, Gas welders, Radiator repairers, Spray painters and sign writers, wiring, panel beaters electrical welders, cushion makers, spring mechanics and greasing. The majority are the General mechanics who are 163 out of a total of 527. Prospects for these people to expand their business look bright.

Of all the informal activities carried on in Nairobi, motor vehicle repair seems most suited to the informal definition already given. There are very few forms of repair work that are not carried out in these areas and in particular Gikomba. Cars are rebuilt from almost total wrecks, lorry engines stripped and repaired, wheel bearings replaced and suspension systems overhauled. At first sight, Nyayo Engineering Works Gikomba is noisy, hot, confusion but a closer look reveals a surprising degree of order and organisation. The plot is clearly demacated into zones in which activities of a closely related sort are carried outfor example, the body repair (panel beaters) specialists are sited next to the painters.

1.8 LIMITATIONS OF THE STUDY.

This study has a few limitations. First, its results may not be generalizable to the whole informal sector. This is because the data for the study were collected for mechanics only and the level of earnings of a mechanic may not give us a true picture of the earnings of say a woman hawker in the City Centre.

Secondly, the data were collected from Gikomba, Burma and Kirinyaga Road only. Due to limited time and lack of financial resources, the study could not cover all the area, where informal sector operators are found.

Thirdly, these three areas, Gikomba, Kirinyaga Road and Burma are unique in three respects and therefore, the level of earnings and the factors that determine it cannot possibly be generalisable to other informal subsectors in Kenya. The reasons for that uniqueness are:-

(1) Kirinyaga Road is right in the middle of the City Centre which is the business and Financial Centre of Kenya, hence demand for repair services is obviously higher than in other informal subsectors. However, it is very near the Centre of operation of City Council Police and therefore a day may not pass without the mechanics being harassed by the police.

(2) Burma is right in the middle of a residential area and it can take quite a time before the City Council Police harass the operators.

3. Gikomba is also another area where there is alot of activity because the Country Bus Stop is right next to it and therefore demand for repair services is quite high, since vehicle owners are likely to prefer taking their vehicles there rather than have them towed all the way to Kirinyaga Road or other open-air-garages. The operators are not harassed by the city council police.

1.9. ORGANIZATION OF THE PAPER

The paper consists of five chapters. After this introductory chapter, others follow.

Chapter two surveys the literature that exists on the informal sector. There are two main sections in this chapter. The first section deals with controversies surrounding the informal sector. The second section deals mainly with the theory and methods used in measuring the earnings function by various authors. The chapter also discusses the main findings of the studies reviewed.

Chapter three presents the hypotheses. It explores the factors affecting earnings in the informal sector and outlines the economic model that is estimated in chapter four.

Chapter four presents the empirical results and interpretations.

Finally, in chapter five, the summary, Policy recomendations and conclusions of the study are presented.

CHAPTER TWO

LITERATUR REVIEW

This chapter has two main sections. The first reviews the general literature on informal sector incomes. The second section deals with studies carried out on the informal sector and the methods used in measuring the earnings function.

2.1. SURVEY OF EMPIRICAL LITERATURE

There has been very little work done in this particular topic in Kenya, and more so, nothing has been done on mechanics. Most of the Kenyan studies on the informal sector deal exclusively with general aspects of the informal sector. Most of them do not focus on specific aspects of the informal sector and have tended to give general policies on this sector. The following is a critical evaluation of some of the studies.

The World Bank Mission to Kenya (1975) is sceptical about the potential of the informal sector. The mission sees the informal sector as a residual employer of those who failed to win the prize of formal sector employment in the rural urban migration lottery! The mission goes on to state that "we do not believe that the development of the informal sector can be the basis for Kenya",[18] and therefore the mission does not offer a general policy for the urban informal sector. However, although it is true that most of the informal sector operators are the ones that have missed jobs in the modern sector, it does not necessarily follow that whatever they do in the informal sector is not of any economic

significance. Kenya has realized this and has defined a policy of integrating the Informal Sector in the national development strategy.

Kabwegyere (1977), analysed the institutional bottlenecks and the growth of the informal sector in Kenya. He concluded that since organizations that can help the informal sector are part and parcel of the new-colonialist economic system, for example the Commercial banks, then "any mention of assistance to the informal sector is largely rhetorical."[19] In view of what is happening today, it seems that his findings are no longer valid because on the 13th of November, 1986, the Informal artisans received tools worth Kshs 121,000 from World Vision.[20] Also, some of the Informal artisans have been provided with sheds especially in Gikomba and Kamukunji areas. Although the aid to the informal sector was small, plus the fact that only a few artisans have benefitted from it. It is expected that with this kind of assistance the informal sector is going to expand even more. Also, a "Jua Kali"[21] Fund has been set up in the Treasury although it is not yet operational. This is expected to boost the informal sector.

Mazumdar (1977) has made a basic distinction between the formal sector and the Informal Sector in suggesting that "employment in the formal sector is in some sense or senses protected so that the wage level and working conditions in the sector are not available in general, to the job seekers in the market unless they manage to cross the barrier of

entry somehow. This kind of "protection" may arise from the action of trade unions or governments, or of both acting together."[22] In his two-sector model of the urban economy, he assumes "no productivity in the informal sector, higher capital coefficients, productivity and wages in the formal sector, dependence of informal sector incomes on the formal sector, but independence of the formal sector and a more rapid increase in the labour supply to the formal sector than can be absorbed."[23] His model predicted that income differentials widen between the sector over time as informal sector income gets shared amongst the ever-growing Informal Sector labour force. As such the hypotheses derived from Mazuridar's model concerning average Informal Sector incomes imply that in equilibrium, they lie below the average income in the urban formal sector.

Webb's Study (1973) found that Informal Sector earnings in Peru overlap with those in the formal sector, although a much higher percentage of low income earners were found in the informal sector.

Marga Institutes' results for Colombo in Srilanka (1978) show that "different levels of income in the informal sector compare favourably with those of equivalent occupations in the formal sector."[24]

House (1977), in his study of Nairobi's Informal Sector found that "a significant part of Nairobi's Informal Sector generates reasonable incomes for its participants."[25]

Rempel (1974) goes on to divide the Informal Sector into two classes. One is the "Community of the poor" who view their condition as temporary. They view themselves as potential members of the formal sector. In this group, "the combination of defeat and hopelessness with undesirable social conditions breeds a culture of poverty."[26] The second group consists of those who take their current condition as permanent and therefore consciously strive to build for the future. This group, the "intermediate sector", is seen by Rempel as having the potential to develop. Since the members of this group take their activities as a ladder out of poverty, all they need for development is a favourable environment.

From the above discussion, it can be seen that there is a contradiction in the findings of the different authors. Mazumdar and Rempel seem to agree that the informal sector operator's earnings are low, while House and Webb, on the other hand say that the earnings are quite reasonable and overlap with formal sector earnings.

House (1977) argues that it is the protected wage structure in the formal sector that tries to explain the rationale for the large numbers of unemployed engaged in searching for formal sector jobs, and "it is to friends and relatives as well as that part of the Informal Sector that the migrant turns for subsistence while engaging in the process of job search."[27] It appears from the above argument that the Informal Sector acts as a transition zone, that those who work here are just temporary waiting to enter into the

formal sector. However, Ndua and Ng'ethe (1984) from their study of the informal sector in Nakuru found that none of the respondents had changed his/her occupation in the six months preceeding the survey which contradicts House's hypothesis that the Informal Sector is transitory and a springboard into the formal sector. According to Ndua, most of the informal sector operators would not even opt to work in the formal sector because the amount they earn, considering their level of education, is much more than they would earn in the formal sector in a different activity.

House measured the weekly earnings of regular workers, and using a log linear function found that earnings were positively related to the workers age because of the skills, experience and goodwill acquried by older workers. This study will try to fit various models since no model has as yet been established to measure the informal sector earnings.

Ndua and Ng'ethe (1984), in their study of carpentry and metal work in the Eastlands of Nairobi mainly concentrated their research on training, and when they estimated the per capita income for these two categories of occupations, they estimated the per capita income of skilled labour relating it to training. However, according to Child (1977), to most businessmen in the informal sector, the "most visible public policy affecting them is not training programmes or credit and certainly not protection from competition of imports, it is the discriminating fees and taxes, the restrictive zonning and the unduly production and building codes,[28] all of which represent barriers to be overcome".[29]

One of the objectives of this study is to check the validity of Child's assertion since in the sample, there is a subsector, Gikomba where the barriers that Child points out have been removed, therefore, the study will find out whether on other ares where these barriers are still there the earnings are significantly different from thosewhere barriers do not exist.

Ndua and Ng'ethe (1984) estimated incomes in the informal sector in Nakuru but their explanatory variables explained only 33% of the variations of income. It could have been that some factors were left out, for example, demographic factors like family size of the informal sector operators. Family size in this study is considered to be important because it determines the amount of reinvestible surplus that the Informal Mechanic will have. If he has a large family, then he will have less surplus to reinvest in his business and obviously this will have a negative effect on his earnings.[30]

Uthoff (1978), when estimating the earnings function for Metropolitan Santiago measures experience as Age minus five minus years of schooling. This assumes that the older one is, and the fewer the number of years of schooling, the larger the figure for experience. This could be true for developed countries where almost all children go to school at the age of 5 years but in developing countries, children go to school even at the age of 10 or even more. It also does not follow that the older one is, the earlier they started that particular occupation. An Informal sector operator could have moved from a formal sector activity (not necessarily in repair), or he could have been unemployed, while a

younger informal sector operator could have more experience depending on what he did immediately after finishing school if he ever did. Merrick (1977), in his work on "Employment and Earnings in the informal sector in Brazil" estimated earnings by considering only age, sex, education and employment in the informal sector. Experience and family size, as already mentioned earlier, are considered to be important in the determination of earnings in this study. However, sex will not be considered as a determinant of earnings for the mechanics because it would be very difficult, if not impossible to come across a female mechanic.

Wolfe and Behrman (1984), estimated the earnings function by taking into consideration the human capital variable which consisted of grades completed of achooling, actual work experience, nutrition status, health status and migratory status. This study considers that health status and nutrition status might have alot of measurement errors especially in the collection of data and therefore, they will not be included in the earnings function.

2.2. METHODS OF ESTIMATING THE EARNINGS FUNCTION

As noted earlier, most of the works pertaining to the estimation of earnings have been outside Kenya. In what follows, we review some of the literature on this topic.

