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MIGRATION AND ECONOMIC DEVELOPMENT:
A REVIEW OF THEORY, EVIDENCE,
METHODOLOGY AND RESEARCH PRIORITIES

by

Michael P. Todaro

Occasional Paper No. 18

INSTITUTE FOR DEVELOPMENT STUDIES
UNIVERSITY OF NAIROBI
P.O. Box 30197
Nairobi, Kenya

April 1976

An earlier version of this paper was prepared for the I.L.O. as background material for a newly initiated project on migration and employment under the World Employment Programme.

Views expressed in this paper are those of the author. They should not be interpreted as reflecting the views of the Institute for Development Studies or of the University of Nairobi.

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ABSTRACT

In this paper the author surveys the most recent literature on internal migration in developing nations. He also treats briefly the history of migration in the economically advanced countries and more recent international migration. After discussing the significance of the problems associated with migration and reviewing the non-economic literature on the subject, he concentrates on recent economic theories of rural-urban migration and examines the rapidly growing number of quantitative and econometric migration studies.

The paper concludes with suggestions for future research priorities in light of what we now seem to know about migration and development.

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INTRODUCTION

Historically, the economic development of Western Europe and North America has often been described in terms of the continuous transfer of economic activity and people from rural to urban areas both within and between countries. As urban industries expanded, new employment opportunities were created while labour-saving technological progress in agriculture reduced rural manpower needs. The combination of these two phenomena made it possible for Western nations to undergo an orderly and effective spatial transfer of human resources. This historical shift in sectoral production and employment was a sufficiently common experience to induce many economists to conclude that economic development in the Third World necessitated a concerted effort to promote rapid urban industrial growth. They tended to view cities, therefore, as the "growth centres" and focal points of an expanding economy. Unfortunately, this strategy of rapid industrialisation has, in most instances, failed to bring about the desired results predicted by historical experience.

Today, many Third World countries are plagued by an historically unique combination of massive rural to urban population movements and growing levels of urban unemployment and underemployment. Substantial urban unemployment in the economies of less developed countries is one of the most striking symptoms of their inadequate development. In a wide spectrum of poor countries, open unemployment in urban areas now affects 10 to 20 per cent of their total labour forces. The incidence of unemployment is much higher among the young and increasingly more educated in the 15 to 24 year age bracket. Even larger fractions of both urban and rural labour forces are "underemployed". They neither have the complementary resources (if they are working full-time) nor the opportunities (if they only work part-time) for increasing their presently very low incomes to levels comparable to those in the modern manufacturing, commerce and service sectors. It is therefore because of its relationship to the problem of Third World poverty that the employment issue in general and the migration question in particular occupies such a central place in the contemporary study of the causes and consequences of underdevelopment.

But the dimensions of the urban employment problem in Third World countries go beyond the simple shortage of work opportunities or the underutilisation and low productivity of those who do work long hours. It also includes the growing divergence between inflated attitudes and job expectations, especially among young educated migrants, and the available

range of actual job opportunities for them in urban areas. In particular, the growing aversion to manual and agricultural work, fostered in urban and "white-collar" oriented educational systems, creates severe strains for poor societies attempting to accelerate national development. We can state at the outset, therefore, that the employment and migration problem in Third World countries has a number of dimensions that make it both historically unique and thus subject to a variety of unconventional economic analyses. There are three major reasons for this historical uniqueness of employment problems in less developed countries.

1. First, unemployment and underemployment regularly and chronically affect much larger proportions of urban labour forces in a variety of different ways than did open unemployment in the industrialised countries, even during the worst years of the Great Depression.
2. Second, the causes of Third World urban employment problems are much more complex than those in the developed countries. They, therefore, require a variety of policy approaches that go far beyond simple "Keynesian" type policies to expand aggregate demand common to Western societies. In most cases, these approaches go beyond narrow economic policies to touch upon social, institutional and attitudinal aspects of the character of economic growth in these societies.
3. Third, it is important to bear in mind that whatever the dimensions and the causes of the excessive migration and urban surplus labour problem in Third World nations, the human circumstances of abject poverty and low levels of living which are associated with this lack of productive work are such as have rarely been experienced in the now developed countries. There is an urgent need, therefore, for concerted policy action by both the less developed and the more developed nations. The less developed countries need to readjust domestic policies to include population distribution and employment creation as major social and economic objectives, while the developed countries need to review and readjust their traditional economic policies vis-a-vis the Third World, especially those in the area of trade and technology transfer.

The causes and consequences of continued internal as well as international migration lie at the heart of the contemporary development problem. As we shall soon discover, continued internal migration in excess

of job opportunities is both a symptom of and contributing factor to the ubiquitous problems of poverty, inequality and unemployment that characterise most contemporary Third World nations. Moreover, the two-way linkages between demographic variables on one hand and economic variables on the other, as outlined for example in the I.L.O. Bachue-2 demographic-economic model with migration as the intervening factor, are only now just beginning to be carefully explored in both theoretical and quantitative dimensions.

