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IRAN AS SPECIAL CASE

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THE ECONOMIC IMPACT OF INTERNAL MIGRATION:

IRAN AS SPECIAL CASE

A DISSERTATION

APPROVED FOR THE DEPARTMENT OF ECONOMICS

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I am solely responsible for the text which follows.

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Chapter I

INTRODUCTION

Indeed, poverty is not a new phenomenon in less developed countries (LDCs), but what is new, is the fact that they are becoming aware of being poor and have grown increasingly determined to do something about it. Until recently, attention of both economists and the policy makers of these countries has been focused mainly on the importance of industrialization as the great strategy for the solution of low productivity, poverty problems, and overpopulation. In general, the longrun policy objective of industrialization was viewed as the best opportunity to transfer rural unproductive labor to the centers of economic activities, as well as to transfer the economy from the post-colonial state of underdevelopment to a system capable of generating a self sustaining development with a minimum of external dependency. Long ago, the International Labor Organization (ILO) suggested that:

The main hope of escape from poverty in developing countries lies in a rapid transfer of population from the low productivity traditional sector to the high productivity modern sector. The modern sector includes large scale commercial agriculture and plantations, and also a number of services. But its back bone is industry, including not only manufacturing but also mining, construction and

power supply.¹

Several reasons were advanced to justify the promotion of mobilization of the labor force from depressed areas to urban areas. First was the lesson from the historical evidence of the industrialization process in the so-called advanced countries (ACs). All these countries have a large portion of their working population in industry and a small portion in agriculture. Second, industrial development has always been accompanied by considerable migration from rural depressed areas to the growing urban centers of labor demand. Third, agriculture was viewed as the traditional sector subject to diminishing returns and marked by a large surplus of labor with almost zero marginal productivity (Lewis, 1954). Therefore, rural resources, mostly unskilled labor, had to be diverted from a traditional sector to a modern sector in the hope that all surplus labor would be absorbed by secondary and tertiary sectors and bring about growth and a more equitable income distribution between urban and rural regions. Fourth, given the fact that the demand for raw materials in the international market is inelastic, industrialization through import substitution rather than export of raw materials allow LDCs to improve their balance of payments.

¹ International Labor Organization, Employment and Economic Growth, ILO, Geneva, 1964, P. 143.

1.1 THE PROBLEM

Rural-urban migration, especially in the process of industrial development, regional development, and urbanization, is an important factor in the socio-economic changes in ACs as well as LDCs. For example, it was believed that gradual redistribution of labor from areas of abundant supply to areas where it is in short supply leads to a more efficient utilization of available human resources. However, as the historical evidence of developing nations has indicated, the exodus was not smooth nor gradual as it was in some ACs in the early stages of their industrialization. As a result, in the past twenty years and more, the urban areas of many LDCs have experienced an unprecedented increase in population which has already had far-reaching economic and social consequences. For example, places of 100,000 population and more, especially the capital cities of LDCs, have grown during the 1960s at rates of more than 5% per year (Tabah & Kono, 1974). Also between 1950-1970 the average annual rate of growth was 4.6%, while the rural population grew at an annual rate of only 1.6% (Tabah-Kono, 1974). The problem has become more apparent and alarming by looking at the growth of cities of one million or more inhabitants.

There were 75 such cities in 1950 (51 in the more developed and 24 in the less developed regions) as against 162 in 1970 (83 and 79 respectively). The combined population of these cities was 174 million in 1950 (126 million in the more developed and 48 million in the less developed regions, and 416 million in 1970 (223 million and 193 million

respectively).... It is therefore not suprising that... the population problems commanding greatest attention are those associated with large and fast growing cities.²

Obviously a part of this growth is due to the rapid rate of over-all population rates, typically around 2.0% to 3.0% (United Nation, 1979). However, as development proceeds, the most important contributing factor by far has been the massive transfer of human resources from depressed rural areas to urban areas. Consequently, the movement of population of this magnitude raises serious problems for migrants, for long term urban residents, and for those remaining in rural areas. For example,

In 1976 the World Conference of Human Settlements(Habita) pointed to migration as a major factor underlying unbalanced growth and mushrooming squatter settlements and in the same year the ILO World Employment Conference linked migration with the growth of urban unemployment, overcrowded services sectors in primate cities and the depletion in rural areas of their younger and most highly educated inhabitants³

Unfortunately, until recently, as development proceeded, there was no national urbanization policy to regulate this exodus. Cities of many of these countries have been allowed to grow without considering the consequences. Many economic policies toward industrialization such as the establishment of basic industries, public utilities, and educa-
tion

² Tabah, L. and Kono, S., "World Population Trends in 1960-70", International Labor Review, Vol. 109, No. 5, May-June 1974, P.412.

³ Shaw, R. P. "Bending the urban flow a construction-migration strategy", International Labor Review, Vol. 1119, No. 4, July-august, 1980, P. 467

tional facilities, have provided much stronger implicit incentives in favor of growth of urban areas at the expense of rural development.

Aside from the above problems, it was believed that redistribution of surplus labor leads to more employment and removes unemployment. The effectiveness of such human resource distribution is positively related to the absorptive capacities of the areas receiving the migration stream. So far, the historical evidences of many LDCs have revealed the fact that the size of migration to industrial cities has greatly exceeded the potential capacity of the industrial sector to absorb all the migrants at the time of arrival. In other words, only a small portion of the increase in the active population of cities obtained industrial jobs. The rest of them entered into the informal low productive sector or remained unemployed without going back to their home towns. Consequently, most of the migrants who worked in the low productive agricultural sector remained less productive as they are absorbed by low productive urban informal sector.

Basically there are several reasons for high unemployment in LDCs: First, the manufacturing employment has failed to grow rapidly enough to employ a part of the overcrowded labor market mainly due to capital shortages. Second, typically the nature of the developing nations' industrialization process is highly capital intensive in which provide employment for skilled workers. Therefore, unskilled work-

ers have little chance to be hired in modern sectors. Furthermore, the failure of employment to grow faster is usually attributed to the capital intensity process assumed to be induced by substantial government subsidies to the modern sector and suppression of agricultural production by an inappropriately low price policy. Consequently, today many of the LDCs which were predominately agrarian are facing a shortage of food stuff, chronic rural unemployment, high internal migration, and finally, destruction of the rural economy.

Recently, for various social as well as economic reasons, governments in an increasing number of these nations no longer accept rural-urban migration of this magnitude as a suitable method for raising the income and improving the living conditions of the majority of the population. Many policy makers have come to the conclusion that there is a need for an appropriate national urbanization policy to regulate the internal migration. In other words, they are becoming more aware of the importance of regulated population mobility to the achievement of their national goals, namely, economic growth, higher living conditions, and a more equitable income distribution both in rural and urban areas. For example:

In a survey of population in countries about the world, prepared by the United Nations Secretariate for the World Population Conference held in Bucharest in 1974, it was found that 76 countries, comprising three-fifths of the world's population, had announced policies for the control of rural-urban migration. Somewhat over one-half of the

less developed countries had adopted such policies. Most policies are aimed at diverting internal migration from large to small cities, while a few seek to prevent all urbanward movement from rural areas.⁴

Along the same line of argument, the leaders of Asian nations have recognized that overpopulation poses a major threat to the achievement of their economic goals. Therefore, they are seeking to adopt policies to divert the massive unwanted migrants to the large cities.

According to a survey carried out by the United Nation in 1976, only 4 out of 35 nations in Asia considered their overall spatial distribution of population to be entirely acceptable. The survey also reported that a number of governments not only recognize the problems, but have begun to adopt policies and programmes to slow down or reverse the flows towards metropolitan regions and other urban centers, relying either on incentives and discentives or on coercive methods.⁵

It should be pointed out that in spite of various socio-economic problems associated with rural-urban migration, it is by no means an undesirable phenomenon. As Kuznet, 1956, pointed out, the relationship between population redistribution and economic development is an important and indispensable link in the mechanism of modern growth. For example, as Yap, in 1975, demonstrated that for Brazil, rapid urban population growth has been a positive factor in the growth and distribution of its national product in the

⁴ Howely, A. H., "Migration and Employment in Peninsular Malay Malaysia, 1970", Economic Development and Cultural Changes, Vol. 119, No. 4, July-August 1980, p.467

⁵ Oberai, A. S., "State Policies and internal Migration in Asia," International Labor Review, Vol. 120, No. 2, March-April 1981, p.231

postwar period.

However, the magnitude of population redistribution must be related to both the potential capacity of labor absorption of the industrial sector, potential food production in rural areas, and the ability of the government to provide public services for both rural and urban communities.

1.2 SCOPE AND PURPOSE OF THIS STUDY

The essential objective of this study is to examine theoretically and empirically the economic impact of migration in LDCs in general, using Iran as a special case. Broadly speaking internal migration or labor mobility is considered as an equilibratory force to bring more output, employment, efficiency, and income equality within the regions of a country. However, the historical evidence has shown that labor mobility had different effects in different countries (Yap, 1976). Therefore, the importance of internal migration in the process of regional economic development and balanced economic growth between rural and urban areas must be recognized by government planners and officials. As a matter of fact, today, the policymakers of developing nations have become increasingly aware of the role of migration in balanced growth, and the innumerable social, psychological, ecological, and political ramifications of present

and projected patterns of internal migration (Shaw, 1975). Furthermore, they must consider such questions as: who is the migrant?; how can migration be stimulated or impeded?; to what extent is migration beneficial and/or detrimental for the losing areas as against the gaining areas?; and finally, is there an optimum level of interregional migration?".

Indeed, the economic development of Iran has presented an impressive case for study of the above issue. Iran's aspiration for economic development has placed a heavy emphasis on industrialization, urbanization, and infrastructural development. Meanwhile, the policy makers at the national level have deliberately paid little attention to the conditions of the rural economy. In fact, during the last twenty years and more, there has been a tendency to emphasize attention to urban concentrations at the expense of rural development. For example, since World War II, the Iranian government has made numerous attempts, such as land reform or subsidizing urban industries, to divert resources, mainly labor and capital, from rural depressed areas to urban industrial cities. Consequently, many economic activities have been concentrated in the capital city of Tehran, and later in other cities, including Isfahan, Arak. As a result, economic activities have become unevenly distributed in different regions. For example, in Tehran:

Almost 14 percent of the population of Iran live in this city and achieved a disproportionate amount of the advantages of development process.

Tehran accounts for 51 percent of Iran's production of manufactured goods, 30 percent of the industrial enterprises, 60 percent of all wages and salary, 33 percent of total investment, 35 percent of the country's gross national product, 38 percent of all institutions of higher education, 52 percent of all students in higher education, 46 percent of all doctors, 76 percent of all cars, and 100 percent of all banks, insurance companies and other fiduciary institutions, all of which have their headquarters in Tehran.⁶

Indeed the concentration of economic activities of this magnitude attract more migration. In turn, the increase in migration potentially creates unemployment, housing problems, congestion, and pollution in receiving areas and probably less growth in sending areas. In Tehran for example, only a few incoming migrants were absorbed by the modern sector, mainly as unskilled workers. Some became government employees, but the majority of them entered in the low productive sector of service industry. The distinct occupations of the latter are: street vendors, petty traders, domestic servants, porters, shoeshine boys, and construction workers. In general, the migrants who move from rural areas to metropolitan areas can not afford to rent a house or a room and as a result most of them end up to live in shanty towns. Taking account of almost the fifty shanty towns around the city, one would judge that the population of these settlements runs between seven to a million. But to date no one has taken a census of these rural poor migrants. They are dwelling in places with colorful names such as; yaaft-aabad

⁶ Johnson G.C., High-Level Manpower in Iran: From hidden Conflict to Crisis, New York, Praeger, 1980. pp. 25-26.

["Foundsville"), Vali-i-Asr ("Lord of time"), and Moosaa aabad ("Mosesville").

In addition to the two basic problems (employment and housing), more migration means more government spending in the large cities, higher environmental pollution, complicated social problems, more income inequality, and finally, more social unrest. It is a common belief that the fall of the Shah was directly related to the living conditions of migrants within the urban areas.

In general, development of an appropriate strategy to alleviate the above problems as well as prevent social unrest and destruction of the rural economy requires an understanding of the magnitude and the behavioral characteristics of the migrants in the cities (Yap, 1977). To do so, one must carefully study the trend, the determinants, and finally the consequences of migration.

So far, most migration studies have concentrated primarily on the patterns and determinants of migration, without considering its economic impact on the quality and quantity of the labor force, quality of life, and overall economic growth and development. This study will emphasize the impact rather than the determinants of migration. It is hoped that the investigation's results will help planners and policymakers to better understand the nature of the problem; the magnitude and impacts of incentives being offered to migrants; and, finally the impact of migration on

unemployment; production, growth level, and income inequality both in sending and receiving areas primarily during 1966-1980.

To accomplish the above goals, a series of theoretical and statistical models will be designed to explain:

- {1} The pattern of migration during 1966-1976.
- {2} The theories of migration by reviewing the current literature.
- {3} The fundamental characteristics of the Iranian economy, pattern of population movement, and estimation of migration between different provinces.
- {4} The harmful and beneficial effects of migration on migrants, receiving areas, and sending areas.
- {5} If and how migration destroys the rural economy, and if so, how the rural poor can be given greater access to economic opportunities.

The final purpose of this study is to prepare a set of policy recommendations for government administrators, planners, and other decision makers to enable them to formulate a series of actions to divert, promote, or slow down the the internal migration.

1.3 ORGANIZATION OF STUDY

This study has been organized into six chapters. The first chapter presents the statement of the problem, a review of the purpose of the study, and the overall organization. The second chapter is a review of the literature dealing with the causes and consequences of migration. A look at the aspects of migration in different studies, such as the pull-push theory, investment in human capital (micro-approach), and evaluation of original and modification of Todaro's model is also attempted.

The third chapter is devoted to analyzing the institutional framework of the Iranian economy, especially since World War II. It tries to answer questions such as: "What are the fundamental characteristics of the Iranian economy?"; "How has Iran reached its present status?"; "What are the roles of the government in economic activities?"; and "What was the pattern of population distribution, the level internal migration and degree of urbanization during 1966-1976?".

The fourth chapter contains a discussion of the theory of the consequences of migration. In this chapter two theoretical models have been constructed, primarily with a view towards examining the effects of internal migration on the production, employment, income inequality, rural economy, and on growth and development. The last chapter

In Chapter V, a number of econometric models has been developed to estimate the impact of internal migration in the Iranian economy. And finally, the last chapter contains a summary of the findings, conclusions, and recommendations of the study.

Chapter II

MIGRATION THEORIES: A REVIEW OF THE LITERATURES

Within the past two decades, the field of migration has been the subject of numerous studies conducted by researchers in various disciplines. Included are economics, sociology, demography, geography, political science, and other social sciences, at both theoretical and empirical levels. In general, demographers {Lee, 1966; Hanzel, 1967; Bogue, 1969} have tended to use aggregate census data in order to estimate the magnitude of migration flows with a secondary interest in describing the characteristics of the internal migration. Sociologists {Mangalam, 1968} have used sample surveys in major migrant destinations {large cities and metropolitan areas} to try to describe migrants' characteristics, examining how the social values and the migrants' interpersonal associations in the place of origin and destination influenced the migration decision. In the same manner, political scientists {Ilchman et al, 1975} investigated the political attitudes of migrants in the destination points. They hypothesized that since the majority of migrants become part of the urban poor, this group has a high propensity for becoming radical in its demands for an improved standard of living. In contrast, economists and re-

gional scientists (Greenwood, 1975; Shaw, 1976; Todaro, 1969; Harris-Todaro, 1970; Sjaastad, 1962; Isard, 1960) have been interested in the relation of migration to the supply of skilled and unskilled labor, the growth of industries, the occupational and employment status of the migrants, and finally the impact of migration on the regional and national development.

As mentioned, migration research has many dimensions and is so voluminous that recently there have been a growing number of survey reports on migration.⁷ However, it is not at all surprising to be confronted with a vast collection of contradictory evidence and results, all of which claim equal validity (De Jong and Gardner, 1981). A major problem in migration analysis is the lack of a sound theoretical basis upon which to frame a study. Of course, as Chang (1981) pointed out, finding a general theory of migration with universal validity and applicability is the perpetual dream of those working in the migration field. As a matter of fact, some writers have claimed to have established the "law of migration" (Ravenstein 1889; Zelinsky 1979) or the "received theory" of migration (Todaro, 1976). While many of these studies are useful and informative, we should not be misled, nor should we mislead others into thinking that general laws of migration behavior and attendant processes have

⁷ For more details see Greenwood M. "Research on Internal Migration in the United States: A Survey". He emphasizes the contribution of economists over the determinants and consequences of migration.

been established (Chang, 1981).

The major problem associated with the lack of adequate theories is the fact that it is not clear what guidelines would be involved to determine the types and causes of migration. Furthermore, it is not known what social and economic data must be collected or how such information would contribute to the better understanding of migration processes by Third World decision makers. In light of the introductory remarks, I intend in this chapter to review the general contribution of economists to the migration literature, theoretical as well as empirical, with special attention to the LDCs. To accomplish this, I intend to review the cause and consequences of migration, and evaluate the relevance of the Harris-Todaro theory and the extension of this model to LDCs.

2.1

THE THEORY OF DETERMINANTS OF MIGRATION

The systematic study of internal migration, which started almost a century ago with the work of E.G. Ravenstein (1885) in England, has produced a remarkable consensus regarding the cause and effect of migration. In general, the analytical and empirical model that determines migration shows that while general economic, social, and political conditions may explain migration as a whole, the analysis of individual cases is a complex interplay of numerous and diverse variables.

The decision to migrate may be considered a two-dimension process. The first dimension involves the decision of whether or not to relocate, while the second dimension (or phase) concerns the question of exactly where to relocate. The personal characteristics of a migrant, particularly age and education, tend to significantly influence the first phase of the migration decision. The second phase, on the other hand, tends to be a function of the labor market characteristics of an area which makes it attractive to migrants, such as higher relative (to the origin area) wage rates, lower unemployment rates, and so forth. Hence, a complete model of the migration decision should encompass both the personal characteristics of migrants and the labor market characteristics of the destination area.^a

Basically, migrants appear to move from rural and small towns to large cities. Reasons for their move range from social, environmental, cultural, and above all, economic. The question to be answered in this section is to what extent do the economic motives play a role in the decision to migrate.

A glance at previous migration studies (Sahota, 1968; De Jong, 1981) suggested that the determinant of rural migration may be explained either by a macro-model or micro-model. At the macro level, the decision to migrate has been viewed as a result of the socio-economic conditions of sending and receiving areas. Accordingly, the approach divides factors that influence the decision to migrate into those that "pushed" individuals out of the countryside and those that "pulled" them into the urban areas. In contrast, in the micro-model, the decision to migrate is not based on ag-

^a Navratil, F. J., and Doyle, J. J. "The Socio-economic Determinants of Migration and The Level of Aggregation." Southern Economic Journal, Vol. 43, 1975, P. 1547.

gregate variables, but it is purely dependent on an individual perception of net gain from the move, therefore, the individual is the one who decides when and where to migrate (Schultz, 1962; Sjaastad, 1962). In other words, a potential migrant acting within a benefit-cost framework, will presumably migrate when his expected return from his migration exceeds his opportunity cost.

2.1.1 Macro-Model: The Pushed-Pulled Hypothesis

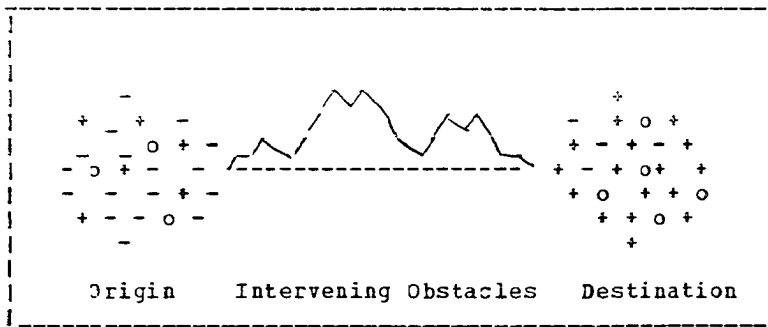
In general, several broad categories of migration studies can be identified within the macro-framework. The oldest one of these may be traced back to Ravenstein, who after an extensive inquiry on internal migration, published two papers in 1885 and 1889, in which he postulated the "Law of Migration." He believed that the migration process follows a definite law and tried to establish a general theoretical framework for migration analysis by presenting seven laws.

In spite of much criticism, the laws of migration remain the starting point for any migration research. As Lee (1966) pointed out:

In the three-quarters of a century which have passed, Ravenstein has been much quoted and occasionally challenged. But, while there have been literally thousands of migration studies in the mean time, few additional generalizations have been advanced. True, there have been studies of age and migration, sex and migration, education and migration, the labor force and migration, and so forth; but most studies which focused upon the characteristics of migrants have been conducted with little reference to the volume of migration, and few studies have considered the reasons for migration or the assimilation of the migrant at

destination.... Except for Dudley Kirk, Ravenstein seems to have been the last person to make a detailed comparison of the volume of internal migration or the characteristics of migrants within a goodly number of nations⁹

However, following the above appraisal, Lee restated Ravenstein's laws more precisely and made them more testable as models. He started by defining the factors which affect the decision to migrate. These factors, shown in Figure 2.1, are: those associated with the area of origin or destination; intervening factors between origin and destination; and personal characteristics of migrants.



Source: Lee, E. S. "Theory of Migration ", 1966 pp. 47-57.

Figure 2.1: Factors That Effect Migration In both Origin & Destination

⁹ Lee, E.S. "A theory of migration", Demography, Vol 3, 1966, pp. 48.

In the Figure 2.1 (+) signs are those factors which act to hold the potential migrant within the areas, (-) signs are those factors which tend to repel them from the present location, and (O's) are those factors to which migrants are essentially indifferent. Indeed, the pull and push factors are differently defined for every prospective migrant.

On the volume of migration, Lee claimed that:

- 1- The volume of migration within a given territory varies with the degree of diversity in that territory.
- 2- The volume of migration varies with the diversity of people.
- 3- The volume of migration is related to the difficulty of surmounting the intervening obstacles.
- 4- The volume of migration varies with fluctuations in the economy.
- 5- Unless severe checks are imposed, both volume and rate of migration tend to increase with time.
- 6- The volume and rate of migration vary with the degree of progress in a country or in an area.

In the same manner, on the stream and counterstream of migration he believed that:

- 1- Migration tends to take place largely within well defined streams.

2- For every major migration stream, a counter-stream develops.

3- The efficiency of stream and counter-stream tends to be low if origin and destination are similar.

4- The efficiency of migration streams will be high if the intervening obstacles are great.

5- The efficiency of a migration stream varies with the economic conditions, being high in prosperous times and low in times of depression.

And finally, on the characteristics of migrants, Lee recognized that:

1- Migration is selective.

2- Migrants responding primarily to plus factors at the destination tend to be positively selective.

3- Migrants responding primarily to minus factors at the origin tend to be negatively selective; or, where the minus factors are overwhelming to entire population groups, they may not be selective at all.

4- Taking all migrants together, selection tends to be bimodal.

5- The degree of positive selection increases with the difficulty of the intervening obstacles.

6- The heightened propensity to migrate at certain stages in the life cycle is important in the selection of migrants.

7- The characteristics of migrants tend to be intermediate between the characteristics of the population at origin and the population at destination.

Of course, the advantage of Lee's general theory over Ravenstein's is that he stated the hypotheses in such a manner that they are testable with the current data. In other words, Lee has helped migration researchers to shift the emphasis from a purely descriptive to a more analytical approach.

Another macro-approach explanation to the determinants of internal migration is in term of the "push" and "pull" factors. The former states that migrants are pushed away from the countryside because of unfavorable conditions prevailing in the rural areas, while the latter assumes that migrants are pulled by urban areas because they provide a better life.

Most of the studies claimed that the structure of a rural economy in LDCs is the primary reason for out-migration. In the developing countries, the rural economy is characterized by the lack of economic opportunity. Low productivity in the agricultural sector, surplus labor or disguised unemployment, and lack of savings are only some of the factors which push farmers out of their present loca-

tion. In other words, the "push" theory is backed by the fact that for most people engaged in agricultural activities income has never reached a level near equality with those in urban areas, in spite of considerable efforts (even in more developed countries) to bring this about. Furthermore, there are the irregular as well as long working hours, the relatively lower social status attached to farmers, the uncertainties of agricultural production and prices, the poor living and working conditions, dirty work in all kinds of weather, and finally, changes in agricultural technology which make employment prospects uncertain. As Bock and Roth-
eber (1979) explained, the causes of rural-urban migration are traceable to three interconnected processes:

Population growth, industrialization, and urbanization. Population growth, encouraged by the declining mortality rate resulting from improved health services, creates pressures on the land and leads to rural unemployment. Industrialization contributes to the situation by introducing agricultural mechanization, which reduces even further the labor force required for food production. The interaction of this process produces the well-known "push factors", which one part of the migration equations. But industrialization also creates improved transportation and communication networks which facilitates the mobility of people from one part of the country to the other, and especially to the major urban centers. Finally, industrialization, almost by definition, contributes to the uneven economic development of the country by concentrating employment opportunity and higher standards of living in certain area, usually in cities. The third process, urbanization, is, of course, intimately related to industrialization and population growth, but makes its own contribution to migration as well. Not only are there industrial jobs in cities, but, in addition there are usually better educational opportunities, social services, and perhaps, above all, relatives who have praised cities life and might be willing to assist "coun-

try cousins." Thus, industrialization and urbanization interact to produce the second part of the equation ---"full factors." The combination of such push and pull factors has produced the rural-to-urban migration flows that have characterized both developed and developing countries.¹⁰

The basic question is: which forces have contributed most to the process of internal migration? Many of those who favor the "Pull" theory argue that the existing conditions in rural areas are less important than the attraction offered by the cities; for example, cities usually provide better education and training, better opportunity for finding jobs, better medical facilities, and the kind of individual freedom that seems to be a part of urban life. Furthermore, in the cities, there is always the chance of "making it big." Only a few actually do, but for many it is a hope; one which they would not have in the rural area. Therefore, the rural population migrates regardless of satisfactory economic rewards of rural economy.

The third stream of literature regarding internal migration in a macro-framework is associated with the Harvard School and particularly with Simon Kuznets.¹¹ Accordingly, internal migration and hence regional population redistribution are important ways in which persons respond to changing

¹⁰ Bock, P. G., and I. F. Rothenberg, Internal Migration Policy and New Towns: The Mexican Experience, Chicago: University of Illinois Press, 1979.

¹¹ Kuznets, S., A. R. Miller, and R. A. Easterlin, Population Redistribution and Economic Growth, United States, 1870-1950, Vol. III. Philadelphia: American Philosophical Society, 1966.

economic opportunities that emerge in the course of economic growth and development (Kuznets, 1966). Furthermore, internal migration is considered as a factor-market adjustment mechanism that acts to reduce geographic wage differentials. Consequently, the higher the wage-rate level in industrial cities, the greater the net migration to those areas (ceteris paribus).

To demonstrate the hypothesis, classical economists usually use a two-factor, two-region economy in which the relative endowments of the two factors initially differ between regions. If labor is a mobile factor and responds to wage differential, labor moves from the lower wage region to the higher region. Consequently, out-migration puts upward pressure in the lower region and down pressure in the higher region (Greenwood, 1975). This process will continue until wage equalization prevails in the two regions. However, the impact of labor mobility on employment is dependent on the elasticity of demand and supply of labor. It may increase, decrease, or remain unchanged.

Following the same line of argument, Kuznets related internal migration and economic development in terms of the selection of migrants. He pointed out that migrants come from select groups. They are individuals who are more dynamic, risk taking, and also have a better ability to perceive the differences in economic opportunities such as wage rate, education and training, and quality of life in alternative

locations. Therefore, they are stimulated by economic motives to migrate to the center of activities and seize better economic opportunities, and this, by itself, promotes growth, and more growth induces further migration of select individuals.

A careful look at these three alternative approaches shows that they differ only in emphasis. Raveustein and Lee presented a general theory in which, among other factors, they considered the characteristics of migration, origin, and destination as well as the existence of differentials in origin and destination. Similarly, Kuznets emphasizes that although differentials do exist in the course of economic development, individuals will respond differently to these differentials.

2.1.2 Land Reform and Its Impact on Internal Migration

One of the main characteristics of the economies of the majority of LDCs is that they are still heavily dependent on the agrarian sector. Unfortunately, this sector of economy suffers from a number of problems: namely, low productivity, size-tenure, under-utilization of human resources, the relatively poor living and working conditions, and rapid population growth. Consequently, many of these countries are experiencing difficulty in providing even enough food to maintain the inadequate nutrition level which currently exists for the rapidly growing population.

To improve the situation, a number of types of rural development have been suggested both by economists, as well as by the policymakers in these nations. But it is agreed by many development economists and policy makers of the Third World that the success of any rural development program depends on the size-tenure structure of the rural economy. Consequently, many of them are in favor of land reform as the fundamental step toward raising the level of income and productivity of farmers.

The main objectives of land reform, which involve taking land from the large land-owners and giving it either to the small farmers or to the landless workers are: (a) distributing income more equitably, (b) raising the level of productivity, (c) generating more employment, and (d) increasing the marketable surplus. However, until recently, few have discussed the consequences of land reform on wage rate and internal migration. According to Berry (1971) the impact of a well-intentioned land reform on wage rate and migration heavily depends on whether the landless farmers which previously were working on large farms receive land or are hired by the small land owners after the agrarian reform. In other words, "the impact of the land reform on the wage rate will depend on whether the sum of labor hired by the new operator plus the amount that his family withdraws from the labor market is greater or less than the quantity previously hired on the large farms, all on a per-acre ba-

sis."¹²

To demonstrate this possibility, Berry (1971) assumed an agrarian economy where there are three groups: large land owners, small landowners, and landless wage-laborers. There are also two types of farms, (a) large farms, where landless wage-labor and some labor from smaller farms is used, and (b) small farms, where cultivation is based on family labor. If the land goes to landless farmers (which is rare in most land reform programs) it will increase employment, and it may have a negative impact on out-migration. But if land is received by small farmers, it is likely that the farmers will increase family labor hours and reduce the demand for hired workers, per unit of land, as compared with the large-scale farms.¹³ As the demand curve for labor shifts to the left, the wage rate will fall and will reduce the income of land-less workers. The greater the land distribution in this manner, the greater the decrease in the income of the wage-laborer, and consequently the greater pressure for them to leave the countryside searching for a job in urban areas.

The effects of transferring land from large landowners to small land owners on the marginal productivity (MP) and the labor supply curve (SS) are shown in Figure 2.2

¹² Berry, R. A. "Land Reform and the Agricultural Income Distribution," Pakistan Development Review, Vol. XI, 1971, pp. 30-44.

¹³ In many LDCs women and children who do work on their farm would often not work elsewhere for institutional reasons. Therefore, we expected the new landowners would use more family work rather than hiring wage-laborer.

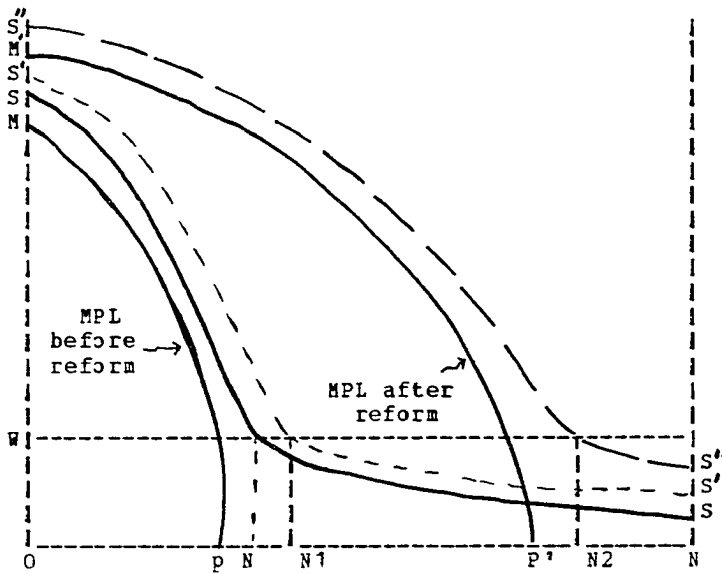


Figure 2.2: the Impact of Land Redistribution Among Small Land-Owners

Where $\{ON\}$ is total family labor available to a small farm, $\{M^*P^*\}$ is the marginal productivity of small farms after land redistribution, $\{S'S'\}$ is the supply price of labor curve before land distribution, and $\{S''S''\}$ is the supply price of labor curve after land distribution.¹⁴ If the wage rate is set at $\{OW\}$, before reform the small farm will supply $\{NN_1\}$ to the market. As the result of transference of land to small land-owners the small farm will only supply

¹⁴ $\{SS\}$ curve is less than $\{S'S'\}$ because people prefer to work in their own land rather than work for someone else. There is also some cost such as the cost of transportation associated with working outside the farm.

NN1-NN2 = N1N2 amount of labor to the wage market. In sum, the net impact in the demand for farm workers can be measured by:

$$D = TL_l - FL_s + FL_r - TL_l$$

Where:

TL_s : total labor applied on small farms after reform.

FL_r : family labor removed from wage market.

FL_s : family labor applied on small farms after reform.

TL_l : labor applied on large farms.

If (DL) is positive land reform may induce landless workers to stay in rural areas. But if (DL) is negative the wage rate will decline and force many landless workers to move to cities searching for job.

2.1.3 Price Uncertainty and Internal Migration

One of the characteristics of many LDCs is that they mainly produce and export primary products. Unfortunately, the price of primary products in an international market fluctuates widely, while the price of manufactured goods is relatively stable. Consequently, the producers of primary goods are uncertain about the price of their products. Typically, price uncertainty in one sector influences resource allocation, national income, and income distribution in all economic sectors.

Batra (1975) presented a two-sector economy in which one sector faced price uncertainty. The underlying assumptions were:

- 1- Production functions are homogeneous in both sectors.
- 2- The producers are risk-aversers and operate under perfect competition.
- 3- Factors of production are mobile in the long-run.
- 4- Price uncertainty only exists in the primary sector.

Under these assumptions, Batra concluded that the introduction of price uncertainty will cause resources to move away from the industry facing price uncertainty to industries operating under certainty. Furthermore, an increase in uncertainty will decrease the reward of the factor used intensively by the industry facing uncertainty and increase the reward of the factors used intensively by the other industry. Since the production of primary goods is labor intensive, the wage differential will increase in the two sectors as well as increase out-migration in the traditional sector.

2.1.4 Non-economic Factors and Decision to Migrate

Numerous studies show that factors motivating migration are complex and intertwined. Migrants respond to non-economic factors as well as economic factors, and they move for a combination of reasons. The important non-economic factors which significantly influence the migration decision are:

1-"Education": One of the most important factors in the determination migration level. Most migrants are highly educated in their area of origin but less educated than urban residents. Normally, the skills acquired by a potential migrant can not be practiced in the countryside, but they can be applied in urban areas with greater rewards. As a result, the more educated who live in rural areas sooner or later, will realize the fact that their best opportunities for a better life (in term of money) are in the urban areas. Furthermore, villages and provincial towns do not possess facilities for advanced education or specialized training, thus those who desire schooling beyond fifth grade must reside, at least temporarily, in urban areas. Many who do so never again return to their home town.

2- "Stock of Migration": The presence of relatives and friends influence the patterns of migration and location. Generally, new migrants will be attracted to those destinations inhabited by earlier migrants from the same origin. Friends and relatives provide not only companionship and temporary work but also reduce the cost of moving. Friends also provide information, which is a valuable service in countries where job information is not provided by media and goes largely through informal channels (Tap, 1975).