Chiswick (1976), estimated the earnings function by first assuming that

$$Yi = Wi + Pi \qquad (1)$$

Where

Y = all earnings

W = wage or salary income of emloyees

P = income from self employment

Self employment income may be attributed to two components, one a return to the labour of the self employed person and one, a return to the owner's non labour inputs into the business. The basic model that chiswick used was

$$\log Y = b_0 + b_1 S + b_2 T - b_3 T^2 + b_4 P + E$$

Where

Y = annual income from wages, salaries, and self employment

S = years of formal schooling

T = years of post schooling experience

P = self employment income (profits as a fraction of annual income $0 \leq P \leq 1$)

E = Stochastic term

The above model takes the human capital earnings function and adds a new veriable P. Years of work experience (Ti) were computed as the difference between age and the age at leaving school (estimated at Si + 6) but the values of Si were somewhat arbitrary. In his findings, wage earners, with no self employment income accounted for 65% of men and 62% of women. Another 4% of the men and women were wage earners with some self employment income as well. The rest, 31% of men and 34% of women were self employed persons with no wage income

(i.e. persons for whom P = 1). He found that Education was an important determinant of earnings since it explained 14% of the variations in earnings and was significant at the 1% level.

The model used in Chiswick's paper is for analysing labour earnings where self employment is an important alternative to wage employment. This involves imputing the labour income of self employed people as the wages they could otherwise earn as employees. The earnings function should be estimated from a pooled sample of both types of workers since a sample of wage earners alone may not be random with respect to earnings related characteristics.

In his study, when estimating the determinants of wages in industrial Senegal, Svejnar (1984) used a model which incorporated sex and ethnic differentials (discrimination). to measure this, he used the model:-

In W = A In Woa + N1n Wna + S1n Ws where A,N and S are dummy veriables taking on the value of 1 if a given occupational group of workers composed of other Africans, Non Africans and Senegalese respctively, and 0 otherwise. However, in this study, the Informal Sector (mechanics in this case) is male dominated and wholy African, and so the question of estimating residual earnings differentials (1) between men and women, and (2) among the Kenyan, other Africans and non-African workers does not arise.

In the absence of discrimination, the expression

$$\text{In } Wc = Bo + X'B + V$$

can be used, where the X' vector should contain all the exogenous veriables of the relevant supply and demand function that determine Wc. For this study, he approximated this reduced form equation by

$$\text{In } Wc = Bo + (OCCVP)'B_1 + 1'B_2 + V \qquad (1)$$

where

Bo = Scalar Parameter

$B_1 + B_2$ = vector parameters corresponding to the (row) vectors (occup)' and 1' of occupational and industry specific veriables.

The veriables comprising vector 1' should account for different degrees of bargaining power and ability to pay as well as for compensation differentials due to diversities in tastes, prestige and hardship of work. Industries also differ in the distribution of total compensation between wages and

fringe benefits. Svejnar found that age and experience usually have an effect on earnings only in so far as they translate into a job category within the firm. He also found that Social and Institutional factors are important determinants of earnings. However, the above model can only be used to estimate earnings in the formal sector because it would be hard, if not impossible to capture some of the veriables like tastes prestige and others. In this study, only one occupation i.e. mechanics is being considered and also, in the informal sector, fringe benefits are unheard of.

When measuring the determinants of the Industrial wage structure, House and Rempel (1976) considered three hypotheses: (1) Variations among industries in the quality of labour used, (2) Variations among industries in their respective ability to pay wages above the level necessary to induce adequate supply of labour and (3) Various institutional factors evident among the indusries in the modern manufacturing sector. They found that trade unions are an important factor in wage determination but in the informal sector, this factor does not apply.

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The model to be used in this study to estimate the determinants of earnings is discussed in a subsequent chapter.

CHAPTER THREE

HYPOTHESES AND EMPIRICAL MODEL

This chapter consists of three sections. The first section deals with hypotheses to be tested and the second section presents the model that was to be estimated. The third section presents the reliability and weaknesses of the data collected.

3.1. FACTORS AFFECTING EARNINGS IN INFORMAL SECTOR

The factors that determine the earnings of a mechanic can be grouped into three categories.

These are:-

1. Human capital variables
2. Demographic variables
3. value of tools.

It is hypothesized that the earnings of a mechanic can be determined by the following factors:-

X_1 = level of education (formal)

X_2 = Experience

X_3 = Age

X_4 = Family size

X_5 = Training

X_6 = Value of tools

In what follows, the hypothesized relationship between earnings and its various determinants is discussed.

$$\frac{\partial Y}{\partial X_1} > 0$$

Earnings of an informal mechanic rise as the level of education rises, i.e. it is hypothesized that the level of formal educational attainment of an informal mechanic influences his earnings. This hypothesis is based on the fact that one's exposure to formal education, the more customers he is able to command i.e. customers from various ethnic groups because he is able to communicate with them properly either in English or Kiswahili. The ease of communication will make the mechanic attract customers and therefore build a clientele of his own which will lead to increased earnings. Also the people who have cars are mainly the educated elite and it is easier to deal with the more educated mechanic than one who is not since many vehicle parts do not have vernacular names. A person with many years of education will make a short time to train. It is also argued that the higher the level of one's formal education the higher the probability that he has been exposed to relevant skills and therefore, the higher are his earnings. The level of education is measured as the number of years a mechanic has been in school.

$$\frac{\partial Y}{\partial X_2} > 0$$

Earnings of an informal mechanic rise as the level of experience rises. Experience refers to the length of time one has been doing a particular activity, in this case mechanics. Therefore, this study considers specific experience only as opposed to general experience which

takes into consideration the experience got outside the specific job one is considering. For example, if a mechanic has changed from a clerk to an informal mechanic then we would also take into account the number of years he served as a clerk and add it to the experience he has got in his present job.

It is hypothesized that experience is positively related to earnings because the more one does a job repeatedly the more skillful one becomes especially in handling customers. Related to this is the fact that if one has been in a particular place for quite a number of years doing the same job, he establishes his own clients because of his good will and this influences his earnings positively unlike one who has little or no experience who might get one or two or no customers per day. Experience is also measured in years.

$$\frac{\partial Y}{\partial X_3} > 0$$

It is hypothesized that age has a positive influence on earnings because of the general experience that goes with it. An older person handles people better than a young one. Experience and age might be highly correlated and a problem of multicollinearity might occur. This will be tested by the use of correlation analysis. Age is measured in years.

$$\frac{\partial Y}{\partial X_4} < 0$$

Earnings fall with family size. This is because the larger the family, the more mouths have to be fed and therefore the less the reinvestible surplus for the business. This

hypothesis can only hold if reinvestible surplus can only be got from personal earnings. If, however, there are other sources of funds, for example loans, farming and so on, then this hypothesis may not hold. Also, earnings might rise with family size especially if the large family size makes the head of the household to work harder than the other mechanics who have smaller families to be able to earn more to feed the family. Family size is measured by considering the number of wives, children and dependants that a mechanic has.

$$\frac{\partial Y}{\partial X_5} > 0$$

It is hypothesized that earnings are positively related to training. A mechanic who is trained will give better service to his customers, cultivate goodwill and these will lead to increased earnings. Training is measured by considering the number of years that a mechanic has taken to train either as an apprentice or in any training institution. However, a slow learner takes longer to accumulate skills similar to those of a quick learner who takes a much shorter time.

$$\frac{\partial Y}{\partial X_6} > 0$$

It is hypothesized that earnings rise with the value of tools used. In most cases, the values of tools reflect the quality of the tools and if high quality tools are used, the the final product in this case, the service will be of high quality and therefore, the higher the price of the service which leads to higher earnings. Also, the greater the stock

of tools, the greater the amount of services given and therefore increased earnings. The value of the tools is measured in terms of replacement value in Kenya shillings.

It is hypothesized that earnings rise with the number of hours worked. This holds only if the mechanic is fully occupied the whole day. From the survey, there was no variation in the number of hours worked by the mechanics and so this variable was not considered in the regression analysis.

3.2. THE ESTIMATED MODEL

To test the relationships hypothesized above, earnings per month were regressed with respect to the given valuable.

$$y = f(x_1, x_2, x_3, x_4, x_5, x_6, \text{-------}u) \quad (1)$$

Where

Y = earnings per month

x_1 x_2-------x_6 = explanatory valuables already defined above.

U = random term

Variations of the following multiplicative model were estimated for employer and employee mechanics separately.

$$Y = \alpha_0 X_1^{\alpha_1} X_2^{\alpha_2} X_3^{\alpha_3} X_4^{\alpha_4} X_5^{\alpha_5} X_6^{\alpha_6} - - - - e^{U} \quad (2)$$

Where

α_0 = a constant

e = natural log

μ = a random term

In logarithimic form the above equation becomes:-

$$\ln y = \ln a_0 + a_1 \ln x_1 + a_2 \ln x_2 + a_3 \ln x_3 + a_4 \ln x_4 + a_5 \ln x_5 + a_6 \ln x_6 + u \qquad (3)$$

Equation (3) above is the general model whose coefficients were to be estimated using ordinary least squares. The multiplicative model was chosen since there is no model established as yet to measure the determinants of earnings. The model was also chosen because it gave the best results among the models that were tried.

The multiplicative model has certain attractive features. A logarithimic version of the multiplicative model is easy to estimate with the ordinary least squares technique. In the multiplicative models, valuables do not affect earnings of a mechanic independently of other variables. This is another desirable property of the model. Finally, its coefficients give us the elasticities that economists are usually interested in.

However, there are certain problems with multiplicative models in general. If one of the explanatory variables takes on a value of zero, then the whole model collapses. However, for the study, no such case arose.

To check for any multicollinearity, simple and partial correlation coefficients were used.

3.3: RELIABILITY AND WEAKNESSES OF THE DATA

For the most part it is considered that the data used in this study is reliable given the nature of the problem under investigation.

There are, however, several weaknesses of the data.

(1) Respondents may not have adequate information about their earnings and therefore, the earnings they reported might be inaccurate.

(2) Opinion surveys are generally not reliable indicators of what happens and hence data collected in this way may not be good approximations of reality.

It is in the light of these factors that the end result of this study should be seen.

CHAPTER FOUR

FINDINGS

This chapter discusses the empirical results of the study. It is divided into four sections. The first section discusses the earnings. This is aimed at determining the extent of poverty among the informal sector mechanics. The results are presented for employees and employers.

The second section discusses other variables that determine the level of poverty. These are family size, age, remittances, area of residence whether owned or rented, the number of rooms lived in, the number of hours worked and the level of education.