Our broad objectives in this paper are fourfold: first, to carefully examine the literature on migration models and the role of migration (both internal and international) in the process of economic development; second, to identify what has been empirically tested and where, giving special emphasis to a number of recently concluded econometric country studies; third, to explore the strengths and limitations of various methodological approaches to estimating the parameters of micro and macro econometric migration functions based both on census and survey data and to suggest the most promising avenues for further investigation; and fourth, building on this background to identify the major priority questions in migration research which still remain to be answered and to suggest appropriate methodological approaches for answering these questions within the context of realistic research budget constraints. It is hoped that this information will assist those contemplating further research on the process of migration at both the national and international level. Such research can then hopefully serve as a basis for the formulation of more appropriate demographic, economic and social policies designed to capitalise on the potential social benefits of internal and external migration while minimising any social costs.

To achieve the above objectives, the paper will be divided into two parts with a total of nine sections. Part One, consisting of sections I through III, will provide a background overview of the urban population growth and employment problem in developing nations. In section I we briefly discuss the role, importance, and problems of migration, both internal and international, for economic development and outline the many ways in which diverse and very often unrelated economic and social policies affect and are affected by the migration process. Section II provides an overview of the dimensions of the problem of urbanisation and urban surplus labour in developing nations. Section III focuses specifically on contemporary problems of international migration by placing these problems in an historical context. We argue that the analytical framework for examining international

migration should be not that different from the one which analyses internal migration even though the relative importance of certain variables will differ.

Part Two, which forms the bulk of the paper, reviews and analyses the alternative theoretical, empirical and methodological approaches to migration research. It consists of sections IV through IX. In section IV we briefly review the main strands of the more general descriptive literature on internal and international migration stressing both "non-economic" and economic approaches. Section V provides a summary of recent theoretical trends in the economic migration literature focussing on extensions and modifications of the basic Todaro "expected income" model of rural-urban migration. Section VI analyses various methodologies for converting theoretical migration models into testable econometric equations. Here we look at alternative specifications of micro and macro migration functions, the strengths and limitations of census vs. survey approaches to data generation, problems of measuring variables, and the pros and cons of different econometric estimation techniques. In section VII we ask the question "what do we think we now know about the migration process?" A survey both of the empirical descriptive literature on migration and particularly the new econometric literature provides the basic information for answering this central question. Finally, in sections VIII and IX we try to identify the priority issues for future migration research and suggest ways in which such research might contribute substantially to the advancement of our understanding of the nature of the migration process and its relationship to population growth and economic development. In particular, it is argued that by increasing the policy content of future migration studies, we will be better able to assist concerned Third World governments with the formulation and application of appropriate economic policies designed to affect the nature, magnitude and pattern of internal and international migration in more socially desirable ways.

PART ONE

MIGRATION, UNEMPLOYMENT AND DEVELOPMENT: AN OVERVIEW

I. THE ROLE AND IMPORTANCE OF MIGRATION FOR DEVELOPMENT

In order to place the migration issue in a proper perspective it is essential that we understand at the outset the centrality of the migration phenomenon, in both its positive and negative sense, in determining the "character" of the development process. Only a few years ago, rural-urban migration was viewed favourably in the economic development literature. Internal migration was thought to be a natural process in which surplus labour

was gradually withdrawn from the rural sector to provide needed manpower for urban industrial growth. The process was deemed socially beneficial since human resources were being shifted from locations where their social marginal products were often assumed to be zero to places where this marginal product was not only positive but also rapidly growing as a result of capital accumulation and technological progress. As Richard Jolly, Director of the Institute of Development Studies at Sussex, has noted:-

Far from being concerned with measures to stem the flow, the major interest of these economists (i.e. those who stressed the importance of labour transfer) was with policies that would release labour to increase the flow. Indeed, one of the reasons given for trying to increase productivity in the agricultural sector was to release sufficient labour for urban industrialisation. How irrelevant most of this concern looks today! (Jolly, 1970, p.4)

In contrast to this viewpoint, it is now abundantly clear from recent experience in less developed countries that rates of rural-urban migration continue to exceed rates of urban job creation and to greatly surpass the capacity of both industry and urban social services to effectively absorb this labour. No longer is migration viewed by economists as a beneficent process necessary to solve problems of growing urban labour demand. On the contrary, migration today must be seen as the major contributing factor to the ubiquitous phenomenon of urban surplus labour and a force which continues to exacerbate already serious urban unemployment problems caused by growing economic and structural imbalances between urban and rural areas.

Migration exacerbates these rural-urban structural imbalances in two major direct ways. First, on the supply side, internal migration disproportionately increases the growth rate of urban job seekers relative to urban population growth, which itself is at historically unprecedented levels, because of the high proportions of well-educated young people who dominate the migrant stream. Their presence tends to swell the growth of urban labour supply while depleting the rural countryside of valuable human capital. Second, on the demand side, most urban job creation is more difficult and costly to accomplish than rural employment creation due to the need for substantial complementary resource inputs for most modern sector industrial jobs. Moreover, the pressures of rising urban wages and compulsory employee fringe benefits in combination with the unavailability of "appropriate", more labour-intensive production technologies means that

a rising share of modern sector output growth is accounted for by increases in labour productivity. Together this rapid supply increase and lagging demand growth tend to convert a short-run problem of manpower imbalances into a long-run situation of chronic and rising urban surplus labour.