3- "Distance": As Lee (1966) pointed out, distance is a barrier to migratory movements and it would be expected that

the probability of migration between two places decreases as distance increases. Olsson (1965) shows that migrants from small places move shorter distances than migrants from large places. The deterrent effect of distance is not only due to the transportation cost, but it is mainly due to the psychic costs of migration (Yap, 1975)

4- "Personal Characteristics": Age and gender play an important role in the decision to migrate. Many studies confirm that males have greater propensity to migrate than females. Migrants are disproportionately young adults, ranging from late teens, to early thirties. As the young are close to the beginning of their working life, they are envisioned as being more readily disposed to taking advantage of new opportunities involving migration than those who are older (Shaw, 1975).

2.1.5 Micro-Model: An Economic Maximization Theory

Recently, the center of attention has shifted from the macro-approach to a more complex micro-oriented approach associated with the Chicago School and particularly with the work of Schultz (1962) and Sjaastad (1962). They both developed a theory of migration in which the decision to migrate is considered to be an investment in human capital. The strength of this approach over the previous ones is that it puts a significant attachment to individual decision-making rather than place of origin or destination.

As Sjaastad indicated, the unit of observation is an individual migrant who makes his or her decision to move based on cost benefit analysis. The underlying assumption is that the man is economically rational, an economic maximizer, and that he will perceive and evaluate his move on this basis. It is also implicitly assumed that migrants will be more oriented toward material goals than non-migrants, and less oriented toward social love-and-affection goals or other rewards coming from a traditional life style in the countryside. In other words, economic incentives are considered to play an important role as a determinant of the migration decision. Furthermore, the movement of migrants is a voluntary matter and the decision-making process is the mechanism by which the move itself is made in a system of known alternative destinations.

The implications of the above assumptions are as follows: Prospective migrants compare and evaluate alternative places, including present residence, and choose the place which maximizes his utilities. If their present residence maximizes their satisfaction, they will not move, but if the most attractive location differs from the one in which they reside, they will move to improve their welfare. This implies that to maximize satisfaction, one must calculate the present or probably future monetary and non-monetary costs, as well as the present value of benefits which may accrue over a specific period of time at present and alternative

locations. Labor will move if the net benefits exceed the cost of moving.

Since any increase in income may be expected to accrue over a considerable period of time, and since there are costs, monetary and nonmonetary, which must be incurred prior to receiving any income, migration is considered as an investment. Since such an investment is embodied in the human being, it is called an investment in human capital. On this basis, we may assume that this investment may increase the productivity of human resources. In summary, the investment in the human capital approach speculates that people move because the present value or current discounted value of the benefits of living elsewhere exceed those of remaining where they are by a margin greater than the cost of moving. Setting matters out more formally, we can calculate the present value of remaining at origin (PVi) by:

$$PVi = \int_0^{\infty} e^{-rt} Y_i(t) dt \quad (2.2.1)$$

where r is a rate discount, t is time in the future, and $Y_i(t)$ is a vector of monetized valuations of factors at origin i , at time t . In the same manner, the present value of benefits at j , at time t , may be calculated by:

$$PVj = \int_0^{\infty} e^{-rt} Y_j(t) dt \quad (2.1.2)$$

Migration will place if:

$$(PVj - PVi) > C_{ij} \quad (2.1.3)$$

where C_{ij} is the cost of moving.

To predict out-migration, one may add to equation (2.2.3) all decision makers and divide by population at i (P_i). If we assume that the aggregate-out-migration is a function of average value, then the net-migration rate (M_{ij}) is:

$$M_{ij}/P_i = f\{PV_j - PV_i - C_{ij}\}. \quad (2.1.4)$$

Cebula (1979) provided a more comprehensive study of the micro approach in the decision to migrate. In contrast to a previous study, he believed that the investment in migration is not only dependent on the current wage differential, but it is also dependent upon three general sets of forces, namely:

- 1- Expected real income differentials.
- 2- Expected amenity differentials.
- 3- Expected differential benefits and costs from state and local government policies.

He defined the discounted present value of the expected nominal income differential between region (A) and (B) for individual i as follows:

$$D_{ij}^{ab} = \sum_{t=1}^{n_i} (Y_{it}^b - Y_{it}^a) (1-r_i)^{-t} \quad (2.1.5)$$

where (Y_{it}) is money income, (r) is the discount rate, and (t) is time. In the same manner the discounted present value of the expected living-cost differential in both regions is:

$$D_{ic}^{ab} = \sum_{t=1}^{ni} (C_{it}^b - C_{it}^a) (1+ri)^{-t} \quad (2.1.6)$$

If we add the income forgone while the individual i 's, is in moving and we add moving costs to equations (2.2.5) and (2.2.6), we will obtain the discounted present value of the expected real income differential by:

$$D_{ir}^{ab} = \sum_{t=1}^{ni} \{ (Y_{it}^b / C_{it}^b) - (Y_{it}^a / C_{it}^a) \} (1+ri)^{-t} - \frac{T_i}{i} - \frac{E_i^{ab}}{i} \quad (2.1.7)$$

where (\bar{T}_i) is individual i 's, expected foregone income while in transit and (E_i) is pecuniary and nonpecuniary moving costs.

The expected differential amenities such as air pollution, climatological conditions, congestion, the availability of recreation facilities, education, health services, and so forth, is evaluated by:

$$D_{if}^{ab} = \sum_{t=1}^{ni} (F_{it}^b - F_{it}^a) (1+ri)^{-t} \quad (2.1.8)$$

where (F_{it}) is the expected value of amenities in period (t) .

The discounted present value of the differential expected real net benefit from government policies is:

$$D_{ig}^{ab} = \sum_{t=1}^{ni} \{ (R_{it} + S_{it}^b) - X_{it}^b - (R_{it} + S_{it}^a) + X_{it}^a \} (1+ri)^{-t} \quad (2.1.9)$$

where (X_{it}) is the real values of the expected state and local government tax liabilities; (R_{it}) is the real values of the publicly provided educational facilities; (S_{it}) is the real values of all other publicly provided government goods and services.

Finally, the contribution of the above factors which may influence the individual's location decision can be summarized by:

$$D = \sum_{i=1}^{n_i} \left\{ (Y_{it}^b / C_{it}^b - Y_{it}^a / C_{it}^a) + (F_{it}^b - F_{it}^a) + (R_{it}^b + S_{it}^b - X_{it}^b - R_{it}^a - S_{it}^a + X_{it}^a) \right\} \\ (1 + r_i)^{-t} - T_i - E_i^{ab} \quad (2.1.10)$$

The shortcomings of the above approach are many. First, they are not relevant to the economy of the Third World. In these countries, the rapid rural-urban migration is accompanied by a relative high urban unemployment. Second, in the study of internal migration, one must study the causes and consequences of migration in a dynamic framework. Therefore, in the following section we will present those theoretical approaches which to some degree take into account some of the characteristics of developing countries as well as the possible impact of labor mobility on migrants in sending and receiving areas.

2.2 REVIEW OF IMPACT OF INTERNAL MIGRATION

The importance of internal migration in the process of economic development has long been recognized as a possible mechanism to achieve growth, efficient allocation of resources, and lower income inequality. Unfortunately, an extensive exploration of the literature reveals that most studies focused explicitly on the determinants of migration and little has been said about its consequences. As Sjaastad [1962] pointed out.

Migration research has dealt mainly with the factors which affect migration and how strongly they have affected it, but little has been done to determine the influences of migration as an equilibrating mechanism in a changing economy. The movements of migrants clearly are in the appropriate direction, but we do not know whether the numbers are sufficient to be efficient in correcting income disparities as they emerge. There is a strong presumption that they are not.¹⁵

The reasons for the lack of comprehensive study in the impact of migration are many. As Greenwood stated:

Few studies have attempted to estimate the impact that migration has had on sending and receiving regions. This failure to carefully investigate the consequences of migration probably results from some combination of two principle factors. First, a reasonably 'complete' model of migration would be extremely complex, since migration influences, and is in turn influenced by, many social and demographic factors, as well as more purely economic variables. Second, data relevant to such comprehensive studies of migration is limited.¹⁶

¹⁵ Sjaastad, L. A. "The Costs and Returns of Human Migration," Journal of Political Science, Vol. 70, 1962, PP. 80-93.

¹⁶ Greenwood, M. J. "A Simultaneous-Equations Model of Urban Growth and Migration," Journal of American Statistical Association, Vol. 70, 1975, PP. 797-810.

In sum, there is no clear distinction between causes and consequences of migration. Or in fact, as Muth (1971) stated, it is a "chicken egg" problem and we can not easily establish a causal relationship mainly between economic factors which affect migration and those factors which are affected by migration. Therefore, a study of internal migration would be complete only if it takes into account the causes and consequences of migration in a dynamic framework. For example, while internal migration has important influences on demographic, and social, as well as purely economic variables in origin and destination, these variables themselves will affect migration in the later period. In other words, there is a significant interaction between migration, employment, income, unemployment, government expenditures, agricultural output, growth, and environmental pollution.

Aside from the above problems, the impact of internal migration on the growth of rural and urban areas has been the subject of great controversy. An extensive review of migration literature reveals the fact that it is very hard to evaluate whether rural-urban migration is in the best interest of the developing economy. According to the neoclassical economic theory, interregional labor and capital mobility foster growth, efficient resource utilization, and benefit both sending and receiving areas (Lewis, 1955; Kuznets 1966). Hart (1975) presented a theoretical model in two parts, in which he formulated the relationship between

migration and economic growth in a closed economy, both in a static and dynamic framework. In a static framework (part I), Hart showed that migration enhanced efficiency of an economy because the equilibrium real wage rate is less and the output is more than the correspondingly weighed averages of wages and outputs of premigration states.

In contrast, there are models that indicate that internal migration benefits only urban areas, and it is not clear whether internal migration is beneficial to economic development. Myrdal (1957) believed that internal migration has depleted the potential development resources (the young in the prime labor force age group, best educated, and possibly the most ambitious components of the origin population) needed in the process of rural development. Therefore, internal migration benefited the more developed areas and deteriorated the future development prospect of depressed rural areas.

A review of the literature indicates that migration tends to increase the costs of urbanization. In general, local governments in urban areas tend to have higher per capita expenditures than local governments in rural areas.

Urbanization is decisive because it is so expensive. The difference between the costs of urban development and rural development does not turn on comparing the capital required for factories and that required for farms. Each of these is a small part of total investment, and the difference per head is not always in favor of industry. The difference turns on infrastructure. Urban housing is

much more expensive than rural housing.¹⁷

In fact, the bulk of public expenditure in most developing countries does not go toward the provision of public services for the poor but toward the improvement of urban infrastructure which makes the cities, particularly the capital, a showcase of modernization with super highways and modern office buildings (Safa, 1975). The major concern here is that rapid urbanization inflicts its costs unevenly across income groups. In fact, in some cases rural households are made a substantial share of the public costs of urbanization. Rapid urbanization still creates a number of problems, especially shortages in housing, health services, and water supply, as well as environmental pollution in the metropolitan areas. For these reasons, many believe that rural-urban migration and rapid urbanization may hinder economic growth and deteriorate the rural economy.

2.2.1 Internal Migration in LDCs: Todaro Model and The Recieved Theory of Migration

The phenomenon of rapid rural-urban migration in LDCs has recently attracted the attention of economists engaged in analytical investigation of stylized models of economic growth and development. One may argue that the decision to move to urban areas where there is unemployment is not a rational one. However, Todaro (1969), Harris-Todaro, and Toda-

¹⁷ Lewis, A. W. "The Evolution of the International Economic Order," Discussion Paper no. 74, Princeton, N. J.: Princeton University, 1977.

ro (1976) have demonstrated that such migration is quite rational. In contrast to previous economic literature which assumes no unemployment in urban areas, Harris and Todaro incorporated urban unemployment as a key variable in the explanation of internal migration.

Among many studies in internal migration, Todaro (1969) is the first economist who on the one hand considers some of the characteristics of LDCs and on the other hand shows the impact of migration in sending and receiving areas of LDCs. The basic assumption underlying Todaro's model is that internal migration is a function of both the urban real income differential and the probability of obtaining a modern job. Furthermore, he believed that the process of migration in LDCs is not a one stage phenomenon (that is, a worker migrates from a low productivity rural occupation directly to a higher productivity urban industrial job), but it is a two stage phenomenon. The first stage consists of the physical move to an urban area and spending a certain period of time in the "urban traditional" sector; the second stage begins when an individual migrant obtains more permanent employment in the modern industrial sector of the urban economy.

To analyze the impact of urban unemployment on employment, Todaro proposed the following model with several behavioral assumptions such as:

- 1- The percentage change in the urban labor force S attributable to migration is a function of the differential between

the discounted present value of the expected urban income $V_u(t)$ and rural $V_r(t)$ over an unskilled workers planning horizon (t) .

$$\frac{\bar{S}}{S}(t) = F \frac{V_u(t) - V_r(t)}{V_r(t)}, \quad F' > 0 \quad (2.2.1)$$

2- The planning horizon and the fixed cost of migration for each worker is identical.

3- The labor discount factor r is constant and identical for all potential migrants.

Given the above assumptions, the labor supply is formulated as the following:

$$V_r(0) = \int_{t=0}^n Y_r(t) e^{-rt} dt. \quad (2.2.2)$$

where $Y_r(t)$ is the net expected rural real income in period t and,

$$V_u(0) = \int_{t=0}^n P(t) Y_u(t) e^{-rt} dt - C(0). \quad (2.2.3)$$

where $P(t)$ is the probability of obtaining a modern job and $C(0)$ is the initial migration cost.

The introduction of $P(t)$ implies that we may have a situation where:

$$Y_u(t) - Y_r(t) > 0; \quad \text{but} \quad P(t) Y_u(t) - Y_r(t) < 0,$$

The nature of $p(t)$ is directly related to the probability of having selected from the pool of urban traditional workers during period t if the worker is a member of that pool in the same period. In mathematical terms:

$P(0) = \pi(0)$, and $P(1) = \pi(0) + (1 - \pi(0))\pi(1)$, and finally:

$$P(t) = \pi(0) + \sum_{i=1}^t \pi(i) \prod_{j=0}^{i-1} (1 - \pi(j)) \quad (2.2.4)$$

Where:

$$\prod_{i=1}^n a_i = a_1 \cdot a_2 \cdot a_3 \cdot \dots \cdot a_n$$

To define $n(t)$ in some meaningful economic sense, Todaro assumed that the total modern sector employment N in period t equal to:

$$N(t) = N_0 e^{(\lambda - p)t} \quad (2.2.5)$$

where λ is the rate of growth of industrial output, p is the rate of growth of labor productivity in the modern sector. If we define:

$y = (\lambda - p)$ as the rate of job creation, then we have,

$$n(t) = \frac{y N(t)}{S(t) - N(t)} \quad (2.2.6)$$

Accordingly, the rate of change in the labor supply in LDCs is:

$$\frac{\dot{S}}{S}(t) = b + \pi(t) F \frac{Y_u(t) - Y_r(t)}{Y_r(t)}, \text{ or}$$

$$\frac{\dot{S}}{S}(t) = b + \pi(t) F(a(t)), \quad dF/da > 0. \quad (2.2.7)$$

where $a(t)$ is the percentage of urban-rural real income differential, b is the natural rate of increase in the urban labor force.

If we define the proportion of the labor force employed in the modern sector at time t as $E(t)$, where

$$E(t) = \frac{N(t)}{S(t)}. \quad (2.2.8)$$

then the equilibrium condition E for this model would be:

$$\frac{\dot{E}}{E}(t) = \frac{\dot{N}}{N}(t) - \frac{\dot{S}}{S}(t) = 0, \text{ or}$$

$$\frac{\dot{E}}{E}(t) = y - b - \frac{y F(a) N(t)}{S(t) - N(t)} = 0 \quad (2.2.9)$$

By rearranging equation (2.2.3) through (2.2.9), the equilibrium condition can be expressed as follows:

$$E^* = \frac{y - b}{y F(a) + y - b}, \text{ and} \quad (2.2.10)$$

The equilibrium proportionate size of the traditional sector is:

$$T^* = 1 - \frac{y - b}{y F(a) + y - b}. \quad (2.2.11)$$

solving for (dy):

$$dy = \frac{-y^2 dF(a)}{y dF(a) - yb - F(a)b - b dF(a)} \quad (2.2.12).$$

To demonstrate the implication of equations (2.2.10) and (2.2.12) we use Todaro's example. Equation (2.2.10) implies that if the growth rate of modern sector employment ($y=.04$), the natural rate of urban labor force ($b=.02$), the rural-urban real wage differential ($a=1.0$), and $F(a)=a$, then in equilibrium, modern sector employment would absorb only one-third of the urban labor force. In terms of equation (2.2.12), if the earning differential increases by 20 percent ($dF(a)$), the rate of modern sector job creation must grow by an additional 1.9 percent to prevent the equilibrium rate from falling below its original.

In summation, the policy implication emerging from Todaro's model is that as long as the urban rural wage differential continues to rise through government subsidies, the rate of migration to urban areas will exceed the rate of job creation in the modern sector. In other words, an increase in the rate of job creation would lead to an increase in the urban unemployment (Todaro paradox). An alternative solution, as Todaro suggested, is to make rural life more attractive.

Zarembka (1970) was among the first economists who criticized the above model in two respects. First Todaro did not assume that migration level depended on rural population, and second Zarembka believed that he found an error in equation (7) and therefore, he replaced it with the following equation:

$$\frac{\dot{S}}{S}(t) = b + \pi(t) F \frac{Y_u(t) - Y_r(t)}{Y_r(t)} \quad (2.2.13)$$

With this correction, the new rate of change in the urban labor force is:

$$\frac{\dot{S}}{S}(t) = b + \frac{A}{S}(t) \frac{\pi(t) Y_u(t) - Y_r(t)}{Y_r(t)}, \quad (2.2.14)$$

if we assume $F(X) = RX$ where R is the percent of rural population that migrates to urban areas and X is constant, the equilibrium condition for the model is:

$$\begin{aligned}
 * \\
 E &= \frac{Y - B + R \frac{A(t)}{S(t)}}{Y - b + \{1 + ay\} R \frac{A(t)}{S(t)}} \quad (2.2.15)
 \end{aligned}$$

Where a , the ratio of urban to rural real income. Equation (2.2.15) simply shows that an improvement in employment opportunity in the urban sector will increase the unemployment rate through the resultant initial increase in the probability of finding employment and thus in migration (Zarembka, 1970). This conclusion is the opposite of Todaro's model (see equation 2.2.10).

A more rigorous two-sector model was presented by Harris-Todaro (henceforth referred to as HT) in 1970. They believed that the conventional economic models are not able to provide rational behavioral explanations for rapid in-migration and high unemployment in urban areas of LDCs. The model they employed is a two-sector closed economy with urban unemployment and wage rigidity. The underlying assumptions of this model are as follows:

- 1- Rural-urban migration depends on expected urban real income.
- 2- Both capital and labor are perfectly immobile. Capital and land are assumed fixed. Therefore, the production functions essentially have labor as the only input to be determined in each sector.
- 3- The expected urban wage is equal to a fixed minimum wage.

4- A periodic random job selection process exists whenever the number of available jobs is exceeded by the number of job seekers.

5- Perfect competitive behavior on the part of the producer in both sectors.

The central problem in the HT-model, using the neo-classical production function is to determine the allocation of labor between two-sectors. The essential elements of this model are:

$$X_a = q(N_a, \bar{L}, \bar{K}_a) \text{ or } q(N_a) \text{ where } q' > 0, q'' < 0 \quad (2.2.16)$$

$X_m = f(N_m, \bar{K}_m) \text{ or } f(N_m) \text{ where } f' > 0, f'' < 0 \quad (2.2.17)$
 where X_a and X_m are the output level of agriculture and manufacture respectively; N_a and N_m are the input labor in two-sector; K is capital, and L is land. The relative price of X_m in terms of X_a is determined by:

$$P = p(X_m/X_a), \quad p' > 0 \quad (2.2.18)$$

Where P = the price of agriculture in terms of manufactured goods. The wage rates in both sectors are:

$$w_a = P \cdot q' \quad \text{and} \quad w_m = f' \geq \bar{w}_m \quad (2.2.19)$$

where \bar{w}_m represents minimum wage.

The urban expected wage is:

$$\frac{e}{w} = \frac{w_m N_m}{N_u}, \quad \frac{N_m}{N_u} \leq 1. \quad (2.2.20)$$

The labor endowment \bar{N} is allocated between the two-sector by:

$$N_a + N_u = \bar{N}_r + \bar{N}_u = \bar{N} \quad (2.2.21)$$

The equilibrium condition will prevail at the point where the expected urban wage is equal to the rural wage rate:

$$w_a = \frac{e}{w}. \quad (2.2.22)$$

The migration is defined as a positive function of the expected wage differential:

$$N_u = Y \left(\frac{\bar{w}_m \cdot N_m}{N_u} - P \cdot q' \right) \text{ where } Y' > 0 \text{ and } Y(0) = 0 \quad (2.2.23)$$

where N_u is the rate of growth of the urban labor force with respect to time. If we rearrange equation (2.2.19) to (2.2.22), then equation (2.2.8) becomes:

$$0 = P \left(\bar{x}_m / \bar{x}_a \right) q' - \frac{f' N_m}{\bar{N} - N_a} = 0. \quad (2.2.24)$$

Solving the implicit equation 0, we can show the level of input and output as well as the equilibrium combination of agricultural and manufacturing employment which is unique for any given minimum wage. The combinations of labor in the two sectors are shown in Figure 2.3,.

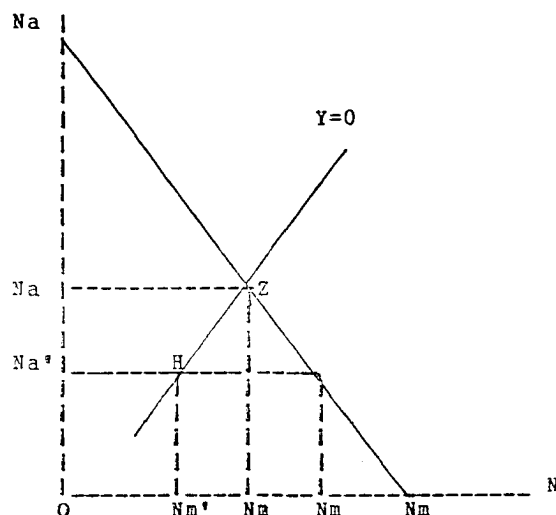


Figure 2.3: Allocation of Labor Force in the Two Sectors

Source: Harris, G. T. and M. P. Todaro, 1970, p.140.

Point Z represents the equilibrium full-employment when minimum wage is equal to the market-clearing wage rate. When minimum wage is set above the market-wage rate, the equilibrium employment point will be inside the triangle $(Na\ Nm\ O)$ like point H. At this point Nm' and Na' are hired by two

sectors and $N_m' - N_m$ is the urban unemployment. Similarly, the impact of a minimum wage on the production level is shown in Figure 2.4.,.

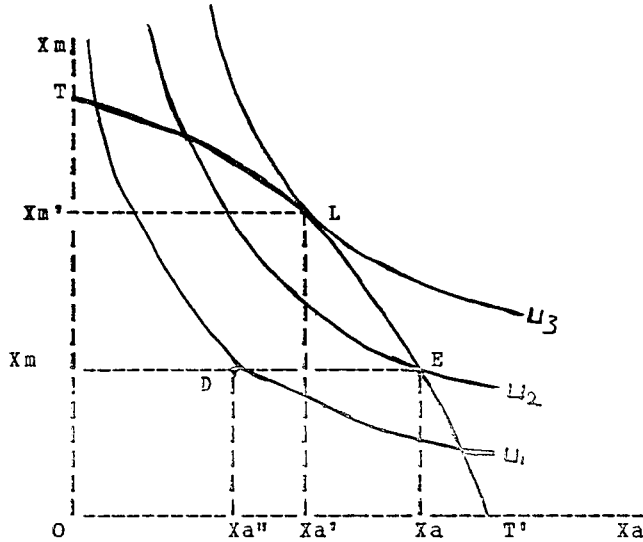


Figure 2.4: Combination of Output in the Two Sectors

Source: Harris, G. T. and M. P. Todaro, 1970, P.140.

where TT' is the production possibility curve.

Given the minimum wage and without internal migration, the economy will settle at point E, where X_m and X_a will be produced by the two sectors. However, due to internal migration the economy will settle at point D. At this point, the output of the agricultural sector will fall to X_a'' and the social welfare will decrease from U_2 to U_1 .

Harris and Todaro concluded that implementing wage subsidy (shadow-wage) or public-sector hiring will increase social welfare temporarily to U3. However, equilibrium point L is unstable so long as the wage actually received by workers exceeds agricultural earnings. As a result of the migration to urban centers, urban unemployment will increase. The new point of equilibrium is less than full-employment L.

In sum, the essence of the HT-model is:

- 1- The two sectors are related through labor migration.
- 2- Wage rate has a dual function. It determines the level of employment in the modern sector as well as allocation of labor between the agricultural and modern sectors.
- 3- If one additional job is created in the modern sector, it will induce migration by more than one.
- 4- The opportunity cost of industrial workers is greater than agricultural workers. This implies that an increased income in the modern sector will increase migration and reduce the agricultural output. An increase in agricultural output will induce reverse migration without reducing industrial output.

The policy implications of the HT-model are:

- 1- Wage subsidy or a migration-restriction policy lead to a welfare improvement.
- 2- A single policy instrument can not bring full-employment.

3- To achieve full-employment, one must use a combination of two policy instruments. As Figure 2.4 shows, subsidies must be used in the modern sector to the extent that the value of the marginal product of labor becomes equal in both sectors (point L), and the second policy must be the restriction of migration flow to prevent urban unemployment.

4- The fiscal requirement of subsidy suggests that altering the minimum wage may prevent the problems of taxation.

2.2.2 Extension and Modification of Received Theory of Migration

The publication of the HT-model or received theory of migration generated a vast literature in the migration field (Johnson (1971); Stiglitz (1974); Bhagwati and Surinivasa (1974); Fields (1975); Collier (1978); Bhatia (1978); and so forth). Each of these studies intended to extend, modify, or criticize the structure and the results of Todaro and HT-models. For example, there is a sharp difference between the model presented by Todaro and the HT-model.

Todaro, in his original paper concluded that an increase in the rate of job creation would result in an increase in urban unemployment. While in the HT-model, they concluded that urban job creation would reduce the urban unemployment rate and increase real income. Todaro (1976) attempted to clear the above differences. He pointed out that:

Since migrants are assumed to base their migration decision on the prevailing urban unemployment rate in the preceeding period, an autonomous increase

in the rate of urban job creation ... has the immediate, ex ante effect of increasing the probability of a migrant successfully finding a modern sector job by the same percentage rate as the rate of increase in job creation. The cumulative induced migration that results will affect the urban unemployment rate and thus exert a negative feedback on ex post urban job probabilities. Whether the net effect will be a rise or a fall in urban unemployment rates depends on the magnitude of migrants' responses to higher perceived job probabilities, that is, "elasticity" of induced migration.¹⁸

Of the several modifications of the basic Todaro model that have been published so far, the following are noteworthy. Blomqvist (1978) attempted to find the underlying assumptions in which Todaro's conclusion is different from Harris-Todaro (1970). He points out that the difference is not due to short-run or long-run analysis, but it is because of incorporation of two different views regarding the interaction between migration and the urban labor market. He suggested a single model which is the synthesis of the two models.

Bhagwati and Sriviansan (1974) demonstrated that the second-best solution in the HT-analysis, requiring control of migration plus an urban wage subsidy to obtain the optimum production, is not necessary since a first-best solution can be achieved by means of a variety of alternative tax or subsidy schemes. Fields (1975) extended the HT-model by including the following four assumptions:

¹⁸ Todaro, M. p. "Urban Job Expansion, Induced Migration and Rising Unemployment, Journal of Development Economics. Vol. 3, 1976, pp. 215.

1- The probability of obtaining an urban job is not limited to urban labor. Once an urban job becomes available, urban residents have a better chance than rural workers to be hired.

2- There is a high probability of an educated person being able to obtain a job in the modern sector.

3- There is a possibility of labor turnover.

4- The economy consists of three sectors: agricultural, murky, and modern.

In this three sector economy, workers chose among available labor market alternatives based on the present discounted value of expected future income V_i . This can be presented by:

$$V_i = \{ (W_u(t) E_{ui}(t) + W_m(t) E_{mi}(t) + W_a(t) E_{ai}(t)) \} / \{ 1 / (1+r)^t \}$$

where E_i is the probability of being employed in different sectors. In the light of the above analysis, he suggested several policies to tackle problems of unemployment, including the setting up of an urban/rural job center to reduce the cost of searching for a job. He concluded that the level of unemployment predicted by this model is less than what the HT-model had predicted.

Corden and Findlay (1975) presented the HT-model with some modification geometrically. For this purpose, they in-

troduced in the HT-model capital mobility and economic expansion. The effect of capital mobility depends on manufacturing elasticity. In general, the model predicts that in the presence of minimum wage, capital mobility raises manufacturing output and lowers agricultural output. The impact of change in the supply of labor and capital corresponds to the Rybczynski theorem, by which an increase in total capital (labor) while labor (capital) supply is unchanged increases the manufacturing (agricultural) output. Finally, a Hicks-neutral technical progress in the modern sector increases both output and employment, but increases urban unemployment. Similarly, technical progress in the agricultural sector increases both output and employment but reduces urban unemployment.

2.2.3 Surplus Labor and Internal Migration

Until Bhatia (1979), the HT-analysis and its extension had ruled out the possibility of surplus labor. For example, Todaro implicitly denied the possibility of surplus labor by suggesting that migration will reduce the agricultural output (see figure 4). Bhatia extended the HT-model by including surplus labor and flexible work-hours.¹⁹ The Bhatia's

¹⁹ The concept of surplus labor was introduced by Rosentein-Rodan (1943) and extensively analyzed by Lewis (1954). Lewis hypothesized that the rural areas of LDCs are characterized by surplus labor with negligible, zero, or negative marginal productivity. This, of course, implies that the removal of labor from the agricultural sector to the industrial sector will not affect the agrarian output. In other words, labor can be removed from the traditional

model is based on labor-leisure choice by individual peasants, and it is hypothesized that an individual will move if the utility derived from income is greater than the disutility of the move.

Based on the above hypothesis he concluded that while the basic HT_model is sustained, several new results emerge from the inclusion of surplus labor and flexible work-hours.

1- When minimum wage rate increases, peasants move to the modern sector even if the expected urban wage remains unchanged.

2- A given increase in the expected urban wage will cause larger out-migration than the HT-model prediction.

3- If society assigns some value to extra consumption generated by an increase in employment, the shadow wage rate of labor will likely be less than the minimum wage.

sector with no social cost, and consequently, the supply of labor to industry is unlimited as long as disguised unemployment prevails.

Over the years, this concept has promoted a number of important works, theoretical as well as empirical. For example, Schultz (1964) sees no evidence of surplus labor in LDCs. Viner (1957) and Higgins (1959) were skeptical about the existence of surplus labor. In contrast, Sen (1966) demonstrated that the necessary and sufficient condition for the existence of surplus labor is the constancy of the marginal rate of substitution between income and effort. Takagi (1976) presented an analytical framework in which he demonstrated the condition that removal of labor may increase, decrease, or not change agrarian production. For more detail, see Takagi, Y. "Surplus Labor and Disguised Unemployment" Oxford Economic Paper. Vol. 28, 1976, pp. 447-57.

The policy implication of this model suggests that in the presence of surplus labor and flexible work-hours, subsidy will not lead to an optimal condition.

2.3 REVIEW OF EMPIRICAL FINDING OF PREVIOUS STUDY

The preceding brief sampling of the various migration literature indicates that the decision to migrate in specific cultural, economic, and social environments is influenced not only by the constraints imposed by those environments but also depends on the perception, attitudes, opinions, and values of individual migrants. Meanwhile, the economic variables such as employment, growth, and income equality, are profoundly affected by the migration process. For a researcher seeking an understanding of the entire process of migration, an ideal strategy would be to adopt a methodology in which the causes and consequences of migration can be analyzed simultaneously. Unfortunately, a review of migration studies reveals that most empirical studies are concentrated on determinants of migration via sample survey analysis or single equation econometric models.²⁰ However, recently, some of the empirical studies are using a more realistic ap-

²⁰ The principal factors or explanatory variables which have received more attention in various studies are: age and sex (Thomas, 1958); marital status (George, 1971); education (Barnum and Sabot, 1976); wages and salaries (Okun, 1968; Greenwood, 1968); employment opportunities (Blanco, 1963); place utilities (Brown et al, 1970); unemployment and probability of finding job (Todaro, 1975); factor allocation (Galloway, 1967); and a cost benefit model (Speare, 1971).

proach by considering both the cause and consequences of migration via simultaneous equation (Salvatore, 1980).

An extensive exploration of migration literature shows that a major contribution has been made by economists through econometric study rather than sampling survey analysis. The econometric studies of the determinants of migration normally have offered the potential both for identifying factors that influence migration behavior and for quantifying their importance. Most of these studies tend to be cross-sectional rather than time series analyses, and most use aggregate census data to explain point-to-point migration. Typically, researchers used multiple regression analysis with log specification. For example, the functional relationship used in many studies is as follows:

$$M_{ij} = f(W_i, W_j, P_j, U_i, U_j, G_i, G_j, D_{ij}, E_i, E_j, QL_j, DU).$$

where migration from {i} to {j} is M_{ij} is dependent on wage rate (W), population (P), unemployment (U), government expenditure (G), the distance between i and j (D_{ij}), education (E), quality of life (QL), and degree of urbanization.

Most of the empirical findings in LDCs such as for Egypt (Greenwood, 1969); Tanzania (Barnum and Sabot, 1974); Brazil (Yap, 1976); Taiwan (Speare, 1971); and Venezuela (Levy and Wadycki, 1974); confirm the importance of one or several of the above independent variables as the significant factors explaining the migration process. Also, most

econometric studies of determinants of migration tend to be cross-sectional rather than time series analyses and are based on aggregate data. The use of aggregate data normally raises a number of problems and, therefore, reduces the usefulness of results for prediction. The problems can be specified as follows:

- 1- Most studies of aggregate data lump together people of different ages and educational levels.
- 2- Most aggregate data does not distinguish between different types of migration processes.
- 3- Aggregate data does not distinguish between army personnel who are more migratory than civilians.
- 4- Aggregate data does not measure different stages of migration. For example, a migrant may move from a rural area to a small town and later from a small town to an urban area, or he may return back to his original place after a while.
- 5- Measuring point-to point migration, which is the number of people who moved from place (i) to (j) during the year {t} or the people enumerated in place {j} in year {t} who were born in place (i) does not measure the directional growth flow between the two areas (Yap, 1977).

Therefore, the extrapolation of the conclusions based on aggregate measures to the individual decision maker may

not be a legitimate procedure. The use of aggregate data may mask some of the factors important to the individual's decision while at the same time exaggerating others (Navratil and Doyle, 1975).

Because of the above problems, recent migration studies have turned to longitudinal microdata. Residences are reported at the time of the initial interview and at each subsequent interview (De Jong and Garden, 1981). However, the microdata are very expensive and time consuming. Some migration researchers instead use a one time interview at the destination point. Consequently, there are a number of problems associated with this type of sample survey analysis. The two most important problems are the complexity of the questionnaire design and the tendency for migrants to rationalize a move already made by stating a variety of acceptable motives which may or may not be the actual ones.

In general, the empirical results are consistent with those theoretical reviewed in the previous sections. For example, Table 2.1 presents the responses to a number of reasons for moving which have been surveyed in several developing countries. The table clearly indicates that people move for economic gain from poorer areas to wealthier areas.