The third section deals with variables that may hamper the success of small African businesses. These are, initial capital, tools used, training and experience.

The fourth section deals with the determinants of earnings.

The results are discussed in relation to the relationships hypothesized in the theoretical framework in chapter three. However, before that there is need to present some general observations on Informal Sector mechanics.

4.1 Earnings of Mechanics

The study set out to determine the level of earnings of the informal sector mechanics, the determinants of these earnings and the level of poverty. The respondents were therefore asked how they received their wages. This question was only answered by the employees and apprentices. All the employees and apprentices are paid on a daily basis and this ranged between

ten and one hundred shillings per day. In the three areas, there were forty employees. Of these, thirteen were from Nyayo Engineering Works, ten from Burma and seventeen from Kirinyaga Road. The table below shows the distribution of earnings of employees in Nyayo Engineering Works.

Table 4.1

Earnings of employees in Nyayo Engineering Works

Earnings per month	Number of Mechanics	Percentage
1000 - 1,600	7	53.85
1601 - 2,200	3	23.08
2201 - 2,800	2	15.38
2801 - 3,400	1	7.69
Total	13	100.00

Source: Own Survey, 1987

Earnings per month were obtained by multiplying daily wages by 30. The lowest paid employee in Nyayo earns 1,320 shillings per month and the highest paid employee earns 3,130 shillings per month i.e. a range of 1,810 shillings. The mean wage for employees in Nyayo is 1,832 shillings. The mode is 1,350, the standard deviation is 527 and the median is 1,527. A majority of the employees mechanics earn between 1000 shillings and 1,600 shillings per month.

In Burma, there were ten employees. The table below shows the distribution of earnings of the employees in Burma.

Table 4.2

Earnings of Employees in Burma

Earnings per month in K.Shs.	Number of meachnics	Percentage
600 - 639	3	30.00
640 - 1000	1	10.00
1001 - 1400	1	10.00
1401 - 1800	4	40.00
1801 - 2200	1	10.00
Total	10	100.00

Source: Own Survey, 1987.

The lowest paid employee in Burma earns 600 shillings per month and the highest paid earns 1,820 per month, i.e. a range of 1,200 shillings. The mean wage is 1,300 shillings, the mode is 1,600 shillings while the median is 1,440 shillings. The standard deviation is 380. From the table, it can be seen that 30% of the employees earn 639 shillings or less i.e. they earn below the legal minimum wage.

In Kirinyaga Road, there were seventeen employees. The table below shows the distribution of earnings of the employees in Kirinyaga Road.

Table 4.3

Earnings of Employees in Kirinyaga Road

Earnings per month	Number of mechanics	Percentage
300 - 639	7	41.18
640 - 1000	3	17.65
1001 - 1400	4	23.53
1401 - 1800	1	5.88
1801 2200	1	5.88
2201 - 2600	1	5.88
Total	17	100.00

Source: Own Survey, 1987

The lowest paid employee in Kirinyaga Road earns 300 shillings per month and the highest earns 2,210 shillings, per month i.e. a range of 1,910 shillings. The mean wage is 1,575 shillings while the mode is 469. The standard deviation is 396 while the median is 1,700 shillings. We notice that 41 percent earn below the legislated minimum wage.

The table below shows the earnings of the employees in the three areas of Burma, Kirinyaga and Nyayo combined. It is found that 25% of the employees earn less than the minimum wage.

Table 4.4

Earnings of Informal Sector Mechanics (Employees)

Earnings per month	Number of mechanics	Percentage
300 - 639	10	25.00
640 - 1000	4	10.00
1001 - 1400	12	30.00
1401 - 1800	5	12.50
1801 - 2200	5	12.50
2201 - 2600	2	5.00
2600 - 3000	1	2.50
3001 - 3400	1	2.50
Total	40	100.00

Source: Own Survey, 1987

From these tables, it can be seen that the average earnings for employees in Nyayo are far much higher than the mean earnings in both Kirinyaga and Burma.

Earnings of employes largely constrast with the earnings of employers and of self employed. The table below shows the distribution of earnings in Nyayo Engineering Works for mechanics that are self employed.

The total number of employers in Nyayo Engineering Works was twenty seven.

Table 4.5

Earnings of Employers in Nyayo Engineering Works

Earnings per month	Number of mechanics	Percentage
2,000 - 2,600	1	3.70
2,601 - 3,200	6	22.22
3,201 - 3,800	7	25.94
3,801 - 4,400	4	14.82
4,401 - 5,600	1	3,70
5,601 - 6,200	3	11.11
6,201 - 7,400	1	3.70
7,401 - 8,600	3	11.11
8,601 -10,760	1	3.70
Total	27	100.00

Source: Own Survey, 1987

From the table above, it can be seen that 67% of the mechanics earn between 2,000 shillings and 4,400 shillings per month.

The range of earnings among the employers was 8,640 shillings. The mean earning per month is 4,677 shillings. The mode is 3,500, the median is 3,880 while the standard deviation is 2,097. This distribution is positively skewed. Only a few mechanics earn over 4,500 shillings per month.

In Burma, there were thirty employers who were interviewed. The table below shows the distribution of their earnings. 1/

Table 4.6

Earnings of Employers in Burma

Earnings per month	Number of mechanics	Percentage
1,400 - 2,000	7	23.33
2,001 - 2,600	4	13.33
2,601 - 3,200	5	16.67
3,201 - 3,800	3	10.00
3,801 - 4,400	4	13.33
4,401 - 5,000	3	10.00
5,001 - 5,600	2	6.67
5,601 - 6,200	2	6.67
Total	30	100.00

Source: Own Survey, 1987

From the table, it can be seen that 63% of the mechanics earn between 1,400 and 3,800 shillings per month. The average earnings for an employer mechanic in Burma is 3,407 shillings, the mode is 3,402, the median is 3,195 while the standard deviation is 1,366. The range of earnings is 4,630 since lowest an employer mechanic earns per month is 1,460 while the highest is 6,090 shillings per month.

In Kirinyaga Road, there were twenty three mechanics who were interviewed. The table below shows the distribution of their earnings.

Table 4.7

Earnings of Employers in Kirinyaga Road

Earnings per month	Number of mechanics	Percentage
2,000 - 2,500	5	21.73
2,501 - 3,000	6	26.09
3,001 - 3,500	3	13.04
3,501 - 4,000	4	17.39
4,001 - 4,500	2	8.70
4,501 - 5,000	2	8.70
5,000 - 6,510	1	4.50
Total	23	100.00

Source: Own Survey 1987

From the table, it can be seen that 60% of the employer mechanics earn between 2,000 and 3,500 shillings per month. The range of earnings among the mechanics is 4,300 shillings. The average earning is 3,401, the mode is 2,750, the median is 3,420 while the standard deviation is 974.

The table below shows the distribution of earnings among the employers in all three areas combined.

Table 4.8

Earnings of Informal Sector Mechanics (Employers)

Earnings per month	Number of Mechanics	Percentage
1,000 - 2,000	7	8.75
2,001 - 2,600	13	16.25
2,601 - 3,200	17	21.25
3,201 - 3,800	13	16.25
3,801 - 4,400	12	15.00
4,401 - 5,000	8	10.00
5,001 - 5,600	3	3.75
5,601 - 6,200	3	2.50
6,201 - 6,800	1	1.25
6,801 - 8,600	3	3.75
8,601 -10,760	1	1.25
Total	80	100.00

Source: Own Survey, 1987

Table 4.8 reveals that 63% of the employer mechanics receive between 3,200/= and 5,000/= per month so it seems that it is the employee mechanics who belong to the community of the poor. The employer mechanics seem to be earning reasonably high wages.

The table below presents the distribution of earnings in the Informal Sector of the three areas for both employees and employers.

Table 4.9.

Distribution of Earnings in the Informal Sector (Employers and Employees)

Earnings in Kshs.	Nyayo Frequency	%	Burma Frequency	%	Kirinyaga Frequency	%
300 - 639	-	-	3	7.5	7	17.5
640 - 1000	-	-	1	2.5	3	7.5
1001- 1400	5	12.5	1	2.5	4	10.0
1401 - 1800	2	5.0	11	27.5	1	2.5
1801 - 2200	4	10.0	1	2.5	1	2.5
2201 - 2600	3	7.5	4	10.0	6	15.0
2600 - 3000	3	7.5	5	13.5	6	15.0
3001 - 3400	7	17.5	2	5.0	3	7.5
3401 - 3800	3	7.5	1	2.5	4	10.0
3801 - 4400	4	10.0	4	10.0	2	5.0
4401 - 6200	4	10.0	7	17.5	2	5.0
6201 - 7400	1	2.5	-	-	1	2.5
7401 - 8600	3	7.5	-	-	-	-
8601 - 10,760	1	2.5	-	-	-	-
Total	40	100.0	40	100.0	40	100.0

Source: Own Survey, 1987

Presented above is a table showing earnings groups of the respondents. In Nyayo Engineering works, only 27.5% earn 2,200 shillings or less while in Burma, 42.5% earn 2,200 shillings or less. In Kirinyaga Road, 40% earn 2,200 shillings or less. However, in Kirinyaga Road 17.5% earn 639 shillings or less, the legal minimum wage in Nairobi. In Burma only 7.5% earn 639 shillings or less while in Nyayo Engineering works, all the mechanics earn 1000/= and above.

In Nyayo Engineering Works, 32.5% earn over 3,800 shillings per month while in Burma only 27.5% earn over 3,800 shillings. In Kirinyaga Road, only 12.5% earn over 3,800 shillings. This shows that the mechanics in Nyayo Engineering Works, both employers and employees earn relatively higher than those in Kirinyaga and Burma.

The average earnings in Nyayo Engineering Works is 3,753 shillings. In Burma, it is 2,781 shillings per month.

To check whether the average earnings were statistically different in the three places, the Z statistic was used.

We put forward the null hypothesis.

$$H_o: \quad \mu_2 = \mu_2$$

or $$\mu_1 - \mu_2 = 0$$

The standard normal variable is then calculated.

$$Z = \frac{(\bar{X}_1 - \bar{X}_2) - (\mu_1 - \mu_2)}{\sigma_{\bar{X}_1 - \bar{X}_2}}$$

where $$\sigma_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

$\bar{X}_1$ = Sample mean for the first sample.

$\bar{X}_2$ = Sample mean for the second sample.

S^2_1 = Sample variance for first sample.