But the impact of migration on the development process is much more pervasive than its obvious exacerbation of urban unemployment and under-employment. In fact, the significance of the migration phenomenon in most developing countries is not necessarily on the process itself or even on its impact on the sectoral allocation of human resources. It is in the context of its implications for economic growth in general and for the "character" of that growth, particularly its distributional manifestations, that migration research has assumed growing importance in recent years.

We must recognise at the outset, therefore, that migration in excess of job opportunities is both a symptom of and contributing factor to Third World underdevelopment. Understanding the causes, determinants and consequences of internal and international migration is thus central to a better understanding of the nature and character of the development process and for formulating appropriate policies to influence the nature and character of this process in socially desirable ways. A simple yet crucial step in underlining the centrality of the migration phenomenon is to recognise that any economic and social policy that affects rural and urban real incomes will directly and/or indirectly influence the migration process. This process in turn will itself tend to alter the pattern of sectoral and geographic economic activity, income distribution and even population growth. Since all economic policies have direct and indirect effects on the level and growth of either urban or rural incomes or of both, they all will have a tendency to influence the nature and magnitude of the migration stream. Although some policies may have a more direct and immediate impact (e.g. wages and income policies and employment promotion programmes, etc.), there are many others which, though less obvious, may in the long run be no less important. Included among these policies, for example, would be land tenure arrangements, commodity pricing, credit allocation, taxation, export promotion, import substitution, commercial and exchange rate policies, the geographic distribution of social services, the nature of public investment programmes, attitudes towards private foreign investors, the organisation of population and family planning programmes, the structure, content and orientation of the educational system, the functioning of labour markets, and the nature of public policies towards international technological

transfer and the location of new industries. There is thus a clear need to recognise the central importance of internal and, for many countries, even international migration and to integrate the two-way relationship between migration and population distribution on the one hand and economic variables on the other into a more comprehensive analytical framework designed to improve development policy formulation.

In addition, we need to better understand not only why people move and what factors are most important in their decision-making process but also what are the consequences of migration, both internal and international, for rural and urban economic and social development. If all development policies affect and are affected by migration, which are the most significant and why? What are the policy options and trade-offs amongst different and sometimes competing objectives (e.g. - curtailing internal migration and expanding educational opportunities in rural areas)? In short, unless we are able to begin to quantify the relative impact of different economic policies on the nature, character and magnitude of such migration and to ascertain what factors influence a person's decision to move in different countries and regions, we will be unable to formulate policies to deal effectively with the dual problems of rapid urban population growth and rising urban marginalism.

II. URBAN SURPLUS LABOUR: SOME DIMENSIONS OF A GLOBAL PROBLEM

A. Urbanisation and Migration

Much has been written about the extraordinary growth of world population over the past few decades.¹ Almost 75 per cent of that growth has occurred in developing countries. By 1975 world population had grown to almost 4 billion people with projections of anywhere from 6 to 9 billion people by the year 2000. (ILO, 1974, Tables 3A and 3B) But, whatever the figure eventually reached by world population, one thing is clear: nowhere will population growth be more dramatic than in the major cities of the developing world. In the second half of this century, the number of people living in cities and towns throughout the world as a whole will double. But in the Third World, unless effective remedial measures are adopted the urban population will more than quadruple as rural peasants and educated youths flood into the cities in search of increasingly elusive, and in many cases, nonexistent modern sector jobs.

1. For two excellent summary reviews see Berelson, (1974) and ILO, (1974).

Current rates of urban population growth range from under one per cent per annum in two of the world's largest cities, New York and London, to over six to seven per cent in most African countries with Asian and Latin American cities growing at annual rates of four to six per cent. As Table 1 dramatically illustrates, the world's twelve fastest growing cities are all located in developing nations. Each of these cities is expected to double in size over the fifteen-year period from 1970 to 1985. Some, like Bandung, Lagos and Karachi, are projected to increase even more substantially in this short time period than have any cities in history over a similar time span. And the major source of this urban growth will not be natural population increase but rather the continuing in-migration of rural people. Over 50 per cent of urban growth in many developing nations is due to the accelerated pace of rural-urban migration (see Table 2). How the governments of less developed countries plan to cope economically, politically and socially with such phenomenal urban population growth will be a crucial ingredient in the success or failure of their long-run development strategies.

Although the rapid growth of urban populations in developing countries is a ubiquitous phenomenon, there still exist considerable variations in urban concentration and growth across countries. Table 2 shows the proportion of the total population living in urban areas as well as urban growth rates for eight countries. They have been compiled by Lorene Yap primarily from 1970 census sources, but with a number of modifications by individual researchers for different countries (Yap, 1975, Table 1). Two measures of urban location are provided in the table: (1) all urban areas, as defined by the census, and (2) a fixed number of larger cities, reported either individually or as a group. Clearly the first measure is very sensitive to the definition of "urban" which can vary from one country to the next and from one census to the next. It thus has a tendency to exaggerate urban growth rates between census years as a result of the addition of more urban places and alterations in urban boundaries. As Yap correctly points out, the second measure, individual or groups of larger cities, does not have this bias while having the advantage of focussing on the larger cities where problems of poverty and in-migration are the most serious.