Unfortunately, study on the impact of internal migration is very limited (Greenwood, 1975; Salvatore, 1980; Yap, 1976). Recently however, numerous studies have been made

TABLE 2.1

Reasons for Rural-Urban Migration Given by Male and Female Respondents in Selected Countries, by Percentages

Survey	Indonesia		Iran		Korea		Thailand	
	M	F	M	F	M	F	M	F
Seeking Better job	42	23	64	3	63	19	14	9
Seeking Work	-	-	14	5	-	-	45	40
Job Transfer	8	10	11	.5	13	3	5	.4
Start New Business	-	-	-	-	10	5	-	-
Marriage	-	36	.4	74	1	3	-	-
Joining Family	-	-	3	12	2	46	19	37
Education of Self	41	26	2	.7	2	3	17	13
Education of Child	-	-	-	-	5	21	-	-
Others	9	5	5.6	4.2	4	0	0	.6

Source: Adopted from De Jong, G. F., and R. W. Gordon, Migration Decision Making, New York: Pergamon Press, 1981, P. 36.

seeking to ascertain the interrelationship between economic growth, labor supply, unemployment, and regional differential via simultaneous equations. Yap (1976) demonstrated that migration has been a beneficial factor in the economic growth of Brazil. Salvatore (1980) showed by a simultaneous equation, that internal migration in Italy resulted primarily from South-North differences in rates of unemployment and real wages. He also concluded that internal migration reduces South-North inequalities. Greenwood (1978) also estimated the relationship between migration and economic growth in Mexico. The results show that while greater regional employment growth induces in-migration, in-migration, in turn, accelerates employment growth. In contrast, out-migration de-

presses employment growth, especially in the agricultural sector. Finally, the result shows that regional earnings distribution are improve where earning and employment growth are proceeding most rapidly, and worsen where unemployment is growing rapidly.

Empirical findings also indicate that migration tends to increase the cost of urbanization. In general, local government in urban areas tends to have higher per capita expenditures than local governments in rural areas. For example, the government of Bogata spends seven times more per capita in urban areas than rural areas (Linn, 1979). In Chile, 53.6 percent of the national investment in housing, 46 percent of the investment in electricity, gas and water, 36.6 of the investment in education, and 27.9 percent of the investment in health were spent in the Santiago Metropolitan Area (Lozano, 1973). Urban in-migration also tends to increase pressure on land price, water supply, environmental pollution and medical services.

The validity of the Todaro model as well as the HT-model, have been also tested by a number of migration researchers.²¹ Most of those empirical findings (Todaro, 1976; Fields, 1975), confirm the conclusion of Todaro's model.

²¹ For a review of recent empirical research on the validity of Todaro's model see, M. P. Todaro, "Rural-Urban Migration, Unemployment and Job Probabilities: Recent Theoretical and Empirical Research", in *Economic Factors in Population Growth*, ed. A. J. Coale (New York: John Wiley & Sons, 1976).

Chapter III

INDUSTRIALIZATION AND THE PATTERN OF INTERNAL MIGRATION IN IRAN

In the previous chapters the migration theories have been reviewed from several different perspectives. In general, the all studies indicated that the process of internal migration in developed or developing countries is strongly interconnected with the processes of industrialization and urbanization. In other words, the process of economic development strongly influences the location of people and economic activities. Therefore, it is essential to study the socio-economic environment of a country prior to examining the pattern and level of internal migration.

During the past three decades or so, the Iranian society witnessed a massive shift of population from rural to urban areas as well as from depressed provinces to developed provinces. This rural-to-urban migration or interprovincial migration is strongly affected by at least four factors, namely, (1) Geographical conditions; (2) Government industrialization policy through national development plans; (3) Massive oil revenues; and (4) Poor living and working conditions in rural areas. The purpose of the present chapter is twofold; first, I intend to examine some of the above factors in connection with the process of internal migration,

and secondly, to demonstrate and measure the pattern of internal migration and urbanization in Iran, especially during the intercensal 1966-1976.

3.1 THE PHYSICAL FEATURES OF IRAN

Iran is a land of vast problems and great opportunities. Geographically, the country is extremely complex and suffers from several wide regional differences. These regional differences originate from the peculiar geographic features of the country, the climate, the uneven distribution of mineral deposits, the lack of political or ethnic homogeneity, the generally poor means of transportation in the past, and foreign intervention.

Iran has a land area of approximately 1,648,000 square kilometers lies between 39°50' and 25° north latitude and 44° and 63° east longitude (Plan Organization, 1982). It is bounded on the north by the Soviet Union, on the west by Turkey and Iraq, on the east by Afghanistan and Pakistan, and on the south by the Persian Gulf and the Gulf of Oman.

The extreme variety of Iran's climate is one of the factors responsible for the location of its people and its economic activities. For example, southern Iran in the summer is extremely hot with the temperature often rising over 55°C while in winter, the great altitude of much of the country, along with its continental situation, results in far lower temperatures (-30° C in the northwest) than one

would expect to find in a low latitude country (Fisher, 1968).

The two major mountain ranges which arise in the west and north of Iran are the Zagros and the Alburz mountains. These, as well as the interior desert in central and south-east Iran have very much affected the life style, location, and economic activities of the people.

Iran consists of 24 provinces; however, one can divide the country according to climate, rainfall, population density and land condition. The division is made especially distinct by the two major mountain ranges and the two major deserts, into several regions as follows:

1- Northern and Northeast region: This region, which is located north of the Alburze mountains, consists of the provinces of Gilan, Mazandaran, and a part of Korasan. The climate of this area is quite different from that of the rest of the country. This area receives considerable rainfall, up to 2000 mm. per year. Gilan, the second most densely populated area (next only to province of Tehran) is located in this region. The major crops produced in this area are: rice, tea, sugar, cotton, and tobacco.

2- North-Western region: This region is the next in terms of population and rainfall and is located in the northwest of the Zagros area. It consists of the provinces of East and West Azarbaizhan. It has fair rainfall, fertile soil, and

severe winters (sometimes the temperature falls to less than -30° C). The main crops in this region are wheat and barley (Plan Organization, 1982).

3- The central and Southern Zagros areas: this region which is next in order of diminishing rainfall, consists of the provinces of Hamadan, Kermanshahan (Bakhteran), Isfahan, Shiraz, Markezi, and extends as far as Tehran. It has moderate rainfall and, in most parts, water is available. The major crops are wheat, barley, and vegetables.

4- The interior Plateau and Eastern Highland: The center of Iran consists of salt basins, many of which are covered by a table of salt swamp (termed Kavir) and partly of loose-sand (desert). The rainfall is very scanty and, as a result, most parts of this area remain uninhabited. Furthermore, a part of this region still remains unexplored and is dangerous to travelers. The strong hot winds during summer often raise sand and make life very difficult for those few inhabitants in the area. Unfortunately every year the sand moves closer to the cities and villages around the 'Kavir' and in the course of time, many villages have been covered by sand.

5- The extreme South and Southeastern: This region consists of the provinces of Kerman, Baluchestan, and Hormozgan. The rainfall is scanty and irregular and, as a result, the area is lightly populated except where water is available.

6- The Plain of Kuzestan: This region is located in the far southwest. It contains a very fertile soil, the major oil fields and the outlets of oil. Most of the land in this area is currently irrigated by the Dez Dam. Recently, most parts of this area have been destroyed by the Iran-Iraq war.

Until recently, when the oil revenues allowed the government to make massive investment expenditures in roads and communications, the geographical conditions have greatly restricted the process of internal migration. In fact, the labor mobility among different areas began after the construction of major roads and the first Trans-Iranian Railway.

3.2 POPULATION GROWTH AND URBANIZATION

Detailed information on Iran's population was not available until recently. Therefore, we have only the sketchiest idea of the population size and its characteristics. In ancient times there were quite advanced civilizations in Iran, with well developed city life and technology comparable to that of Egypt and Greece. During those periods, a number of censuses were taken, and the actual population must have numbered in the hundred thousands. The counts were probably taken mainly to determine fiscal, labor, and military obligation and were usually limited to heads of households, and the males of military age. Women and children were seldom counted.

The first systematic record of population which includes factors such as size, sex, birth and death rates, and age began with the establishment of the Census Bureau (or Sabte Ahvale Keshvar) in 1928 (Bharier, 1971). However, geographical barriers, the nomadic life of those who lived in mountainous areas, and the lack of personnel prevented the agency from recording facts about births, deaths, marriages and divorces of all the citizens of the country. Another attempt to enumerate the population was started in 1939, but the occupation of Iran by the Allied forces halted census taking for more than 15 years (Bharier, 1971).

Since 1956, three population censuses have been conducted in Iran. The first census was taken in 1956, the second in 1966, and the third in 1976. As Table 3.1 shows, the population growth was very small prior to the Second World War, but since then, population growth has sharply increased, partly due to better health services and partly to a rise in the living standard.

Today, Iran's population growth is among the highest in the world. According to the latest United Nations' report, the crude birth rate is 42.5, per thousand; the crude death rate is 11.5 per thousand; the annual growth rate is about 3.1 percent (United Nations, 1979). As Table 3.1 shows, from 1906 to 1956 the Iranian population increased by 8 million, but an increase of comparable magnitude was attained in the 10 years from 1966 to 1976. Similarly, it

TABLE 3.1

Urban and Rural Population in Selected Years in Million

Years	Total Pop.	Urban Pop.	Rural Pop.	Urban/Total Pop.
1906e	10.29	2.16	8.13	21
1916e	11.05	2.32	8.73	21
1926e	11.86	2.49	9.37	21
1936e	13.72	2.93	10.79	21
1946e	15.93	4.13	11.80	26
1956c	18.95	5.95	13.00	31
1966c	25.79	10.56	16.51	41
1976c	33.71	15.86	17.85	47

Where {e} and {c} the estimated population and census figures.
Source: Bharier, 1971; and Plan Organization, various issues.

took 50 years, for the rate of urbanization to increase from 21 percent to 31 percent, while it took only 10 years from 1956 to 1966 to achieve the same rate of urban growth.

As Table 3.1 shows, the distribution of population is characterized by an increase in the proportion of population living in urban settings. For example, urban population increased from 31 percent (of the total population) in 1956 to 41 percent in 1966, and to 47 percent in 1976. An approximately 2.4 percent increase in the population of primary cities [such as Tehran, Esfahan, Mashhad, and Karaj] was due to the natural growth of population. The rest of the increase was a result of rural-urban migration or interprovincial migration. As Table 3.2 shows, of the 15.86 million urban population which lived in 380 cities, 28 percent resided in Tehran and/or 60 percent resided in only 10 cities.

TABLE 3.2

Population of Major Cities, Their Rank, and Rate of Growth
During 1966-1976

Population					Population				
Cities	R	1966	1967	G	Cities	R	1966	1976	G
Tehran	1	2720	4330	68	Hamadan	11	85	166	95
Mashhad	2	410	668	63	Rezaieyeh	12	111	164	48
Esfahan	3	424	662	56	Ardabil	13	84	148	76
Tabriz	4	403	598		Kerman	14	85	141	65
Shiraz	5	270	426	56	Khrramsh.	15	88	140	59
Ahvaz	6	206	334	58	Qazvin	16	88	140	58
Abadan	7	273	294	08	Karaj	17	44	138	213
Kermansh.	8	188	291	55	Yazd	18	93	136	48
Qom	9	134	247	84	Dezful	19	84	121	44
Rasht	10	144	334	62	Arak	20	72	117	62
Total		5172	8184	-	-	-	836	1411	-

1) R is the rank of Iranian cities

2) G is the ten year growth of cities' populations

3) Population in 1000

Source: Plan and Budget Organization, National Census of
Population and Housing, 1968 and 1981.

Finally, the rural-urban population of different provinces in 1966 and in 1976 censuses are shown in Table 3.3. The degree of urbanization is significantly different from one province to another and the province of Tehran exhibits the highest degree of urbanization.

Although the population growth rate began to accelerate after World War II, in the mid 1970's Iran appeared to be moving through the stage of demographic transition in which the population growth rate approached a peak, and in fact, started to decline. However, events in the early 1980's, especially the war between Iran and Iraq, as well as the

TABLE 3.3

Urban Population & Degree of Urbanization in 1966 & 1976

Provinces	Urban 1976	Urbz. (1) %	Urban 1966	Urbz. %
Tehran	4,589,201	97.9	-	-
Markezi	1,048,947	41.5	3,505,970	70.3
Gilan	461,355	29.2	303,694	23.5
Mazandaran	776,819	32.5	404,997	23.9
E. Azarbayejan	1,188,292	37.2	755,458	28.7
W. Azarbayejan	446,714	31.7	277,646	25.5
Kermanshahan	441,885	42.9	278,539	34.0
Khuzestan	1,275,109	58.3	883,057	51.7
Fars	872,768	42.9	580,848	36.7
Kerman	350,806	32.1	196,476	23.3
Khorasan	1,245,258	38.1	726,690	28.8
Esfahan	1,241,904	63.0	551,811	52.8
Sistan & Balu.	162,854	24.5	72,149	14.4
Kordestan	190,375	24.3	102,398	16.5
Hamadan	325,176	29.9	230,833	25.9
Chaharmahal & Ba	140,272	35.6	87,552	29.1
Lorestan	294,618	31.5	155,634	21.6
Ilam	48,595	19.7	20,190	9.5
Boyer Ahmad & Ko.	30,867	12.6	15,359	8.1
Busheher	119,144	34.2	54,623	21.1
Zanjan	144,613	24.9	82,598	17.9
Semnan	117,413	47.5	84,182	40.5
Yazd	218,233	61.2	124,542	44.3
Hormozgan	123,462	26.7	53,000	15.2
Total	15,854,680	47.0	9,794,246	38.0

1) Urbz. is the degree of urbanization.

Source: Plan and Budget Organization, National Census
of Population and Housing, 1966 and 1976, Total
Country, Tehran: Plan Organization, 1968 and 1981.

promotion of large families by the government, have a mixing effect on population growth. Noone knows what the rate of population growth in the 1980's will be.

Furthermore, between 1956 and 1976, Iran's population increased by approximately 15 million. The increase was

mainly due to high fertility and declining mortality rates, especially among infants. Consequently, the population acquired a substantial increase in the proportion of people in the non-working groups, relative to those of working age. For example, in 1966, 46.1 percent of the population were under 15 years (or non-working age) and 50 percent in the age group of 15 to 64 years. In 1976, 44.5 percent were still in the non-working group (Plan Organization, 1968 and 1980).

As Table A.7 in Appendix A shows, the population of Iran is unevenly distributed among different provinces. The population density varies from 3.2 persons per kilometer in the southeast to more than 107.5 person per kilometer in Tehran province.

The dispersal of population is one of the important factors which policy makers need to consider in the process of national development planning. There are a number of techniques available to measure the spatial distribution of population and the degree of concentration or dispersal of population within a country (Duncan, 1957).

Two of the techniques which may be used to measure the concentration of population are the 'Lorenz curve' and the 'Gini concentration'. For example, by using the data provided in Table 3.4, the Lorenz curve is depicted in Figure 3.1. This figure shows that the Iranian population, like other LDCs, are unevenly dispersed throughout the country. Simi-

TABLE 3.4

Size and Number of Localities in Censuses 1966 and 1976

Size of Localities	No. of Localities	Population 1966	No. of Localities	Population 1977
500000 & Over	1	2,720,000	4	6,357,479
250000-499999	5	1,780,000	4	1,244,880
100000-249999	8	1,170,000	15	2,052,945
50000-99999	15	1,070,000	22	1,481,294
25000-49999	30	1,080,000	47	1,487,782
10000-24999	72	1,100,000	111	1,648,794
5000-9999	119	800,000	172	1,559,875
2500-4999	308	1,020,000	Na	Na
1000-2499	2,087	3,010,000	Na	Na
500-999	5,314	3,640,000	Na	Na
250-499	10,415	3,660,000	Na	Na
100-249	16,936	2,780,000	Na	Na
<100	31,378	1,210,000	Na	Na
All Localities	66,688	25,040,000	55,000	33,708,744

Source: Plan and Budget Organization, Markaz -i Amar -i Iran, National Census of Population and Housing, 1966 and 1977 Tehran: Plan Organization, 1968 and 1981.

larly, the Gini Concentration can be calculated for the same period of time.²² Using the data in Table 3.4 the Gini concentration is equal to 0.75.

Both The Lorenz curve and Gini concentration indicate that the population distribution in Iran is extremely uneven. This is also true for a country like Venezuela, where the

²² To calculate the 'Gini concentration' one must calculate both the cumulative proportion of population (Xi) and localities (Yi) for each size locality. The formula for calculating 'Gini Concentration' is $G_i = \frac{(\sum X_i * Y_{i+1}) - (\sum X_{i+1} * Y_i)}{(\sum X_i * Y_i)}$. For more details see Duncan, Otis D., "The Measurement of Population Distribution" Population Studies, Vol. 11, 1957, pp. 27-45.

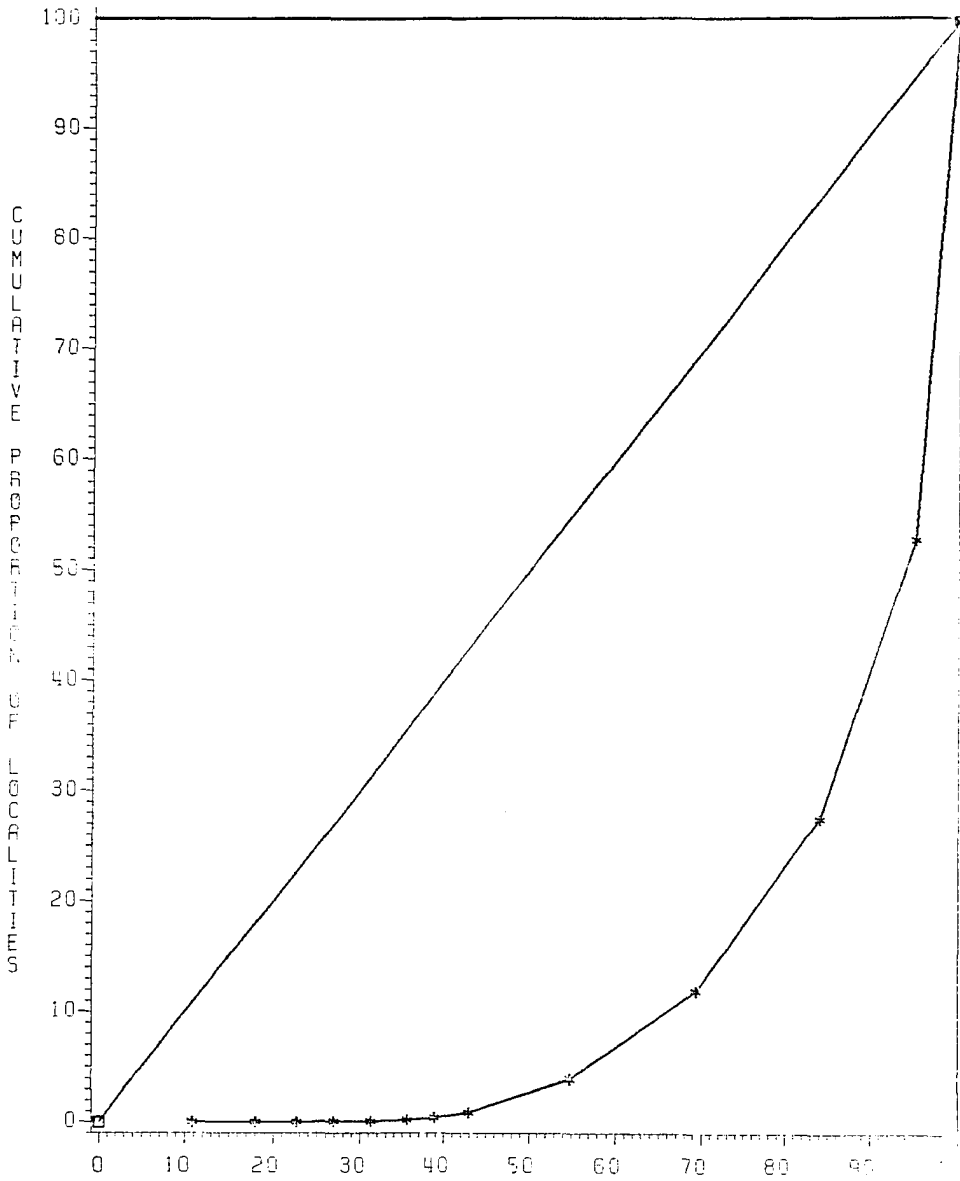


Figure 3.1: Lorenz Curve: For Measuring Population Concentration in Relation to the Number of Localities in Iran

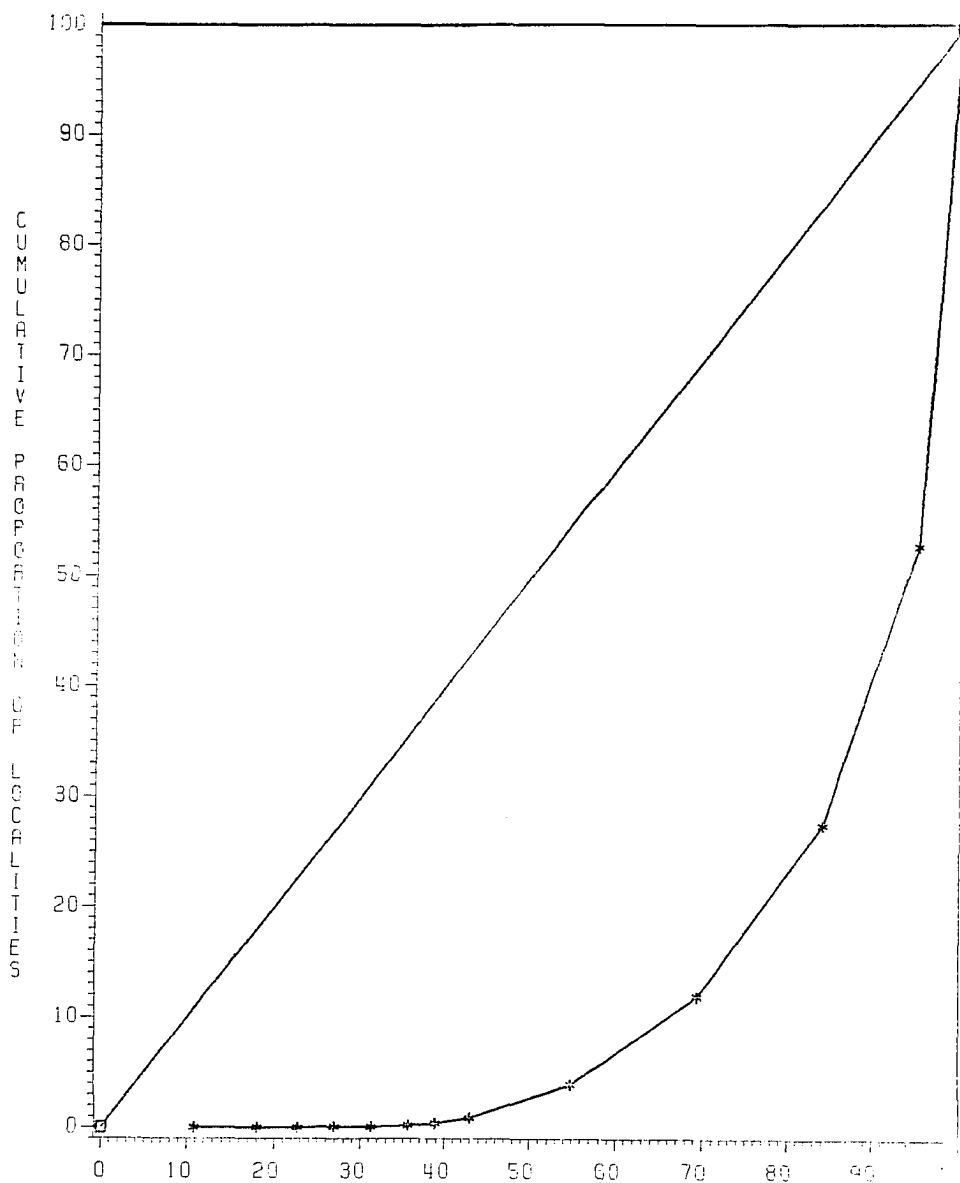


Figure 3.1: Lorenz Curve: For Measuring Population Concentration in Relation to the Number of Localities in Iran

computed Gini coefficient for persons living in different size localities were 0.7821 in 1961 (United Nations, 1980). Although the data for 1976 is not complete, evidence indicates that the dispersal of population remained almost the same in 1976.

3.3 ECONOMIC DEVELOPMENT AND INTERNAL MIGRATION IN IRAN

In general, the process of Iranian economic development in relation to migration can be divided into three distinct eras. The first period started with Reza Shah's Industrialization policy of the 1930s and ended with the occupation of Iran by the Allies in 1941. The second period started in 1947 when the First National Development Plan was submitted for approval to the parliament. It ended with the Islamic Revolution in 1979. Finally, Iran entered the post-revolution era in which the people's way of thinking as well as the government's attitudes, have significantly changed toward economic development.

3.3.1 The State of Economy Before 1941

In ancient times, Iran was a center for trade between East and West, but this activity disappeared as trade shifted to the sea. For many centuries, the Iranian people did not have much contact with the West and as a consequence, little modern technology for the production of goods and services is used.

At the turn of the century, Iran was an agrarian country and in spite of several centers of trade such as Ray, Isfahan, Shiraz, and Tabriz, the majority of the population was living in rural areas. In 1900, approximately 90 percent of the active population worked in either the agricultural or the nomadic sector. There was almost no large-scale industry, and the remaining 10 percent were handcrafters and merchants (Halliday, 1978). The application of new technology or the so called 'modernization of industry' actually started very slowly in the early twentieth century. Tabriz, a city near Turkey, became the main center of industry with two cotton textile plants, a sawmill, two match factories, a knitting plant and a soap factory (Wilson, 1979).

The process of economic development accelerated in the second quarter of this century. In 1925, Reza Khan deposed the Qajar dynasty and established the Pahlavi dynasty. Before he went into exile in 1941, he brought a number of social and economic changes to Iranian society. First he centralized the state, crushed rebellious separatist movements, and built a modern army, which he used to enforce government control over the entire country (Kutouzian, 1981). By 1930 about ten large-scale privately owned factories under various state protections had been established. However, during the 1930s, the increase in oil revenue as well as the imposition of indirect taxes allowed Reza Shah to launch a number of economic programs, especially the establishment of

state-owned factories. The government believed that more factories were better than fewer factories, that state factories were better than privately owned factories, and various protective devices must be employed in order to promote industrialization (Bharier, 1971).

Despite many economic achievements (namely the increase in the number of factories and the country's industrial capacity and improvements in transportation and education related to the Reza Shah's policies), one must realize that many of the investment expenditures in this period were not economically sound. In fact, during this period because of the concentration of activities in only a few cities, the country began to experience rural to urban migration. For example, Graham (1978) pointed out that Reza Shah emphasized the centralization and concentration of industry around the capital without any economic justification. For example, against professional advice, he altered the siting of a proposed steel plant from Semnan to Karaj (20 miles from Tehran). Katouzian (1981) also criticized Reza Shah in many respects. He believed that Reza Shah's economic achievements were not the consequence of a reasonable and relevant approach to economic progress. He pointed out:

Any investment expenditure would result in the building of roads, factories, schools, and banks; but an appropriate investment strategy is one which results in the allocation of the national resources to their best possible use. In simpler words, what matters is what the national economy gets from what it spends on building a factory, not the mere fact that a factory, any factory, has been built for everyone to see. Yet, on the basis

of evidence it is clear that in his economic policies Reza Shah wasted the national resources by investing them in projects which involved high costs and low returns.²³

The economic policy under Reza Shah was not only characterized by its establishment of a state monopoly over foreign trade, but it also had considerable control over the distribution of domestic agricultural products. For example, the state acted as the sole buyer and distributor of wheat and barley. Under this policy, the agricultural prices were arbitrarily kept as low as possible and, in fact, the urban populations in Tehran and a few other cities were subsidized at the expense of Iran's rural society (Katouzian, 1981).

As a result of the above agricultural price policy, Iran remained predominantly agrarian. Agricultural methods remained primitive and little had been done to improve agricultural productivity or rural living conditions. The agricultural yield was low due to the land tenure system, absentee landlord, poor irrigation, lack of education, and the shortage of capital.

One aspect of the so called modernization in this period was the redistribution of wealth from rural residents to a select few urban residents. Nearly all welfare service, especially education, health, and other public utilities, were concentrated in Tehran and a few other cities. In short, during this period, the Iranian peasantry was penal-

²³ Katouzian, Homa, The political Economy of Modern Iran, New York: University Press, 1981.

ized in every possible way. Consequently, many peasants started to move to cities, especially Tehran, searching for better jobs and improved working conditions.

When the Germans invaded Russia in 1941, the Allies wanted to send supplies to Russia through Iran, but Reza Shah refused to do so because he was pro-German. As a result, on 23rd August 1941, Allied forces occupied Iran and Reza Shah's rule was terminated by the outside military intervention. His son was placed on the throne at the age of 21, a virtual puppet of the Allies, and a new era began in the history of Iranian economic development and process of internal migration.

3.3.2 Post-War Economic Development: The Impact of Multi-year National Development Plan on Rural to Urban Migration

The occupation of Iran by Allies and the abdication of Reza Shah brought a decade of freedom and a new era of economic development. Immediately after Mohammad Reza Shah was placed on the throne, liberties which had been denied the Iranian people since the days of the constitutional revolution were restored in the country. Political prisoners were freed, books and newspapers could be published without political censorship, and people could speak freely now unafraid of being reported by relatives (Katouzian, 1981).

Indeed, the economic impact of occupation was devastating because the process of industrialization was halted for

more than 15 years. At the end of World War II, various efforts, especially the formulation of several multiyear development plans, have resulted in the establishment of large-scale industrialization and redistribution of population. In fact, since 1947, when the first attempt was made to formulate a national development plan, there were profound changes in the Iranian economy, as well as in the life style of people.

Basically, the idea of designing a systematic multiyear national development plan was begun as early as 1937, but due to a number of problems, it was delayed until 1947 when a planning board was established in the Industrial Mining Bank. The first seven year plan underwent several revisions because of technical and financial problems but was finally approved by parliament in 1949. To implement the plan, the government immediately established the Plan Organization (Bharier, 1971).

The First Plan, which was put forward by planners as a 'Big Push' to achieve economic self-sufficiency, suffered from several deficiencies. First, it was a partial plan rather than a comprehensive plan. Second, the plan was a collection of infrastructural projects without allowing for the share of private investment in economic development. Third, the plan consisted of independent projects without addressing any specific national goal. However, the planners realized that the development of a modern manufacturing sec-

tor based on heavy industry would be impossible without adequate infrastructural improvements.

The plan categorized the project under six headings: agriculture, transportation, communication, mining and industry, oil exploration, and social welfare. The projected revenue was to be comprised of 37.1 percent from oil revenue and 30.0 percent from foreign loans (Plan Organization, 1957). Therefore, the First Plan was heavily dependent on the international market. For example, the drop in oil revenue resulting from the nationalization of oil and the subsequent oil boycott against Iran by oil companies made the implementation of the plan virtually impossible. As a result, at the end of the plan period many projects remained unfinished or were not implemented in the first place. As table 3.5 shows, the actual expenditures were less than projected.

The major achievements of the First Plan were limited to the establishment of several new factories, construction of roads and communication facilities, and a few minor improvements in the agricultural sector (Bharier, 1971).

The increase in oil revenue soon after the resumption of oil production and a new agreement between the government and Consortium, allowed the planners to propose a new plan to parliament.²⁴ The Second Plan, like the first one, was a

²⁴ The Consursum was a combination of several companies from different nationalities namely, American, English, French, and Dutch

TABLE 3.5

Planned, Revised, and Actual Expenditures During First Plan,
1949-55 in Million Dollars

Sector	Projectd 1949	%	Revised 1952	%	Actual 1955	%
Agriculture	70.0	25	98.00	28	13.33	20
Transportation & Communication	76.6	27	103.33	29	20.06	29
Industry & Mines	53.4	19	70.67	20	31.96	47
Social Welfare	80.0	29	80.90	23	2.65	4
Total	280.0	100	352.0	100	68	100

Source: Plan Organization , Review of the Second Seven Year
Plan, Tehran: Plan Organization, 1956.

seven year plan and consisted of a number of proposed state investments without any reference to the role of private investment projects. The plan also had no general goal other than the heavy emphasis on infrastructural improvement. As Table 3.5 shows, 34.9 percent of the funds were allocated for transportation and communication, 7 percent for industry and mines, and 21.6 percent for agriculture.

At first glance, one may judge that the planners' priority shifted from industry to agriculture. However, most of the funds that were allocated for the agricultural sector went into the construction of dams, such as the Kraj Dam which had nothing to do with improvement of the agricultural sector. In fact, the purpose of construction of these dams was purely for generating electricity and the provision of water supply for the Tehran areas.

TABLE 3.6

Planned, Revised, and Actual Expenditures in Second Plan ,
1955-62, in \$ Million

Sector	Projected 1955	Revised 1958	Final Revised	Actual 1962
Agriculture & Irrigation	239.71	287.65	326.41	308.47
Transportation & Communication	300.28	360.33	433.85	393.95
Industry & Mines	238.95	166.74	120.93	116.09
Social Welfare	242.12	290.54	202.45	171.13
Urban Const.	-	-	-	0.24
Total	921.06	1105.26	1083.64	990.14

Source: Plan Organization , Review of the Second Seven Year
Plan, Tehran: Plan Organization, 1956.

The combination of expansion of credit to the private sector, the provision of a favorable environment for private investors, the increase in government expenditures during the Second Plan, and rapid in-migration to the capital city of Tehran produced Iran's first major economic boom which lasted until 1960. The expansion of private investment was mainly in consumer goods, especially in textiles, cooking oil, sugar, bricks, and housing. For example, investment in construction in Tehran rose by 85 percent in 1958 and 130 percent in 1959 (Looney, 1982).

Despite huge government expenditures, the major achievement of the Second Plan was once again limited to increases in the capacity of state owned factories, especially

textile, sugar, and cement, as well as the establishment of a few new plants such as chemical fertilizer plants. Several new roads were constructed and three dams were built.

At the end of this period, the planners realized that economic development is impossible without a comprehensive plan in which one or several national priorities have been set. Therefore, the Third Five Year Plan that became effective from mid 1962 to 1967 was the first comprehensive plan in which the planners set a national goal of 6 percent increase in output. Furthermore, for the first time, the Iranian planning effort was aimed at coordinating the process of decision making between the national planning authorities and other governmental and private institutions with regard to the parameters of planning. Despite unreliable data, the planners set the following objectives:²⁵

- 1- Manpower development and provision of facilities for private investors.
- 2- Attainment of a more equitable income distribution especially in the agricultural sector, by means of land reform and by a net profit-sharing program for industrial workers. However, no numerical target had been set up.

²⁵ Evidence suggested that defining national objectives and searching for alternative strategies, programs and projects is not wise in a country with limited and unreliable data. For more detailed information see Baldwin, George, Planning and Development in Iran, Baltimore: Johns Hopkins Press, 1967.

3- Improvement in agricultural, industrial, and infrastructural development.

4- Creation of a better coordination between the various government agencies as well as provision of reliable data for the next development plan.

The planned and actual expenditures used to achieve the above objectives are shown in Table 3.7 As this table shows, the plan is divided into ten sectors and the terms of total expenditures are much greater than the second plan.

One of the important features of the Third Plan was the introduction and implementation of the first stage of land reform. Theoretically, the main objective of land reform is to change the existing land tenure system which is regarded as the main obstacle to improvement of agricultural productivity and rural underemployment.²⁶ However, the main objective of the Shah's land reform was to curtail the landlord's power in rural areas, to encourage some of the landlords to invest in the industrial sector, and finally, the provision of cheap labor for new, privately established industry via encouraging rural-urban migration. As a result of this policy, agricultural production fell far below its target as the country began to witness the unprecedented,

²⁶ Before the Land Reform Act of 1962, about 70 percent of the fertile land was owned by landowners, peasants owned about 15 percent, and remaining land belonged to the state, clergy, and other owners in which the share of the landowner was as high as three-fourth in production. For details see Lambton, A. K. S., The Persian Land Reform, 1962-66, London: Oxford University Press, 1969.