S^2_2 = Sample variance for second sample.

n_1 = Sample size of first sample.

n_2 = Sample size of second sample.

μ_1 = Population mean for population of mechanics in study group.

μ_2 = population mean of mechanics in control group.

$\sigma_{\bar{X}_1 - \bar{X}_2}$ = standard error of difference between means.

$$\sigma_{\bar{X}_1 + \bar{X}_2} = \sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}$$

$$= \sqrt{\frac{1721344}{40} + \frac{762129}{40}}$$

$$= 249$$

$$= \frac{3753 - 2781}{249}$$

$$Z = \frac{972}{249}$$

$$= 3.90$$

Values for observations on $\bar{X}_1 - \bar{X}_2$ can be assumed to be normally distributed as sample sizes n_1 and n_2 are large. At 1% level of significance, Z calculated is greater than Z critical. Therefore, $\bar{X}_1$ is significantly greater than $\bar{X}_2$ at 1% level of significance, i.e. average earnings in Nyayo Engineering works are significantly greater than average earnings in Burma. To check whether average earnings in Nyayo were different from average earnings in

Kirinyaga Road, the same formula was used:

$$\sigma_{\bar{X}_1 - \bar{X}_3} = \sqrt{\frac{1721344}{40} + \frac{469225}{40}}$$

$$= \sqrt{43033 + 11730}$$

$$= 234$$

$$Z = \frac{3753 - 2566}{234}$$

$$= \frac{1187}{234}$$

$$= 5.1$$

At 1% level of significance, Z calculated is greater than Z critical. Therefore $\bar{X}_1$ is significantly greater than $\bar{X}_3$ at 1% level of significance, i.e. average earnings in Nyayo are significantly greater than average earnings in Kirinyaga Road.

To check whether average earnings in Burma were different from average earnings in Kirinyaga Road, the same formula was used.

$$\sigma_{\bar{X}_2 - \bar{X}_3} = \sqrt{\frac{762129}{40} + \frac{469225}{40}}$$

$$= \sqrt{19053 + 11730}$$

$$= 175$$

$$Z = \frac{2,781 - 2,566}{175}$$

$$= \frac{215}{175}$$

$$= 1.23$$

At 1% level of significance, Z calculated is less than Z critical. Therefore, $\bar{X}_2$ is not significantly greater than $\bar{X}_3$ at 1% level of significance, i.e. average earnings in Burma are not significantly greater than average earnings in Kirinyaga Road.

To check whether average earnings for employers were significantly greater than average earnings for employees the same formula was used.

$$\sigma_{\bar{X}_1 - \bar{X}_2} \qquad \sqrt{\frac{2187441}{80} + \frac{188356}{40}}$$

$$\sqrt{27343 + 4709}$$

$$= 179$$

$$Z = \frac{3828 - 1569}{179}$$

$$= \frac{2259}{179}$$

$$= 12.6$$

At 1% level of significance, Z calculated is greater than Z critical. Therefore average earnings of employers are significantly greater than average earnings of employees. The table below summarises the results obtained on earnings.

TABLE 4.10: EARNINGS OF INFORMAL SECTOR MECHANICS

	Min.	Max.	Mean	Mode	Median	Standard Deviation
NYAYO	1,320	10,760	3,753	2,402	2,760	1312
EMPLOYERS	2,120	10,760	4,677	3,500	3,880	2097
EMPLOYEES	1,320	3,130	1,832	1,350	1,527	527
BURMA	600	6,090	2,781	2,942	3,014	873
EMPLOYERS	1,460	6,090	3,407	3,402	3,195	1,366
EMPLOYEES	600	1,820	1,300	1,600	1,440	380
KIRINYAGA	300	4,220	2,566	1,940	2,425	685
EMPLOYERS	2,210	4,220	3,401	2,750	3,420	974
EMPLOYEES	300	2,210	1,575	469	1,700	396
TOTAL	740	7,023	2,732	2,428	2,733	956
EMPLOYERS	1,930	7,023	3,828	3,217	3,498	1479
EMPLOYEES	740	2,386	1,569	1,140	1,556	434

Source: Own Survey 1987

Respondents were also asked whether they worked part-time i.e. whether they ever repaired vehicles outside their places of work. Only 30% of the respondents said that they worked part-time and the earnings from this part-time worked ranged between 100 and 300 shillings per month. Only one of the respondents said that his wife had wage employment; the rest had their wives staying at home. Some 20% of the respondents said that they had other sources of income which they were not ready to disclose.

The respondents in Nyayo Engineering works said that since the roof was put up, their working conditions had improved greatly and their wages/profits had changed. About 70% of the respondents said that their profits/wages had increased but they could not tell by how much.

The study was also interested in finding out whether the earnings of mechanics were enough to maintain themselves and their families. The respondent was asked whether he was married and if he was, how many wives and children he had. It happened that all the respondents had wives either living with them in Nairobi or the wife living in the rural areas. The ages of the children werelisted down. If one or more children were above five years, the respondent was asked whether they went to school. It was found that all those mechanics who had children of school going age took them to school. This is because primary education is free but most of them said they could not take their children beyond primary school because it is very expensive for them.

The family size of each respondent was written down. The aim of getting the family size was to check whether the respondent's earnings were enough to sustain his family since a large family can put pressure on him either to work harder or use up his reinvestible surplus. To get the family size, the respondent was asked how may wives he had, how many children and also how many dependants he had, i.e. all other people, apart from his wife/wives and children who depended on him for their financial upkeep. The table below shows the range of family size of the respondents in all the three areas.

TABLE 4.11: FAMILY SIZE (NUMBER OF WIVES, CHILDREN AND DEPENDENTS)

Family Size	Number of mechanics	Percentage
1 - 2	34	28.33
3 - 4	10	8.33
5 - 6	4	3.33
7 - 8	5	4.18
8 - 9	64	53.33
10 - 11	3	2.50
TOTAL	120	100.00

Source: Own Survey, 1987.

Table 4.11 shows that majority of the mechanics have 8 - 9 children dependants. This is quite a large family and with the mechanic as the sole bread winner, it obviously puts pressure on him to maintain it. Only 28.3% of the respondents had a family size of 2 or less.

Table 4.12

Family size (number of wives, children and dependants) for employees

Family Size	Number of Mechanics	Percentage
1 - 2	30	75.0
3 - 4	8	20.0
5 - 6	2	5.0
Total	40	100.0

Source: Own Survey, 1987

There is a significant diffence in family size between employers and employees.

From table 4.12, it can be seen a majority of the employees have fewer children and dependants since 75% of them had a family size of 2 or less.

Table 4.13 , shows the range of family size for employers.

Table 4.13

Family size (number of wives, children and dependants)

FOR EMPLOYERS

Family Size	Number of Mechanics	Percentage
1 - 2	4	5.00
3 - 4	2	2.50
5 - 6	2	2.50
7 - 8	5	6.25
8 - 9	64	80.00
10 - 11	3	3.75
Total	80	100.00

Source: Own Survey, 1987

From the table above, it can be seen that most employers have large families since 80% of them have 8 - 9 children and dependants.

The respondents were also asked to state their ages and the table below shows the age distribution for employees in all three places.

Table 4.14

Distribution of Age among the Employees in all three areas

Age groups	Number of mechanics	Percentage
20 - 22	16	40.0
23 - 25	10	25.0
26 - 28	4	10.0
29 - 31	7	17.5
32 - 34	3	7.5
Total	40	100.0

Source: Own Survey, 1987

From table 4.14, it can be seen that the employees are relatively young people between 20 and 34 years.

The table below shows the distribution of age for employers in all three places.

Table 4.15

Distribution of age among the employers in all three places

Age group	Number of mechanics	Percentage
20 - 23	3	3.75
23 - 25	5	6.25
26 - 28	8	10.00
29 - 31	6	7.50
32 - 34	7	8.75
35 - 37	10	12.50
38 - 40	11	13.75
41 - 43	7	8.75
44 - 46	10	12.50
47 - 49	9	11.25
50 - 52	2	2.50
53 and over	2	2.50
Total	80	100.00

Source: Own Survey, 1987

Table 4.15 shows that 58.75% of the employer mechanics are between 35 and 49 years. They are relatively old people unlike the employee mechanics who are young.

Information was sought on whether the mechanics had dependants at home to whom they sent money. A majority of the mechanics said that they had dependants at home and they sent them money every month or sometimes. Below is a table showing the proportion of respondents who sent money to dependants monthly. The respondent gave round figure for amount of money sent.

Table 4.16

Mechanics who send money to dependants monthly

Amount in Kshs	Number of Mechanics	Percentage
0	6	5.0
100	10	8.3
200	12	10.0
300	16	13.3
400	20	16.7
500	20	16.7
Sometimes	36	30.0
Total	120	100.0

Source: Own Survey, 1987

From the table, it can be seen that 56.7% of the mechanics send between 200 - 500 shillings to their dependants at home every month.

Information was also sought on where the respondents lived. It was found that 95% of them live in the Eastlands in such estates as Ziwani, Makadara, Kaloleni, Makongeni, Mathare, Mukuru and Eastleigh, 2% live in the City Centre in such places as Kirinyaga Road and River Road, 2% live in Kawangware, Kibera and Langata (servant quarters) while only 2% live in their own houses. The table below presents these percentages.

Table 4.17

Areas of residence of Informal Sector Mechanics

Estate	Number of Mechanics	Percentage
Ziwani	10	8.33
Makadara	20	16.67
Kaloleni	5	4.15
Mokongeni	8	6.67
Mathare	50	41.67
Mukuru	15	12.50
Eastlegh	6	15.00
Kawangware, Kibera	2	1.67
City Centre	2	1.67
Own houses	2	1.67
Total	120	100.00

Source: Own Survey, 1987

From table 4.17, it can be seen that these mechanics live in the low income areas of Nairobi especially the 41.67% who live in Mathare. The mechanics choose to live in these areas due to proximity to places of work since most of them walk because they cannot afford busfare everyday. This is a clear indication of the poverty that prevails among these people.

Each respondent was asked whether he owned a house or rented it and the number of rooms he resided in. It was found that 98% of the respondent rented rooms. Out of these, 86% rented single rooms, while 12% rented two rooms. Only 2% lived in their own house and these happened to be the respondents who lived outside Nairobi. All of the employees had one room each while employers, had an average of 0.8 of a room per person.

When we combine the two categories of mechanics, we find that they had an average of 0.9 of a room per person. This shows that the conditions under which the mechanics live are congested.