Table 1. The world's fastest growing cities.

<u>City</u>	<u>1970 Population in millions</u>	<u>1985 Projected Population in millions</u>	<u>Overall Growth Rate (%)</u>
1. Bandung, Indonesia	1.2	4.1	242
2. Lagos, Nigeria	1.4	4.0	186
3. Karachi, Pakistan	3.5	9.2	163
4. Bogota, Colombia	2.6	6.4	146
5. Baghdad, Iraq	2.0	4.9	145
6. Bangkok, Thailand	3.0	7.1	137
7. Teheran, Iran	3.4	7.9	132
8. Seoul, South Korea	4.6	10.3	124
9. Lima, Peru	2.8	6.2	121
10. Sao Paulo, Brazil	7.8	16.8	115
11. Mexico City, Mexico	8.4	17.9	113
12. Bombay, India	5.8	12.1	109

Source: People, 1 (4), 1974.

Table 2. Urban population growth and concentration.

Countries	Population: Urban Total	
	Year (1)	% (2)
<u>MEXICO</u>		
1) Urban Places 2500 and over	1970	59
2) 25 Largest Cities (100,000 and over in 1970)	1970	37
3) Mexico City Metropolitan area (8.6 million in 1970)	1970	18
<u>BRAZIL</u>		
1) Urban Places (administrative definition)	1970	56
2) Rio de Janeiro (4.3 million in 1970)	1970	5
3) Sao Paulo (5.2 million in 1970)	1970	6
<u>GHANA</u>		
1) Towns 5000 and over	1970	29
2) Accra (.6 million in 1970) + Adults (15 and over) only	1970	7
<u>TANZANIA</u>		
1) Urban Places (administrative definition)	1967	6
2) Largest Towns (19,000 and over in 1971)	1967	4
3) Dar es Salaam (.3 million in 1971) + Adults only	1967	2
<u>KENYA</u>		
1) Urban Places 2000 and Over	1969	10
2) Nairobi (.5 million in 1969)	1969	5

Average Annual Growth Rate			Proportion of Urban Population Born Elsewhere	
Period	Total Population %	Urban Population %	Year	%
(3)	(4)	(5)	(6)	(7)
1960-70	3.3	4.8	1970	22
1950-60	3.1	4.9		
1960-70		4.9	1970	29
1950-60		4.9		
1960-70		5.1	1970	37
1950-60		5.1		
1960-70	2.8	5.0	1970	40
1950-60	3.2	5.5		
1960-70		2.8	1970	42
1960-70		5.1		
1960-70	2.4	4.8	1960	70+
1948-60	3.6	9.2		
1960-70		5.0		
1948-60		8.2		
1967-71	n.a.	4.7	1971	84+
1948-67	2.5	6.8		
1967-71		3.3	1971	84+
1948-67		7.5		
1962-69	3.4	7.1		
1962-69		15.2*	1969	76

Table 2. (cont.)

Countries	Population: Urban Total		Average Annual Growth Rate			Proportion of Urban Populati Born Elsewhere	
	Year (1)	%	Period (3)	Total Population	Urban Population	Year (6)	%
				(4)	(5)		
<u>KOREA</u>							
1) 32 Urban Places 50,000 and Over	1970	41	1960-70	2.3	5.5	1970	50
2) Seoul (5.5 million in 1970)	1970	18	1960-70		7.8	1970	57
<u>INDIA</u>							
1) Urban Places 5000 and Over	1971	20	1961-71	2.2	3.3	1961	39
			1951-61	2.0	2.7		
2) Metropolitan Areas 100,000 and Over	1971	10	1961-71		4.1		
			1951-61		4.0		
3) Calcutta	1971	1	1961-71		2.0		
4) Bombay	1971	1	1961-71		3.7		
<u>PAKISTAN</u>							
1) Urban Places 5000 and Over	1972	26	1961-72	3.6	4.8		
2) Metropolitan Areas 500,000 and Over	1972	10	1961-72		4.9		

* African Population only.

Source: Lorene Yap, Urban Poverty Task Force Paper, I.B.R.D., March 1975, Table 1.

But whatever measure is used, urban growth has been substantial and the major source of this growth has been migration. For most developing nations migration accounted for anywhere from 40 to 65 per cent of urban population growth during the 1960 to 1970 period. Since many migrants are unmarried job seekers, the proportion of urban labour force growth resulting from migration during this same period is even larger. Finally, in terms of the migration status of the urban population, we see from column 7 of Table 2 that the proportion of persons born outside the city can be as high as 57 per cent in Seoul, Korea, 76 per cent in Nairobi, Kenya and over 84 per cent in Dar es Salaam, Tanzania.