TABLE 3.7

Planned & Actual Expenditures under the Third Plan, 1962-67,
in \$ Million

Sector	Planned	%	Actual	% (b)
Agriculture & Irrigation	638.66	21.5	630.7	98.7
Industries & Mines	364.00	12.3	228.0	62.6
Energy & Fuel	46.00	15.8	426.7	91.4
Communications & Telecommunications	760.0	25.6	717.3	94.4
Education	234.66	7.9	230.7	98.3
Health	177.33	6.0	176.0	99.2
Labor & Manpower	38.66	1.3	37.3	96.6
Urban				
Development	97.33	3.3	96.0	98.6
Planning & Statistics	21.33	0.7	20.0	93.8
Housing & Construction	165.33	5.6	162.7	98.4
Others	-	-	2.7	-
Total	2964.33	100	2728.0	92.0

a) \$1=75 Rials

b) Percentage of actual over planned expenditure

Source: Plan Organization, Third National Development Plan, 1962-1967, Tehran: Plan Organization, 1965.

huge rural-urban migration during the 60's and 70's. The annual growth of the agricultural sector which was planned to grow at an annual rate of 4 percent grew only at an annual rate of 1.8 percent (Plan Organization, 1965?).

In contrast, industrial output and employment significantly increased during this period. This increase mainly

resulted from (1) the implementation of land reform; (2) the government industrialization policies such as the protective measures for the protection of the domestic industry from foreign rivals; (3) exemption of imported capital goods from custom duties; and (4) the supply of easy credit to industrial firms which encouraged many private investors to launch large-scale industries in urban areas. Despite the economic recession of 1960-1963 which led to the reduction of output in many industries, the industrial sector enjoyed a high growth rate of 12 percent per annum during the Third Plan.

In summary, despite the huge increase in oil revenue and foreign loans, the major achievement of this plan was limited to annual growth GNP by only 4.4 percent. The implementation of the plan also resulted in the completion of several dams and heavy industrial projects such as the steel mill, machine tool complexes, petrochemical plants, and the paper mill.

The Fourth Five-Year Plan (1968-1972) was more comprehensive than the previous plans. For the first time, the planners reviewed the major socio-economic problems which needed to be taken into consideration during the preparation and implementation of the Fourth Plan.²⁷ Based on those so-

²⁷ For the first time the planners took into consideration the fact that the productivity of capital, labor, and entrepreneurship is considerably lower in Iran than in the advanced countries. They believed the low productivity in the agricultural sector was due to (a) shortage of water resources and inefficient use of water, (b) the use

cio-economic problems, the planners set the following objectives:

- 1- An annual increase of 9 percent in the GNP.
- 2- A more equitable income distribution by increasing employment, extending social welfare to all, and expanding local development.
- 3- A decrease in the dependency on foreign countries in meeting basic requirements.
- 4- The diversification of exported goods and searching for new foreign markets to sell the Iranian products.
- 5-Improvement of administration services by advancing managerial techniques.

The quantitative objective of the Fourth Plan was varied, based on the priority of each sector. The highest priority was given to industry and mining with an average growth of 15 and 17.2 percent respectively, while the agricultural sector had the lowest priority with an annual growth rate of only 5 percent.

of traditional techniques in agricultural production, and (c) the lack of credit to purchase modern equipment. In industry, the low productivity was due to (a) the shortage of skill, (b) bad management, (c) low-scale production due to the limited market, and (d) the lack of sufficient infrastructural development.

The total projected expenditures under the Fourth Plan are shown in Table 3.8 According to this plan, the total development budget rose from \$ 3,000 million in the Third Plan to \$ 6,400 million in the Fourth Plan. Still, the final revised expenditure was increased to \$ 7,693.33 million, 20 percent above the original allocation.

TABLE 3.8

Fourth Plan Projected Investment Expenditures, 1968-1972, in \$ Million

Sector	planned	%
1- Agriculture and Animal Husbandry	866.67	13.5
2- Industry & Mining	1320.00	20.6
3- Gas and Oil	350.67	5.5
4- Water	646.67	10.1
5- Power	506.67	7.9
6- Comm. & Transport	1066.67	16.7
7- Telcom. Tv & Radio	270.67	4.2
8- Rural Development	121.33	1.9
9- Urban Development	93.33	1.5
10- Construction & Housing	306.67	4.8
11- Education	466.67	7.3
12- Art & Culture	24.00	0.4
13- Tourism	50.66	0.8
14- Health & Medical Services	183.33	2.9
15- Social Welfare	64.66	1.0
16- State & Regional Development	61.33	0.9
Total	6400.00	100

Source: Plan Organization, Fourth National Development Plan 1968-1972, Tehran: Plan Organization, 1968, P. 63.

In terms of performance, while most of the Fourth Plan targets except agriculture and construction were met or sur-

passed, the outlook of economic development progress was not bright, mainly due to the following problems:

1- In agriculture, due to the land reform, rural to urban migration, and the lack of available credit, the agricultural production was far less than the needs of the rapidly growing urban population. Consequently, Iran, which was self-sufficient in the production of basic food prior to the early 1960s, became rapidly dependent on imported basic food stuff after this time.

2- In industry, while the growth rate of output was very high, it was unfortunately oriented toward the production of consumer goods resulting from the rapid growth of urban population. As a result, this sector, like the agricultural sector, heavily depended on the importation of intermediate goods, raw materials, and foreign technology. In summation, at the end of the Fourth Plan, the country was dependent on oil revenue, foreign loans, and the international market.

3- the level of rural-urban migration accelerated, mainly due to the execution of land reform and heavy government investment in urban areas.

The Fifth National Development Plan was enacted in March 1973. However, there was an increase in oil prices soon after the October War between the Arabs and Israelis. Subsequently the Arab embargo increased Iranian oil revenues astronomically. Therefore, the new plan no longer was satis-

factory to the Shah's ambitions or to Iran's new economic opportunities. As a result, the planners were under tremendous pressure to draw up a new Plan to meet the huge oil revenues. The planners knew well that this extraordinary change in Iran's financial position, during the course of one year was far from the absorptive capacity of the Iranian economy. But in January of 1974 the Plan and Budget Organization was forced to revise the year old Fifth Plan without fully considering the infrastructural bottlenecks. As Loo-ney (1981) pointed out, the revised Plan stopped careful manipulation of resources which had been done more and more during the first four Plans. For example, targets and allocations were increased without much thought to priorities, and the current budget was considered more than the development budget.

The objectives of the Fifth Plan were similar to the Fourth Plan except that the planner increased the targets and allocation of each sector. Originally, the planner allocated \$ 20,000 million but as Table 3.9 shows, the total funds allocated in the revised Plan jumped to \$50 billion. However, as Graham (1978) pointed out, the real change was one lacking of substance. The planners simply allocated more money to be spent on bigger projects in a short time; better imported technology; the use of more foreign experts and skilled workers; and more money for the ordinary Iranian in terms of a higher salary or a subsidized basic food program;

and finally more money for strengthening the army. As Table 3.9 shows, the share of defense expenditures was almost as high as the share of economic affairs.

TABLE 3.9

Planned Distribution of Expenditures Under Fifth Plan,
1973-78, in \$ Billion

Chapter		Planned (revised)
General Affairs		12.26
Defense Affairs		28.95
Social Affairs		19.27
1- Education	7.35	
2- Culture and Arts	3.48	
3- Public Health	1.19	
4- Social Security and Welfare	0.48	
5- Youth Affairs	0.74	
6- Urban Development	0.98	
7- Rural Development	3.35	
8- Housing	0.20	
9- Environmental	0.24	
10- Regional Development		
Economic Affairs		31.31
1- Agricultural & Natural Resources	5.43	
2- Water Resources	2.42	
3- Electricity	3.67	
4- Industry	5.41	
5- Oil	4.90	
6- Gas	0.75	
7- Mining & Quarrying	0.96	
8- Trans. & Communication	6.26	
9- Postal Services & Telecommunication	1.25	
10- Tourism	0.20	
11- Commerce	0.06	
Total		91.78

Source: Plan and Budget Organization, Iran's 5 th Development Plan 1973-1978: Revised, Tehran: Plan Organization, 1975, p. 22.

In terms of Fifth Plan performance, over the period of 1973-78, the GNP rose in real terms from \$17 billion to \$55.3 billion. The GNP increased about 40 percent in 1974-75, but the pace of growth slowed down to almost 17 percent in 1976-77. Unfortunately, despite the country's large income and allocation of huge financial resources in the Fifth Plan, and despite the unprecedented growth rate of the GNP, the process of economic development has suffered from a number of problems. For example, during this period, the country encountered problems such as infrastructural bottlenecks; a broadened gap between aggregate demand and supply; high-inflation; and a shortage of qualified management and/or skilled professional workers.

The immediate economic impact of the revised Plan was in the huge increase in current expenditures rather than investment expenditures. The boom in government expenditures stimulated consumer spending so rapidly, especially in urban areas, that domestic producers could no longer meet the rapid increase in market demand. Therefore, some of the demand shifted to foreign markets. As a result, the level of import increased voluminously so that the major ports were unable to unload imported raw, intermediate, or finished goods immediately.²⁸ Furthermore, there were not enough trucks to

²⁸ In 1974, many ports not only were obsolete, but did not have adequate facilities to release the cargos immediately. In addition, the customs clearance procedure was so slow that many items were unloaded after 200 days. In fact in that year, Iran was forced to pay over \$1 billion in demurrage charges (Graham, 1978).

deliver the shipments on time. The limited capacity of ports and the shortages of transportation delayed virtually every project, created shortages of almost every-thing, especially building materials, and pushed the price of virtually every-thing up.

The boom in expenditures also raised the income of ordinary people as well as skilled workers, such as welders, carpenters, machine-operators, mechanics and professionally trained personnel in urban areas. The immediate impact of higher wages was on the flow of migrants from rural to urban areas searching for better jobs and working conditions. Consequently, small landowners were not able to hire cheap labor at harvest. As a result, the cost of agricultural production increased so high that agricultural production became unprofitable and forced many farmers to seek an urban job rather than working on their own land.

In summary, at the end of the Fifth Plan, the state of the economy had undergone a structural transformation, mainly from being an essentially agrarian economy to a dualistic economy. For example, as Table 3.10 shows, the industrial and service sector increased in output and employment significantly, while the contribution of the agricultural sector to the GNP steadily declined. Furthermore, the growth of industrialization, which was encouraged by government, led to a fundamental shift in the geographic distribution of the economy. In fact, many of the industries were located around

the few large cities turning local, or mostly imported raw materials, into goods for the domestic market. Meanwhile, old centers such as Tehran, Tabriz, and Esfahan expanded significantly, and new industrial cities like Arak, Ahvaze, Ghazvin, Bander-e-Shahpour, Shiraz, and Kashan have emerged from the government's development policies and quickly acquired considerable importance.

TABLE 3.10

Percent of Sector Contribution to GNP and Employment

sector	1962-63		1967-68		1972-73		1977-78	
	GNP	Emp	GNP	Emp	GNP	Emp	GNP	Emp
Agriculture	24.4	55.1	21.6	49.0	10.3	40.9	9.2	32.2
Industry	17.8	20.6	20.7	24.7	12.6	29.0	18.5	33.2
Service	40.0	23.8	36.4	25.7	23.9	29.5	34.6	34.0
Oil	12.3	0.5	18.0	0.6	50.6	0.6	34.7	0.6
Total	100	100	100	100	100	100	100	100

Source: Bank Markazi -i Iran, Annual Report and Balance Sheet 1967-1980, Tehran: Bank Markazi, Various reports.

In general, Iran's industries can be divided into five groups: textiles, food processing, construction materials, appliances, and petrochemical industry. From the beginning, the government has adopted a policy of import-substitution in order to reduce external dependency. However, the goods produced in the new industrial establishment are primarily

designed to meet the demands of the middle class, who want consumer durables such as cars, television sets, refrigerators, etc. These goods can only be produced using highly mechanized processes, which of course increases the need for imports of raw, intermediate, or capital goods. In other words, most of these new industries merely assemble imported components, resulting in the degree of value added domestically being minimal (Looney, 1982).

In terms of job creation, as Table 3.10 shows, these industries do little to solve problems of unemployment and underemployment. Most of the large-scale establishments are using capital-intensive processes which require few workers (Wilson, 1979). The numbers actually employed in industries such as iron, steel or petrochemicals are relatively small. For example, modern manufacturing claiming 57 percent of total manufacturing and mining output, employed an average of only 150,000 or 6 percent of the whole industrial labor force (Katouzian, 1981). Or as Wilson (1979) pointed out, the amount of capital investment per job created in large-scale industries was as high as \$1 million. In many cases, these industries need to hire expensive expatriate labor from the West to operate or service the machines. In total, the industrial development of Iran did not absorb enough labor to decrease the problem of underemployment.

During the past three decades and more, the agricultural sector remained undeveloped. In terms of land conditions,

out of the total surface of 165 million hectares, over half is classified as uncultivable, non-agricultural land and of the next half, only 11 percent or 15.7 million hectares is under cultivation (Bank Markazi, 1979). About 6.0 million hectares of agricultural land, are irrigated with modern water-storage system or from the ancient system of 'ganats'. The rest of the land (9.7 million hectares) is allocated to rain-fed agriculture which is common in the Northwest and the Northeast provinces (Bank Markazi, 1979).

The chief factors limiting the size of agricultural production are (1) inadequate transportation and limited access to market, (2) poor seeds (3) lack of application of modern techniques, (4) lack of proper irrigation system, (5) lack of adequate financial resources, (6) the lack of government price support policies, and (7) small unit farms. For example, about four-fifths of the farms are less than 11 hectares (Loony, 1981).

Until the mid-1960's, Iran was self-sufficient in foodstuff, but because of land reform and rapid rural to urban migration, the agricultural output failed to keep pace with increasing domestic consumption. As a result, the country started, ironically, to import vast amounts of foodstuffs from advanced countries. For example, in 1975-76 imports of foodstuffs totaled \$1500 million or 13 percent of the total imports. By mid-1978 the level of imported foodstuffs was estimated as high as \$2000 million (Halliday, 1979).

3.4 THE TREND OF INTERNAL MIGRATION

As it was explained above, during the past three decades, the Iranian government, through multiyear National Development Plans, has tried to establish an industrial base comparable to Japan or even to western countries. One of the major consequences of such a policy was the rapid shift of population from rural areas into urban areas. Consequently as table 3.2 shows, several cities, especially Tehran, grow so fast that recently many planners and government decision-makers have worried about first, the magnitude of rapid urbanization in different areas and, secondly, the impacts of rapid urbanization without proper planning. Therefore in the following attempt will be made to estimate the level of internal migration using different techniques during the past two decades (1966-1976).

To estimate the migration stream from rural to urban or from one province to another, it is necessary to define precisely the phenomenon being measured, as well as to derive a framework to approach the analysis. In general, migration is a form of geographic or spatial mobility involving a change of usual residence between clearly defined geographic points (United Nation, 1980). Therefore, an internal migrant is an individual who, within a given nation, moves from one regional unit to another for a certain minimum period of time which is usually defined by a census bureau and other data collection agencies. Furthermore, every move is an "out-mi-

gration" with respect to the area of origin and an "in-migration" with respect to area of destination. Therefore, an in-migrant is a person who enters a migration-defining area by crossing its boundary from some point outside the area but within the same country. In contrast, an out-migrant is a person who departs from a migration defining area by crossing its boundary to a point outside it but within the country (United Nations, 1980).

Theoretically, we can identify at least sixteen categories of migration. The most important are:

- 1- Intra-rural migration: move within the traditional peasant sector of the periphery;
- 2- Rural-urban migration; move from a traditional sector of the periphery to the traditional sector of the town ;
- 3- Urban metropolitan migration: move from the traditional sector of town to modern productive sector.
- 4- Inter-provincial migration: a move from one province to another.

In this study, an attempt will be made to study the rural-urban and inter-provincial migration.

The duration of the migration process ranges from a short term visiting, for business purposes or pleasure, to permanent settlement. However, in this study the short term visitor will not be considered as a migrant. The flow of

migrants to the cities may be divided into temporary and permanent migration. According to Nelson, (1975), we may recognize the following patterns of migration;

1- "Target migration". Many peasants, or those who live in small towns travel to the cities during particular seasons to accumulate some amount of money for a particular purpose (marriage, building a house, completing their education). They may return to their homes after they have finished their schooling or move to cities to seek temporary employment during the fall, because the small unit of land and the nature of work on the farm do not provide enough employment for the entire year. In spring and summer, they return to their original place, to work on their own land or on others' lands.

2- "Cyclic short-term moves" or rural-urban pool patterns. In this type of temporary migration, migrants move several times into an area and back to the original place, but each stage is a longer duration than for the target migrants. As Nelson (1975) stated, from the standpoint of the extended family rather than the individual migrant, this pattern of migration forms a "rural-urban pool." At any given time, some members of the family are in the city earning money, while others remain at home to cultivate communal or individually held land and attend to other family interests. The rural base represents a permanent haven for those in the city who become ill, or are elderly or unemployed.

3- Permanent migration. The third type of migrants are those who leave the countryside and live in the city permanently. This group expects to enjoy a better life in the cities than in rural areas and as a matter of fact the intention of this study, is to evaluate the impact of their decision upon themselves and the overall economy.

The three types of migration outlined above are not mutually exclusive. Furthermore, there are many undecided migrants who stay for their entire lives in the city or they may go back to their original place after a while. The rate of return to the original place is totally dependent on the customs, culture, traditions, access to the land and the right of the individual to reobtain the land he had before he left the village (Nelson, 1975).

3.4.1 Methods of Measuring Internal Migration

Information on rural-urban migration and the flow of migration can be obtained either directly or indirectly. The source of data in measuring or estimating migration are census data, population registration, and periodic sample surveys. Until the establishment of an efficient system of population registration, the census data will be the major source of information on internal migration.

1) Direct measures of Migration: Basically, migration can be measured directly by continuation of registration, by observing moves when they happen, or by directly questioning

individuals about their past moves, their previous residences from years before (usually 5 years), or their places of birth.

2) Indirect Measure of Migration: Information on internal migration can also be obtained indirectly using two residual models. However, neither of these allows us to estimate either gross in-migration or gross out-migration. They are limited to estimating the net migration. These two common procedures which are explained in the following discussion are 'vital statistics method' and 'survival ratio technique'.

According to the 'vital statistics method', internal migration can be estimated simply by comparison of total population in each area in two successive censuses. The residual method uses the following formula:

$$P_{t+n} = P_t + B - D - (I-O) \quad (3.4.1)$$

That is, the population of an area (P_{t+n}) is equal to its previous population (P_t), plus births (B), minus deaths (D), plus the differences between in-migration (I) and out-migration (O). This procedure assumes that international migration is negligible (United Nations, 1970). To calculate the net migration (NM):

$$NM = P_{t+n} - P_t - (B-D) \quad (3.4.2)$$

Unfortunately, in Iran like in many developing nations, there is not only systematic information on births and deaths; therefore, estimation of internal migration can be done only by the use of 'survival ratio method'.

3.4.2 Survival Ratio Method

The survival ratio method is another residual method which is commonly used in developing countries. In contrast to the 'vital statistics method' the procedure is more convenient to use because it does not require accurate information about the deaths and births. The basic information required in this procedure to estimate the net internal migration is a kind of survival ratio, and the number of persons classified by age and sex are counted in each area and in the entire country in two successive censuses (United Nations, 1970). The formula for estimating the forward net migration (FNM) is:

$$FNM = P_{i, x, i, x+n, t+n} - S \{ P_{x, i, x, t} \} \quad (3.4.3)$$

Actually there are two types of survival ratios: a Life Table Survival Ratio (LTSR) and the Census Survival Ratio (CSR). The (LTSR) is calculated as L_{x+n}/L_x from an appropriate life table which lists the intercensal average mortality. The CSR can be obtained by dividing the population age ($x+n$) from the later census, by the population age (x) from the earlier one. Unfortunately, selection of the life table

which contains the accurate average mortality is very difficult, especially in developing nations. Therefore, to calculate the net internal rate many researchers are forced to use the CSR.

Actually, $\{xS.Px,t\}$ which is called 'Forward Survival Ratios' is one alternative method for the calculation of the expected number of persons at the second census. Another alternative is the 'reverse survival ratio', which is simply the calculating of the number of persons that would have been $\{x\}$ years of age at the earlier census, from the number who are counted as $\{x+n\}$ years old in the second census (United Nations, 1970).²⁹ The formula for calculating the 'reverse survival ratio' is:

$$RNM = \frac{1}{i \ x \ S} \{ P_{i \ x+n,t+n} \} - P_{i \ x,t} \quad (3.4.4)$$

In practice, since these two procedures give different results, the statistician usually uses the average of the two estimates as follows:

$$ANM = \frac{\frac{RNM}{i \ x} + \frac{FNM}{i \ x}}{2} \quad (3.4.5)$$

²⁹ For more details see United Nations, Manual VI: Methods of Measuring Internal Migration, United Nation, 1970, P. 25.

One advantage of the census survival ratio is that it takes care of census error. But one shaky assumption underlying the CSR is that mortality and census error have little variation in different areas.

3.4.3 Intercensal Migration in Iran, 1966-1976:

Information on internal migration patterns in Iran can be obtained directly or indirectly. As Table 3.12 shows, of the 15,854,680 persons who lived in urban areas, 72.8 percent were born in the county 'Shahrestan' of the same province (Ostan), and 27.2 percent had arrived through intraprovincial or interprovincial migration. The table also shows that males are more migratory than females and that interprovincial migration is much greater than intraprovincial migration.

The detailed information in interprovincial migration, which is shown in Appendix A, demonstrates quite well that the province of Markazi (which contains the provinces of Markazi and Tehran) has experienced in-migration significantly.

Although direct information in internal migration is available from 1976 and 1966 censuses, they suffered from a number of errors. For example,

The accuracy of the response is likely to vary from one question to another. If, as seems likely, it can be assumed that one of the most important causes of errors in response to these questions would derive from lapses of memory, then it would seem a priori that data on place of residence (x) years ago are likely to be less precise

TABLE 3.12

Population, by Place of Birth, Sex and Area for 1976

Place of Birth & Sex	Urban No.	Areas %	Rural No.	Areas %
Born in the same place of residence in census period:				
1) Total	11,536,253	72.8	16,947,701	94.9
2) Male	5,906,113	71.2	8,564,863	94.5
3) Female	5,630,140	74.4	8,382,838	95.4
Born in Other Place of the same Province				
1) Total	140,9221	8.9	391,632	2.2
2) Male	750,941	9.1	202,155	2.2
3) Female	658,280	8.7	189,477	2.2
Born in Other Provinces				
1) Total	2,757,600	17.4	487,426	2.7
2) Male	1,554,393	18.7	280,540	3.1
3) Female	1,203,207	15.9	206,886	2.3

Source: Plan and Budget Organization, Markaz -i Amar -i Iran,
National Census of Population and Housing, 1976, Total
Country, 1981.

than those based on birth-place or place of residence. To be sure, the place-of-birth question will yield less accurate results if there have been numerous or important changes in area boundaries during the lifetime of an appreciable proportion of the population. But if the address at the some prior date is required, especially if this date is not in the very recent past, many respondents may not be able to remember accurately and easily the required information. A question such as 'Where were you living five years ago?' may well tax the memory of a person who has moved more than once during this period.³⁰

³⁰ United Nations, Manual VI, Methods of Measuring Internal Migration, New York: United Nations, 1970.

Similarly, many people may hide their places of origin or their previous residences. Therefore, the direct measure of migration may not accurately reflect the true internal migration.

Another way of getting information about the internal migration in Iran is simply to compare the intercensal growth rate of population of different provinces. As Table 3.13 shows the provinces of Tehran and Esfahan experienced higher growth rate than the rest of the provinces.

A more convenient way of getting information about the net internal migration by sex, is the use of survival rates technique, which was explained in detail in the previous section. Table 3.14 shows the national survival ratio between 1966 and 1976.

Using the survival ratio in table 14, and the provincial population by age, in 1966 in Appendix A, the number of persons expected to live in different age groups in the census period of 1976 are shown in table 16. As Table 3.15 shows, by definition, the net interprovincial migration is the difference between the number of persons expected to live in 1976 and the actual population in 1976 (see Appendix A).

As Table 3.16 shows, provinces of Tehran (OBS=21) and Esfahan (OBS=5) experience net positive in-migration. In comparison, the province of Markezi (OBS=17), which is located around the province of Tehran, experiences huge net

TABLE 3.13

Provincial Population Changes during Intercensal 1966-76

	PROVINCE	POP76	POP66	% Change
1	BOYER AHMAD AND KOHGILUYEH	244370	190542	28.25
2	BUSHEHR	347863	259101	34.26
3	CHAHARMahal AND BAKHTIYARI	394357	301359	30.86
4	EAST AZARBAYEJAN	3197685	2636089	21.30
5	ESFAHAN	1969965	1424446	38.30
6	FARS	2035582	1584539	28.46
7	GILAN	1581872	1293835	22.26
8	HAMADAN	1088024	889892	22.26
9	HORMOZGAN	462440	349820	32.19
10	ILAM	246024	213011	15.50
11	KERMAN	1091148	841982	29.59
12	KERMANSHAHAN	1030714	818685	25.90
13	KHORASAN	3264398	2520779	29.50
14	KHUZESTAN	2187118	1706758	28.14
15	KORDESTAN	782440	619700	26.26
16	LORESTAN	933939	767374	21.71
17	MARKAZI	2518717	2257252	11.58
18	MAZANDARAN	2387171	1845270	29.37
19	SEM NAN	246105	207907	18.37
20	SISTAN AND BALUCHESTAN	664292	502626	32.16
21	TEHRAN	4689497	2727811	71.91
22	WEST AZARBAYEJAN	1407604	1087182	29.47
23	YAZD	356849	281160	26.92
24	ZANJAN	580570	461597	25.77

Source: Plan and Budget Organization, Markaz Amar-i Iran,
National Census of Population and Housing, 1966 & 1976
Total Country, Tehran: Plan Organization. 1968-1981.

out-migration. As mentioned above, the reason for unprecedented in-migration in these two provinces is the fact that (a) the government spent millions of dollars in the province of Esfahan in the steel mill, and (b) most of the private firms are located in the provinces of Tehran and Esfahan.

TABLE 3.14

Population of Iran by Age & Census Survival Ratio During
1966 - 1976

Age in 1966	Enumerated Pop. 1966	Age in 1976	Enumerated Pop. 1976	CSR 1966-1976
-	-	0 - 9	10,397,192	-
0 - 9	8,699,266	10 - 19	7,845,730	0.891634597
10 - 19	5,290,211	20 - 29	5,095,184	0.963134362
20 - 29	3,421,435	30 - 39	3,418,161	0.999043091
30 - 39	3,166,474	40 - 49	3,123,015	0.986275270
40 - 49	2,215,668	50 - 59	2,056,262	0.928055105
Over 50	2,885,898	Over 60	1,850,851	0.641521015
Total	25,788,717	-	33,708,744	-

Source: Plan and Budget Organization, Markaz -i Amar -i Iran,
National Census of Population and Housing, 1966 & 1976
Total Country, Tehran: Plan Organization. 1968-1981.

TABLE 3.15

Expected Provincial Population by Age in 1976

OBS	10-19	20-29	30_39	40_49	50_59	OVER60	TOTAL
1	67686	33047	22394	26045	12310	11695	173178
2	75677	52775	33837	31582	19816	20649	234337
3	98102	60630	35716	34906	18269	20854	268477
4	833113	485743	352505	326254	205754	187353	2390723
5	431876	290529	173906	155321	113198	118620	1283449
6	494814	332452	193855	186701	119058	110843	1437724
7	404606	260086	158358	154960	107103	86195	1171308
8	279917	170630	114469	100628	74335	65493	805471
9	101012	63121	41066	49507	31705	29208	315620
10	68827	43076	25596	23862	16103	15351	192814
11	257636	166098	100989	103926	66358	6583	760839
12	251311	164920	104752	99986	64973	57325	743268
13	749290	466647	338403	314501	221110	192495	2282445
14	534359	362193	221765	198446	121409	113801	1551974
15	187065	115566	84867	80856	49540	44650	562544
16	253440	143656	94080	88962	59929	54550	694617
17	673014	454729	291232	263911	183307	175582	2041776
18	589602	371146	242380	216356	144825	115876	1680185
19	60945	43229	26486	22791	19584	15364	188399
20	157306	89972	62438	65495	42488	37273	454971
21	710245	581965	466357	348316	214956	176687	2498526
22	345676	201533	143045	138471	83532	74839	987097
23	78790	58141	31087	32630	24471	26278	251398
24	141420	83299	58576	58599	42130	34038	418063

TABLE 3.16
Net Interprovincial Migration During 1966-76

Province	Migrants Age						Total
	10-19	20-29	30-39	40-49	50-59	Over 60	
1	-5274	3712	5281	-735	-401	1792	4375
2	57	1506	26	3044	1689	2968	9289
3	-10028	-3142	1421	2768	5834	2183	-965
4	-130970	-20096	10530	25477	8264	-1756	-107650
5	12411	897	34692	33145	21689	13992	116827
6	32308	1156	11930	19369	13058	9779	87599
7	-32227	-22483	7828	10713	919	830	-34420
8	-45471	-4491	9177	7485	8793	931	-23576
9	-1839	2776	117	798	-185	8255	9922
10	4564	5475	2711	4316	-401	3385	20149
11	16341	4169	12313	12456	15463	4157	64899
12	3089	667	-1239	-755	457	-100	2119
13	-7447	-11165	13945	14419	8935	-10787	7900
14	68220	8243	-18292	-19210	-14653	98	24404
15	-23058	2008	-6807	-7280	-2090	-442	-37670
16	-22502	1851	13006	2873	513	2958	-1301
17	-18592	-92199	-77323	-57396	-47436	-59061	-352007
18	5725	-24309	-29570	-21268	-13341	-5698	-88462
19	-4992	-5639	295	2008	-605	415	-8518
20	-6273	18925	17469	8022	2382	6376	46901
21	395216	300598	81276	76455	60692	148233	1062470
22	-17298	-3085	-5453	-2306	-3087	-4432	-35662
23	-1628	-4853	8608	6084	4773	3689	16673
24	-21942	1666	6802	2336	452	-648	-11335

3.5 CONCLUSION

Until 1936, The Iranian population was predominantly rural. The land conditions, availability of water, and the climate were the major factors responsible for the location of people and economic activities. Prior to that period, labor mobility was insignificant and the degree of urbanization had not changed for several decades.

The increase in oil revenues during the 1930s allowed the government to undertake a number of development projects which led to the improvement of roads, communication, and the establishment of a number of state-owned factories in urban areas, especially in Tehran. As a result, a number of migrants were attracted to those new industrial towns, searching for jobs and better living conditions. However, the level of internal migration remained moderate until the economic development was accelerated by the formulation of the First Multiyear Development Plan in 1947.

In fact, since the formulation of the First Plan, the Iranian economy has undergone a structural transformation from essentially an agrarian economy to a dualistic economy, where the modern sector operates side by side with the traditional sector. In terms of priorities, the First Plan gave the greatest emphasis to industry and mineral exploitation; the Second Plan to infrastructural development mainly to communication and transportation, and construction of several dams; the Third Plan to agricultural development by implementing the land reform; the Fourth and the Fifth Plans to industrial development by encouraging private, foreign or domestic investment.

In general, since World War II, land reform and government development policies were the major factors contributing to the rapid process of internal migration. In fact, prior to 1962, the decision to migrate was due to pull fac-

tors (or attraction of cities). However, as the gap between rural and urban income increased (due to government spending in urban areas), the decision to migrate became significantly dependent on push factors in rural areas.

Chapter IV

THE THEORY OF ECONOMIC CONSEQUENCES OF INTERNAL MIGRATION IN LDCS

The importance of internal migration in the process of economic development has long been recognized as a possible mechanism for achieving growth, efficient allocation of resources, and lower income inequality (Kuznets, 1966). Unfortunately, an extensive exploration of the literature in Chapter II has revealed that most studies in this area have focused explicitly on the determinants of migration and less has been devoted to the comprehensive study of the consequences of migration on migrants themselves as well as the economies of sending and receiving.

The reasons for the lack of such a comprehensive study are many. First, there is an interrelationship between migration and socio-economic factors. To include such relationships in any model has to be very complex. Second, there are no robust techniques for differentiating the causes of migration from the consequences of migration (Math, 1970). The third major problem associated with the study of migration is the fact that the impact of migration on the economy of a country depends heavily on the socio-economic structure of that country. In one country it may have a beneficial impact on both sending and receiving areas, while in another

country it may have detrimental effects on sending and/or receiving areas. In light of the above discussion, the basic objective of this chapter is to investigate the impact of internal migration from different perspectives. Therefore, in order to carry out the analysis, I intend to explain theoretically and empirically the major impacts of migration on the socio-economic factors, especially on: (1) wage rate, (2) unemployment, (3) employment, (4) output, (5) Government expenditures, (6) composition of consumption and, (7) environmental pollution in both sending and receiving areas.

4.1 ANALYTICAL MODEL OF CONSEQUENCES OF MIGRATION

In general, internal migration has important influences on demographic and social, as well as purely economic variables.³¹ These variables, in turn, interact with one another in the next period. As Figure 4.1 shows, there is significant interaction between migration, employment, industrialization, population growth, income distribution, pattern of consumption, the cost of provision of urban amenities, unemployment, government expenditures, agricultural output, growth, environmental pollution, and social unrest. For example, job opportunity, wage differential, amenities differential, and growth of urban areas all stimulate in-migration

³¹ Bock, P.G. and Rothenberg, I.F. , Internal Migration Policy and New Towns: The Mexican Experience University of Illinois Press: Chicago, 1979, p. 6

and in-migration in turn affects employment growth and income distribution both in sending and receiving areas.

Unfortunately, there is not a sound theoretical model to explain the above interaction nor is there any agreement among economists over the possible beneficial or harmful effects of labor mobility in sending or receiving areas. Except that the majority of researchers in this area believe that migration is beneficial to migrants (Yap, 1975; Myrdal, 1956; Kuznets, 1965).

However, in this study, to assess the impact of internal migration, two alternative models are presented. The first model explains the impact of migration among the regions of an economy while the second model examines the impact of migration between rural and urban areas.