The study was also interested in the working conditions of the respondents,therefore the respondents were asked how many hours they worked per day. These were the hours that the respondent was at his place of work, whether occupied or not. This is because the mechanics couldn't tell exactly how many hours they were occupied since they varied from time to time. It was found that 70.8% of the respondents worked between 10 and 12 hours per day which is obviously higher than the number of working hours in the formal sector where the workers spend only 8 hours at work. The mechanics also work on Saturdays and over 50% of them work half day on Sundays. From this we can conclude that most of the informal sector mechanics work for long hours. It was observed that although the mechanics report very early and leave very late, customers may not be available and they may go home without having repaired any vehicle. This was observed especially in Kirinyaga Road and Burma.

The study was also interested in the levels of education of the respondents. The years of education ranged between one and thirteen years, Table 4.18 shows the years, frequencies and percentages of the respondent formal education.

Table 4.18

Levels of Education of Informal Sector Mechanics

Years of Education	Number of Mechanics	Percentage
Lower Primary 1 - 4	19	15.8
Upper Primary 5 - 7	31	25.8
Lower Secondary 8 - 9	30	25.0
Upper Secondary 10 - 11	20	16.7
"A" level 12-13	20	16.7
Total	120	100.0

Source: Own Survey, 1987

From the table above, it can be seen that 15.8% of the respondents had less than 5 years of education, of these 10.2% were from Kirinyaga, 2.3% from Burma while 3.3% were from Nyayo These are the people who had not done C.P.E. examination and 25.8% of the respondents had between 5 - 7 years of education. Of these 15.3 were from Kirinyaga, 4.2 from Burma and 6.3 from Nyayo. This group includes those who did C.P.E examination but never went ahead. Those with 8 - 9 years of education include those who did K.J.S.E. From this table, we can say that 66.6% of the mechanics had between 1-9 years of education. Mechanics, as a job, it appears, needs a little bit of formal education because most of the vehicle parts bear foreign names and without it, it would be very hard to do the job. Also, most people who have vehicles are the educated elite and formal education is essential for proper communication.

Employers were asked how much they had started their businesses with. This question was only answered by the employers. Some respondents said that they had started with as little as forty shillings while others had started with as much as two thousand shillings. The amount had been increased through buying tool boxes, machines and materials for work. Most of the respondents wished to expand their businesses but they said that lack of capital prevented them from doing so. All the repondents who were self-employed said that they were alone in the business.

The study was also interested in the stock of tools and machines that the respondents had. It was found that only radiator repairers, spray painters and sign writers had invested in machines. They had machines such as blow lamps, Grease Guns, battery charging machines, spray painting machines Gas welding machines and compressors.

The table below shows the proportion of mechanics who did not have a tool box, those who had a half full tool box and those who had a full tool box. Atool box is the basic item that a mechanic should have.

Table 4.19

Proportion of respondents who had tool boxes

Tool box	Number of mechanics	Percentage
Full box	72	60
Half full tool box	26	22
No tool box	22	18
Total	120	100

Source: Own Survey 1987

It was found that 60% of the respondents had tool boxes that were full with such tools as spanners, hammers, screw-drivers, Jacks, ring squeezers, lockridges, kaffirs, wire-plushers and pipe ranges, 22% had tool boxes that were not full and 18% did not have tool boxes,either because theydid not need them or they were employees who had not as yet bought tool boxes of their own because they could not afford them.

To investigate whether the informal sector acts as a transitory zone as William House(1977) had asserted, it was revealed that 75% of the respondents had no plans of ever moving from that sector. This could be explained by the recent Government involvement in the sector and so the operators think that by sticking in the sector, they might later on gain. Those who planned to move were only 20% while 5% were not decided on whether to move or stick in the sector.

The study had hypothesized that training is essential in the informal sector and especially mechanics. It was revealed that 85% of the respondents had been trained for 2 - 3 years, while 15% had less than 2 years of training,. It appears that the duration of training for mechanics is 3 years. This was the case for both employees and employers. This might be because the job requires alot of skill and therefore it takes a long time to train. Most of the training had been done through apprenticeship since 95% of the respondents said that they had been trained as apprentices in small businesses while only 5% had been apprentices in big businesses. It was also revealed that training is useful in vehicle machanics because 75% of the respondents said that the training had been quite

useful to them.

It had also been hypothesized that experience is important in the informal sector as a determinant of earnings. The table below shows different levels of experience of the respondents.

Table 4.20

Levels of Experience of the respondents

Years of Experience	Number of Mechanics	Percentage
0 - 5	35	29.2
6 - 10	40	33.3
11 - 15	25	20.8
16 and over	20	16.7
Total	120	100.0

Source: Own Survey, 1987

From the table, it can be noted that 62.5% of the respondents had less than 10 years of experience. Out of these, 20% were from Nyayo Engineering Works, 22.5% from Burma and 20% from Kirinyaga Road. Those who had over 10 years of experience were 37.5% of these, 13.3% were from Nyayo Engineering Works, 92% from Burma and 15% from Kirinyaga Road.

4.2 Determinants of Earnings

This section presents and discusses regression results of the study. The results are discussed in relation to the relationship hypothesized in chapter three. Detailed regression results are reported in Annex 2.

Several regression equations were run during the analysis. This was because there were three study areas, (Nyayo Engineering Works, Kirinyaga Road and Burma) and two study groups, (Employers and Employees). In each study area and group, there were six explanatory variables for employers and five explanatory variables for employees in the regression equations estimated.

The following criteria were used in choosing the reported results.

(1) Correct signs of the estimated coefficients.

(2) Low Correlations among the regressions.

(3) Explanatory power of the estimated model.

The results were obtained with the ordinary least squares technique.

In what follows, the results are discussed by taking each explanatory variable at a time. All tests of significance were two tailed and in all cases, they were at 1 percent and 5 percent levels of significance. In the reported results, t values indicate whether the results are statistically significant, the R^2 is the coefficient of determination and D.F are the degrees of freedom.

4.3 Regression Results

The model estimated was

$$\ln Y = \alpha_0 + \alpha_1 \ln X_1 + \alpha_2 \ln X_2 + \alpha_3 \ln X_3 + \alpha_4 \ln X_4 + \alpha_5 \ln X_5 + \alpha_6 \ln X_6 + \mu$$

where Y = Monthly income

X_1 = Education

X_2 = Experience

X_3 = Age

X_4 = Family size

X_5 = Training

X_6 = Value of tools

U = a random term

Ln = Natural log.

Tables 4.21 through to table 4.27 show that as the level of education (X_1) of the informal sector mechanic rises, his earnings rise.

The regression coefficient of the education variable for each study area is statistically significant at the 1 percent level for employers. Table 4.25 gives results on regressions for each variable taken separately for employers while Table 4.27 does the same for employees.

For employers, the following equation is obtained:

$$\ln Y = 8.54 + 0.084 \ln X_1$$

while for employees, we get

$$\ln Y = 4.21 + 0.575 \ln X_1$$

The coefficients of $\ln X_1$, show the respective elasticities. According to these results, a 1 percent increase in the number of years of schooling will increase earnings

of employers by 0.084% and of employers by 0.57%. Given the log linear form of the model used, these values are the elasticities of earnings with respect to an informal operator's education. The informal sector operators with higher levels of education tend to have correspondingly higher levels of education than those whose levels of education are low. The reason may be that the high level of education makes the informal sector operator more outgoing and improves the level of communication and working relations with customers. When education was regressed alone against earnings, it still remained significant and had a positive influence on earnings. The education variable taken separately for employers had an r^2 of 0.291 i.e. it explained 29% of the variations in earnings.

Tables 4.21 to 4.27 show that experience has a positive influence on earnings. The following equation was obtained when experience was regressed against income of employers in all the three areas combined as shown in table 4.25.

$$\ln Y = 5.15 + 1.427 \ln X_2$$

For employees, regressions couldn't be run separately for each study area since the sample size was too small. However, in the three study areas combined, the following equation was obtained:

$$\ln Y = 6.19 + 0.109 \ln X_2$$

These findings are in line with the already hypothesized relationship. Experience was also found to be statistically significant. The regression coefficient of the variable X_2 (Experience) is shown to be

positive. This suggests that the level of experience exerts a positive influence on the earnings of informal sector mechanics. The results indicate that a 1 percent increase in the number of years of experience of self-employed mechanic increases earnings by 1.427% and of employee mechanics by 0.109%. These results were statistically significant both at the 5% and 1% level of significance.

Age (X_3) has positive coefficients in all study areas and among all mechanics, whether employer or employee. The following equation was obtained for employers in all the three areas combined as shown in Table 4.25.

$$\ln Y = 5.979 + 0.353 \ln X_3$$

For employees in the three study areas, we have

$$\ln Y = 4.215 + 0.661 \ln X_3$$

However, age (X_3) was not statistically significant in both Nyayo Engineering Works and Kirinyaga Road, both at the 5% and the 1% level, for employers.

Further, all the tables show X_4 (family size) as having a negative influence on the earnings of informal sector mechanics. The following equations were obtained for employers and employees respectively.

For employers:

$$\ln Y = 4.245 - 0.441 \ln X_4$$

and for employees

$$\ln Y = 4.127 - 0.589 \ln X_4$$

These results are significant for both employers and employees at the 5% and 1% level.

Training (X_4) is shown as having a positive influence on the earnings of informal mechanics. The relevant equations for employers and employees are:

$$\ln Y = 9.453 + 0.191 \ln X_5$$

$$\ln Y = 10.102 + 2.647 \ln X_5$$

This is in line with the hypothesized relationship that training exerts a positive influence on the earnings of informal sector operators. the variable is found to be statistically significant at 1% level in all study areas. Training alone explained 25% of the variations in earnings of employers and 50% of the variations in earnings of employees.

Value of tools was considered as an explanatory variable for earnings of employers only, and was shown to be positively related to level of earnings as follows:-

$$\ln Y = 3.413 + 0.081 \ln X_6$$

This is in line with the hypothesized relationship that value of tools has a positive influence on earnings. The result is statistically significant at 1% level.

Having run separate regressions for each variable and for each study area for employers, observations on all the three areas together were taken for each study area for employers, observations on all the three areas together were taken for employers to run another regression with all the variable. The following regression equation was obtained as shown in Table 4.24:-

$$\ln Y = 8.28 + 0.392 \ln X_1 + 3.542 \ln X_2 + 1.644 \ln X_3 - 1.484 \ln X_4 + 0.233 \ln X_5 + 1.154 \ln X_6$$

Each of the coefficients show the elasticity of earnings with respect to each variable. For example the coefficient for X_3 shows that the elasticity of earnings with respect to age is 1.644.