B. Urban Labour Force Growth: Past and Projected

The number of people searching for work in a less developed country depends primarily on the size and age composition of its population. The processes relating trends in overall population growth to the growth of indigenous labour forces take on numerous forms. Two are of particular interest, however. First, whatever the overall magnitude of the population growth rate, its fertility and mortality components have a separate significance. A three per cent (or 30 per 1,000) natural growth rate when crude birth and death rates are 50 and 20 has different labour force implications from a birth and death rate combination of 40 and 10. This is because the age structure of the population will be different for a high birth and death rate economy than for a low birth and death rate one, even though the natural rate of increase is the same for both. Since birth rates obviously affect only the numbers of newly born while death rates tend to affect (although unevenly) all age groups, a high birth and death rate economy will have a greater percentage of the total population in the age dependent (i.e. 1-15 year) group than will a low birth-death rate economy. The rapid reductions in death rates recently experienced by most less developed countries, therefore, have expanded the size of their present labour forces, while continuous high birth rates create high present dependency ratios and rapidly expanding future labour forces.

Second, the impact of fertility declines on labour force size and age structures operates only after very long lags, even when these declines are rapid. The reason is the phenomenon of population "momentum" widely referred to in the demographic literature (see, for example, Berelson, 1974). For example, a sudden halving of fertility rates in less developed countries by the late 1970s would only reduce the male labour force by 13 per cent by the end of the century, a reduction from about 1.27 billion to 1.11 billion

workers. This is certainly not a trivial reduction and its long-run impact would clearly be substantial. Nevertheless, the essential fact remains that over the next 15 years those who enter the labour force have already been born while the size of the labour force over the next quarter century is fairly well determined by current fertility and mortality rates.

Present labour force projections suggest annual increases of the order of 2.1 per cent for all less developed regions during the present decade and approximately 2.4 per cent and 2.6 to 2.8 per cent for the 1980s and 1990s respectively (see Table 3). But within the Third World, Latin American countries are likely to experience the greatest rates of labour force growth over the next two-and-one-half decades, while Asian and African countries follow close behind. In terms of actual numbers, however, which more dramatically underline the prospective magnitude of the urban employment problem in less developed countries than do rates of growth, reasonable projections for the year 2000 indicate that there will be over 920 million new job seekers over those in 1970, with over 45 per cent of these concentrated in South Asia and 31 per cent in East Asia (see Table 4). Unless viable and productive economic opportunities can be created in rural areas, the majority of these people will continue to seek work in the already congested urban localities.

C. The Magnitude and Age-Structure of Urban Unemployment

Given rapid rates of urban labour force growth in the range of 4 to 7 per cent per annum and the relatively slower growth of urban employment opportunities (averaging about 2.5 per cent), the problem of urban surplus labour has attained very serious proportions in many less developed nations. Current rates of open unemployment (i.e. people without any regular or part-time jobs) in the cities of Africa, Asia and Latin America average about 10 per cent of the urban labour force or approximately 34 million people. But the problem is considerably more serious for those between the ages of 15 and 24, many of whom have had significant amounts of schooling. Table 5 shows that in almost all urban centres in less developed countries, rates of unemployment in this age bracket are almost double the rates of recorded unemployment for the urban labour force as a whole.

Rates of "open" urban unemployment, however, only reveal the visible aspects of the employment problem in Third World nations, the tip of an enormous iceberg. The actual underutilisation of labour takes many other forms, including various manifestations of underemployment and hidden

Table 3. Annual rates of labour force growth: 1970 - 2000.

	<u>Labour Force Growth Rate (%)</u>		
	<u>1970-80</u>	<u>1980-90</u>	<u>1990-2000</u>
Developed Countries	1.1	0.9	0.9
Less Developed Countries	2.1	2.4	2.6 - 2.8
<u>Regions</u>			
South Asia	2.3	2.6	2.9
East Asia	1.6	2.1	2.5
Africa	2.2	2.5	2.7
Latin America	2.8	3.0	3.3

Source: International Labour Office, Bulletin of Labour Statistics: Labour Force and World Population Growth, 1974 Special Edition, Geneva, 1974, Table 8, p. 69.

Table 4. Labour force projections: 1970 - 2000.

	<u>Labour Force in millions (and % of Total)</u>			
	<u>1970</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>
Developed Countries	488 (32.5)	542 (30.4)	593 (27.6)	649 (25.1)
Less Developed Countries	1,012 (67.5)	1,239 (69.6)	1,547 (72.4)	1,933(74.9)
<u>Regions</u>				
South Asia	429 (42.3)	537 (43.2)	691 (44.5)	886 (45.6)
East Asia	376 (37.1)	440 (35.4)	519 (33.4)	602 (31.0)
Africa	132 (13.1)	165 (13.3)	212 (13.7)	277 (14.3)
Latin America	74 (7.3)	97 (7.8)	129 (8.3)	172 (8.9)

Source: International Labour Office, Ibid., Table 3A, p. 64.

Table 5. Rates of urban unemployment by age.