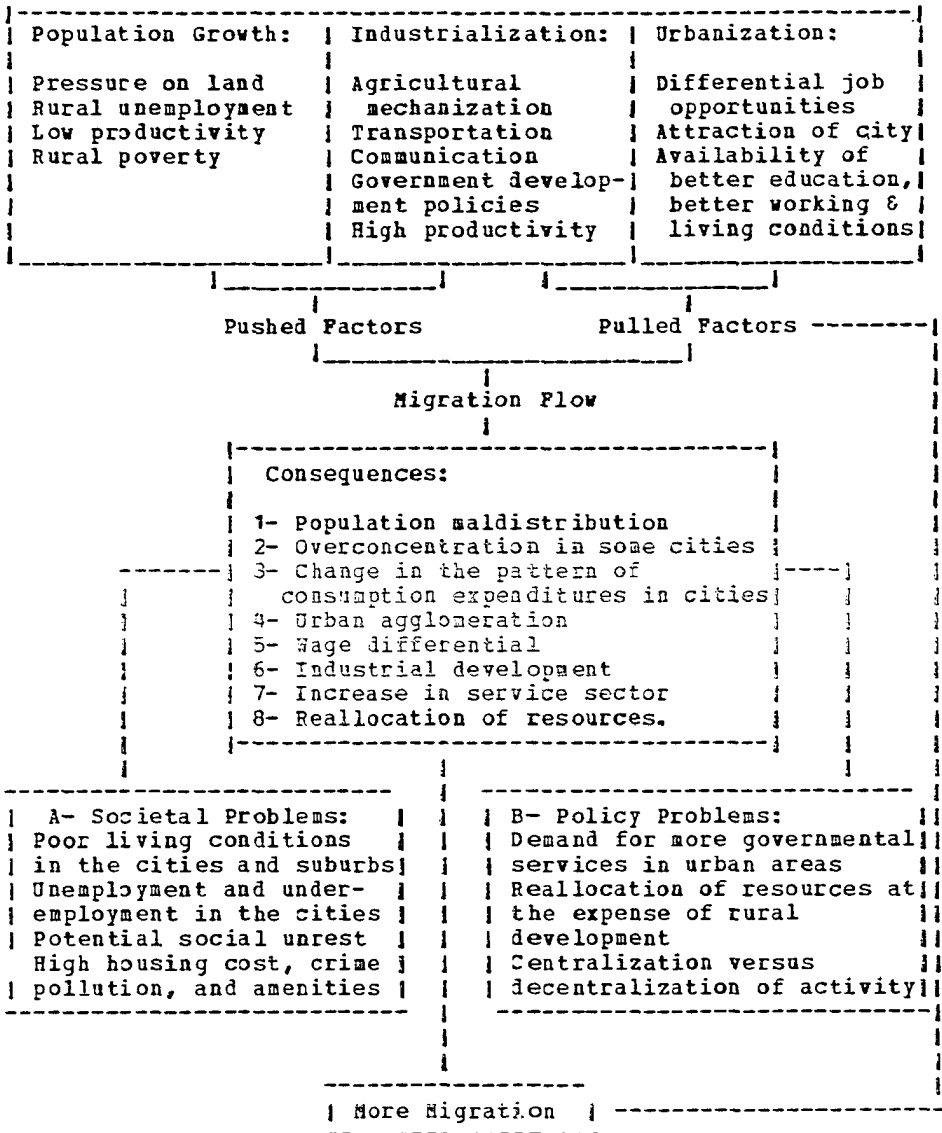


Figure 4.1: Cause and Consequences of Internal Migration in LDCs

4.1.1 Model I: The Regional Economic Impact of Labor Mobility

In general, neoclassical economists (Bort, 1960; Kuznet, 1966) regards internal migration (particularly from overpopulated rural areas to urban growing centers) as a desirable characteristic of economic development and a necessary condition for efficient allocation of resources and obtaining equitable income distribution through reducing wage differential among the regions.³² Basically, the neoclassical theory is a theory of factor mobility. The well-known assumptions are: (a) perfect competition in product and input markets, (b) perfect mobility of resources, (c) homogeneous factors of production, (d) full employment of resources, (e) rationality of individuals, and (f) perfect information. In these circumstances, internal labor migration may be viewed as a response to wage differentials resulting from the lack of information about the output and input markets. This can happen as a result of geographical barriers among the various regions.

To analyze the impact of migration using the above assumptions in a formal way, consider that an economy consists of two regions, a low-wage region (A) and a high-wage region

³² An exception to the traditional neoclassical model, is the work of Kuznets. He hypothesizes that the process of development typically involves accelerated growth in the modern sector which slowly absorbs population released from the traditional sector. He shows that such a process would lead to an increase in relative inequality in the early stage of development. For more details see Kuznets 1966.

(M). The agricultural output (X_a) is produced in the low-wage region and (X_m), the output of manufacturing industries in the high-wage, are produced by the use of two factors of production capital (K) and labor (L). The two production functions can be represented by:

$$X_a = X_a(K_a, L_a) \quad (4.1.1)$$

$$X_m = X_m(K_m, L_m) \quad (4.1.2)$$

Both production functions are linearly homogeneous and concave with respect to factors of production and satisfy the following properties:

$$X_{La} = dX_a/dL > 0, \quad X_{Lm} = dX_m/dL > 0,$$

$$X_{Ka} = dX_a/dK > 0, \quad X_{Km} = dX_m/dK > 0,$$

Under perfect competition in the product market and profit maximization, each factor is paid according to its value of marginal product:

$$W_a = p X_{La}(K_a, L_a), \quad (4.1.3)$$

$$W_m = p X_{Lm}(K_m, L_m), \quad (4.1.4)$$

$$R_a = p X_{Ka}(K_a, L_a), \quad (4.1.5)$$

$$R_b = p X_{Km}(K_m, L_m), \quad (4.1.6)$$

Where W = the real wage rate

R = the capital rental, and

$p = P_a/P_m$

Assume further that the rental to capital are identical between the two regions ($R_a = R_m = R$), but due to the lack of information the wage rate is different ($W_a < W_m$). If labor is a mobile factor and responds to expected wage differential,

$$M = f\{E\{(W_u - W_a)/W_a\}\} \quad (1.7)$$

then labor moves from the low-wage region to the high-wage region.

As Figure 4.2 shows, out-migration puts upward pressure (W_a to W_a^*) in the lower region and down pressure (W_m to W_m^*) in the higher region (Greenwood, 1975). In other words, if we assume that the monetary and non-monetary cost of moving is equal to zero, then the process of migration will continue until wage equilization prevails in the two regions. Even if the cost of moving is not equal to zero, it is expected that the internal migration will reduce the wage differential significantly. However, the impact of labor mobility on employment is, in both cases, dependent on the elasticity of demand and supply of labor. It may increase if $L_m L_m' > L_a' L_a$; it may decrease if $L_m L_m' < L_a' L_a$; or it may remain unchanged if $L_m L_m' = L_a' L_a$.

Unfortunately, the above model does not explain the persistence of wage differential between two regions. One may argue that the existence of wage differential is due to the assumption of continuous full employment, which is often in-

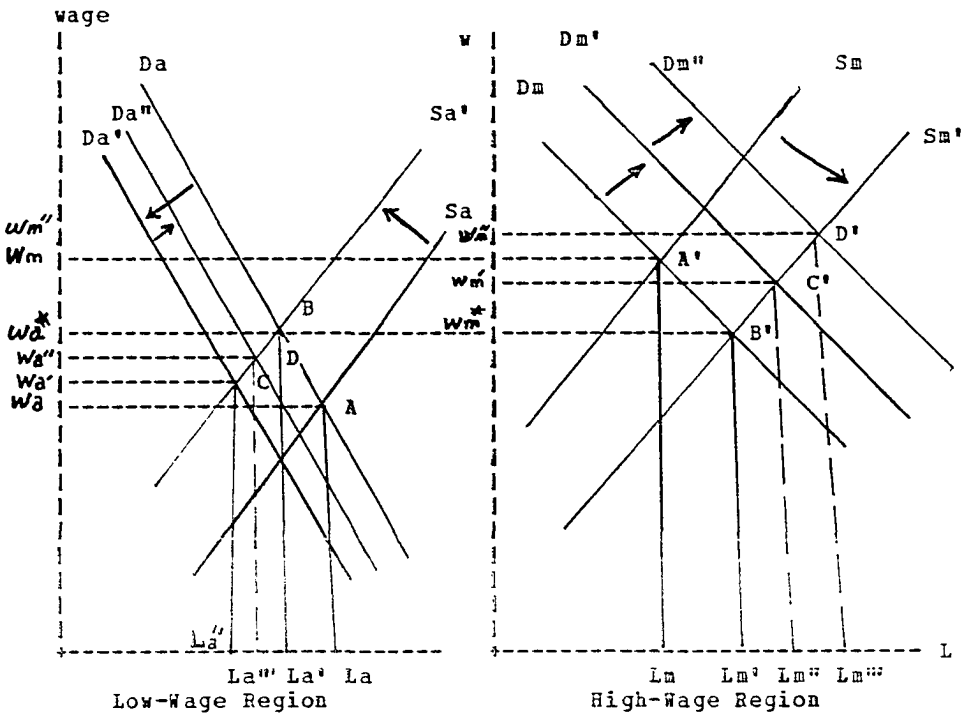


Figure 4.2: The Equilibrium Wage Rate and Employment in Both Regions

applicable to a multiregional system in which regional problems emerge because of geographical differences in the degree of resource utilization or governmental development policies. Similarly, the assumption of perfect competition is out of place in an economy where pure monopoly or monopolistic competition are more typical market structures. Finally, labor is not a homogeneous factor, and therefore wage dif-

ferential is due to the amount of capital embodied in each unit of labor.

If the assumptions of the neoclassical model are true, there are as Greenwood (1975) showed, reasons to believe that internal migration does not lead to the reduction of wage differential among the regions of a developing country. To demonstrate this point, let us include in the above model (a) the concept of interdependence between supply of and demand for labor, and (b) the assumptions that each region produces essentially two commodities with different labor intensity, one for local consumption and another for export. In this circumstance, because of interdependence between supply of and demand for labor, the influx of migrants to a high-wage region also will increase the demand for the goods and services which are produced for only local consumption. This in turn increases more employment and higher wage in the high-wage region. This implies that more migrants will be attracted to this region because the probability of getting a job increases. In contrast, as a result of reduction in the demand for the production of locally consumed goods, the number of jobs available in the low-wage region will decline. In other words, in-migration (out-migration) causes an increase (decrease) in demand for the locally produced and consumed commodity in the high-wage (low-wage) region. This is likely to increase (decrease) production and employment in high-wage (low-wage) region.

Again as Figure 4.2 shows, an increase in demand (Dm') for labor due to an increase in the demand for locally consumed goods will put upward pressure in the wage rate of the high-wage region (Wm') and the opposite effect in out-migration region. Consequently, the labor mobility may increase the wage gap among the regions rather than decrease it. However, the magnitude of total employment (increase or decrease) in both regions will depend on how labor-intensive the industry which produced the locally consumed commodity is. Furthermore, if we assume that labor is heterogeneous rather than homogeneous, and the migrants are drawn disproportionately from the younger, more skilled and more ambitious elements in the labor force of depressed areas, then it is safe to assume that the marginal product schedule of remaining workers could shift downward due to the loss of complementary input (Greenwood, 1978). This may decrease employment as well as wage rate in the sending areas and may increase the productivity and employment of receiving areas.

Agglomeration factors may also influence the wage differential among the regions, especially in the early stages of regional development. Normally, one impact of the agglomeration factor is the increase in productivity of factors of production, especially the productivity of capital. The main agglomerative factors are (1) development of industries which complement manufacturing production in the form of more efficient auxiliary industries, including the effi-

ciency of large-scale production and utilization of an efficient and specialized technical equipment; (2) growth of an efficient and specialized labor force due to the opportunity to work in the area; (3) economies in purchasing materials and in marketing the product due to the large scale of the industry. Firms do not have to maintain a large stockpile of raw materials because of close proximity to suppliers and their ability to obtain the needed materials regularly and upon short notice; and (4) reduction in general overhead costs of production of electricity, water, road, and communication. As a result, the capital moves to the areas where the productivity is higher due to agglomeration factors. As Figure 4.2 shows, the demand for labor will increase (D_L'') and, therefore, it will push the wage rate even higher (W_L'') due to the complementary factors of production as capital moves to the high-wage region.

One of the important implications from the above model is that the wage differential will persist (in spite of interregional migration) as long as the marginal productivity of factors of production for some reason are greater in the high-wage region. However, one factor which may force the system toward equilibrium is the magnitude of remittance which is sent by migrants for their families in the aggregate demand of sending areas. If the amount of remittance is high enough, it may increase the demand for locally produced goods more than the reduction in the demand of those

who left the area. In these circumstances, the wage differential may decrease rather than increase, if it is spent in consumption of locally produced commodities, or if it is invested to improve the agricultural production. As point D in Figure 4.2 shows, it is expected that the increase in low-region demand from D_a'' to D_a''' (due to remittance) decreases the wage gap from $W_a' W_m''$ to $W_a'' W_m'''$.

4.1.2 Model II: The Impact of Migration on Rural and Urban Areas

Today, one of the main features of many LDCs is the unprecedented movement of population, not from depressed provinces to advanced provinces, but from rural depressed areas to urban areas. Unfortunately, the massive exodus from rural to urban areas is far above the absorptive capacity of urban modern sectors. Consequently, many of the migrants moving to the urban areas hoping to obtain a decent job, end up being underemployed in the informal sector.

In fact, the growing mass of urban unemployment and underemployment is regarded by many as a great social evil and a prime source of human tragedy. Others, including politicians in power, fear it as a source of political instability. The presence of large numbers of poverty-stricken and jobless people in the cities puts a great deal of pressure on governments, national and local, to increase current expenditures rapidly to provide civil service jobs for the unemployed. At the same time, the government of many LDCs are

faced with demands on their capital budgets to spend more for development purposes. In addition, increasing urban population creates demands for urban services: housing, sewage, lighting, roads, police protection, water supply, green space (parks) to decrease the pollution, and the like.

To incorporate the above factors in our three sector model, let us assume that the economy consists of an agricultural sector (A) in rural areas, and a dual urban economy with two distinct sectors: a modern highly efficient modern sector (M), and a low-productive traditional or informal sector (T). These two urban sectors are markedly different in organization, factor productivity, capital labor ratio, and ability to absorb unskilled labor.

In general, the line between the modern sector and the traditional urban sector is often hard to draw. In fact, this distinction is somewhat arbitrary. Basically, the difference is one of scale of operations. The modern sectors in developing countries consist of efficient large-scale establishments utilizing substantial amounts of capital per worker, and employ skilled and unskilled workers in the process of production of consumer goods or capital goods. No matter how the level of employment is generated, it is limited either by technological constraints (for example production is fairly capital-intensive), by skill shortages, or by minimum wage regulation (Yap, 1975). As a result, the labor is not absorbed in sufficient quantities relative to the

general population growth, and especially the growth of urban areas. Furthermore, this sector is highly regulated, subsidized, and protected by government. But it is also subject to minimum wage, social security, and union contracts. Consequently, the expected wage rate in this sector is higher than the other sectors.

The urban traditional or informal sector in LDCs, in contrast, consist of numerous very small-scale establishments often individually or family run. These include petty trading, individual craft activities, and very small-scale manufacturing and construction establishments, employing less than ten workers. As a result, this sector plays an important role in providing temporary or permanent earning opportunities for a large number of urban residents, as well as new-comers to the urban areas.

The employment in this sector has the following characteristics: (1) arrangements typified by self-employment or loose and often temporary agreements, lack of coverage by minimum wage laws, social security, and other types of government regulations, and absence of union contracts when such exist, (2) ease of entry and high turnover of employment, (3) smaller scale and less capitalized establishments, and as a result, (4) generally more competitive determination of wage levels than the modern sector. Furthermore, this unprotected sector in cities performs as a labor market clearing functioning in a situation in which

the level of migration exceeds the demand for labor in protected sector. In other words, the wage rate in the informal sector regulates the flow of migrants to urban markets.

In contrast, the agricultural sector contains surplus labor in the sense that the marginal product of labor is less than prevailing wage and, in the extreme, is perhaps zero (Lewis, 1954). As development proceeded, the contribution of this sector to national product and employment declines and eventually reaches a point where, in the highly industrialized stage, the wage rate in this sector becomes equal to opportunity cost of labor.

In order to express the general characteristics of the LDCs in formal terms, we shall now construct a simple model containing the main features of these countries' economies. Accordingly, the economy is divided into three sectors: the backward sector which produces agricultural goods, the industrial modern sector which produces capital and consumption goods, and the traditional urban sector providing services mostly for the modern sector. Although there are reasons to believe that the application of the neoclassical model to developing countries is very doubtful, we assume the production function in all three sectors is the neoclassical type, but subject to a number of restrictions especially in input markets.³³

³³ The argument against the application of the neoclassical model are many. For example, it is difficult to accept the idea of a 'well behaved' production function in developing countries just as it is equally difficult to see

The production function which describes the production in the modern sector is assumed to be neoclassical, and therefore takes the following forms:

$$Q1 = M(t) (K1, LD1, UL1, SL), \quad (4.2.1)$$

Where $Q1$ = total modern sector production

$M(t)$ = improvements of total input productivity

$K1$ = the use of capital in the modern sector

$UL1$ = unskilled labor in the modern sector

$LD1$ = the use of land in the modern sector

t = time, as technical progress is expected

to be reaped in the modern sector

The function can be converted to:

$$\frac{\dot{Q1}}{Q1} = \frac{\dot{M}}{M} + a1 \frac{\dot{K1}}{K1} + b1 \frac{\dot{LD1}}{LD1} + c1 \frac{\dot{UL1}}{UL1} + e \frac{\dot{SL}}{SL}, \quad (4.2.2)$$

the relevance of the marginal productivity theory of distribution in peasant economies, characterized largely by family farming rather than wage-labor. Similarly, another major difficulty that arises in the application of the neo-classical model in a peasant economy, is the application of the principle of marginal productivity in determination of factor shares, especially in the agricultural sector, where the output heavily depends on rainfall precipitation variability. It is also equally possible to argue that given the nature of market structure and financial mechanisms in most of these countries, the neo-classical solution, for example, equilibrium between interest rate and the rate of profit would be difficult to achieve. Even when the equality can be achieved, it will be relevant only to the organized markets which are usually located in the urban sector without greatly affecting the partly monetized rural sector.

Where \dot{Q}_1/Q_1 = the rate of growth of output
 \dot{M}/M = the rate of growth of technology
 \dot{K}_1/K_1 = the rate of growth of capital
 \dot{LA}_1/LA_1 = the rate of growth of land
 \dot{UL}_1/UL_1 = the rate of growth of labor
 $a_1+b_1+c_1+e = 1.$

The production function in the traditional or informal urban sector has the following form:

$$Q_2 = I(t) (K_2, LD_2, UL_2), \quad (4.2.3)$$

Where Q_2 = total informal production
 $I(t)$ = improvements of total input productivity
 K_2 = the use of capital
 UL_2 = unskilled labor
 LD_2 = the use of land

The function can be converted to:

$$\frac{\dot{Q}_2}{Q_2} = \frac{\dot{I}}{I} + a_2 \frac{\dot{K}_2}{K_2} + b_2 \frac{\dot{LD}_2}{LD_2} + c_2 \frac{\dot{UL}_2}{UL_2}, \quad (4.2.4)$$

Where \dot{Q}_2/Q_2 = the rate of growth of informal output
 \dot{I}/I = the rate of growth of technology
 \dot{K}_2/K_2 = the rate of growth of capital
 \dot{LA}_2/LA_2 = the rate of growth of land
 \dot{UL}_2/UL_2 = the rate of growth of labor
 $a_2+b_2+c_2 = 1.$

Where \dot{Q}_1/Q_1 = the rate of growth of output
 \dot{M}/M = the rate of growth of technology
 \dot{K}_1/K_1 = the rate of growth of capital
 \dot{LA}_1/LA_1 = the rate of growth of land
 \dot{UL}_1/UL_1 = the rate of growth of labor

$$a_1 + b_1 + c_1 + e = 1.$$

The production function in the traditional or informal urban sector has the following form:

$$Q_2 = I(t) (K_2, LD_2, UL_2), \quad (4.2.3)$$

Where Q_2 = total informal production

$I(t)$ = improvements of total input productivity

K_2 = the use of capital

UL_2 = unskilled labor

LD_2 = the use of land

The fuction can be converted to:

$$\frac{\dot{Q}_2}{Q_2} = \frac{\dot{I}}{I} + a_2 \frac{\dot{K}_2}{K_2} + b_2 \frac{\dot{LD}_2}{LD_2} + c_2 \frac{\dot{UL}_2}{UL_2}, \quad (4.2.4)$$

Where \dot{Q}_2/Q_2 = the rate of growth of informal output

\dot{I}/I = the rate of growth of technology

\dot{K}_2/K_2 = the rate of growth of capital

\dot{LA}_2/LA_2 = the rate of growth of land

\dot{UL}_2/UL_2 = the rate of growth of labor

$$a_2 + b_2 + c_2 = 1.$$

Finally, the production function which describes agricultural production is of a simple form with neutral innovation in the Hicksian sense:

$$Q_3 = A(t) \{ K_3, L_3, U_3 \}, \quad (4.2.5)$$

Where Q_3 = total agricultural production

$A(t)$ = improvements of total input productivity

K_3 = the use of capital

U_3 = unskilled labor

L_3 = the use of land

The fuction can be converted to:

$$\frac{\dot{Q}_3}{Q_3} = \frac{\dot{A}}{A} + a_3 \frac{\dot{K}_3}{K_3} + b_3 \frac{\dot{L}_3}{L_3} + c_3 \frac{\dot{U}_3}{U_3}, \quad (4.2.6)$$

Where \dot{Q}_3/Q_3 = the rate of growth of agriculture

\dot{A}/A = the rate of growth of technology

\dot{K}_3/K_3 = the rate of growth of capital

\dot{L}_3/L_3 = the rate of growth of land

\dot{U}_3/U_3 = the rate of growth of labor

$$a_3 + b_3 + c_3 = 1.$$

Let us assume, for simplicity, that capital is a mobile factor and the land can be used either for farm use or urban use. These assumptions assure us that capital rental and land price both in urban and rural areas are equal. Flexibility of capital rental imply that:

$$R_i = p_i Q_{ki}(K_i, L_{Di}, U_{Li}, S_L) \quad (4.2.7)$$

Where R = capital rental

Q_{ki} = marginal productivity of capital

P_i = price of product

$i = 1, 2, 3.$

and the flexibility of land price implies that:

$$LD_1 + LD_2 + LD_3 = LD \quad (4.2.8)$$

Or if assuming that the total supply of farm land (LD_u) is equal to LD_3 and the total urban land is equal to $LD_1 + LD_2$ then

$$LD_f = 1 - LD_u \quad (4.2.9)$$

Similarly, the flexibility of capital rental implies that

$$K_1 + K_2 + K_3 = K, \text{ or} \quad (4.2.10)$$

$$\frac{\dot{\bar{K}}}{\bar{K}} = \frac{\dot{\bar{K}}_1}{\bar{K}_1} \frac{\dot{\bar{K}}_2}{\bar{K}_2} \frac{\dot{\bar{K}}_3}{\bar{K}_3}, \text{ or} \quad (4.2.11)$$

$$I = \dot{\bar{K}} = \dot{\bar{K}}_1 + \dot{\bar{K}}_2 + \dot{\bar{K}}_3 \quad (4.2.12)$$

$$I = GI + PI \quad (4.2.13)$$

$$GDE = GE - NGDE \quad (4.2.14)$$

$$GDE = GRDE + GUDE \quad (4.2.15)$$

$$GE = GR + GB \quad (4.2.16)$$

Where I = total investment

GDE = total government development expenditures

$NGDE$ = total government non-development expenditures

$GRDE$ = total government rural development expenditures

$GUDE$ = total government urban development expenditures

GE = total government expenditures

PI = total private investment

GB = total government borrowing

GR = total government revenues

The employment and wage rates for skilled and unskilled workers are affected by a number of imperfections in labor markets. Let us assume that skilled workers receive a wage $\{W_s\}$ which is equal to its value of marginal productivity:

$$W_s = p_1 Q_s\{K_1, LD_1, UL_1, SL_1\}, \quad (2.16)$$

But for some reason (for example minimum wage or government subsidies) the wage rate for unskilled workers in the modern sector $\{W_u\}$ is higher than the wage rate in the informal sector $\{W_u2\}$ and that of agriculture is equal to the subsistence wage rate $\{W_u3\}$. This implies that

$$W_u = p_1 Q_u\{K_1, LD_1, UL_1, SL_1\}, \quad (4.2.17)$$

$$W_u2 = p_2 Q_u2\{K_2, LD_2, UL_2\}, \quad (4.2.18)$$

$$W_u3 > p_3 Q_u3\{K_3, LD_3, UL_3\}. \quad (4.2.19)$$

The total supply of the labor force in urban areas:

$$L_u = 1 - L_r, \text{ or} \quad (4.2.20)$$

$$L_u = UL_1 + UL_2 + SL + UN_u. \quad (4.2.21)$$

Where L_u = total labor force

L_r = total rural labor force

U_{Nu} = urban unemployed

Also, urban unemployment is dependent on in-migration M

$$U_{Nu} = a_0 + 1M \quad (4.2.22)$$

The labor force in the agricultural sector L_r is assumed to grow at a natural rate r less the amount of migration

$$L_r = U_{Lr} = r.L_r - M \quad (4.2.23)$$

The urban labor force L_u also grows at a rate g plus amount of rural-urban migration

$$L_u = g.L_u + M \quad (4.2.24)$$

Following Todaro's model (1970), the migration (M) into the urban dual economy follows a two-stage process in which an unskilled rural worker migrating to the city is willing to spend a certain amount of time in the urban traditional sector until finding modern sector employment. Let $E\{W_u\} = (W_u - E_u)L_u$. The migration function can be written as

$$M = M\{E\{W_u\} - E\{W_r\}\} \quad (4.2.25)$$

Where $E\{W_u\}$ = expected urban income

W_u = average urban wage rate

W_r = rural wage (average productivity of labor)

The process of rural-urban migration will continue until the expected income received becomes equal in both areas.

4.1.3 Evaluation of the Three Sectors Economy

The impact of labor mobility, from rural to urban areas, mainly on output, employment, wage rate, income distribution, the pattern of government expenditure, the pattern of consumption, and other socio-economic factors is dependent on the reallocation of resources as a result of labor mobility. In the following section an attempt will be made to examine some of these impacts in a three sector economy.

4.1.3.1 1: The Impact of Migration in the Output of Sending Areas

In general, the attention of researchers in this area must be focused on the impact of internal migration in the sending areas. In other words, the impact of labor mobility in the sending area (usually rural area) is vital to the hypotheses of whether the internal migration has a beneficial or a detrimental effect on the overall economy. Therefore, we begin our examination by looking at the impact of migration in rural areas or the agricultural sector. To make the analysis in a formal way, let $Q_1 = Q_3/LD_3$ denote the output of agriculture per unit of land and $Y = Q_3/UL_3$ as output per unit of labor. By definition we have

$$Q_3 = Q_1 \cdot LD_3 \quad (4.2.26)$$

$$Q_3 = Y \cdot UL_3, \text{ or} \quad (4.2.27)$$

$$\bar{Y} = \frac{\bar{Q1} \cdot \bar{LD3}}{\bar{UL3}} \quad (4.2.28)$$

$$\frac{\dot{\bar{Y}}}{\bar{Y}} = \frac{\dot{\bar{Q1}}}{\bar{Q1}} + \frac{\dot{\bar{LD3}}}{\bar{LD3}} - \frac{\dot{\bar{UL3}}}{\bar{UL3}}, \quad (4.2.29)$$

Equation (4.2.19) can be written as

$$\frac{\dot{\bar{Q3}}}{\bar{Q3}} = \frac{\dot{\bar{Y}}}{\bar{Y}} + \frac{\dot{\bar{UL3}}}{\bar{UL3}}, \quad (4.2.30)$$

If we substitute equation (4.2.22) into equation (4.2.6) we have:

$$\frac{\dot{\bar{Y}}}{\bar{Y}} = \frac{\dot{\bar{A}}}{\bar{A}} + a3 \frac{\dot{\bar{K3}}}{\bar{K3}} + b3 \frac{\dot{\bar{LD3}}}{\bar{LD3}} - (1-c3) \frac{\dot{\bar{UL3}}}{\bar{UL3}}, \quad (4.2.31)$$

Equations (4.2.29) and (4.2.31) which are crucial in this analysis and of course are more relevant in the later stages of development, show that agricultural output per unit of worker varies directly with the growth of supply of land, supply of capital, and total input productivity, but varies inversely with the growth of supply of labor.

In other words, equation (4.2.31) shows that as peasants move to the urban areas, the growth of output per unit of labor in the agricultural sector would be increased by a factor of $(1-c3)$. However, the total output will decrease due to the labor reduction, unless:

{1} The economy is in the early stage of development. In this circumstance, the economy experiences surplus labor in which laborers may appear to be doing work of one sort or another but they are so crowded on the land that if some of the labor were removed total output would remain unchanged.

{2} The selectivity of migration has nothing to do with the productivity of remaining workers.

{3} Migrants will not remove their funds from rural areas in order to invest in the informal sector in urban areas.

{4} The farm land will not be converted to urban use land.

The impact of labor mobility on production is also dependent on the type of production process and organization. If the agricultural sector operates along fairly capitalist lines with a wage payment system, labor will not be employed beyond the point where the marginal productivity of a unit of labor time is equal to the agricultural wage. Under this circumstance, the marginal product of labor must be considered positive in the sense that if labor migrated from the agricultural sector, the output will decline. However, if the farms are run by family members, then they will work on the farm up to the point where the marginal product of their working will become zero. Thus, the wage rate will be equal to average productivity. In this situation, output may not decrease as family members migrate to the cities.

4.1.3.2 B: The Impact of Migration on the Output, Wage, and Employment of Urban Areas

The transfer of labor resources from the agricultural sector, where they add nothing to production, to the urban areas will affect a number of economic variables. In general, as the migrants moved to urban areas their demand for goods and services in urban areas will increase. This increase in demand could be due to (1) their increased earnings due to obtaining urban jobs (2) their spending their savings if they have them, or (3) their borrowing from their friends. The immediate impact of the labor mobility in receiving areas is the increase in production of goods and services produced by the modern and informal sectors. The reasons are many. It can happen if the migrant is hired either by the modern sector or the informal sector. The demand for goods and services may increase if the migrants spend their savings or borrow from their friends at the time of arrival. This in turn, increases the output, employment, and probably the wage rate in both urban sectors.

The increase in the income of migrants resulting from obtaining urban jobs presumably will increase the demand for food-stuff. This increase in demand for farm products in the first stage of development may not affect the wage rate in the agricultural sector. As long as there is disguised unemployment and the workers receive the subsistence wage which is above the marginal productivity of labor in this sector, the wage rate will not be affected. Also, the agri-

cultural production may not increase if (1) the funds are transferred from low productive farm activities into the urban areas where the return of investment is relatively high, (2) there is reduction in government rural development expenditures or (3) there is reduction of farm land resulting from the rapid expansion of cities. All of these factors will be explained in detail in the next section.

4.1.3.3 C: The Impact of Labor Mobility on Land Use

The rapid urbanization in the LDCs during the past decades has created additional demand for urban land. However, the experiences of many developing nations suggest that any increase in the size of urban land causes corresponding reduction in the land under agricultural uses. If the cultivated land to population ratio is very low, the loss to agriculture and gain for the urban sector have to be viewed from the point of view of the country's overall benefit and consequences to the total economy.

To show the impact of migration on land use, let us assume that the demand and supply for land settled at the point where the marginal productivity of urban land is equal to the marginal productivity of farm land. According to equations (4.2.29) and (4.2.31), as people move to the cities, the demand for production of modern and traditional urban sectors will increase. This implies that the demand for urban land either for commercial use or residential use

will increase (equations 4.2.2 and 4.2.4). In this circumstance, more land will be allocated to urban use than to farm use. However, according to equation (4.2.23), the reduction in farm land will decrease the per capita output of the agricultural sector as well as total agricultural output, unless the production process becomes a land-saving process. Furthermore, if we assume that the more productive farm land is located around the urban areas, the conversion of farm land to urban land will reduce agricultural production significantly.

The land-saving process requires working capital. However, in the early stage of development in LDCs it is likely that investors move their funds away from the agricultural sector and invest in the urban sector, where the rate of return is relatively high due to agglomeration factors.

4.1.3.4 D: The Impact of Labor Mobility on Government and Private Investment

In general, the government of LDCs are playing an active role in economic development in order to bring about a more equitable income distribution and better living conditions for the entire country. And indeed, the rapid process of urbanization resulting from rural-urban migration strongly affects the pattern of government expenditure, especially the development expenditure which is needed very badly to improve living conditions of both rural and urban residents in a number of ways.

As equation (4.2.16) shows, the government expenditures in rural or urban areas are usually divided into 'development' and 'non-development' expenditures. However, the rapid rural-urban migration may divert the limited financial resources usually available from rural development projects, in order to finance the provision of basic urban amenities. As a result, the country may face a lower rate of growth and wider income inequality.

Following the rapid in-migration or the concentration of economic activities usually in a few urban areas of LDCs, various groups of different interests put the government under pressure to expand urban development and non-development expenditures. The major pressure comes from the business groups which usually have a strong influence on the government's decision making to increase urban infrastructure for commercial uses. Pressure may be imposed by the head of government to expand expenditures to make the cities, particularly the capital, a showcase of modernization with highways, parks, street lights, recreational facilities, and modern office buildings for bureaucrats. Also, as the size of cities increased, permanent residents forced the government to provide more public housing, water supply, employment, police protection, fire protection, health service, education, and hundreds of other urban amenities.

Another group which asks government authorities to increase nondevelopment expenditures at the expense of devel-

opment expenditures is the migrants. This group of people usually live in shanty towns and slum suburbs at the time of arrival. Unfortunately, many of the squatter settlements, shanty towns, or slum suburbs are suffering from the lack of basic amenities, especially water, electricity, health services, paved streets, and recreational facilities. Many children living in these places suffer from a number of diseases. Consequently, as these places are expanded or as the number of migrants (normally from the same background) increase, they demand those facilities through political pressure or social unrest. In this situation, the authorities with little popular support find it hard to ignore the migrants' demands and the government is usually forced to provide minimum basic urban amenities. But as the migrant's demands are satisfied, even partially, it creates more incentive for potential migrants to move to urban areas. However, more migrants means greater problems for authorities in that they must provide basic needs for urban residents in the later period.

If the pace of in-migration resulting from the above approach becomes greater than the absorptive capacity of the modern sector or the informal sector, then the government will be under tremendous pressure to increase (normally unproductive) government jobs. This in turn drains further development budgets and, as a result, government is forced to further reduce the development expenditures in rural areas to finance the ever increasing urban amenities.

In sum, as the government devotes a considerable portion of its budget in current expenditures (1) to improve the infrastructure for private commercial use, (2) to improve the urban amenities and the living conditions of the poor, and/or (3) to increase the urban amenities to increase the image of the capital city in the world community, less funds will be available for rural development or agricultural growth. In other words, the funds which must be used to improve the living conditions of the rural dweller in order to regulate the migration level go toward the provision of urban amenities. Consequently, it is likely that this policy leads to deterioration of rural development, lower national economic growth, and higher income inequality.

The alternatives to the reduction of the development expenditures is to finance the above projects by borrowing from the foreign countries or increasing the tax level. Both policies are unwise procedures because: (a) the only way that a loan is repaid is when it is used for productive activities; and (b) the imposition of taxes hurts only the poor as the wealthy people can use different tax loopholes. If the amount of foreign loans exceeds the ability of a country to repay, then borrowing may lower economic growth or create a financial crisis in the later stages of development.

If the government resists the demands of various groups, especially the poor, then it is likely that a go-

vernment with little popular support faces social upheaval and possible revolution, as was the case in Iran.

Meanwhile, the private funds tend to move away from the agricultural activities. The reasons for the private sector to reallocate their funds are many. First, the investment is more productive in areas with a large market size. Second, the marginal productivity of capital is lower in the agricultural sector than in other sectors because of the nature of production process. For example, agricultural production depends on weather conditions, rainfall variability and many unforeseeable events, while the production process in the modern sector is relatively more stable. Therefore, it is more likely that capital is allocated by the private sector in urban areas than in rural areas.

In these circumstances, the only way to keep the agricultural production from falling is the government investment in the agricultural sector. However, as mentioned above, the rapid migration into cities of many LDCs forced the government to spend more in provision of basic urban amenities creating unproductive jobs and, as a result, less capital available for rural development. As agricultural production declines over time, resulting from the lack of working capital, it is likely the country will be forced to import food-stuff. In Iran, for example, as a result of rapid migration and the neglect of rural development, the supply of food-stuff is completely dependent on foreign sup-

pliers. Similarly, many other LDCs which were the exporters of agricultural production are now dependent on foreign agricultural suppliers. This in turn, will reduce the availability of hard currency necessary for purchasing new technology in order to have a self-sufficient economy. Therefore, the notion that rapid urbanization could jeopardize the national objective is not without foundation.