As explained earlier, separate regression equations could not be estimated for employees in each study area as the number of observations in each area were considered too small for such an exercise. However, the following equation was obtained for employees in all the three areas put together as shown in Table 4.28.

$$\ln Y = 4.221 + 0.432 \ln X_1 + 0.190 \ln X_2 + 0.172 \ln X_3 - 0.128 \ln X_4 + 0.300 \ln X_5.$$

The coefficient for X_4 (family size) shows that the elasticity of earnings for employees with respect to family size is -0.128. The coefficient for X_1 shows that the elasticity of earnings for employees with respect to education is 0.432 and so on.

Taking each area separately, the effect of all the variables on earnings of employees will now be discussed.

In Nyayo Engineering works the explanatory variables explain 74 percent of the variation earnings of employers.

In Kirinyaga Road, they only explain 48 percent of the variations in earnings for employers.

while in Burma they only explain 32 percent of the variations in earnings for employers.

In the three areas together, the variables explain 34 percent of the variations in earnings of employers, and 54 percent of the variations in earnings of employees.

The results show that there are other variables that were not included in the model which can explain the variations in earnings. These other factors could be the City Council Bye-Laws, Business stability, range of services, sources of spare parts, labour turnover, infrastructure and so on.

As for Bye-Laws, there are procedures to be followed when one starts a business in the city. For example, the operator must have a licence and he must not operate on private property. The informal sector mechanics, except for the ones in Nyayo Engineering Works, neither have licences nor do they own the ground on which they operate. As such they are prone to City Council harassment every now and then. This disrupts their business because when they are thrown out, they have to look for some other working place, goodwill is lost and it takes time before the old customers know where the mechanic is operating from and this obviously has a negative effect on their earnings.

Related to the above problem is business stability. Most of the mechanics in Burma and Kirinyaga Road are not stable. After City Council harassment, the mechanics stay for sometime before going back to their old site. Most of the respondents said that although they had stayed in that site for so many years, they were not confident; they never know when the City Council police would strike and evict them. This uncertainty obviously has a negative effect on the mechanics' earnings because they cannot invest alot of money since when the City Council police come, their tools and even some spare parts are taken and to retrieve them, they have to pay a small fee at County Hall.

Mechanics is a highly specialized occupation and has other specializations within it. For example, a mechanic can specialize in only one part of a vehicle, like radiators while another one can be a general mechanic without specializing in any area. This specialization can have a positive or negative effect on earnings although the study did not consider it in the regression analysis.

The informal sector mechanics have been accused quite often of stealing spare parts. Although there is no proof to this accusation the informal sector mechanics do not have a stable supply of spare parts and rely on second hand materials which may not please the customers. However, for the mechanics in Nyayo Engineering Works, their only complaint was the high cost of spare parts from the Indian shops.

On labour turnover, it was noted that since the employees are paid very little they only worked with their employers for a short time and then set up their own businesses. This obviously affects the employer's earnings because he has to start all over again with a new employee or apprentice who might break tools, or be very slow; thus negatively affecting earnings. On the other hand, the employee who has left and started his own business might be having very little experience, very little initial capital and obviously has to compete for customers with his former employer and this will be reflected in low earnings.

As for infrastructure, most of the work done by mechanics needs electricity, water and shelter. In Nyayo Engineering Works, these facilities are available but for Burma and Kirinyaga Road, they may not be able to do some work, for example, spray painting since they do not have shelter. They also do not have electricity. Lack of these

facilities has had a negative effect on the earnings of the mechanics in both Burma and Kirinyaga Road.

4.4 Correlations between explanatory variables

In this section, correlation between the explanatory variables of the estimated model is discussed. Correlation results are in Annex 3.

Tables 4.28 through to 4.29 show the correlation matrices. It is generally accepted that a correlation coefficient above 0.5 indicates multi-collinearity. For this study therefore, a cut off point of ±0.500 was chosen as a correlation coefficient that indicates the presence of a serious multi-collinearity problem.

Throughout the tables 4.28 to 4.29 , we note that age (X_3) and experience (X_2) are highly correlated, with corelation coefficients of over 0.60 for employers in all study areas.

Experience (X_2) and family size (X_4) also portray linear correlation since the two have a correlation coefficient of over 0.50 for employers in all study areas.

This trend shows that most people who are a little bit aged tend to be the same people with many years of experience and tend to have large families since family size and age are also highly correlated since the correlation coefficients for employees in all study areas were over 0.80 and for employers, the coefficients were over 0.70 in all study areas. However, the rest of the explanatory variables were not highly correlated and therefore the problem of multi-collinearity was not serious.

The problem of multi-collinearity can be considered as one of a gap between the information requirements of the model and the information provided by the sample data. There are various ways that this study could have dealt with multi-collinearity.

One of the ways is to add more data or other information to facilitate the estimation of the model as specified but addition of data of the same type would not have helped.

Another way would have been to scale down the model to the data available i.e. to change the specification by dropping some of the explanatory variables but the problem would have been in knowning which specific variables to drop.

Another way of dealing with multi-collinearity is simply to recognize the multi-collinearity and not try to change either the data or the model. This study chose the latter method.

CHAPTER FIVE

SUMMARY OF FINDINGS AND POLICY IMPLICATIONS

5.1 SUMMARY OF FINDINGS

The previous chapter discussed the effects of the factors that influence earnings of informal sector mechanics.

In general, these factors fall into three categories. The human capital variables, demographic variable, value of tools and institutional factors.

Except for family size, all the variables were found to be statistically signficant and still, the variable family size was found not to be reliable due to the problem of multi-collinearity that exists between age and damily size.

Training was found to be statistically significant and it, alone explained 50 percent of the the variation in earnings of mechanics.

Experience was also found to be statistically significant and it explained 35 percent of earnings in Nyayo Engineering Works.

Education was statistically siginificant and explained 29 percent of earnings.

Value of tools was also found to be statistically significant.

The study also found that while most of the employee mechanics are relatively young (average age 25 years), the self-employed mechanics are relatively older (average age 42 years). As they grow older, the employees graduated to open their own businesses, it appears.

It was found that the informal sector operators lack initial capital to start their businesses since it was revealed that some started their businesses with as little as 40 shillings which is not even enough to buy a tool box. It was also revealed that quite a number of them do not have tool boxes.

It was also found that the level of earnings of mechanics in Nyayo Engineering Works are far much higher than those of informal sector mechancis in both Burma and Kirinyaga Road. This can be explained by institutional factors. Nyayo Engineering Works has been formerly recognized by the government and basic infrastructure has been installed. The operators there have water, electricity, sheds, roads and toilets. The operators are not subjected to harassment by City Council police because they have permits allowing them to operate from there legally. As such, then businesses tend to be more stable than those ones in Burma and Kirinyaga Road. The operators in Burma and Kirinyaga Road are subjected to City Council By-Laws. There are procedures to be followed when one starts a business in the city. For example, the operator must have a licence and he must not operate on private property. The informal sector mechanics in Kirinyaga Road and Burma neither have licences nor do they own the ground on which they operate. As such they are prone to City Council harrassment every now and then. This disrupts their businesses because when they are thrown out, they have

to look for some other working place, goodwill is lost and it takes time before the old customers know where the mechanic is operating from and this obviously has a negative effect on their earnings. The higher earnings in Nyayo Engineering Works seems to support Child's assertion that the most visible public policy affecting informal sector operators are not training programmes or credit, nor protection from competition of imports but the harassment that the informal sector operators are subjected to. It was also found that Kabwegyere's assertion that "any mention of assistance to the informal sector is largely rhetorical" no longer holds since the government has already started helping them though there are no records from the Treasury to show how much has been spent since most of it is from donors. We also found that there is a statistically significant difference between the earnings of operators in Nyayo Engineering Works and those of the operators in Kirinyaga Road and Burma.

The study also found that the earnings of 30 percent of employees fall below the legal minimum wage while for employers, their earnings are not much different from those in the formal sector. Therefore, the hypothesis put forward by House (1977), Mazmudar(1977) and Webb)1973) that earnings of informal sector operators are no different from those in the formal sector holds only for employers.

5.2 POLICY IMPLICATIONS

The existence of the informal sector and its importance as a major source of employment for the urban population was recognized during the ILO Employment Mission to Kenya in 1972. Unfortunately, a

comprehensive approach to develop and assist the sector through policies and action-oriented programmes did not emerge. The question of interest here is what could be done to promote this sector in terms of entrepreneural skills and increased earnings.

In the ILO Report (1972), the informal sector was considered as an autonomous entity characterized by the supply of manpower, goods and services to the low income groups of the town population. From this point of view, the autonomous informal sector is economically efficient and has comparative advantages in keeping up with similar activties developed in the formal sector. The major advantage consists of the use of adequate proportions of the human factor in the production process, since maximum use is made of manpower without exerting much pressure on capital or foreign exchange.

The integration of the informal sector is therefore not only necessary but indispensable if we mean to ensure more complimentarity between the different sectors of the economy and a greater consistency of the national economic system as a whole.

This integration should have several objectives:-

(a) fairer distribution of income

(b) better adjustment of the education system to the real needs of the economy.

(c) more effective mobilization and a more rational use of the domestic saving and finally, a pronounced integration of the national financial system into the national economic system.

(d) better control of rural depopulation of urban growth and solutions to the problems raised by the latter.

(e) promotion of national enterprises without foreign capital and without pressure exerted by the import of capital goods on internal resources.[31]

Inspite of the importance of such objectives, until very recently, there was no explicit policy for the promotion or development of the informal sector, more so the development programmes or plans for this sector. It was only in 1985 that Kenya emerged with a policy for the development of this sector and this is seen in the development that has taken place in Nyayo Engineering Works and Kamukunji.

Our discussion so far shows that the informal sector is hindered by certain factors which affect earnings and development of entrepreneural skills. The removal of these factors that inhibit expansion would assist the informal operators to effectively utilize their equipment and machinery make use of their experience, training and education and this could lead to the creation of more jobs and increased earnings.

Available evidence on the sector suggests that it has potential for a more dynamic growth in employment promotion. In this respect, the informal sector activities could take advantage of changes in official policy to improve earnings and enhance its growth. Nyayo Engineering Works seems to have benefitted alot due to the change in official policy. Therefore, the policy recommendations that are discussed below will particularly refer to other informal subsector but there are some that will be of benefit to all.