	<u>15 - 24 years</u>	<u>15 and over</u>
Ghana, 1960 Large Towns	21.9	11.6
Bogota, Colombia, 1968	23.1	13.6
Buenos Aires, Argentina, 1965	6.3	4.2
Chile, 1968 Urban Areas	12.0	6.0
Caracas, 1966	37.7	18.8
Panama, 1963/64 Urban Areas	17.9	10.4
Uruguay, 1963 Mainly Urban	18.5	11.8
Venezuela, 1969 Urban Areas	14.8	7.9
Bangkok, Thailand, 1966	7.7	3.4
Ceylon, 1968 Urban Areas	39.0	15.0
India, 1961/62 Urban Areas	8.0	3.2
Korea, 1966	23.6	12.6
Malaya, 1965 Urban Areas	21.0	9.8
Philippines, 1965 Urban Areas	20.6	11.6
Singapore, 1966	15.7	9.2
Teheran City, Iran 1966	9.4	4.6

Source: David Turnham and Ian Jaeger, The Employment Problem in Less Developed Countries, O.E.C.D., June 1970.

unemployment (see below). Although data on the various forms of under-employment in the cities of less developed countries are scarce, recent I.L.O. studies of countries such as Colombia, Kenya, Sri Lanka and the Philippines indicate that as much as 30 per cent, or over 100 million people, in Third World urban areas may be counted as being heavily under-utilised.

D. Dimensions of Urban Surplus Labour: Some Definitional Distinctions

We pointed out above that in order to get a full comprehension of the significance of the urban employment problem, one has to take into account, in addition to the openly unemployed, those larger numbers of others who may be visibly active, but in an economic sense are grossly underutilised. As Edgar O. Edwards has correctly pointed out in his excellent survey of employment problems in developing countries:-

In addition to the numbers of people unemployed, many of whom may receive minimal incomes through the extended family system, it is also necessary to consider the dimensions of (1) time (many of those employed would like to work more hours per day, per week or per year), (2) intensity of work (which brings in consideration of health and nutrition), and (3) productivity (lack of which can often be attributed to inadequate complementary resources with which to work). Even these are only the most obvious dimensions of effective work, and factors such as motivation, attitudes, and cultural inhibitions (as against women, for example) must also be considered. (Edwards, 1974, p. 10)

Edwards, therefore, makes a distinction among the following five forms of underutilisation of labour:-

1. Open unemployment - Both voluntary (people who exclude from consideration some jobs for which they could qualify, implying some means of support other than employment) and involuntary,
2. Underemployment - Those working less (daily, weekly or seasonally) than they would like to work.
3. The visibly active but underutilised - Those who would not normally be classified as either unemployed or underemployed by the above definitions, but who in fact have found alternative means of "marking time", including,
 - (a) Disguised underemployment. Many people seem occupied on farms or employed in government on a full-time basis even though the services they render may actually require much less than full time. Social pressures on private industry may result also in substantial amounts of disguised underemployment. If available work is openly shared among those employed, the disguise disappears and underemployment becomes explicit.

- (b) Hidden unemployment. Those who are engaged in "second choice" nonemployment activities, perhaps notably education and household chores, primarily because job opportunities are not available (a) at the levels of education already attained, or (b) for women, given social mores. Thus, educational institutions and households become "employers of last resort". Moreover, many of those enrolled for further education may be among the less able as indicated by their inability to compete successfully for jobs before pursuing further education.
- (c) The prematurely retired. This phenomenon is especially apparent, and apparently growing, in the civil service. In many countries, retirement ages are falling at the same time that longevity is increasing, primarily as one means of creating promotion opportunities for some of the large numbers pressing up from below.
4. The impaired - Those who may work full time but whose intensity of effort is seriously impaired through malnutrition or lack of common preventive medicine.
5. The unproductive - Those who can provide the human resources necessary for productive work but who struggle long hours with inadequate complementary resources to make their inputs yield even the essentials of life.

Although all of the above manifestations of the underutilisation of labour in less developed countries are highly interrelated, and, each in its own way is of considerable significance, we shall for convenience limit our discussion throughout the remainder of this paper to the specific problem of urban unemployment and underemployment.²

E. Linkages Between Urban Surplus Labour, Poverty and Income Distribution

Obviously, there is a definite and close relationship between migration, high levels of urban unemployment and underemployment, widespread poverty and unequal distributions of income. For the most part, those without regular urban employment or with only scattered part-time employment are also among the very poor. Those who do have regular paid employment in the public and private sector typically are among the middle- to upper-income

2. For a broader and more analytical definition and measurement of urban surplus labour, see Sabot (1975b).

groups. But it would be incorrect to simply assume that everyone who does not have an urban job is necessarily poor while those who work full-time are relatively well off. This is because there may be many unemployed urban workers who are "voluntarily" unemployed in the sense that they are searching for a specific type of job, perhaps because of high expectations based on their presumed educational or skill qualifications. They refuse to accept jobs which they feel to be inferior and are able to do this because they have outside sources of financial support (e.g., relatives, friends, or local money lenders). Such people are unemployed by definition, but they may not be poor.