4.1.3.5 E: Other Impacts of Internal Migration

The negative impact of internal migration in LDCs is not limited to the increase in wage differential or the change in the pattern of government and private investment. Today, many urban and metropolitan areas of LDCs are facing urban problems such as the shortage of water supply, electricity, housing, lack of adequate sewage system and storm drainage, and increasing air, noise, and water pollution. All these factors lead to the deterioration of the quality of life in overpopulated urban areas. For example, in many LDCs during the past two decades, the cost of excess agglomeration of industries in overpopulated cities has increased disproportionately. The per capita cost of the provision of domestic water supply, prevention of crime, and public services are becoming much greater than the provision of these services to rural areas.

Similarly, the quality of air and water is likely to deteriorate because of the population explosion, rapid in-

dustrialization, and urbanization. For example, studies which have been conducted by environmentalists indicate that the atmosphere of major urban areas of LDCs such as Tehran, Bambaiei, Calcutta, Jacarta, and many other primary cities is highly polluted. As the size of urban population increases, the basic amenities of life, such as water, air and land are becoming polluted. The major factors which contributed to pollution are many. First, the fact that most industries are located around the principal cities allows them to have access to large markets for their products. Most of these factories do not have appropriate devices to reduce air and water pollution and in fact, government is unlikely to impose any effective regulation on the basis that these regulations may discourage industrialization processes. The second source of air pollution is the burning of fuels at home and the use of vehicles that are generally old with poor engine performances.

Regardless of the source of pollution, the pollutants released into water or air such as suspended matters, nitrogen oxides, sulfur dioxide, carbon monoxide, and many others are hazardous. Medical researchers have proven conclusively that these pollutants lead to diseases such as lung cancer, asthma, bronchitis, tuberculosis and nervous disorders. Unfortunately, many of the victims are poor people who are dependent on the public health services. As a result, every year the government spends million of dollars to alleviate

this side effect of environmental pollution without much success.

Industrialization and overpopulation resulting from rural-urban migration also increase the volume of domestic and industrial discarded materials. This, in turn, gives rise to a new problem regarding the collection and the safe hygiene disposal of these industrial wastes. For example, in Tehran there are no sanitary landfills. Refuse materials are collected by garbage collectors and piled in different sites in the streets of the city ready to be loaded in the rear loading vehicles. Consequently, the streets of the city are very dirty. Furthermore, as a result of unplanned rapid urbanization, the city does not have storm drainage systems or sewage facilities. The unhygienic practice of collecting the waste materials and the existence of an open sewer system lead to a number of diseases and increase the cost of medical care. In rural areas, there are few problems of sewage and collection of waste materials and, in fact, in many LDCs farmers collect them for farm use at no cost.

In summation, since clean air, land, and potable water are basic amenities for healthy living, the task of the government is to initiate the necessary corrective measures to keep the city free from such health hazards.

4.2 CONCLUSION

The purpose of this chapter was to evaluate, theoretically and empirically, the impact of migration on sending and receiving areas. To carry out this task, two models have been introduced. The first model was laid out to explain the impact of migration in different regions of an economy, and the second was to explain the impact of migration both in rural and urban economies.

Depending on the structure of economy, both models predict that internal migration, especially rural-urban migration, increases the output and employment of receiving areas and probably reduces the output and employment of sending areas. In other words, the labor migration from rural areas has led to the economic growth of receiving areas and drained much of the potential developmental resources in sending areas. As a result, rural-urban migration led to impoverishment of rural areas.

Chapter V

ECONOMETRIC MODEL AND EMPIRICAL FINDINGS

The theoretical models in Chapter IV provide information essential to specification of an empirical model of determinants and impacts of labor mobility in the peasant economy. However, the translation of those theoretical models into one suitable for empirical investigation is a difficult undertaking, and a variety of obvious difficulties are encountered which will be explained in the following section.

5.1 DATA AND EMPIRICAL SPECIFICATION

Perhaps the major obstacle in the study of the impacts of migration is the lack of adequate and accurate statistical information, especially time series data concerning employment, production, gross migration, wage rate, income distribution, and other economic variables. Indeed, a systematic approach toward the collection, tabulation, and evaluation of statistics is not an easy task, and it takes many years and many resources for a developing nation to design a statistical system and to accumulate the time series data required for a comprehensive economic analysis and a sound policy recommendation. Iran is no exception. At the present

time, very few economic statistics present the full picture of the Iranian economy. However, the above deficiencies do not mean that there is nothing to be learned from the quantitative data that are available or that those quantitative inquiries should be abandoned until the ideally desirable data are on hand. In this study, as in other migration studies, it is impossible to analyze the whole complexity of the interaction of all the factors involved, and therefore a great deal of attention is given to those factors which explain the determinants and the impacts of internal migration. In the selection of these variables, attempts were made:

1- To select the best available cross-sectional indicators of social and economic development such as G.N.P., government expenditure, public utilities, and education. Therefore, the empirical analysis relies mainly on cross-sectional data, mostly at provincial levels in Iran.

2- To select the proxy variables whenever the data is not available, and to collect time series data whenever it is available.

In this study, several sources have been used to estimate the economic impact of internal migration. The major sources of information of in-migration come from the National Census of Population and Housing which is published by

the Statistical Center of Iran for 1966 and 1976. The census data which provides information about the age, sex, and residential location at provincial levels, give us reasonably accurate information about the trend of net migration from one province to another. Other explanatory variables which will be used in this study are published by the United Nations, the Central Bank of Iran (Bankeh-i Markazi), the Statistical Center of Iran and the Plan and Budget Organization. All the data which were intended to be used in econometric models or display by tables, are provided for further investigation in Appendixes.

Aside from the quality of data, the primary statistical problem facing the empirical researcher of internal migration is the multitude of explanatory variables which the theory indicated as potentially relevant to the migration decision and the impact of labor mobility. In other words, in any empirical specification, we must consider the possible interaction among the variables.

For this reason, several econometric models consisting of a single equation as well as systems of equations have been used to estimate the impacts of internal migration. The logic of each specification follows from the theoretical models presented in Chapter II and Chapter IV. The results are shown in the following sections.

Researchers accustomed to research of this sort will realize that the following specifications are only one set

of many possible specifications. However, they appear to be the most intuitively plausible; they conform to a theoretical model and yield, to the some extent, strong results. Most of the coefficients of variables that are statistically significant in one specification remain so in alternative specifications. The suspect relations in some of the specifications are those involving value added, the proxy for the output of the modern sector.

In the next section two alternative techniques are used to estimate the coefficients of structural models. One is the use of ordinary least squares (OLS), which make no attempt to adjust for simultaneous equation bias and are potentially biased. However, to include the interactions among the dependent and independent variables one must use a simultaneous equation which adequately analyzes both the causes and effects of labor mobility on the growth and development of the regions involved and of the nation as a whole. For this purpose, a simultaneous equation has been constructed to estimate the interaction among the variables in action. Furthermore, a Three Stage Least Squares (3SLS) will be used in order to separate the simultaneous effects. By this method, each endogenous variable is initially fit by ordinary least squares as a linear function of all the exogenous variables appearing in the econometric model. Then, whenever an endogenous variable appears as an explanatory variable in the structural equations, it is replaced by its predicted

value calculated in the corresponding first stage equation. The 3SLS does adjust for simultaneous equation bias and is theoretically preferable to the OLS estimates.

5.2 EMPIRICAL FINDINGS

In order to estimate the economic impacts of internal migration on employment, output, government expenditures, income distribution and economic factors several econometric models have been estimated. For example, to estimate the impact of internal migration on the level of government employment the following model has been constructed:

$$TGVENP76 = b_0 + b_1 \text{ UNEMPL71} + b_2 \text{ INNIG71} + b_3 \text{ CINMIG71} + b_4 \text{ TOTGO770}$$

The logic of the above specification follows the fact that as in-migration increases in an area, the government is forced to increase employment partly because of the expansion of urban areas and partly because the labor absorption of both the modern sector and informal sector is very limited. In this model, two different values for migration (which are calculated differently) have been used. The model was estimated by an OLS technique, and the results are shown in Table 5.1,. The results show that the coefficients of both predictors CINMIG71 and RMIG71 are significantly different from zero at $\alpha = 0.05$. However, the coefficient of UNEMPL71 is not significant but it is in a right direction.

It estimated coefficients also indicated that the level of unemployment is higher in those provinces in which the government created fewer jobs.

TABLE 5.1

The Impact of Migration in Government Employment

Variable	df	Parameter estimate	Standard error	t value	Prob>> t
INTERCEPT	1	6496.683	5251.722	1.237	0.2329
UNEMPL71	1	-16.455	11.08566	-1.484	0.1560
INMIG71	1	0.134	0.03036	4.418	0.0004
CINMIG71	1	0.734	0.14813	4.958	0.0001
TOTGOV70	1	6.913	4.65545	1.485	0.1559

R-square=0.9880 adj R-square =0.9852 F =350.343 Prob >0.0001

Similarly, the impact of migration on government expenditures was examined by fitting the multivariate model of the form:

$$\text{TOTGOV80} = b_1 + b_2 \text{NFLTW} + b_3 \text{WHEATP} + b_4 \text{CINMIG71} + b_5 \text{VLUADD76}$$

The regression results are shown in Table 5.2, indicates that the F-test for overall regression model is very significant. R-square value, the fraction of total variance in TOTGOV80, which are explained by the models is 0.9949. The t-tests of the value of individual predictors show that the

TABLE 5.2

The Impact of Migration on Government Expenditures

Variable	df	Parameter estimate	Standard error	t value	Prob> t
INTERCEPT	1	11344667	40902990	2.774	0.0125
NFLTWL71	1	112.168	156.570	0.780	0.4454
WHEATP	1	-0.008	0.01926	-0.45	0.6562
CINMIG71	1	1.339	0.51205	2.590	0.0097
VLUADD76	1	2.865	0.136338	21.02	0.0001

R-square=0.9949 adj R-square =.9937 F =873.771 Prob >0.0001

coefficient of predictors 7LUADD76, and the coefficient of predictor CINMIG71 is significant from zero at $\alpha = 0.01$. The intercept parameter was also significant at $\alpha = 0.05$. The results of this model confirm the hypothesis that the internal migration and the establishment of large firms greatly affect very much the total government expenditures.

Also, the impact of migration in growth of social services has been examined by regressing the number of social service institutions on migration and other economic factors. The results, which are shown in Table 5.3, demonstrate that the level of urban population has a significant impact on the level of social services.

The determinants of migration have been studied by constructing a multiple regression of the following form:

TABLE 5.3

The Impact of Urban Population (URPOP76) on Social Services

Variable	df	Parameter estimate	Standard error	t value	Prob>> t
Intercept	1	1.284	168.609	0.008	0.9940
NFINL9	1	0.1128	0.05	2.380	0.0274
URPOP76	1	0.0065	0.0006	11.367	0.0001

R-square=0.9927 adj R-square =0.9919 F =1353.639 Prob >0.0001

$$\text{NETMIG76} = b_1 + \text{WHEATP} + b_2 \text{NFCNS} + b_3 \text{UNEMPL76}$$

The results in Table 5.4 clearly show that the migrants move to the provinces in which they will not be engaged in agricultural production. The coefficient of NFCNS (the number construction firms in each province) is significant at $\alpha = 0.07$. The results also confirm the hypothesis that migrants move to the provinces involved heavily in construction activities.

It is also hypothesised that the in-migration significantly affects the level of construction in a region. For this purpose the number of firms in construction activities (NFCNS) have been regressed on migration and other related economic factors as follows:

$$\text{NFCNS} = b_1 + b_2 \text{CINMIG71} + b_3 \text{VLUADD74} + b_4 \text{RMIG76} + b_5 \text{TOTGOV70}$$

TABLE 5.4

The Determinants of Net Migration (NETMIG76) in 1976

Independent Variable	df	Parameter estimate	Standard error	t value	Prob> t
Intercept	1	-474.523	21953.4	-0.022	0.9830
WHEATP	1	-0.0004	0.0001	-4.17	0.0007
NFCONS	1	145.938	74.0854	1.97	0.0664
UNEMPL76	1	-0.004	0.005	-0.737	0.4715

R-square=0.9301 adj R-square =0.9038 F =35.456 Prob >0.0001

The estimated coefficients are shown in Table 5.5,. All coefficients of the model except the TOTGOV70 are significantly different from the Zero at $\alpha = 0.07$. This implies that the construction activities are the major factors in attracting the migrants into provinces.

The impact of migration on the agricultural sector has been examined either by presenting the data in Table 5.7, or estimating by an econometric model. Both procedures confirm the notion that out-migration from rural areas not only decreased the per capita output but decreased in absolute value as well since 1976. As a result, the Iranian government was forced to import millions of dollars worth of agricultural products in the country and distributed them at lower prices in both urban and rural areas. For example, in 1977

TABLE 5.5

The Impacts of Migration on Urban Construction Activities

Independent Variable	df	Parameter estimate	Standard error	t value	Prob> t
Intercept	1	55.1729	84.685	0.652	0.5230
CINMIG71	1	0.0036	0.0016	2.281	0.0349
VLUADD74	1	0.0001	0.0001	5.883	0.0001
RMIG76	1	1744.6010	897.917	1.943	0.0678
TOTGOV70	1	0.0822	0.069	1.187	0.2507

R-square=0.9757 adj R-square = .9703 F =180.662 Prob > 0.0001

TABLE 5.6

The Impact of Migration on Government Expenditures in 1980

Independent Variable	df	Parameter estimate	Standard error	t value	Prob>> t
Intercept	1	-3133065	11790595	-0.266	0.7033
RMIG76	1	-3476900	130833186	-0.027	0.9791
WHEATP	1	-0.227	0.0568	-3.995	0.0008
URPOP76	1	174.410	11.1538	13.216	0.0001

R-square=0.9453 adj R-square = .9367 F =109.499 Prob > 0.0001

food imports were running at \$2.6 billions.³⁴ Similarly, in

³⁴ Halliday, F., Iran Dictatorship and Development, New York, Penguin Books, 1979, p. 128.

1976 the value of imported grain was 20,927,576 thousand rials, while, in 1980, this rose to 7,764,355 thousand rials (Plan and Budget Organization, 1982).

TABLE 5.7

The Trend of Farm Land and Agricultural Output

Main Agri. Prod.	1973		1977		1978		1979	
	Area	prod.	Area	prod.	Area	Prod.	Area	rod.
Wheat	6325	4546	4847	3896	4682	3791	4915	3733
Barley	1656	1158	1447	1130	1414	1133	1466	979
Rice	338	937	308	753	300	741	165	501
Cotton	330	560	311	531	216	405	122	205

Where area is in 1000 hectares and output in 1000 tons

Source: Plan and Budget Organization, Annual Statistical Report, 1982, PP. 271-346.

The results also confirm the notion that the amount of farm land may be reduced as a result of rural-urban migration. The reasons for reduction of agricultural production are many. The two main reasons could be the lower productivity due to out-migration and the lower price of agricultural output resulting from the importation of food-stuff by the government.

The discussion in previous chapters suggested that migration accelerates the growth of the modern sector either

by the action of private investors or by the change in the composition of consumption of the migrants. To show the impact of migration, the production of modern large firms in 1980 (VLUADD80) has been regressed on migration and the estimated results are shown in Table 5.8

TABLE 5.8

The Impact of Migration on Production of Large Firms in 1980

Independent Variable	df	Parameter estimate	Standard error	t value	Prob> t
INTERCEPT	1	1155141	3232571	0.357	0.7250
NETMIG71	1	56.4418	31.7699	1.777	0.0925
AGRIP	1	-0.285	0.0156	-1.817	0.0859
URPOP76	1	32.1348	10.8748	2.955	0.0085

R-square=0.9453 adj R-square = .9367 F =109.499 Prob > 0.0001

To analyze the interaction between migration and other related economic factors a simultaneous equation has been constructed as follows:

PROCESSED MODEL STATEMENTS

MODEL CINMIG71 = TGVEMP71

MODEL NETMIG76 = WAGE75 B001.CHGGVE76 B001.CHGUNM76

MODEL VLUADD80 = CHGVA76 CHGURP76

MODEL TOTGOV80 = CHGURP76 AGRIP B001.NETMIG76

MODEL CHGEMP76 = CHGVA76 B001.CINMIG71

MODEL CHGGVE76 = NFLTW VLUADD76 B001.CINMIG71

MODEL CHGUNM76 = TOTGOV70 NFLTW B001.CINMIG71 AGRIP

MODEL SEMP76 = B001.CHGGVE76 B001.CINMIG71

MODEL NFCONS = B001.CINMIG71 CHGVA76

The simultaneous equation has been estimated by a 3SLS technique on cross-section data. The results which are shown in Table 5.9 and Table 4.11, strongly support the notion that migration is dependent on government expenditures, regional wage rate, change in government employment, and change in unemployment. In turn, internal migration affects government expenditures, employment, unemployment, farm production, and construction activities in the later period. For example, the results of 3SLS show that government employment had a significant effect on provincial migration (at $x > 0.0001$) with the value of the coefficient equal to 143.8. or net provincial migration has significantly effected the government expenditures in 1980. The coefficients of all variables except the AGRIP (Agricultural Production) are significant and in the right direction. The sign of coefficient of AGRIP is negative (which was expected), but it is not significant. This may be due to fluctuations in agricultural production due to the weather conditions in 1976.

TABLE 5.9

Third Stage Simultaneous Results

----- T H I R D S T A G E -----					
MODEL: MIGRATN					
DEP VAR: CINMIG71					
VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB> T
INTERCEPT	1	30290.94	6182.596	4.8994	0.0001
TGVEMP71	1	143.808536	9.578703	15.0134	0.0001

MODEL: MIGRAT76					
DEP VAR: NETMIG76					
VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB> T
INTERCEPT	1	-13546.9	12116.58	-1.1180	0.2782
WAGE75	1	0.034684	0.004057909	8.5473	0.0001
B001.CHG3VE76	1	-0.757399	0.240778	-3.1456	0.0056
B001.CHGUNN76	1	-0.322789	0.101997	-3.1647	0.0054

MODEL: VALUADD					
DEP VAR: 7LUADD80					
VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB> T
INTERCEPT	1	-264608	1969985	-0.1343	0.8946
CHGVA76	1	1.148421	0.072358	15.8715	0.0001
CHGURP76	1	30.636557	6.847202	4.4743	0.0003

MODEL: GOVEXP					
DEP VAR: TOTGOV80					
VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB> T
INTERCEPT	1	18598142	11390117	1.6328	0.1199
CHGURP76	1	118.503591	38.420590	3.0844	0.0064
AGRIP	1	0.015902	0.032866	0.4838	0.6343
B001.NETMIG76	1	661.804877	57.553803	11.4989	0.0001

MODEL: EMPLOY					
DEP VAR: CHGEMP76					
VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB> T
INTERCEPT	1	-8700.08	34607.16	-0.2514	0.8042
CHGVA76	1	-0.00799353	0.001830001	-4.3680	0.0003
B001.CINMIG71	1	6.666835	0.545698	12.2171	0.0001

TABLE 5.10

Continued ...Third Stage Simultaneous Results

MODEL: UNEMPLOY					
DEP VAR: CHGUNM76					
VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB> T
INTERCEPT	1	34650.42	17692.33	1.9585	0.0668
TOTGOV70	1	-8.574277	12.783648	-0.6707	0.5114
NFLTW	1	-1.243945	0.647751	-1.9204	0.0717
B001.CINMIG71	1	0.922980	0.363802	2.5370	0.0213
AGRIP	1	-.0000330916	.00006701376	-0.4938	0.6278

MODEL: GEMPLOY					
DEP VAR: CHGGVE76					
VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB> T
INTERCEPT	1	4121.522	4360.418	0.9452	0.3571
NFLTW	1	0.291644	0.133972	2.1769	0.0430
VLUADD76	1	0.001175711	0.001563845	7.5181	0.0001
B001.CINMIG71	1	0.646044	0.093339	6.9215	0.0001

MODEL: SERVICE					
DEP VAR: SEMP76					
VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB> T
INTERCEPT	1	-11599.6	5601.107	-2.0710	0.0522
B001.CHG3VE76	1	1.350419	0.115462	11.6958	0.0001
B001.CINMIG71	1	0.515902	0.155268	3.3226	0.0036

MODEL: CONSTRTN					
DEP VAR: NPCONS					
VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB> T
INTERCEPT	1	-87.104398	84.788440	-1.0273	0.3172
B001.CINMIG71	1	0.006810922	0.001399325	4.8673	0.0001
CHGVA76	1	.00002894341	.00000478309	6.0512	0.0001

The time series data was intended for use in estimating the impact of migration. However, the migration data was only available at two points in time, namely 1966 and 1976.

One way to generate the historical data for rural to urban migration is to calculate the difference between the natural growth and the actual growth of urban areas. Using the generated migration data, the impact of migration on government expenditures and agricultural production has been estimated. The results show that there is a positive relationship between rural-urban migration and government expenditures and a negative relationship with agricultural production.

The residuals of each of the above models have been plotted to see if the fitted model is appropriate for the cross-section data.³⁵ Most of the plots of residuals show that they are fairly uniformly distributed around zero. No nonlinearities or trends, have been discovered. This suggests that the techniques and models which were used are probably adequate in order to fit into as much of the pattern existing in the data as possible. However, the residual plots suggest the presence of one or two outliers. These outliers were expected because most economic activities and government administrations were located in the province of Tehran, formally a part of the province of Markazi. As a matter of fact, Tehran has experienced an in-migration level

³⁵ In exploratory data analysis, we use residual plots extensively to suggest improvements to the fit, to see how the technique acts on the data to give the fit, and to portray the adequacy of the fit. Our hope is that the fitting technique puts into the fit as much of the pattern in the data as possible. In other words, the examination of residual plots help us to see if the fitted model is appropriate, as well as to concentrate our attention on the discrepancies between the data and the fit model.

of more than one million during the period of 1970-1976.

The influence and partial statistics were calculated to see if any of the outliers or dependent variables require special attention. The Cook's D statistic shows that observation 17 has the greatest influence on the coefficients. This was expected since these points correspond to the province of Markazi. As it has been mentioned in Chapter I, more than half of the economic activities are located in this province. This observation also strongly influences the size of coefficients, but there is no reason to suspect the validity of these particular data points. For this reason, this 'outlier' will remain in the model.

A logarithmic transformation of data has been attempted to see if it is possible to improve the fitted models. However, it was found that this transformed model did not significantly improve the fitted models.

To examine the impact of migration on income distribution, two variables, household income and expenditures, have been used. The logic for the selection of household expenditures in addition to household income in our analysis is quite obvious. In general, information on household expenditure LDCs is more reliable than information about the household income. For example, people do not like to reveal or to report their income accurately, because of a fear of taxation. Or, people tend to underestimate their income, hoping to get more government subsidies.

TABLE 5.11

Annual Distribution of the Urban Household Expenditures In
Rials(a)

Year	Total sample	Less than 120000		120 000-600000		More than 600000	
		Number	%	Number	%	Number	%
1975	7880	1952	24.8	5047	64.0	881	11.2
1977	13588	2409	17.7	8661	63.7	2518	18.5
1979	9429	1152	12.2	5822	61.8	2454	26.0
1980	12894	1011	7.8	7995	62.0	3888	30.2

a) One Dollar is equal to 71 Rials.

Source: Plan and budget organization, Statistical Center of Iran,
The Survey of Urban Household Budget, various issues.

The distribution of household consumption expenditures (shown in Tables 5.11 and 5.12) indicates the existence of income inequality between rural and urban areas. Unfortunately, because of the way the data is tabulated, it is difficult to establish a strong relationship to demonstrate the actual income differential between the two regions. Nevertheless, the data presented in the Tables 5.11 and 5.12 clearly demonstrates the persistence of income inequality between rural and urban areas over time. For example, in 1979, 63.2 percent of rural households had yearly consumption expenditures of less than 240,000 rials, while in the same year, 74.2 percent of urban households had yearly ex-

TABLE 5.12

Annual Distribution of the Rural Household Expenditures In
Rials

Year	Total sample	Less than 60000		60000-240000		More than 240000	
		Number	%	Number	%	Number	%
1972	-	-	67.5	-	31.4	-	1.1
1973	-	-	56.2	-	41.4	-	2.7
1974	3350	804	24.0	2131	63.6	415	12.4
1975	3600	803	22.3	2308	64.1	489	13.6
1976	7141	1671	23.4	4449	62.3	1021	14.3
1978	10775	1141	10.6	6670	61.9	2964	27.5
1979	10012	901	8.0	5525	55.2	3686	36.8

Source: Plan and budget organization, Statistical center of Iran, various issues.

penditures of less than 600,000 rials. The persistence of income inequality between the two regions exists in spite of massive migration from rural to urban areas. This may suggest that labor mobility does not reduce the earning differential among the regions of LDCs.

Another sign of increasing the gap between urban and rural earnings is shown in Table 5.13. Accordingly, the difference between the average monthly consumption expenditures rose from 19,250.7 rials in 1976-77 to 19,980.8 rials in 1978-79.

TABLE 5.13

Average Monthly Distribution of Household Expenditures

Year	Expenditure in Rials		
	Rural	Urban	Differences
1375-76	12,678.0	-	-
1376-77	17,266.7	36,517.4	19,250.7
1377-78	19,572.1	-	-
1378-79	24,036.3	44,017.1	19,980.8

Source: Plan and Budget Organization ,Annual Statistical Reports, 1982, PP. 710-32.

There are a number of statistics which can be used in measuring the degree of income inequality between rural and urban areas. Among them, the application of the Lorenz Curve over time seems to be an appropriate way of demonstrating the trend of income inequality.

Using the time series data, the Lorenz Curve has been plotted (in Figures 5.1 and 5.2) in order to show the degree of income inequality between rural and urban areas. These plots show a wide gap between the distribution of household consumption expenditures in rural and urban areas both in 1976-77 and 1979-1980. This implies that the huge rural to urban migration did not reduce the wage differential. On the contrary, all evidence suggests that the income inequality between rural and urban areas remains the same if not worse.

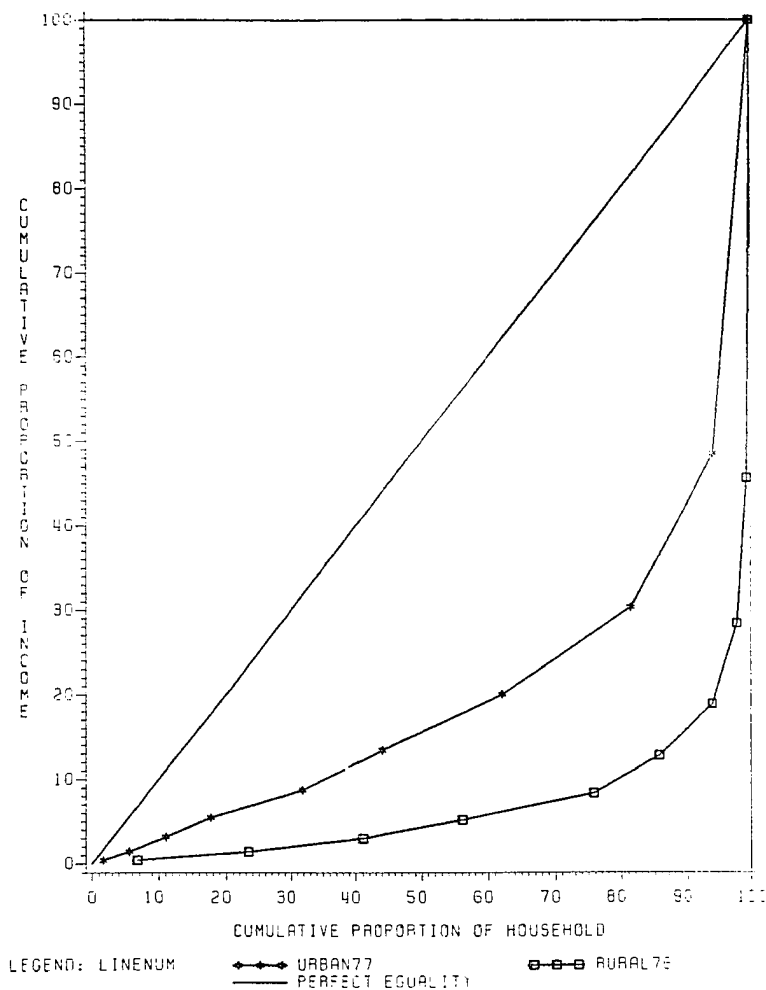


Figure 5.1: Lorenz Curves: Comparison Between Distribution of Household Expenditures by Bracket in Rural & Urban Areas{1976-77}

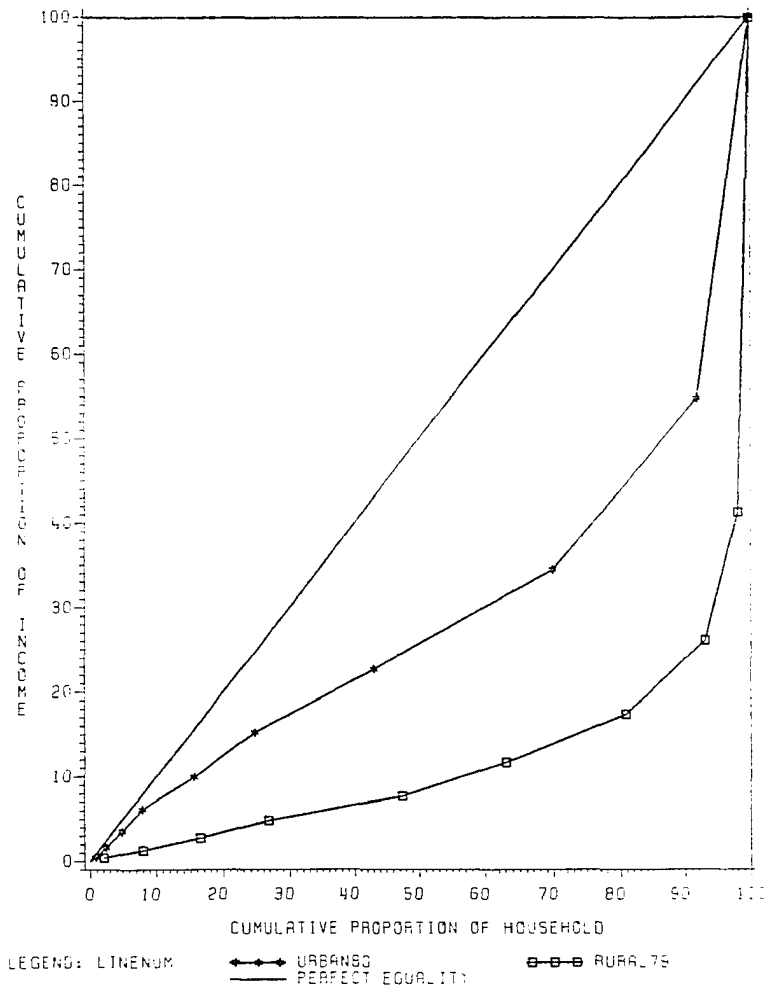


Figure 5.2: Lorenz Curves: Comparison Between Distribution of Household Expenditures by Bracket in Rural & Urban Areas (1979-80)

A separate Lorenz Curve has been constructed in order to show the trend of distribution of household expenditures in urban areas during 1977 to 1980 and in rural areas during 1976 to 1979. As Figure 5.3 and 5.4 show, the degree of income inequality is substantially reduced in both urban and rural areas. This may imply that the lower class people enjoy substantially from the increase in oil revenue.

A similar approach has been employed to examine the trend of income inequality in rural areas during 1976-1979. As Figure 5.4 shows, the degree of income inequality also decreased in rural areas. The reduction in income equality both in rural and urban areas can be attributed to the increase in government expenditures due to the high oil price.

The same conclusion can be made by looking at the annual income of urban and rural households. As Table 5.14 shows, the average annual earning differential between urban and rural areas has been increased from 282,421 rials in 1977 to 356,649 rials in 1980.

The difference between income of rural and urban residents becomes much wider if we take into consideration the fact that the number of persons in rural households is greater than in urban households.

One related issue which must be taken into consideration is that the composition of consumption expenditure is significantly different between rural and urban areas. For

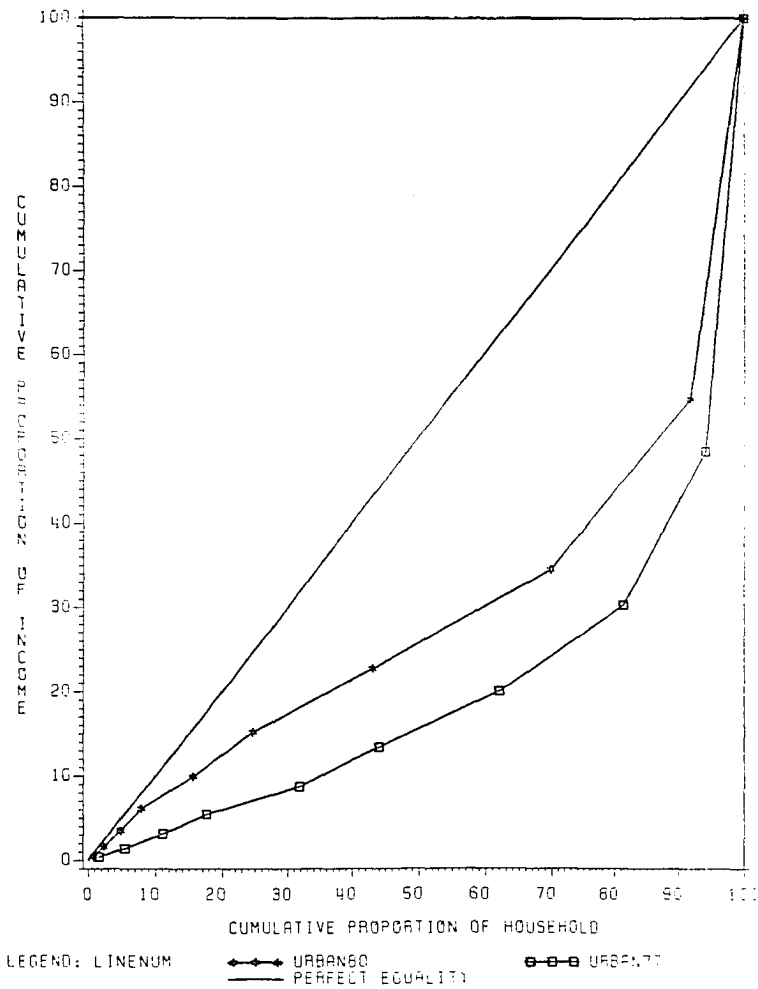


Figure 5.3: Lorenz Curves: Comparison Between Distribution of Household Expenditures by Bracket in Urban Areas in 1977 & 1980.