1. Most of the mechanics in Burma and Kirinyaga Road are not stable. After City Council harassment, the mechanics move away for some time before going back to their old site. Most of the respondents said that although they have stayed in that site for so may years, they are not confident. They never know when the City Council police would strike and evict them. This uncertainty obviously has a negative effect on earnings of informal sector operators because they cannot invest alot since when the City Council police come, their tools and even some spare parts are taken and to retrieve them, they have to pay a small fee at County Hall.

Uncertainty about the informal operators' present site of work is therefore an important area in which the informal sector could be assisted. This type of assistance could take the form of industrial estates or specially developed sites for the activities. The advantage in this approach is that the operators could be provided with adequate infrastructural facilties or they can provide these for themselves. This would reduce the problem of harassment by the City Commission Authorities.

Provision of operational sites would not only remove the insecurity on the part of the informal operators but it would, as pointed out earlier, encourage the artisan in the utilization of relatively sophisticated equipment.

In addition, by clearly specifying the requirements for licensing and other regulatory procedures, the artisans are more likely to be definite about their planned investments.

2. Training is a major bottleneck in the informal sector. The

study revealed that training alone explains 50 percent of the earnings of the operators and was highly significant. The training that takes place in the informal sector is through apprenticeship that is, it is on the job training. In this training, only the old techniques are passed on and there appears to be very little innovation.

Training is therefore one area in which the informal sector could be assisted. Training programmes for young school leavers can be employed immediately after training in the informal sector. This could help in the transmission of new knowledge and make the informal sector more dynamic. The government has done this through the village polytechnics where young school leavers are absorbed in various training programmes like mechanics, carpentry, business education and many others.

3. Initial capital was found to be a major constraint in the informal sector. It was revealed that some of the operators had started their businesses with as little as Shs.40. This hinders the expansion of the business.

The young graduands from village polytechnics or apprentices could be provided with tools to start off their bsuiness. This can be a kind of loan from the government and the informal operators can repay it after they have established themselves well in business.

4. Experience was found to be very significant in the informal sector's earnings. Experience can be used as a proxy for the length of time the business has been in operation and therefore an indicator of business stability. Since it was found to be significant, there

is need for a policy geared towards stabilizing employment and incomes. It was found that the earnings of the apprentices and employees are low and irregular. This results to high labour turnover. The employees are paid very little and irregularly they therefore work with their employers for a short time and then set up their own businesses. This obviously affects the employers' earnings because he has to start all over again with a new employee or apprentice who might break the tools, be very slow and have a negative effect on earnings. On the other hand, for the employee who has left and started his own business, he might be having very little experience, very little initial capital and obviously, he will have to compete for customers with his former employer and this will be reflected in low earnings.

There is need to increase productivity in the informal sector so that employers are able to pay their workers better and remove irregularities in payment. This can be done by improving the working conditions in the informal sector. The operators need basic infrastructure like electricity, water, shelter and toilets. Some jobs like spray painting, and welding need electricity and shelter.

5. Education was also found to be significant in explaining the earnings of the informal sector operators. This means that basic education is essential for the good performance of a job in the informal sector. There is therefore need for the government to encourage or even force people to have some basic education. This has already been done because education in primary school is free and also, for grown-ups, adult education is free.

6. A majority of the entrepreneurs in the informal sector do not keep proper records of their businesses and to a large extent tend to confuse the revenue of the enterprise with their business earnings. This problem could be solved by organizing training programmes intended specifically for good management (especially accounting) as well as techniques for doing so.

7. Since most of the informal sector mechanics interviewed cited lack of customers as one of their problem, government activities could endeavour to utilize services from the informal sector. For example; government vehicles for example, from Parastatals can be repaired in the informal sector. Also, the government can buy office furniture from informal sector carpenters.

8. The informal sector mechanics in Nyayo Engineering Works complained of exploitation by middlemen who sell to the tools and spareparts. This problem can be solved through the formation of a Raw Materials Bank by the informal sector operators. This can be done if they organize themselves into cooperatives and they can then buy their raw materials regularly and cheaply.

FOOTNOTES

1. Central Bureau of Statistics
2. Central Bureau of Statistics, Report on "Employment and Earnings in the modern sector, 1984.
3. Small scale enterprises are composed of the formal and informal enterprises.
4. Personal Interview with a senior planning officer in charge of Informal Sector Unit, Ministry of Planning and National Development, Kenya.
5. Republic of Kenya, "Economic Management for Renewed Growth" Sessional Paper No. 1 of 1986, P54.
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7. Colin Leys, 1973, "Interpreting African underdevelopment: Reflection on the ILO Report on Employment, incomes and Equality in Kenya". African Affairs. 72(289) October, PP. 419 - 29
8. Keith Hart, 1973, "Informal income opportunities and urban employment in Ghana", Journal of Modern African Studies Vol.2 p.61 - 89
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12. The Wanjigi Report, P.216.
13. C.B.S. Report on "Employment and Earnings in the Modern Sector 1984

14. Rempel H., "An Estimate of Kenya's labour force," Working Paper No. 159, 1974 P.19

15. House, W.J. "Nairobi's Informal Sector: A Reservoir of Dynamic Enterprises or a Residual Pool of Surplus Labour." Working Paper No. 347, _ P.15.

16. ILO Report, 1972

17. International Bank for Reconstruction and Development (World Bank), 1975,"Kenya Into the Second Decade". Baltmore Johns Hopkins, University Press

18. IBRD, OP cit, P.19 - 20.

19. T.B. Kabwegyere, "Institutional Bottlenects and the growth of the informal sector in Kenya", Occassional Paper No. 25 P.67.

20. Daily Nation 13th November, 1986

21. "Jua Kali" is Kiswahili word meaning hot sun. This refers to the conditions under which informal operators work.

22. Mazumdar, D, "The urban informal sector", World Development, Vol. 4, No.8, 1976.

23. Mazumdar, D; Op, cit.

24. Marga Institute, Colombo, "The Informal Sector of Colombo City", ILO, Working Paper No. 30, 1978

25. House W.J. "Nairobi's Informal Sector: A Reservoir of Dynamic entrepreneurs or residual of surplus labour", I.D.S., University of Nairobi, Working Paper No.347

26. Rempel H. "The Informal Sector" Interdisciplinary Seminar, March 1974.

27. House W.J. Working Paper No. 347

(28) The Informal Sector operators are usually harrassed by the City Commission Police and their tools and wares taken. To retrieve them, they must pay a fine. Building codes have been revised but not yet implented.

(29) Child F.C., "Programmes and Policies for promoting the Growth of the intermediate sector in Kenya", I.D.S. University of Nairobi, Working Paper No. 130.

(30) This may be the case if earnings are the only source of reinvestible surplus, otherwise a mechanic may get funds from a loan if he has collateral security like land, or he may borrow from friends. Also, due to large family size, he may work very hard which might have a positive effect on his earnings,

(31) Economic Commission for Africa, Integration of the Informal Sector in Economic Development Planning," Workshop on multisectoral Planning Models and short-term Forecasting for policy Design in Development Planning and Management in African Countries, Moscow, U.S.S.R, September, 1986 p.28.

ANNEX 1

SURVEY OF INFORMAL SECTOR EARNINGS

IN

BURMA, KIRINYAGA ROAD AND NYAYO ENGINEERING WORKS.

QUESTIONNAIRE NO ----------

GREETINGS: I am a student from the University of Nairobi. I am interested in the mechanics who work here and especially in their earnings. I am only interested in the opinion of only those I talk to in general, therefore, I am not recording their names. I would be very grateful if you could answer the following questions.

QUETIONNAIRE

General (Everyone).

1. LOCATION _____
2. RESPONDENT NUMBER _____
3. OWNER/EMPLOYEE _____
4. TYPE OF MECHANIC _____
5. DATE OF INTERVIEW _____
6. AGE _____
7. Married Yes/No
8. If yes, how many children do you have? _____
9. How old are they? 1 _____ 5 _____ 9 _____
   2 _____ 6 _____ 10 _____
   3 _____ 7 _____
   4 _____ 8 _____
10. Do all those of school doing age go to school?
    Yes/No.
11. If No, Why don't they? _____
12. If No to q. 10, what do they do? _____
13. Do yo have any other dependants e.g. grandma,
    sister etc, living with you ? Yes/No.
14. If yes how many _____
15. What part of town(estate) do you reside ?

    _____

16. Do you have relatives outside Nairobi? Yes/No.
17. If yes, do you send money to them?
    (a) yes, regularly shs ----------per---------
    (b) yes, sometimes shs ----------per---------
    (c) Never.

18. If yes, do you receive money from them? Yes/No.

19. If yes, how much shs ---------per ----------

EDUCATION AND TRAINING (EVERYONE).

1. What is the highest level of educati on you have received?

   (a) Never went to school

   (b) Did not finish C.P.E.

   (c) C.P.E. or K.A.P.E.

   (d) K.J.S.E.

   (e) K.C.E.

2. How many years of schooling do you have? _____

3. How did you learn your current skills?

   (a) village polytechnic

   (b) secondary school

   (c) commercial training school

   (d) Institute of technology

   (e) other training institution

   (f) as an apprentice in a small business

   (g) self taught on the job

   (h) as an apprentice in a big business

4. How many years/months did this training take? _____

5. Do you think this training has been useful to you?

   (a) very useful

   (b) quite useful

   (c) not useful

EXPERIENCE (Everyone)

1. How many years have you practised this occupation? _____

2. How long have you worked here? _____

WORKING CONDITIONS (Everyone)

1. How many hours do you work per day? _____

2. Do you work on Sundays? (a) yes, full day
   (b) yes half day
   (c) No.

3. What is it that you like about this occupation?

   _____

4. What is it that you dislike about this occupation?

   _____

5. Are you planning to stick to this business or are you planning to move? stick/move

6. If move, why? _____

   and to where? _____

7. Do you know any informal sector mechanics from this location who have moved? Yes/No.

8. If yes, why do you think they moved? _____

9. How has the government helped you in improving your working conditions? _____

   (a) provided roof
   (b) water, toilets, electricity
   (c) tools
   (d) removed harassement from city council
   (e) others
   (f) Nothing

10. What (other) improvements do you require?

_____

11. Do the city council askaris ever visit you?

Yes/No.