Similarly, there are many individuals who may work full-time in terms of hours per day but may, nevertheless, earn very little income. Many self-employed workers in the so-called urban "informal" sector (e.g. traders, hawkers, petty service providers, workers in repair shops, etc.) may be so classified. Such people are by definition fully employed but often they are still very poor.

In spite of the above reservations about a too literal linkage between unemployment and poverty, it still remains true that one of the major mechanisms for reducing poverty and inequality in less developed nations is the provision of adequate paying productive employment opportunities for the very poor. Clearly, the mere creation of more employment opportunities in urban areas should not be viewed as the sole solution to the urban poverty problem. Such a solution requires much more far-reaching economic and social measures focussed primarily on rural areas. But the provision of more work and the wider sharing of the work that is available would go a long way towards reaching that goal. Employment, therefore, must be an essential ingredient in any poverty-focussed development strategy.

III. PROBLEMS OF INTERNATIONAL MIGRATION

In addition to rapid population growth, one of the major factors differentiating the contemporary urbanisation experience in less developed countries from the historical record of today's economically developed nations is the gradual demise of international migration as a major alternative choice, or "safety valve", for unsatisfied and mostly unskilled rural (and urban) workers. As is vividly demonstrated in Table 6, not only was the incidence of international migration widespread over the one hundred year period between 1850 and 1950, but its magnitude in terms of local populations was sizeable. In countries such as Italy, Germany and

Ireland, periods of severe famine or pressure on the land often combined with limited economic opportunities in urban industries to "push" unskilled rural workers across national boundaries towards the labour scarce nations of North and South America as well as Australia and New Zealand. Brinley Thomas has noted in his well-documented treatise on migration and economic growth in the nineteenth century that "the three outstanding contributions of European labour to the American Economy - 1,187,000 Irish and 919,000 Germans between 1847 and 1855, 418,000 Scandinavians and 1,045,000 Germans between 1880 and 1885, and 1,754,000 Italians between 1898 and 1907 - had the character of evacuations." (Thomas, 1954, p. 118).

Whereas the main thrust of international emigration up to the first World War was both long-distant and permanent in nature, the post-World-War-II period has witnessed a resurgence of international migration within Europe itself which is essentially over short distances and temporary in nature. However, the economic forces giving rise to this migration are basically the same, that is, surplus rural workers from Southern Italy, Greece, Turkey and Eastern Europe are today flocking into areas of labour shortages of which West Germany and Switzerland are the most notable.³ Table 7 gives an example of the magnitude and direction of Italian migration between 1960 and 1964.

The fact that this contemporary migration from regions of surplus labour in Southern and Southeastern Europe has a large component that is of a non-permanent nature was long thought to provide a valuable dual benefit to the relatively poor areas from which these unskilled workers were migrating. In addition to relieving the home governments of the costs of providing for these people, many of whom would remain unemployed, the opportunity to earn money in nearby countries and the fact that a large percentage of these earnings is repatriated has provided a valuable and not insignificant source of foreign exchange to the country in which the worker is permanently domiciled.

While such an analysis of the benefits of international emigration as a source of relief for surplus rural workers may have been true throughout most of the nineteenth and twentieth centuries, it is not as obvious today when the flow of international migration is becoming increasingly more selective of the young and better educated. Although parts of Africa still experience substantial short-term migration across national boundaries

3. For an excellent analysis of recent emigration from the Mediterranean basin into Western Europe, See W. R. Bohnung (1975).

Table 6
Average Annual Overseas Emigration from Europe, 1846-1949 (in Thousands)