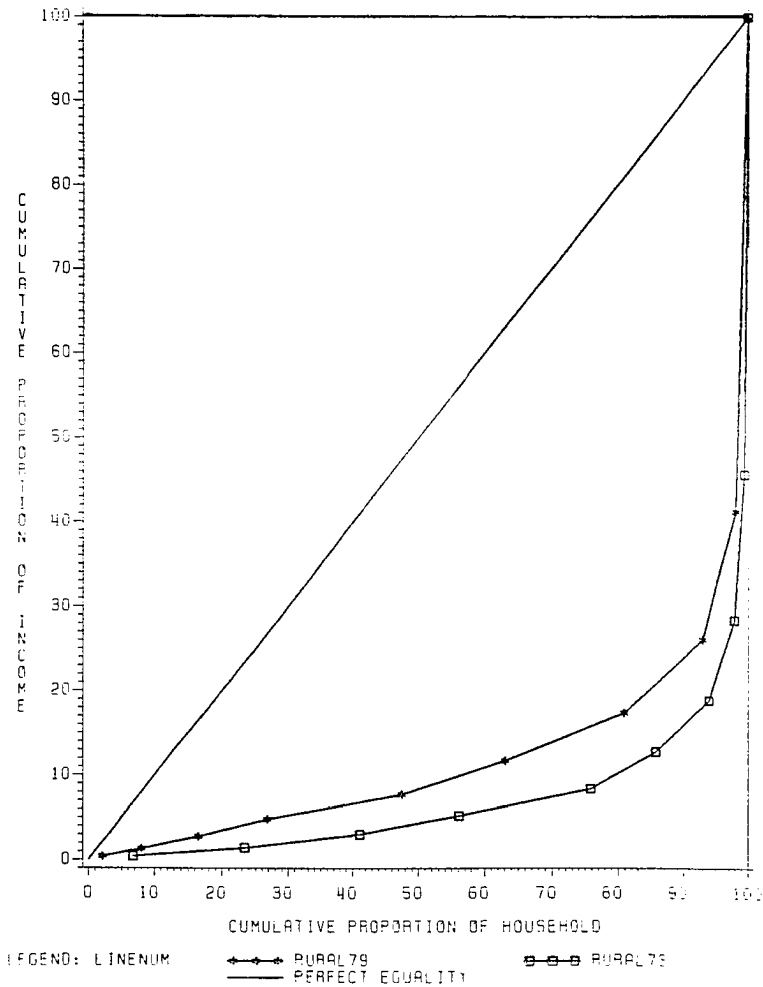


Figure 5.4: Lorenz Curves: Comparison Between Distribution of Household Expenditures by Bracket in Rural Areas in 1976 & 1979.

TABLE 5.14

Annual Household Income in Rural and Urban Areas

Region	1976	1977	1978	1979	1980
Rural Areas	120,913	166,308	192,215	227,301	251,200
Urban Areas	-	448,729	-	514,446	608,849

Source: Central bank of Iran, various issues

example, in 1977 urban households on the average spent 33 percent on food-stuff and 28.9 percent on housing. In the same year, rural households spent 49 percent on food-stuff and only 7 percent on housing. This indicates that the pattern of consumption of migrants will change once they leave the countryside. This may lead to shortages of some goods and services in receiving areas.

5.3 CONCLUSION

The purpose of this chapter was to empirically evaluate the impact of migration on sending and receiving areas. For this purpose, several econometric models have been developed and estimated by OLS and 3SLS. Using the Iranian data, the results confirm the notion that migration significantly affects government expenditures, urban production, agricultural production, expansion of service industry, and the cost

of urbanization. The empirical result also suggests that government expenditures and construction activities are the two important factors in the flow of migrants into the urban areas. The empirical result also confirms the hypothesis that rural-urban migration increases (rather than decreases) the income differential between rural and urban areas.

Chapter VI

CONCLUSIONS AND POLICY IMPLICATIONS

The purpose of this study was to examine the impact of internal migration on the economies of both sending and receiving areas. In Chapter I, the statement of the problem and the purpose of this study has been discussed. For example, it was indicated that until recently, many economists believed that internal migration, especially from depressed rural areas to urban areas of developing countries, led to a more efficient utilization of human resources as well as other factors of production. However, today, many development economists agree that the rapid pace of massive rural-urban migration in many LDCs lead to a lower national income and a higher income inequality. The present study tries to assess the validity of the above hypotheses in a developing country like Iran where she has experienced huge internal migration since World War II.

Chapter II was devoted to a review of migration literature on the determinants and consequences of migration from different perspectives. Accordingly, the determinants of migration have been studied from both macro and micro level. In macro analysis, the study is concentrated on the factors which push migrants from sending areas, or the factors which

attract the migrants in receiving areas. In contrast to the macro approach, it is hypothesized that the decision to migrate is based on cost and benefit analysis, which is made by the head of the family, and that the migrants move to the areas where they can find employment, better working conditions, and a higher stream of income.

In LDCs, however, migration into urban areas has a particular feature. The migrants usually move to urban areas even when the level of unemployment is very high. Todaro (1970) hypothesized that the level of in-migration in urban areas of developing nations is dependent on both the urban real income differential and the probability of obtaining a modern job. Later, several theoretical models have been developed to assess or to modify the Todaro' model.

Based on the review of literature, there is no agreement over the possible impact of migration. One group of economists believe that the process of migration is not only to improve the living condition of migrants but it also has a beneficial impact on sending as well as receiving areas. On the other hand, there are some economists who believe that the process of migration has a detrimental impact on sending and in some cases in receiving areas, in terms of economic development.

Chapter III has been devoted to the examination of the process of migration in Iran. For this purpose, the process of industrialization and urbanization was presented first in

order to identify the major factors responsible for the rapid migration in the few urban areas of Iran. It has been shown that the urban in-migration was insignificant before World War II, but became significant as a result of the government development policy after the war. In fact the process of migration, especially from rural to urban areas, was accelerated when (1) the government increased its role in economic activities since 1949 through various National Development Plans, (2) semi-land reform was implemented of semi-land reform in 1962, and (3) food prices were kept low by importing agricultural product and distributed at a lower price than could be produced at home to reduce the social discontent.

Although, the census data provide information about the gross in-migration, the author estimates the net provincial migration between 1966 to 1976 by the cohort technique. This procedure allows us to identify those provinces which gain population and those which lose their population as a result of migration.

In Chapter IV two models have been developed in order to demonstrate the probable impact of migration. The first model explained the impact of migration on the two regions' economies and the second was constructed to show the possible impact of migration in a three sector economy. Both models predicted that due, to the nature of the economy of LDCs, it is highly possible that migration has a negative

impact in terms of output and employment on sending areas, but the impact on receiving areas is hard to evaluate. Both models also predicted that under some circumstances (such as the reduction of farm land, transfer of funds to urban areas, and reduction of government rural development funds) the gap between rural and urban income could be widened.

In Chapter V, several empirical models have been developed to estimate the impacts of migration in sending and receiving areas. The econometric estimates obtained by this study, using single equation and simultaneous equation models, reveal a strong pattern of interaction between migration flow, government expenditures, production levels of the modern sector, rate of change of unemployment, expansion of service or traditional urban sector, and construction activities.

The data also clearly show that the gap between rural and urban income has widened since 1976. This implies that the process of migration into urban areas (especially the metropolitan area of Tehran) will continue in the near future. In this circumstance, the process of migration not only has negative impact on economic growth of sending areas, but also puts pressure on government authorities to provide ever more expensive urban amenities to maintain the current living conditions of urban residents.

Similarly, our findings indicate that the per capita agricultural production has been declining over time, and

much of this decline is attributed to rural to urban migration. This finding is based on several factors. First, the migrants who leave the countryside searching for better work conditions and a higher living standard are young and potentially more productive than those who remain in sending areas. As a result, the overall productivity of remaining farm workers is reduced. Second, as the price of urban land increases the demand for farm land (especially for those surrounding the large urban areas) increases significantly. This in turn, induces many farmers or landlords to sell the farm land for urban use. Finally, the decline of agricultural production can be related to government economic policies such as the implementation of land reform, heavy emphasis on industrialization, and government farm price policies. For example, for many years, the government kept the price of domestic farm products low by subsidizing imported farm products. All of these factors led to the creation of a social environment which persuaded many farmers to find jobs in urban areas.

The negative impact of rural-urban migration is not limited to the decrease or increase in the output and employment of sending and receiving areas. As the size of an urban area, resulting from rural-urban migration exceeds the urban 'optimal size', the cost of providing urban amenities becomes very expensive. Similarly, the cost of housing due to the high cost of land becomes so expensive that the

migrants and ordinary urban residents can neither afford to buy nor rent houses, and as a result many of them end up living in slum and shanties. Furthermore, as the size of cities increases, the provision of transportation, water supply distribution, sewerage services, solid waste disposal, health services, reduction of pollution, and other public services become very expensive.

In contrast, the provision of housing and social amenities is much cheaper in rural areas than urban areas. Meanwhile, in rural areas there is no traffic congestion; the air, land, and water is less polluted and in fact there are few housing shortages. Similarly, the cost of provision of police protection, fire protection, mass communication, garbage collection provision of drinking water, and other public services are much cheaper. Finally, urbanization is very expensive and the concern over the fiscal and financial implications of rapid urbanization in LDCs forces many policymakers to seek a way to stop or divert the flow of migration into overpopulated urban areas.

Until recently, the Iranian government did nothing to alter the flow of migration, especially into metropolitan areas. However, in 1983, a number of programs such as demolition of shanties, the refusal to issue building permits, and the refusal to issue coupons for the necessary items which are rationed by the government to newcomers, have been designed to stop the flow of migration into metropolitan

Tehran. The experience of many developing countries suggested that this kind of policy fails because it addresses only the symptoms of the problem, and not the causes (Shaw, 1980).

6.0.1 Policy Recommendations

Basically, from what has been mentioned above, the rapid rural-urban migration is due to the lack of economic opportunities in rural areas and especially the urban biased policy of the central government. For example, many governmental policies of LDCs discriminate against the agricultural sector and protect the manufacturing sector by price policies, tax policies, import-export controls and foreign exchange. These policies which create economic opportunity in the cities lead to massive rural-urban migration.

To prevent the negative aspect of internal migration especially in the sending areas, the process of migration must be regulated. One way to regulate the migration process is to divert economic activities by tax policy and other incentives toward a desirable growth pole. But a successful way of regulating migration is dependent on a comprehensive rural development design to bring economic opportunity to rural residents. In other words, to alter the migration process, as well as to reduce the cost of rapid unwanted urbanization, the policymakers of LDCs must pay more attention to the modernization of the agricultural sec-

tor and rural development as well as providing economic opportunity for the investor in small urban areas.

A rural development policy aimed at the provision of economic opportunities for rural residents must be based on the potential resources available to the governments of developing countries. For example, in Iran, it is neither feasible nor economical to provide the basic needs and services to the more than 50,000 rural areas dispersed across the country. As a consequence, it would be in the best interest of the government to provide basic needs and services to the selected areas, called "rural centers" or "service centers". The best location for these centers are villages which already have some basic facilities and are surrounded by several other village.

The basic function of these centers is to provide the necessary services for improving both farm production and living conditions of rural residents. In other words, the program must create a suitable environment in order to persuade young people to stay in rural areas.

The function of government at the early stage of rural development is:

- 1) the establishment of processing industries to provide part-time or full-time employment to the farmers during the winter season.

2) the provision of technical services such as marketing facilities, educational services, drinking water, irrigation and drainage networks, housing construction, improved roads and communication , and healthcare services.

3) the establishment of an effective agricultural pricing policy in order to prevent wide fluctuations of income in agricultural sectors.

All of these programs can be implemented through the establishment of various cooperative associations. In fact, the cooperative organization which was established after land reform, was proven to be a usefull method if it were not abused by the government. These organizations not only can provide technical assistance for farmers but also improved seeds, fertilizers, pesticides, and agricultural machinery, at a low cost. In other words, a proper cooperative association can reduce the cost of production and permit the buying and loaning of machinery which single farmers could not afford.

The establishment of production cooperation or group farming seems to be an appropriate and necessary step toward the improvement of agricultural productivity in a country like Iran, where the size of the farm unit is fairly small. The members of these organizations, while they keep the right of ownership of their land, are benefit from the ad-

vantages of large-scale modernization farming.³⁶

Indeed, future work is needed to understand the full impacts of migration. But it is hoped that the results of this paper can shed light on the examination of the impact of migration in Iran, as well as in other LDCs with a similar background. Also, it is hoped that the results of this study will help the planners and other decision makers to (1) formulate a series of actions to divert, promote, or slow the rate of internal migration, (2) consider the impacts of migration in their plans, and (3) formulate a proper national development policy in order to reduce the gap between urban and rural income.

³⁶ As Dumett, R.E. and Brainard, L.S. stated, for an efficient use of agricultural machinery, not only is the size of the farm an important factor, but also the size of the single plot. If there is a high degree of fragmentation with the result that the plots of land cultivated with the same crops are spread over a large area. moving from one plot to another involves much idle time for the machine and a rational use of machinery can not be expected.

Appendix A

APPENDIX A: PROVINCIAL POPULATION AND MIGRATION IN 1966-198

The discription of variables which have been used in estimating the provincial population and provincial migration are as follows:

URPOP66 = urban population in 1966
URPOP76 = urban population in 1976
RUPOP66 = rural population in 1966
RUPOP76 = rural population in 1976
TPOP80 = total population in 1980
DENSTY76= population density in 1976
DENSTY80= population density in 1980
INMIG71 = in-migration in 1971
RUMIG71 = rural migration in 1971
CINMIG71= census migration in 1976
NETMIG76= net migration in 1976
MIg80 = net migration rate in 1980

Source: Data for the Tables A.1-A.7 are taken from Statistical Yearbook of Iran, various Issues and National Census of Population and Housing 1976 and 1966.

TABLE A.1

Population Distribution by Age and Provinces in 1976

	PROVINCE	TOTAL76	Age0_9	Age10-19
1	BOYER AHMAD AND KOHGILUYEH	244370	94129	52272
2	BUSHEHR	347863	112057	73993
3	CHAHARMAHAL AND BAKHTIYARI	394357	130752	87595
4	EAST AZARBAYEJAN	3197685	962898	694475
5	ESFAHAN	1969965	577103	446372
6	FARS	2035582	648337	484096
7	GILAN	1581872	453347	373492
8	HAMADAN	1088024	310398	235796
9	HORMOZGAN	462440	141937	98671
10	ILAM	246024	92315	52815
11	KERMAN	1091148	349800	247816
12	KERMANSHAHAN	1030714	327427	242574
13	KHORASAN	3264398	1008126	738473
14	KHUZESTAN	2187118	734892	564678
15	KORDESTAN	782440	260762	164872
16	LORESTAN	933939	317137	205259
17	MARKAZI	2518717	845867	655884
18	MAZANDARAN	2387171	806795	597008
19	SEM NAN	246105	67376	56212
20	SISTAN AND BALUCHESTAN	664292	207800	136813
21	TEHRAN	4689497	1219865	1108889
22	WEST AZARBAYEJAN	1407604	461252	330047
23	YAZD	356849	90432	77543
24	ZANJAN	580570	176387	120083

TABLE A.2
Provincial Population by Age in 1976

OBS	Age20_29	Age30_39	Age40_49	Age50_59	OVER60
1	31562	24175	21036	9927	11268
2	52615	32833	33379	20792	22195
3	56664	36693	36919	23773	21961
4	456441	356756	342936	209208	174971
5	290271	208109	186587	133929	127594
6	302041	187583	186964	120325	106236
7	236034	165414	163481	106896	83208
8	165461	123324	106895	82498	63653
9	65033	40669	49229	30945	35955
10	35347	20481	20729	10716	13621
11	152094	102358	104257	74294	60529
12	156450	97825	92920	61553	51965
13	449314	348263	322231	226138	171853
14	341799	186176	162054	96652	100867
15	117092	77804	72581	47020	42310
16	129821	96910	81475	53657	49681
17	359526	212321	202633	133839	108647
18	344635	211651	192050	129975	105057
19	37394	26691	24511	18802	15120
20	100047	73831	66594	40518	38689
21	880250	546319	420554	273827	317444
22	197648	137189	134489	79738	67240
23	53057	39607	38319	29037	28855
24	84589	65181	60194	42202	31933

TABLE A.3
Provincial Population by Age in 1966

	PROVINCE	TOTAL66	Age0_9
1	BOYER AHMAD AND KOHGILUYEH	190542	75912
2	BUSHEHR	259101	84875
3	CHAHARMAHAL AND BAKHTIYARI	301359	110025
4	EAST AZARBAYEJAN	2636089	934366
5	ESFAHAN	1424446	484364
6	FARS	1584539	554952
7	GILAN	1293835	453780
8	HAMADAN	889892	313936
9	HORMOZGAN	349820	113288
10	ILAM	213011	77192
11	KERMAN	841982	288948
12	KERMANSHAHAN	818685	281854
13	KHORASAN	2520779	840355
14	KHUZESTAN	1706758	599303
15	KORDESTAN	619700	209800
16	LORESTAN	767374	284242
17	MARKAZI	2257252	754809
18	MAZANDARAN	1845270	661260
19	SEMNAH	207907	68352
20	SISTAN AND BALUCHESTAN	502626	176424
21	TEHRAN	2727811	796565
22	WEST AZARBAYEJAN	1087182	387688
23	YAZD	281160	88366
	ZANJAN	461597	158608

TABLE A.4
Provincial Population by Age in 1966

OBS	ACL10_19	ACL20_29	ACL30_39	ACL40_49	NOVER50
1	34312	22416	26408	13264	18229
2	54795	33870	32021	21352	32188
3	62951	35750	35392	19685	32507
4	504336	352842	330795	221705	292046
5	301649	174073	157482	121973	184905
6	345177	194041	189299	128288	172782
7	270041	158510	157116	115406	134361
8	177161	114579	102028	80097	102090
9	65537	41106	50196	34163	45530
10	34724	25620	24194	17352	23928
11	172456	101086	105373	71502	102618
12	171233	104853	101378	70010	89358
13	484508	338727	318878	238250	300060
14	376056	221978	201208	130821	177392
15	119990	84949	81981	53380	69600
16	149155	94170	90200	64574	85032
17	472135	291511	267584	197518	273697
18	385353	242612	219367	156052	180627
19	44884	26511	23108	21102	23949
20	93415	62498	66407	45782	58100
21	604241	466804	353163	231619	275419
22	209247	143182	140398	90008	116659
23	60367	31117	33084	26368	40961
24	86488	58632	59414	45396	53059

TABLE A.5
Rural and Urban Population in Thousand

OBS	PROVINCE	URPOP76	RUPOP76	URPOP66
1	BOYER AHMAD AND KONGILUYEH	30867	213503	15359
2	BUSHEHR	119144	228719	54623
3	CHAHARMAHAL AND BAKHTIYARI	140272	254085	87552
4	EAST AZARBAYEJAN	1188292	2009393	755458
5	ESFAHAN	1241904	728061	551811
6	FARS	872768	740342	580848
7	GILAN	461355	1120517	303694
8	HAMADAN	325176	762848	230833
9	HORMOZGAN	123462	338978	53000
10	ILAM	43595	197429	20190
11	KERMAN	350806	740342	196476
12	KERMANSHAHAN	441885	588829	278539
13	KHORASAN	1245258	2019140	726690
14	KHUZESTAN	1275109	912009	883057
15	KORDESTAN	190375	592065	102398
16	LORESTAN	294618	639321	165634
17	MARKAZI	4538148	1578993	3505970
18	HAZANDARAN	776819	1610352	404997
19	SEM NAN	117413	129665	84182
20	SISTAN AND BALUCHESTAN	162854	501438	72149
21	WEST AZARBAYEJAN	446714	960890	277646
22	YAZD	218233	138616	124542
23	ZANJAN	144613	435957	82598

TABLE A.6

Rural, Urban, and Migration in 1971 and 1976 by Provinces

OBS	INMIG71	RUMIG71	NETMIG76	CINMIG71
1	11183	2186	-22937	5075
2	18694	2186	1470	11493
3	9269	3205	-4872	13298
4	132115	85368	-155936	140552
5	138505	45290	109413	74385
6	107864	57686	-50479	76999
7	94821	60347	-42783	74353
8	48173	32770	-27845	44914
9	5500	2000	4883	15130
10	2163	372	-39106	6091
11	41943	26964	-19491	37525
12	112246	62475	-39981	51143
13	204083	114089	-26174	128869
14	204780	24378	-99748	131993
15	27549	11551	-40866	27316
16	44823	20157	-77815	36280
17	1803657	841254	679831	417873
18	109873	50543	-99809	103335
19	8843	297	-9670	27579
20	27985	6176	1521	34185
21	60149	42940	-40744	53869
22	90670	5000	15019	16085
23	11020	10000	-13880	21319

TABLE A.7

Population and Density in 1976 and 1980 by Provinces

OBS	TPOP80	DENSTY76	DENSTY80
1	270000	17.136	18.933
2	391000	12.580	14.140
3	439000	26.610	29.622
4	3463000	47.654	51.608
5	2495000	20.680	23.704
6	2258000	15.271	16.939
7	1715000	107.530	116.579
8	1179000	53.937	58.447
9	520000	6.754	7.594
10	257000	12.918	13.494
11	1214000	5.654	6.291
12	1137000	43.549	48.040
13	3631000	10.418	11.588
14	2448000	33.823	37.857
15	860000	31.300	34.403
16	1011000	29.758	32.214
17	7528000	105.352	123.505
18	2647000	50.399	55.885
19	308000	3.232	3.439
20	752000	3.658	4.141
21	1561000	35.894	39.805
22	393000	6.272	6.907
23	1223000	30.693	33.601

Appendix B

APPENDIX B: MAJOR ECONOMIC FACTORS RELATED TO MIGRATION

The discription of economic variable which have been used in this study are as follows:

NFTORY76= number of large factories in 1976

NFTORY80= number of large factories in 1980

PR_FCTRY= number of Private factories in 1980

NWORKR76= number workers in Large firms in 1976

NWPROD76= number of workers in productive activities in large factories

NWNONP76= number of employee in non-productive activities in large factories

VLUADD74= value added in large firms in 1974

VLUADD75= value added in large firms in 1975

VLUADD76= value added in large firms in 1976

VLUADD80= value added in large firms in 1980

WAGE75 = wage rate in 1975

WAGE80 = wage rate in 1980

PRODTY80= labor productivity in 1980

GOVGEXP = government general expenditure in 1980

GOVPEXP = government planning expenditure in 1980

GOVECEXP = government economic expenditure in 1980

GEXP68 = government general expenditure in 1968

GEXP79 = government planning expenditure in 1969

GEXP70 = government planning expenditure in 1970
 GEXP71 = government planning expenditure in 1971
 PFIRM80= number of private firm in 1980
 NFAG = number of firm in agricultural activities in 1976
 NFM = number of firm in minning activities in 1976
 NFIN = number of firm in industry in 1976
 NFINL9 = number of firm in industry with 1-9 workers in 1976
 NFCONS = number of firm in costruction in 1976
 NFCONS = number of firm in costruction in 1976
 NFTRNS = number of firm in transportation in 1976
 NFINL9 = number of firm in finnnacial market with 1-9
 workers in 1976
 NFSWL9 = number of social service institutions with 1-9
 workers in 1976
 NFSW = number of social service institutions 1976
 TNF76 = total number of firms in 1976
 NFLTW = number of firms between 1-9 workers in 1976
 NFMTW = number of firms more than 10 workers in 1976
 TFUNIT = total farm units
 TAREAS = total areas of farm lands
 VFUNIT = number of farms under the cultivation of vegetable
 VAREA = areas under cultivation of vegetable {hectar}
 YPFUNIT= number of farms under annual cultivation
 YPAREA = areas under annual cultivation {hectar}
 PPFUNIT= number of farms under permant cultivation
 YPAREA = areas under permanat cultivation {hectar}
 PPFUNIT= number of farms temporarily falow

YPAREA = areas under temporarily fallow (hectar)

WHEATP = wheat production (kilo gram)

WPHECTAR= wheat production per hectar

BARLEYP = barley production (kilo gram)

BPHECTAR= barley production per hectar

RICEAREA= areas under rice production (hectar)

TLF71 = total labor force in 1971

TEM71 = total employment in 1971

TGEM71 = government employment in 1971

TpEM71 = private employment in 1971

UNEM71 = unemployemnt in 1971

RUNEM71 = rate of unemployemnt in 1971

TLF76 = total labor force in 1976

TEM76 = total employment in 1976

TGEM76 = government employment in 1976

UNEM76 = unemployemnt in 1976

RUNEM76 = rate of unemployemnt in 1976

Source: Data for the Tables B.1-B.3 are taken from the Netayeje
h Amar Geary -i Keshavarzee -i Roostaeih Iran, 1975,
Tehran: Plan and Bodget Organization 1979. Data for Tables
B.4-B.5 and tables B.13-B.14 have been taken from Statisti-
cal Yearbook of Iran, various issues. And finally, the fig-
ures for Tables B.6-B.12 have been taken from Netayeje
h Amar Geary -i Karghah-hayeh Bozoorqheh Keshvar, various issues.

TABLE B.1
Agricultural Production by Provinces

OBS	PROVINCE	TFUNIT	TAREAS	VFUNIT
1	BOYER AHMAD AND KOHGILUYEH	24781	152478	171
2	BUSHEHR	32069	184605	0
3	CHAHARMAHAL AND BAKHTIYAR	45764	301436	17834
4	EAST AZARBAYEJAN	267302	1741032	181388
5	ESFAHAN	124221	386184	53256
6	FARS	126487	1003647	11591
7	GILAN	199578	297874	3227
8	HAMADAN	87835	884771	63549
9	HORMOZGAN	33434	50845	22
10	ILAM	27783	183826	1680
11	KERMAN	119656	311218	28546
12	KERMANSHAHAN	93900	713495	34749
13	KHORASAN	269535	2569876	71580
14	KHUZESTAN	113470	975661	3002
15	KORDESTAN	68498	1179599	48728
16	LORESTAN	86567	548507	37492
17	MARKAZI	229274	1476244	104496
18	MAZANDARAN	234672	790867	8500
19	SEM NAN	16580	80290	4998
20	SISTAN AND BALUCHESTAN	81385	112814	5859
21	WEST AZARBAYEJAN	126739	1071370	73816
22	YAZD	25951	17118	8928
23	ZANJAN	64689	675860	41095

TABLE B.2

Agricultural Production by Provinces in 1975

OBS	VAREA	YPFUNIT	YPAREA	PPFUNIT	PPAREA	FLAREA
1	78	123125	92092	7523	1552	58752
2	0	26368	158914	19177	14092	11598
3	10894	41304	145899	23653	6475	138166
4	135015	225738	883870	147759	63900	658245
5	20469	112543	191145	74020	24750	149819
6	11339	97541	539771	68811	43105	409430
7	3131	179164	211846	131221	56962	25932
8	30842	68027	390948	67262	11864	451116
9	17	15382	25151	30852	14965	10701
10	1008	26641	115524	2278	321	66971
11	6605	74116	98159	76132	69456	136996
12	16739	81177	432312	44089	11441	235002
13	22944	239600	1562441	141633	64638	919852
14	3571	85618	705544	30524	32670	233874
15	35245	63804	556389	34766	14388	573575
16	16248	80443	296427	22168	5188	230642
17	56504	167830	621178	181393	91144	716418
18	4671	210734	703095	107494	45110	3799
19	1273	11955	37818	11559	4274	36924
20	1509	64155	59392	31893	7498	44414
21	163429	99496	552384	73482	46664	308862
22	856	16344	6587	20512	6070	3602
23	28091	50125	306086	46072	16594	325087

TABLE B.3

Agricultural Production by Provinces in 1975

obs	province	wheat productn	wheat hect.	barly hc.	rice hect.	barley prduct.
1	BOYER AHMAD AND KOHGILUY	28713502	411	415	2269	7925516
2	BUSHEHR	24841895	254	246	0	14671056
3	CHAHARMAHAL AND BAKHTIYR	128250003	1226	1014	3707	32687784
4	EAST AZARBAYEJAN	359996768	587	394	3159	71456471
5	ESFAHAN	244291771	1917	1843	4682	48447313
6	FARS	406611602	1178	990	25202	101678702
7	GILAN	17257949	900	733	168561	5006276
8	HAMADAN	231901305	735	804	0	34187059
9	HORMOZGAN	7864138	691	593	0	6489209
10	ILAM	50763243	651	751	1087	15505101
11	KERMAN	112003823	1853	1648	0	27756872
12	KERMANSHAHAN	244315800	801	1109	113	57003700
13	KHORASAN	477364552	547	475	0	147412119
14	KHUZESTAN	204389468	413	486	30535	72546604
15	KORDESTAN	299145980	622	590	990	30087801
16	LORESTAN	203618556	938	909	443	42356813
17	MARKAZI	441160325	1044	1519	14479	130242613
18	MAZANDARAN	307139901	1449	819	138883	85691709
19	SEM NAN	28125895	1389	1058	0	6561484
20	SISTAN AND BALUCHESTAN	35979472	820	767	1951	4743648
21	WEST AZARBAYEJAN	371164117	960	901	285	54677073
22	YAZD	9820820	1859	1463	0	1359684
23	ZANJAN	120072132	1389	424	3543	20345821

TABLE B.4

Labor Force, Employment, and Unemployment by Provinces

OBS	PROVINCE	TLF76	TEMPL76	TGVEMP76	UNEMPL76
1	BOYER AHMAD AND KOHGILUYEH	61400	46617	5662	701
2	BUSHEHR	90491	75150	17855	2931
3	CHAHARMAHAL AND BAKHTIYARI	123414	117737	9050	3514
4	EAST AZARBAYEJAN	901105	836675	95780	26454
5	ESFAHAN	668284	644577	117453	25240
6	FARS	551181	512847	97750	18179
7	GILAN	557771	315101	60606	7717
8	HAMADAN	321191	299098	27839	9607
9	HORMOZGAN	129591	114216	25348	4961
10	ILAM	64383	63111	6635	1383
11	KERMAN	310502	298067	55322	12552
12	KERMANSHAHAN	273248	250439	48762	7617
13	KHORASAN	1018342	974357	109290	36223
14	KHUZESTAN	544958	464557	147859	15818
15	KORDESTAN	251270	212968	26926	5474
16	LORESTAN	243556	213799	27349	5633
17	MARKAZI	1858110	1785809	569332	69973
18	MAZANDARAN	701314	532479	82129	21139
19	SEM NAN	76485	74123	26596	2327
20	SISTAN AND BALUCHESTAN	180345	166573	23680	4838
21	WEST AZARBAYEJAN	428037	386278	49717	11432
22	YAZD	122381	120001	14489	4694
23	ZANJAN	318187	294782	27663	8776

TABLE B.5

Employment and Unemployment by Provinces in 1971 and 1976

OBS	TLF71	TEM71	TGEM71	TPEM71	UNEM76	UNEM71	RUNEM76	RUNEM71
1	461	401	12	11	14783	60	31.712	14.963
2	15341	.	20.414	.
3	1162	1123	25	92	5677	39	4.822	3.473
4	8934	7386	306	812	64430	1548	7.701	20.959
5	5401	5024	354	1058	23707	377	3.678	7.504
6	4152	3897	247	594	38334	255	7.475	6.543
7	5740	4277	191	229	242670	1463	77.013	34.206
8	2713	2238	80	221	22093	475	7.387	21.224
9	1683	1436	66	122	15375	247	13.461	17.201
10	446	393	9	15	1772	53	2.808	13.486
11	2483	2366	87	223	12435	117	4.172	4.945
12	2433	2095	168	239	22809	338	9.108	16.134
13	7836	7324	290	911	43985	512	4.514	6.991
14	4241	3800	722	749	80411	441	17.309	11.605
15	2091	1685	74	95	38302	406	17.985	24.095
16	2054	1770	74	135	29757	284	13.918	16.045
17	15885	14973	2821	4127	72301	912	4.049	6.091
18	5859	5412	206	396	168835	447	31.707	8.259
19	553	521	59	58	2362	32	3.187	6.142
20	1205	1010	54	78	13772	195	8.268	19.307
21	3493	3115	132	221	41759	378	10.811	12.135
22	988	945	50	169	2380	43	1.983	4.550
23	1490	1243	35	81	23405	247	7.940	19.871

TABLE B.6

Number of Large Firms, Workers, Wage, and Value Added

OBS	PROVINCE	NFTORY75	NWORKR75	WAGE75	VLUADD75
1	BOYER AHMAD AND KOHGILUYEH	1	118	53588	19775
2	BUSHEHR	7	59	10436	48193
3	CHAHARMAHAL AND BAKHTIYARI	11	421	43739	119794
4	EAST AZARBAYEJAN	214	7675	909620	5487771
5	ESFAHAN	389	31682	4328650	11923584
6	FARS	147	10223	2455124	7792989
7	GILAN	188	12496	1978382	3894373
8	HAMADAN	92	2626	307482	727513
9	HORMOZGAN	12	277	29157	188209
10	ILAM	0	0	0	0
11	KERMAN	73	1995	294349	11939944
12	KERMANSHAHAN	80	2078	292670	1032887
13	KHORASAN	208	12558	1622903	6510212
14	KHUZESTAN	183	8742	2186643	15451222
15	KORDESTAN	17	439	90967	356965
16	LORESTAN	40	2591	493660	2190060
17	MARKAZI	2134	162230	33110497	185543141
18	MAZANDARAN	462	17670	2370433	8376528
19	SEMNAH	124	7681	1336884	4096817
20	SISTAN AND BALUCHESTAN	75	501	26487	63162
21	WEST AZARBAYEJAN	92	4144	622470	1628477
22	YAZD	245	8691	863728	2833390
23	ZANJAN	10	2001	196425	1093702

TABLE B.7

Number of Large Firms, Value Added, and Workers by Province

OBS	PROVINCE	NF76	NW76	NPW76	NNP76	VADD76
1	BOYER AHMAD AND KOHGILUYEH	1	118	77	41	15660
2	BUSHEHR	8	613	554	48	475623
3	CHAHARMAHAL AND BAKHTIYARI	11	424	378	29	116381
4	EAST AZARBAYEJAN	209	12411	9033	2869	8508649
5	ESFAHAN	456	43268	39148	3376	14939353
6	FARS	160	11421	8688	2484	7487382
7	GILAN	231	17186	14002	2930	4807931
8	HAMADAN	113	3240	2768	180	989648
9	HORMOZGAN	13	639	511	117	233429
10	ILAM	1	118	77	41	15660
11	KERMAN	59	2014	1722	245	1182929
12	KERMANSHAHAN	88	3398	2523	725	1770388
13	KHORASAN	240	14408	12311	1740	7667293
14	KHUZESTAN	280	28581	21734	6490	28310340
15	KORDESTAN	23	237	180	17	37455
16	LORESTAN	43	2633	2223	357	2100333
17	MARKAZI	2512	211898	174812	33100	197795635
18	MAZANDARAN	466	27071	23906	2675	11402552
19	SEM NAN	132	8768	7772	800	4158887
20	SISTAN AND BALUCHESTAN	80	586	532	7	67364
21	WEST AZARBAYEJAN	96	3825	3178	488	2141335
22	YAZD	250	8783	8055	324	2820589
23	ZANJAN	12	2245	1726	513	1862568

TABLE B.8

Large Firms, Number of Workers, and Value Added in 1974

OBS	PROVINCE	NFTORY74	NWORKR74	VLUADD74
1	BOYER AHMAD AND KONGILUYEH	1	249	22591
2	BUSHEHR	11	1009	390532
3	CHAHARMAHAL AND BAKHTIYARI	10	311	40935
4	EAST AZARBAYEJAN	237	10119	2920365
5	ESFAHAN	412	40265	9161477
6	FARS	130	7273	2271757
7	GILAN	219	10455	2132313
8	HAMADAN	61	1877	293947
9	HORMOZGAN	20	527	618593
10	ILAM	7	54	1913
11	KERMAN	49	1812	1636348
12	KERMANSHAHAN	57	1695	814419
13	KHORASAN	212	10026	4753509
14	KHUZESTAN	231	17218	12453934
15	KORDESTAN	16	443	345580
16	LORESTAN	46	2561	1211921
17	MARKAZI	1944	154646	73096726
18	MAZANDARAN	219	16733	7224909
19	SEM NAN	14	1623	324183
20	SISTAN AND BALUCHESTAN	53	536	25618
21	WEST AZARBAYEJAN	79	2696	816356
22	YAZD	93	7010	1494834
23	ZANJAN	4	946	194113