12. If yes, how often? _____

13. Why do they come? _____

HOUSE (Everyone)

1. Do you own a house or rent it? own/rent.

2. How many rooms? _____

3. If own, what is the value of the house? _____

FAMILY EXPENDITURE (Everyone)

1. What is your total family expenditure per month on

(a)	electricity	ksh	_____
(b)	water	ksh	_____
(c)	rent	ksh	_____
(d)	fees	ksh	_____
(e)	transport	ksh	_____
(f)	food	ksh	_____
(h)	others	ksh	_____
	Total		

2. How much do you save per month? ksh _____

or don't know.

BUSINESS EXPENDITURE (Employer)

1. No of employees | wage/daily | No of Years/Months worked

1	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____

2. How much do you spend on

   1. materials _____ per month
   2. rent or tools _____ per month
   3. other _____ per month

   Total _____

INVESTMENT (Employer)

1. Are you alone in this business? Yes/No.
2. If No, is it a family business or are you in partnership with others?

   (a) family

   (b) other partners

3. How many partners or family members _____
4. If partners, what has been your financial contribution to the business? _____
5. Do you have any machines? Yes/No.
6. If yes, are they yours or rented?
7. If yes, Name of machines | Present value if rented/rent paid

_____	_____
_____	_____
_____	_____

8. What major tools

Name	Present Value
_____	_____
_____	_____
_____	_____

9. Other minor tools

_____	_____
_____	_____

10. When you started/joined this business approximately what was the amount of money you invested?

_____

11. Since that time, how much have invested?

_____

12. Do you have plans for expanding this business? Yes/No.

13. If yes, how much to you plan to invest? _____

14. If you were to move from here, how much would all your machines and tools fetch? _____

15. How much goodwill would your business fetch_____

16. How has the government helped you in expanding your business?

(a) conducting seminars

(b) Roof

(c) Loans

(d) tools

(c) others _____

INCOME (Employer)

1. Do you charge for repair according to time taken? Yes/No.
2. If yes, how much per hour? _____
3. If No, do you charge according to work done? Yes/No.
4. If yes, how? _____
5. Do you charge according to the type of car, e.g volvo, mercedez, mini etc. yes/NO.
6. On average, how much do you charge to repair a vehicle with say
   (a) engine problem _____
   (b) exhaust _____
   (c) radiator _____
   (d) other mention _____ charge _____
7. Do you charge more to rich people? Yes/No
8. Do you supply spare parts or do you tell your clients to buy them from elsewhere? Supply/elsewhere.
9. How much do you earn per month after deducting all the business expenses? _____

INCOME (Employee)

1. Are you paid on a daily basis or on monthly basis?
   (a) daily
   (b) monthly
2. If daily, how much do you earn per day? _____
3. If monthly, how much do you earn per month? _____
4. Do you have plans for starting your own business? Yes/No.
5. If yes, do you have enough savings? Yes/No.

OTHER INCOME (Everyone)

1. Do you work part-time after you leave here? Yes/No.
2. If yes, how often? (a) Everyday
   (b) Twice a week
   (c) Once a week
   (d) Other/specify
3. How much do you earn part-time per month? _____
4. If married, does your wife work? Yes/No.
5. If yes, what is her monthly income? _____
6. Any other income? Yes/No.
7. If yes, how much Kshs. _____

If garage has a roof (Everyone) Gikomba

1. Are you happy with this roof? Yes/No.
2. If yes, how has it helped you?
   (a) providing shelter
   (b) more customers
   (c) remove harassment
   (d) other/specify.
3. How were the working conditions before the roof was put in?
   (a) lack of water, electricity, toilets etc.
   (b) few customers
   (c) harassment from City Council
   (d) others/specify.
4. Have your profits/wages increased or decreased after the roof was put in? Increased/decreased.

5. If they have increased, by how much? _____ day/month.

6. If they have decreased, by how much? _____ day/month.

7. What were the profits/wages before the roof was put in _____

Thank you very much.

Time taken _____

ANNEX 2

REGRESSION RESULTS

Table 4.21

NYAYO ENGINEERING WORKS (EMPLOYERS)

DEPENDENT VARIABLE Y = LOG OF MONTHLY EARNINGS OF INFORMAL MECHANICS.

Explanatory Variable	Regression Coefficient	t. Statistic
X_1	0.323	2.41*
X_2	0.548	2.48*
X_3	0.481	1.19
X_4	- 0.385	-1.18
X_5	0.452	2.05*
X_6	0.231	3.79*
Constant	5.252	

D.F. = 20

R^2 = 0.746

* = significant results

Table 4.22

BURMA (EMPLOYERS)

DEPENDENT VARIABLE Y = LOG OF MONTHLY EARNINGSOF INFORMAL MECHANICS

Explanatory Variable	Regression Coefficient	t-Statistic
X_1	0.896	2.17 *
X_2	0.752	2.18*
X_3	1.923	2.38*
X_4	-0.142	-2.24*
X_5	0.342	2.71
X_6	0.099	0.21
Constant	3.008	

D.F. = 23

R^2 = 0.322

* = significant results

Table 4.23

KIRINYAGA ROAD (EMPLOYERS)

DEPENDENT VARIABLE Y = LOG OF MONTHLY EARNINGS OF INFORMAL MECHANICS

Explanatory Variable	Regression Coefficient	t-Statistic
X_1	0.333	2.901*
X_2	0.834	2.297*
X_3	0.087	1.559
X_4	- 0.429	-1.846
X_5	3.105	2.00*
X_6	0.616	2.22*
Constant	6.682	

D.F. = 16

R^2 = 0.488

* = significant results

Table 4.24

NYAYO, BURMA AND KIRINYAGA ROAD (EMPLOYERS)

DEPENDENT VARIABLE Y = LOG OF MONTHLY EARNINGS OF INFORMAL MECHANICS

Explanatory Variable	Regression coefficient	t-statistic
X_1	0.392	2.06*
X_2	3.542	2.72*
X_3	1.644	3.84*
X_4	-1.404	-2.43*
X_5	0.233	2.04*
X_6	1.154	1.47 -
CONSTANT	8.28	

D.F = 73

R^2 = 0.342

* = significant result

Table 4.25

NYAYO, BURMA AND KIRINYAGA ROAD (EMPLOYERS)

DEPENDENT VARIABLE Y = LOG OF MONTHLY EARNINGS OF INFORMAL SECTOR MECHANICS

Explanatory Variable	Regression coefficient	t-statistic
X_1	0.084	2.50*
CONSTANT	8.542	
D.F. = 78		
R^2 = 0.291		
X_2	1.427	2.272*
CONSTANT	5.151	
D.F = 78		
R^2 = 0.356		
X_3	0.353	2.68*
CONSTANT	5.979	
D.F = 78		
R^2 = 0.105		
X_4	-0.441	-2.31*
CONSTANT	4.245	
D.F. = 78		
R^2 = 0.197		
X_5	0.191	1.312
CONSTANT	9.453	
D.F. = 78		
R^2 = 0.247		
X_6	0.081	3.301*
CONSTANT	3.413	
D.F. = 78		
R^2 = 0.145		

* = Significant result

Table 4.26

NYAYO, BURMA AND KIRINYAGA ROAD (EMPLOYEES)

DEPENDENT VARIABLE Y = LOG OF MONTHLY EARNINGS OF INFORMAL MECHANICS

Explanatory Variable	Regression Coefficient	t-statistic
X_1	0.432	3.29*
X_2	0.190	2.67*
X_3	0.172	4.24*
X_4	-0.128	-0.06
X_5	0.300	1.90
CONSTANT	4.221	

D.F. = 34

R^2 = 0.546

* = significant result

Table 4.27

NYAYO, BURMA AND KIRINYAGA ROAD (EMPLOYEES)

DEPENDENT VARIABLE Y = LOG OF MONTHLY EARNINGS OF INFORMAL SECTOR MECHANICS

Explanatory variable	Regression Coefficient	t-statistic
X_1	0.575	2.371*
CONSTANT	4.214	
D.F. = 38		
R^2 = 0.228		
X_2	0.109	1.962
CONSTANT	6.194	
D.F. = 38		
R^2 = 0.204		
X_3	0.661	1.252
CONSTANT	4.215	
D.F. = 38		
R^2 = 0.141		
X_4	-0.589	-3.084*
CONSTANT	4.127	
D.F. = 38		
R^2 = 0.221		
X_5	2.647	4.98*
CONSTANT	10.102	
D.F. = 38		
R^2 = 0.501		

* = significant result

ANNEX 3

Table 4.23

CORRELATION MATRIX FOR KIRINYAGA ROAD (EMPLOYER)

	Y_1	X_1	X_2	X_3	X_4	X_5	X_6
Y_1	1.00						
X_1	0.451	1.00					
X_2	0,392	0.402	1.00				
X_3	0.224	0.442	0.747	1.00			
X_4	-0.424	0.242	0.632	0.762	1.00		
X_5	0.322	0.141	0.411	0.144	0.317	1.00	
X_6	0.226	0.154	0.430	0.342	0.134	0.529	1.00

Table 4.23

CORRELATION MATRIX FOR BURMA (EMPLOYERS)

	Y_1	X_1	X_2	X_3	X_4	X_5	X_6
Y_1	1.00						
X_1	0.401	1.00					
X_2	0.127	0.371	1.00				
X_3	0.242	0.272	0.641	1.00			
X_4	-0.272	0.413	0.524	0.743	1.00		
X_5	0.561	0.281	0.251	0.168	0.182	1.00	
X_6	0.234	0.192	0.012	0.391	0.424	0.184	1.00

Table 4.30

CORRELATION MATRIX FOR NYAYO EMPLOYERS

	Y_1	X_1	X_2	X_3	X_4	X_5	X_6
Y_1	1.00						
X_1	0.236	1.00					
X_2	0.512	0.414	1.00				
X_3	0.402	0.122	0.721	1.00			
X_4	-0.340	0.307	0.481	0.704	1.00		
X_5	0.416	0.261	0.249	0.172	0.241	1.00	
X_6	0.494	0.072	0.326	0.281	0.044	0.064	1.00

Table 4.31

COMBINED CORRELATION MATRIX (EMPLOYERS)

	Y_1	X_1	X_2	X_3	X_4	X_5	X_6
Y_1	1.00						
X_1	0.551	1.00					
X_2	0.241	0.240	1.00				
X_3	0.394	0.272	0.346	1.00			
X_4	-0.403	0.194	0.592	0.784	1.00		
X_5	0.231	0.43	0.149	0.064	0.374	1.00	
X_6	0.221	0.346	0.04	0.274	0.294	0.342	1.00

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