TABLE B.9

Number of Firms in Agricultural, Mining, & Industry in 1976

OBS	PROVINCE	NFAG	NFM	NFIN	NFINL9
1	BOYER AHMAD AND KONGILUYEH	39	8	165	160
2	BUSHEHR	33	1	547	530
3	CHAHARMAHAL AND BAKHTIYARI	156	1	2515	2488
4	EAST AZARBAYEJAN	4967	54	21089	20635
5	ESFAHAN	25169	36	18785	18330
6	FARS	8836	34	6886	6687
7	GILAN	391	16	4836	4598
8	HAMADAN	160	8	3995	3917
9	HORMOZGAN	42	7	534	489
10	ILAM	96	5	319	311
11	KERMAN	7462	16	6136	6085
12	KERMANSHAHAN	181	16	3375	3282
13	KHORASAN	6071	62	16655	16086
14	KHUZESTAN	574	141	7283	6899
15	KORDESTAN	64	15	2432	2397
16	LORESTAN	204	14	2749	2695
17	MARKAZI	7431	218	55627	52654
18	MAZANDARAN	5392	18	7113	6793
19	SEM NAN	6085	7	1619	1561
20	SISTAN AND BALUCHESTAN	1560	7	1040	983
21	WEST AZARBAYEJAN	571	23	5200	5121
22	YAZD	18768	19	9000	8919
23	ZANJAN	134	7	1815	1778

TABLE B.10

Number of Firms in Different Major Activities

OBS	NFCONS	NFSAS	NFTRNS	NFFIN	NFSW	NFSWL9	NFSWM
1	39	504	171	22	276	187	77
2	44	2624	556	83	788	556	151
3	60	2468	369	69	779	609	112
4	1023	31198	4227	1513	8235	6959	852
5	1410	22791	5920	1182	10470	8446	903
6	630	15981	4121	895	6488	5074	885
7	346	10751	2938	630	4284	3417	637
8	180	7539	1229	331	2537	2096	334
9	81	2326	774	101	865	590	144
10	5	222	166	35	353	246	90
11	282	7260	1446	263	3177	1397	511
12	156	9855	1805	419	2706	2175	440
13	990	24315	4801	1648	10196	8318	1134
14	661	17954	5018	1180	7678	5898	1158
15	115	4835	1122	188	1519	1209	269
16	139	5845	761	252	1799	1452	287
17	6298	97372	18823	10407	35677	30024	4143
18	340	16455	6294	942	6987	5758	834
19	147	2915	804	193	1756	1343	302
20	112	2861	910	102	1175	816	275
21	300	11493	2238	542	3538	2916	507
22	211	3853	1825	229	2667	2086	230
23	146	3240	631	156	1057	834	162

TABLE B.11

Number of Firms, Without, Less, or More Than Ten Workers

OBS	PROVINCE	TNF76	NPNW	NFLTW	NFMTW
1	BOYER AHMAD AND KONGILUYEH	1244	122	991	131
2	BUSHEHR	4851	380	4253	218
3	CHAHARMAHAL AND BAKHTIYARI	6517	328	6033	156
4	EAST AZARBAYEJAN	73637	2107	69880	1650
5	ESFAHAN	87540	5541	80319	1680
6	FARS	45451	3416	40630	1405
7	GILAN	24736	1925	21870	941
8	HAMADAN	16392	619	15294	479
9	HORMOZGAN	4960	961	3738	261
10	ILAM	1917	147	1657	113
11	KERMAN	25843	1688	30117	938
12	KERMANSHAHAN	18856	1125	17133	598
13	KHORASAN	65622	5377	58477	1768
14	KHUZESTAN	41594	3891	35432	2271
15	KORDESTAN	10427	691	2356	380
16	LORESTAN	11827	454	10951	422
17	MARKAZI	238324	14045	213530	10749
18	HAZANDARAN	45188	2183	41085	1920
19	SEMNAN	13778	553	12794	431
20	SISTAN AND BALUCHESTAN	8103	725	6953	425
21	WEST AZARBAYEJAN	24161	1508	21946	707
22	YAZD	36821	808	35623	390
23	ZANJAN	7348	500	6611	237

TABLE B.12

Value Added, Wage, Productivity, and Large Private Firm

OBS	VLUADD80	WAGE80	PRODTY80	PFIRM80
1	100000	507.9	132.7	0
2	116063	674.9	775.9	8
3	112876	129.5	274.5	9
4	7248572	209.3	685.6	203
5	31868321	214.9	345.3	448
6	16119457	283.4	655.6	148
7	8197564	187.5	279.8	211
8	2080395	145.8	305.4	112
9	504194	140.7	365.3	11
10	100000	200.0	132.7	0
11	2907891	184.2	587.4	59
12	2658343	219.8	521.0	85
13	12329910	169.6	532.2	229
14	45130712	264.3	990.5	262
15	60000	128.7	158.0	23
16	4200226	224.9	797.7	38
17	173789280	232.5	933.4	2407
18	12880575	183.5	421.2	437
19	1718248	203.5	74.3	128
20	97825	58.6	30.3	79
21	2520510	169.6	59.8	89
22	5923348	156.8	321.1	250
23	23647837	133.6	829.6	12

TABLE B.13

Government Planning Expenditures in 1968-71 in Million
Rials

OBS	PROVINCE	GEXP68	GEXP69	GEXP70	GEXP71
1	BOYER AHMAD AND KOHGILUYE	106.5	4.0	12.0	108
2	BUSHEHR	28.0	41.1	40.0	54
3	CHAHARMAHAL AND BAKHTIYARI	0.5	14.0	11.0	51
4	EAST AZARBAYEJAN	140.7	53.4	123.0	195
5	ESFAHAN	47.9	50.8	14.0	346
6	FARS	74.8	100.9	57.0	3407
7	GILAN	74.3	75.1	111.0	74
8	HAMADAN	39.7	44.9	13.0	58
9	HORMOZGAN	29.0	41.1	39.0	54
10	ILAM	8.8	2.2	52.0	39
11	KERMAN	56.2	51.5	75.0	227
12	KERMANSHAHAN	66.3	31.6	66.0	103
13	KHORASAN	165.5	74.5	78.0	461
14	KHUZESTAN	95.4	190.4	133.0	285
15	KORDESTAN	26.0	29.2	33.0	34
16	LORESTAN	75.5	22.2	22.2	162
17	MARKAZI	377.7	159.6	527.0	3394
18	MAZANDARAN	109.1	23.3	45.0	98
19	SEMNAN	50.1	3.9	10.0	53
20	SISTAN AND BALUCHESTAN	68.2	14.4	60.0	139
21	WEST AZARBAYEJAN	134.3	122.5	72.0	131
22	YAZD	6.5	6.5	9.0	98
23	ZANJAN	30.4	30.4	28.0	28

TABLE B.14

Government General, Planning, and Economic Expenditures

OBS	GGEXP80	GPEXP80	GEEXP80
1	93855	568878	2698678
2	2814242	1649301	10582924
3	71726	440479	4778068
4	1053075	4351623	27549831
5	2864256	9386678	64272093
6	2346763	4431328	34256087
7	1398031	4663700	16213548
8	349814	1420126	2551945
9	6453600	1268929	19921825
10	34292	731615	3455971
11	1110187	4802613	25287160
12	760716	2926325	6947079
13	838727	11454124	27448369
14	2562080	9048351	72860545
15	529080	1222379	3522623
16	1425850	1419311	3761924
17	17509892	43544155	551422104
18	479237	4687605	25960791
19	148760	1474907	10260626
20	4579048	5828428	16270051
21	753403	2195958	7034561
22	65168	1643191	4450976
23	351022	1991037	4955440

Appendix C

APPENDIX C: THE MONTHLY INCOME AND HOUSEHOLDS EXPENDITURES

The variable and their labels which has been used in order to demonstrate the impact of migration on income distribution are:

PERU75 = % of urban household expenditure in 1975

PERU76 = % of urban household expenditure in 1976

PERU77 = % of urban household expenditure in 1977

PERU78 = % of urban household expenditure in 1978

PERU79 = % of urban household expenditure in 1979

PERU80 = % of urban household expenditure in 1980

PERR75 = % of rural household expenditure in 1976

PERR75 = % of rural household expenditure in 1979

PRIN76 = % of rural household income in 1976

PRIN79 = % of rural household income in 1979

MUBRKT = Mean of urban expenditures in each bracket in 1975

MRB76 = mean of rural expenditure in each bracket in 1976

MRB79 = mean of rural expenditure in each bracket in 1976

MUB77 = mean of urban expenditure in each bracket in 1977

MUB80 = mean of urban expenditure in each bracket in 1980

Source: Data for the Tables C.1-C.4 have been taken from The Survey of Rural Households Budget, various issues and The Survey of Urban Households Budget, various issues.

TABLE C.1

Urban Households Expenditures by Expe. Brackets & Provinces

OBS	PROVINCE	SAMPLE	BRACKET1	BRACKET2	BRACKET3
1	MARKAZI	5081	0.49203	2.00748	3.2868
2	GILAN	414	0.96618	1.93237	4.8309
3	MAZANDARAN	644	3.10559	4.34783	6.0559
4	EAST AZARBAYEJAN	945	1.90476	5.60847	7.1958
5	WEST AZARBAYEJAN	343	2.04082	6.70554	10.2041
6	KERMANSHAHAN	358	1.11732	2.51397	6.1453
7	KHUZESTAN	1018	0.88409	1.66994	3.8310
8	FARS	731	2.18878	6.70315	6.8399
9	KERMAN	313	3.19489	6.07029	7.3482
10	KHORASAN	979	5.00511	8.98876	11.2360
11	ESFAHAN	1085	4.05530	5.71429	6.4516
12	SISTAN AND BALUCHESTAN	142	2.11268	2.81690	5.6338
13	KORDESTAN	103	0.00000	2.91262	1.9417
14	HAMADAN	265	1.50943	2.64151	6.0377
15	CHAHARMAHAL AND BAKHTIYARI	119	1.68067	7.56303	5.0420
16	LORESTAN	192	0.52083	3.12500	8.3333
17	ILAM	41	0.00000	4.87805	4.8780
18	BOYER AHMAD AND KOHGILUYEH	63	3.17460	4.76190	4.7619
19	BUSHEHR	111	0.90090	0.00000	6.3063
20	ZANJAN	154	0.64935	7.79221	11.6883
21	SENNAN	195	2.05128	3.58974	6.1538
22	YAZD	185	2.70270	9.18919	10.2703
23	HORMOZGAN	107	0.93458	0.93458	0.9346

TABLE C.2

Urban Households Expenditures by Expe. Brackets & Provinces

OBS	BRACKET4	BRACKET5	BRACKET6	BRACKET7	BRACKET8	BRACKET9	BRACKET10
1	5.1565	12.2417	12.5959	19.3269	22.7121	15.0364	7.1443
2	5.7971	14.7343	12.5604	16.1836	20.0483	15.9420	7.0048
3	5.2795	11.9565	11.1801	16.4596	21.2733	15.0621	5.2795
4	6.6667	17.0370	13.7566	16.9312	16.0847	10.5820	4.2328
5	11.0787	15.1603	13.1195	15.1603	13.1195	9.0379	4.3732
6	11.4525	17.0391	14.5251	17.5978	18.4358	7.2626	3.9106
7	4.7151	13.4578	11.9843	23.3792	21.6110	11.6896	6.7780
8	10.5335	16.0055	9.8495	15.5951	14.3639	12.9959	4.9248
9	8.3067	16.2939	11.8211	14.3770	17.3914	10.8626	3.8339
10	8.9888	18.4883	11.4402	15.0153	12.5638	6.2308	2.0429
11	8.5714	15.6682	11.5207	16.8664	16.4055	10.8756	3.8710
12	5.6338	12.6761	7.7465	17.6056	18.3099	15.4930	11.9718
13	3.8835	14.5631	17.4757	19.4175	22.3301	14.5631	2.9126
14	4.9057	13.9623	11.6981	17.3585	20.0000	16.2264	5.6604
15	4.2017	15.1261	12.6050	20.1681	20.1681	10.9244	2.5210
16	11.4583	9.3750	10.9375	20.3125	15.6250	13.5417	6.7708
17	2.4390	24.3902	7.3171	9.7561	9.7561	21.9512	14.6341
18	4.7619	12.6984	14.2857	4.7619	26.9841	19.0476	4.7619
19	8.1081	15.3153	14.4144	22.5225	16.2162	14.4144	1.8018
20	7.1429	18.1818	14.2857	15.5844	13.6364	8.4416	2.5974
21	8.2051	11.2821	12.8205	24.1026	15.3846	9.7436	6.6667
22	5.4054	15.1351	15.1351	15.1351	14.5946	9.1892	3.2432
23	0.9346	5.6075	9.3458	21.4953	19.6262	23.3645	16.8224

TABLE C.3

Urban Households Expenditures by Expenditure Brackets

OBS	BRAKET	PERU75	PERU76	PERU77	PERU78	PERU79
1	< 6250	12.30	9.43	5.97	3.8	2.34
2	6250 - 8333	7.29	5.32	4.09	2.2	1.96
3	8334 - 10416	6.81	6.40	4.50	2.3	2.29
4	10417 - 12500	6.37	5.90	4.24	2.6	2.64
5	12501 - 14583	6.42	5.69	4.02	3.7	2.48
6	14584 - 16666	6.11	5.10	4.82	3.2	2.57
7	16667 - 20833	9.92	9.60	7.71	7.6	6.67
8	20834 - 25000	7.30	7.96	6.82	6.5	7.28
9	25001 - 33333	10.38	11.79	12.94	11.1	12.43
10	33334 - 41666	7.03	8.15	9.76	9.9	9.50
11	41667 - 50000	4.53	5.43	7.02	7.6	10.06
12	50001 - 62500	4.49	5.02	7.68	10.0	9.16
13	62501 - 75000	3.33	3.47	5.23	6.6	6.91
14	75001 - 100000	3.63	4.39	5.90	8.5	9.03
15	> 100000	4.09	6.35	9.30	14.4	14.68

TABLE C.4

Rural Households Expenditures by Expenditure Brackets

OBS	BRACKET	MRB76	PERR76	PRIN76	MRB79	PERR79
1	< 2500	1603	6.78	7.89	1722	2.1
2	2501 - 4999	3816	16.61	17.80	3854	5.9
3	5000 - 7499	6204	17.66	20.41	6310	8.5
4	7500 - 9999	8650	15.01	17.26	8789	10.3
5	10000 - 14999	12213	19.77	20.31	12424	20.7
6	15000 - 19519	17208	9.84	8.16	17386	15.6
7	20000 - 29999	24135	8.43	4.97	24350	17.8
8	30000 - 49999	37329	3.84	2.18	37710	12.2
9	50000 - 99999	67492	1.46	0.82	65684	5.0
10	> 100000	212358	0.60	0.20	252973	1.9

TABLE C.5

Urban Households Expenditures by Expenditure Brackets

OBS	BRAKET	PERU80	MUB80	PERU77	MUB77
1	< 2500	0.8	1604	1.7	1491
2	2501 - 4999	1.6	3826	3.9	3867
3	5000 - 7499	2.5	6279	5.5	6283
4	7500 - 9999	3.0	8809	6.6	8777
5	10000 - 14999	7.7	12642	14.1	12435
6	15000 - 19999	9.1	17501	12.3	17461
7	20000 - 29999	18.4	24984	18.1	24697
8	30000 - 49999	26.8	39057	19.2	38586
9	50000 - 99999	21.9	67894	12.8	68389
10	> 100000	8.2	151115	5.8	193397

BIBLIOGRAPHY

- Amin, S., Modern Migration in West Africa. London: Oxford University Press, 1974
- Amuzegar, Jahangir, Iran: an Economic Profile, Washington, D.C.: Mideast Institute, 1977.
- Annable, Jr., J. E. "Internal Migration and Urban Unemployment in Low-Income Economies," Oxford Economic Papers,
- Bacon, L. "Poverty Among Interregional Rural-to-urban Migrants," Rural Sociology, Vol. 36, 1971, pp. 125-140.
- Balan, J., "Migration-Native Socio-economic Differences in Latin America Cities: a Structural Analysis," Latin American Review, Vol. 80, 1966, pp. 88-107
- Baldwin, George, Planning and Development in Iran, Baltimore: Johns Hopkins Press, 1967.
- Bank Markazi -i Iran, Annual Report and Balance Sheet 1967-1980, Tehran: Bank Markazi, 1978-1981. Vol. 24, 1972, pp. 344-412.
- Barnum, H. and R. H. Sabot, Migration, Education, and Urban Surplus Labor, Paris: OECD., 1976.
- Batra, R. N., The Pure Theory of International Trade Under Uncertainty, New York: Wiley, 1975.
- Berry, R. A. "Land Reform and the Agricultural Income Distribution," Pakistan Development Review, Vol. XI, 1971, pp. 30-44.
- Bharier, J., Economic Development in Iran, 1900-1970, London: Oxford University Press, 1971.
- , "The Growth of Towns and Villages in Iran, 1960-66," International Journal of Middle East Studies, Vol. 8, 1972, pp. 51-61.
- Bhatia, K. B. "Rural-Urban Migration and Surplus Labor," Oxford Economic Papers, Vol. 31, 1979, pp. 403-14.

- Blanco, C. "The Determinants of Interstate Population Movements," Journal of Regional Science, Vol. 5, 1963, PP. 77-84.
- Blomqvist, A. G. "Urban Job Creation and Unemployment in LDCs: Todaro vs. Harris and Todaro," Journal of Development Economics, Vol. 5, 1978, PP. 3-18.
- Bock, P. G., and I. F. Rothenberg, Internal Migration Policy and New Towns: The Mexican Experience, Chicago: University of Illinois Press, 1979.
- Bogue, D. J., Principles of Demography, New York: John Wiley, 1969.
- Bowles, S. "Migration as Investment: Empirical Tests of the Human Investment Approach to Geographical Mobility," Review of Economics and Statistics, Vol. LII, 1970, PP. 356-62.
- Boer, W. and M. Herve, "Employment and Industrialization in Developing Countries," Quarterly Journal of Economics, Vol 80, 1966, 88-107.
- Bowles, S., "Migration as Investment: Empirical Tests of the Human Investment Approach to Geographic Mobility," Review of Economics and Statistics, Vol. 52, No. 4, Nov. 1970, PP. 356-62.
- Brown, L. A., J. Odland, and R. G. Colledg, "Migration, Functional Distance and the Urban Hierarchy," Economic Geography, Vol. 46, 1970, PP. 472-85.
- Caldwell, J. C. "Determinants of Rural-to-Urban Migration in Ghana," Population Studies, Vol. 22, 1968, PP. 361-77.
- Cebula, R.J.-, The Determinants of Human Migration, Lexington, Mass.: Lexington, 1979.
- Cebula, R.J., and Vedder, R.K., "A Note on Migration, Economic Opportunity, and the Quality of Life," Journal of Regional Science, Vol. 13, 1973, PP. 205-211.
- Clark Carey, J. C., and A. G. Carey, "Industrial Growth and Development Planning in Iran," Middle East Journal, 1975.
- Chang, T. H. P. :A Review of Migration in the Third World Context," in Migration Decision Making, Ed. G. F. De Jong, and R. W. Gardner. New York: Pergamon Press, 1981.
- Collier, P. "Migration and Unemployment: A Dynamic General Equilibrium Analysis Applied to Tanzania," Oxford Economic Paper, Vol. 20, 1978, PP. 205-36.

- Corden, W. M., and R. Findly, "Urban Unemployment, Intersectoral Capital Mobility and Development Policy," Economica, Vol. 58, 1975, PP. 59-77.
- Culberston, J.M., "The Quality of Life, Population, and the Environment." Review of Social Economy, Vol. 30, 1972, PP. 46-53.
- De JONG, G. F., and R. W. Gordon, Migration Decision Making, New York: Pergamon Press, 1981.
- Duncan, Otis D., "The Measurement of Population Distribution" Population Studies, Vol. 11, 1957, PP. 27-45.
- Ebanks, G. E. "Differential Internal Migration in Jamaica," Social and Economic Studies, Vol. 17, 1968, PP. 197-214.
- Field, G.S., "Rural-Urban Migration, Urban Unemployment and Underemployment, and Job-Search Activity in LDCs," Journal of Development Economics, Vol. 2, 1975, PP. 165-87.
- Fisher, W. I. B., The Cambridge History of Iran Volume I: the Land of Iran, London: Cambridge University Press, 1968.
- Gallaway, L. E. "Industry Variation in Geographical Labor Mobility Patterns," Journal of Human Resources, Vol. 2, 1967, PP. 461-74.
- Gaude, J. "Agricultural Employment and Rural Migration in a Dual Economy," International Labour Review, Vol. 106, 1972, PP. 475-90.
- George, H. V. "Estimation of Interprovincial Migration for Canada from Place of Birth by Residence Data: 1951-61," Demography, Vol. 8, 1971, PP. 123-41.
- Gordon, J. B. "Labor Mobility and Economic Growth: The Central American Experience--Costa Rica and El Salvador," Economic Development and Cultural Change, Vol. 17, 1969, PP. 319-38.
- Graham, Robert, Iran the Illusion of Power, New York: St. Martin's Press, 1978.
- Greenwood, M.J., "An Econometric Model of Internal Migration and Regional Economic Growth in Mexico," Journal of Regional Science, Vol. 18, No. 1, 1978, PP. 17-29
- , "The Economics of Labor Mobility: An Empirical Analytical Comment," Western Economic Journal, Vol. 6, 1969, PP. 243-44.

- . "The Determinants of Labor Migration in Egypt," Journal of Regional Science, Vol. 9, 1969, pp. 233-99.
- . "Lagged Response in the Decision to Migrate," Journal of Regional Science, Vol. 10, 1970, pp. 375-84.
- . "Urban Economic Growth and Migration: Their Interaction," Environment and Planning, Vol. 5, 1973, pp. 91-112.
- . "Migration Research: A Survey of Finding," Journal of Economic Literature, Vol 13, 1975, pp. 397-433.
- Haenszel, W. "Concept, Measurement and Data in Migration Analysis," Demography,
- Halliday, Fred, Iran Dictorship and Development, New York: Penguin Books, 1979.
- Harris, J. T. and M. P. Todaro. "Migration, Unemployment and Development: A Two Sector Analysis," American Economic Review, Vol. LX, 1970, pp. 139-49. Vol. 4, 1967, pp. 253-62.
- Hart, R. A. "Interregional Economic Migration: Some Theoretical Considerations (Part I)", Regional Science, Vol. 15, 1975, pp. 127-138.
- . "Interregional Economic Migration: Some Theoretical Considerations (Part II)", Regional Science, Vol. 15, 1975, pp. 289-306.
- Herrick, B. Urban Migration and Economic Development in Chile. Cambridge: Cambridge University Press. 1965.
- Higgins, B., Economic Development, New York, 1959, pp. 353-4.
- . "Urbanization, Industrialization, and Economic Development." In The Urban Explosion in Latin America, ed. Glenn Beyer, New York: Cornell University Press, 1967.
- Howely, A.H., "Migration and Employment in Peninsular Malaysia, 1970," Economic Development and Cultural Changes Vol. 27, No. 3, 1979, pp.491-501.
- Ilchman, W. F., et al., eds., Policy Science and Population. Lexington, Mass.: D. C. Heath, 1975.
- International Labour Organization, Employment and Economic Growth, International Labour Organization, Geneva, 1956.

- Jacqz, Jane W., ed., Iran: Past, Present, and Future, New York: The Aspen Institute for Humanistic Studies, 1976.
- Johnson, G. Cook, High-Level Manpower in Iran: From Hidden Conflict to Crisis, New York: Praeger, 1980.
- Johnson, G. E. "The Structure of Rural-Urban Migration Models," Eastern Africa Economic Review, Vol. , 1971 PP. 21-28.
- Johnson G.C., High-Level Manpower in Iran: From Hidden Conflict to Crisis, New York, Praeger, 1980.
- Katouzian, Homa, The Political Economy of Modern Iran, New York: University Press, 1981.
- Kazemi, Farhad, Poverty and Revolution in Iran, New York: University Press, 1980.
- Kritz, E., and Ramos, J., "The Measurement of Urban Underemployment," International Labour Review, Vol. 113, No. 1, 1976, PP. 113-127.
- Kuznets, S. and Thomas D.S., " Internal Migration and Economic Growth," Selected Studies of Migration Since World War II, New York: Milbank Memorial Fund, 1958.
- Kuznets, S., A. R. Miller, and R. A. Easterlin, Population Redistribution and Economic Growth, United States, 1870-1950, Vol. III. Philadelphia: American Philosophical Society, 1966.
- Kurtzig, Michael, "The Agrarian Based Economic Development of Iran," Land Economics, Vol. 13, 1975, PP. 2-4.
- Lambton, A. K. S., The Persian Land Reform, 1962-66, London: Oxford University Press, 1969.
- Lee, E. S. "A Theory of Migration," Demography, Vol. 3, 1966, PP. 47-57.
- Levy, M. and W. Wadycki, "Education and the Decision to Migrate: an Econometric Analysis of Migration in Venezuela," Econometrica, Vol. 42, 1947, PP. 377-88.
- , "What is the Opportunity Cost of Moving: Reconsideration of the Effect of Distance on Migration," Economic Development and Cultural Change, Vol. 22, 1974, PP. 198-214.
- Lewis, A. W. "Economic Development with Unlimited Supplies of Labor," The Manchester School, Vol. 22, 1954, PP. 139-171.

- , "The Evolution of the International Economic Order," Discussion Paper no. 74, Princeton, N. J.: Princeton University, 1977.
- Linn, J. F. "The Cost of Urbanization," Economic Development and Cultural Change, Vol. 34, 1982, pp. 625-48.
- Looney, Robert, E., A Development Strategy for Iran Through the 1980s, New York: Praeger, 1977.
- , Economic Origins of the Iranian Revolution, New York: Pergamon Press, 1982.
- , Iran at the End of the Century, Massachusetts: D. C. Heath Company, 1977.
- MacDonald, J. R. "Internal Migration and Changing Patterns of Regional Development: The Case of France," Journal of Geography, Vol. 11, 1972, pp. 542-48.
- Macpherson, G. and Jackson, D., "Village Technology for Rural Development: Agricultural Innovation in Tanzania," International Labour Review, Vol. 109, 1974, pp. 97-108.
- Mills, E. "Is Out-Migration Affected by Economic Conditions," Southern Economic Journal, Vol. 39, 1973, pp. 396-405.
- Mobogunji, A. L. "Systems Approach to a Theory of Rural-Urban Migration," Geographical Analysis, Vol. 2, 1970, pp. 1-18.
- Morrison, P.A., "Chronic Movers and the Future Redistribution of Population," Demography, Vol. 8, 1971, pp. 171-84.
- Muth, R. F. "Migration: Chicken or Egg," Southern Economic Journal, Vol. 37, 1971, pp. 297-306.
- Myrdal, G. Economic Theory and Underdeveloped Regions London: Duckworth, 1957.
- Navratil, F. J., and Doyle, J. J. "The Socioeconomic Determinants of Migration and The Level of Aggregation." Southern Economic Journal, Vol. 43, 1975, p. 1547.
- Nelson, J. "Sojourners Versus New Urbanites: Causes and Consequences of Temporary Versus Permanent Cityward Migration in Developing Countries," Economic Development and Cultural Change, Vol. 24, 1976, pp. 721-57.
- Oberai, A.S., "State Policies and Internal Migration in Asia," International Labour Review, Vol. 120, No. 2, 1981.

- Okun, B. "Interstate Population Migration and State Income Inequality: A Simultaneous Equation Approach," Economic Development and Cultural Change, Vol. 16, 1968. PP. 279-315.
- Olssen, G. Distance and Human Interaction: A Review and Bibliography. Philadelphia: Regional Science Research Institute, 1965.
- Patrick, C.H, and Ritchey, P.N., "Change in Population and Employment as Processes in Regional Development," Rural Sociology, Vol. 39, 1974 PP. 224-37.
- People's Mojahedin Organization of Iran, Cities in The Clutches of Imperialism: Roots and Existence of Tehran's Shanty-towns, Moslem Students Society, U.S., 1981.
- Plan Organization, Markaz -i Amar -i Iran, National Census of Population and Housing, 1966, Tehran: Plan Organization Vol. 1-168, 1968.
- Plan Organization, Review of the Second Seven Year Plan Program of Iran, Tehran: Plan Organization, 1960.
- , Third National Development Plan, 1962-1967, Tehran: Plan Organization, 1965.
- , Fourth National Development Plan, 1968-1972, Tehran: Plan Organization, 1968.
- Plan and Budget Organization, Markaz -i Amar -i Iran, National Census of Population and Housing, 1976, Total Country, January 1981.
- , Iran's Fifth National Development Plan 1973-78, Revised, Tehran: Plan and Budget Organization, 1975.
- , Netayeieh Amar Gery -i Keshavarzee -i Roostaieh Iran, 1975, Tehran: Plan and Budget Organization, Persian, 1979.
- , Netayeieh Amar Gery -i Karghah-hayeh Bozoorqheh Iran, various issues, Tehran: Plan and Budget Organization, Persian, 1973-1981.
- , Annual Statistical Report, 1981. Tehran: Plan and Budget Organization, Persian, 1981.
- , The Survey of Rural Households Budget, various issues, Tehran: Plan and Budget Organization, Persian, 1972-1980.

- , The Survey of Urban Households Budget, various issues, Tehran: Plan and Budget Organization, Persian, 1973-1980.
- Ramino, R.L., "Interstate Migration and Wage Theory," Review of Economics and Statistics, Vol. 44, 1962, PP. 428-38.
- Ravenstein, E. G. "The Laws of Migration," Part I. Journal of the Royal Statistical Society, Vol. 48, 1885, PP. 167-227.
- , "The Laws of Migration," Part II. Journal of the Royal Statistical Society, Vol. 52, 1889, PP. 241-301.
- Renaud, B., National Urbanization Policies in Development Countries, World Bank Staff Working Paper No. 347, 1979.
- Reynolds, L. G. "Economic Development With or Without Surplus Labor: Some Complications," Oxford Economic Papers, Vol. 21, 1969, PP. 89-103.
- Rosenstein-Rodan, P. W. "Problem of Industrialization on Eastern and South-Eastern Europe," Economic Journal, Vol. 53, 1943, PP. 202-11.
- Sahota, S. S. "An Economic Analysis of Internal Migration in Brazil," Journal of Political Economy, Vol. 76, 1968, PP. 218-51.
- Safa, H. I., and B. M. Toit, Migration and Development, 1975.
- Schultz, T. P., "Rural-Urban Migration in Colombia," Review of Economics and Statistics, Vol. 53, 1971, PP. 175-63.
- Schwartz, A. "Interpreting the Effect of Distance on Migration," Journal of Political Economy, Vol. 81, 1973, PP. 1153-69.
- Schultz, T. W. "Reflections on Investment in man," Journal of Political Economy, Vol. LXX, 1962, PP. 51-58.
- , "The role of Government in Promoting Economic Growth," In Transforming Traditional Agriculture, ed. L. D. White, New Haven, 1964, PP. 53-70.
- Scully, G.W., "Interstate Wage Differentials: A Cross Section Analysis," American Economic Review, Vol. 59, 1969, PP. 757-73.
- Sen, A. K. "Peasants and Dualism With or Without Surplus Labor," Journal of Political Economy, Vol. 74, 1966, PP. 425-50.

- Shaw, R. P. "A Note on the Cost-Returns Framework and Decisions to Migrate," Population Studies, Vol. 28, 1947, PP. 167-69.
- , "Land Tenure and the Rural Exodus in Latin America," Economic Development and Cultural Change, Vol. 22, 1974, PP. .
- , Migration Theory and Fact, Bibliography Series, No. 5, Philadelphia, Regional Science Research Institution, 1975.
- , "Bending the Urban Flow a Construction-Migration Strategy," International Labour Review, Vol. 119, No. 4, 1980, PP. 467-79.
- Sjaastad, L. A. "The Costs and Returns of Human Migration," Journal of Political Economy, Vol. 70, 1962, PP. 580-93.
- Soos, H., "The Impact of Select Rural Development Projects on Income and Rural-Urban Migration," Draft, September 1974.
- Speare, Jr., A. "A Cost-Benefit Model of Rural-to-Urban Migration," Population Studies, Vol. 25, 1971, PP. 117-31.
- Stiglitz, J. E., "Alternative Theories of Wage Determination and Unemployment in LDCs: The Labor Turnover Model." Quarterly Journal of Economics Vol. 88, 1974, PP. 1153-69.
- Takagi, Y. "Surplus Labor and Disguised Unemployment" Oxford Economic Paper. Vol. 28, 1976, PP. 447-57.
- Thomas, D. S. "Age and Economic Differentials in Interstate Migration," Population Index, 1958, PP. 313-66.
- Tabah, H. and Kono, S, "World Population Trends in 1960-70." International Labour Review, Vol. 113, No. 5, 1974, P. 412.
- Thomas, R. N., and J. M. Hunter, Internal Migration System in the Developing World, Boston, Mass.: G. K. Hall & Co., 1980.
- Todaro, M. P. "A Model of Labor Migration and Urban Unemployment," American Economic Review, Vol. 69, 1969, PP. 138-58.
- , "Rural-Urban Migration, Unemployment and Job Probabilities: Recent Theoretical and Empirical Research", in Economic Factors in Population Growth, ed. A. J. Coale (New York: John Wiley & sons, 1976).

- Todaro, M.P., " A Model of Labour of Migration and Urban Underemployment in Less Developed Countries," American Economic Review, Vol. 59, 1969.
- Todaro, M.P., " Income Expectations, Rural-Urban Migration and Employment in Africa," International Labour Review, Vol. 104, No. 1-2, 1971 PP. 384-413.
- Todaro, M.P. and Harris, J.R., " Migration, Unemployment and Development : A Two-sector Analysis," American Economic Review, Vol. 60, 1970, PP. 126-42.
- United Nations, Manual VI, Methods of Measuring Internal Migration, New York: United Nations, 1970.
- , The Method and Materials of Demography, United Nation, New York, 1980.
- Vanderkamp, J., " Migration Flow, Their Determinants, and the Effects of Return Migration." Journal of Political Economy, Vol. 79, 1971, PP.1012-31.
- , "The Effects of Out-Migration on Regional Employment," Canadian Journal of Economics, Vol. 3, 1970, PP. 54-50.
- Viner, J. "Some Reflections on the Concept of Disguised Unemployment," Indian Journal of Economics, Vol. 38, 1957.
- Waterston, A., Development Planning: Lesson of Experience, Johns Hopkins Press, 1965, P. 177.
- Weeks, J., " Policies for Expanding Employment in the Informal Urban Sector of Developing Economics," International Labour Review, Vol. 108, 1973, PP. 1-7.
- Wellisz, S., " Dual Economics, Disguised Unemployment and the Wilson, Randney, The Economics of the Middle East, New York: Holmes and Meier Publishers, Inc., 1979.
- Yap, L. , Internal Migration in Less Developed Countries: A Survey of the Literature, World Bank Staff Working Paper No. 215, 1975.
- , "Rural-Urban Migration and Urban Underemployment in Brazil," Journal of Development Economics, Vol. 3, 1976, PP. 227-43.
- , "The Attraction of Cities: A Review of the Migration Literature," Journal of Development Economics, Vol. 4, 1977, PP. 239-64.

-----, " Internal Migration and Economic Development in Brazil," Quarterly Journal of Economics, Vol. , 1974.

-----, " The Attraction of Cities: A Review of the Migration," Journal of Development Economics, Vol. 4, 1977, pp. 239-64.

Zarembka, P. "Labor Migration and Urban Unemployment: Comment," American Economic Review, Vol. 70, 1970, pp. 184-88.

-----, Towards a Theory of Economic Development, San Francisco: Holden-Day, 1972.

Zelinsky, W. "The Demographic Transition. Changing Pattern Of Migration. Migration," University Park: The Pennsylvania State University, 1979.