	Total European Overseas Emigration	Total	British Isles	(Ire- land)	Switzerland				Italy	Austria				Spain	Balkans
					Norway	France	Sweden	Low Countries		Hungary	Russia	Poland	Czecho- Lithuania		
1846-1850	256.6	254.3	199.1	(118.8)	35.5	4.3	14.4	2.3	.2	1.6	.1	.4			
1851-1855	342.3	331.3	231.7	(139.0)	74.9	6.9	17.8	11.0	.7	4.0	.2	6.1			
1856-1860	197.1	184.7	123.5	(43.7)	49.4	4.5	7.3	12.5	4.2	2.2	.2	5.9			
1861-1865	219.3	202.9	143.6	(39.1)	43.5	9.7	6.1	16.4	8.2	2.2	.3	5.9			
1866-1870	354.9	308.4	170.8	(47.8)	83.4	39.3	14.9	37.4	18.7	5.7	.6	12.4			
1871-1875	370.7	310.1	193.9	(59.0)	79.0	22.1	15.1	60.6	23.3	10.5	5.0	21.8			
1876-1880	258.0	192.8	114.9	(28.4)	46.2	23.2	8.5	65.2	28.9	11.8	7.2	17.3			
1881-1885	661.3	480.7	228.0	(67.1)	171.5	58.4	22.8	180.6	64.0	34.6	17.1	64.5			.4
1886-1890	737.7	407.2	214.8	(62.0)	97.0	60.8	34.6	330.5	134.2	52.5	45.5	96.7			1.6
1891-1895	674.8	273.9	128.4	(45.5)	80.5	48.1	16.9	400.9	150.2	67.6	72.2	108.9			2.0
1896-1900	543.2	137.5	81.0	(30.2)	24.9	22.1	9.5	405.7	165.7	77.2	55.8	102.4			4.6
1901-1905	1,038.9	253.0	156.0	(36.8)	28.4	53.9	14.7	785.9	320.6	203.0	143.4	97.4			21.3
1906-1910	1,436.7	322.2	234.6	(31.0)	26.4	43.7	17.6	1114.3	402.4	265.4	211.6	185.4			49.5
1911-1915	1,365.3	325.6	265.7	(38.4)	15.8	28.6	15.5	1039.5	312.2	243.6	216.8	220.2			46.7
1916-1920	405.5	123.9	101.1	-	2.4	11.2	9.2	281.8	126.6	11.5	7.8	121.3			14.6
1921-1925	629.5	295.2	197.7	-	58.9	26.2	12.2	334.4	130.9	23.8	56.8	96.3			26.5
1926-1930	555.6	253.5	163.3	-	54.0	23.9	13.3	302.2	89.4	23.0	75.5	74.7			39.6
1931-1935	130.8	50.0	30.4	-	12.7	3.1	3.8	81.0	28.2	5.1	20.9	19.6			7.2
1936-1939	147.4	60.4	30.3	-	17.3	4.2	5.6	87.2	23.6	6.3	20.8	27.4			9.1

Sources: Dudley Kirk, *Europe's Population in the Interwar Years* (Princeton: League of Nations, 1946), p. 279.
For Ireland, Brinley Thomas, *Migration and Economic Growth* (Cambridge: University Press, 1954), p. 284.

(e.g. from Upper Volta to the Ivory Coast, from nearby West African states to Ghana and Nigeria, from Malawi to Zambia, South Africa and Rhodesia, and from Tunisia and Morocco to Europe), and Central and Latin America continues to show widespread transnational migratory movements (e.g. from Mexico, the West Indies, Surinam, Colombia, Bolivia, Paraguay and Uruguay to other countries within the hemisphere), the scope for such international migration of unskilled workers has been greatly reduced by a combination of more restrictive immigration laws and growing unemployment in the receiving countries. As a result, much of the international migration from the less developed countries that still takes place tends to be increasingly concentrated among highly educated professional groups whose emigration often represents substantial social costs in the form of lost human capital. For example, Filipino emigration to the United States has always been sizeable. However, the outflow was especially pronounced during the 1960s when over 155,000 Filipinos migrated to the U.S., swelling the stock of Filipino migrants living in America from 181,614 to 336,731. (Smith, 1975) What is even more striking about these figures is the composition of this "second wave" of Filipino migrants. All indicators converge in describing these new international migrants as young, well educated individuals who envisage their future in the U.S. rather than in the Philippines. Their median number of years of schooling has risen from seven to fourteen while, astonishingly, the proportion of Filipinos employed in the U.S. who are professionals has grown from 1.2 per cent in 1940 to nearly 25 per cent by 1970. Finally, 43.2 per cent of those 25 and over have had a college education.

Although the Philippine experience with international migration to the United States is somewhat atypical due to the special relationships between the two countries, the fact remains that over the past decade almost 200,000 professionals from Third World countries have migrated to the developed nations. At least half of these are intended permanent migrants and many more will remain in their countries of immigration. While many do send back part of their earnings to relatives in their country of origin, there can be little doubt that this professional "brain drain" represents a sizeable net social loss to the countries of emigration (Bhagwati, 1974).

We will argue in Part Two of this paper that the basic forces influencing the direction and flow of international migration are roughly the same as those affecting internal migration - namely the perceived private economic benefits and costs to the decision maker. Thus, the overall analytical framework for studying international migration (i.e. economic

Table 7. Italian emigration (1960-1964).

Region	1960	1961	1962	1963	1964
European Economic Community	170,580	175,266	158,900	107,578	113,200
Total Europe	309,876	329,597	313,400	235,134	236,600
North America	34,219	29,754	27,876	26,492	26,466
Central/South America	18,823	10,252	6,568	3,837	3,322
Australasia	19,629	16,379	14,411	11,539	10,890
Africa	1,283	1,022	706	589	1,128
Asia	78	119	255	20	178
Grand Total	383,908	387,123	363,216	277,611	278,584

Source: "Italian Emigration: Some Aspects of Migration in 1964,"
International Migration, 4 (2) 1966, p. 122.

benefit/cost analysis supplemented by certain "non-economic" variables) should be little different from the framework for studying internal migration. However, within this broad, common framework, the relative importance of different independent variables to the migration decision is likely to differ, sometimes substantially. For example, the importance of "intervening" variables, such as distance, national immigration laws, quotas and cultural differences, is obviously more pronounced for international than for national migration. As an illustration of this point, it is often noted that changes in U.S. immigration policies as a result of the U.S. Immigration Act of 1965 which ended the national origins quota system, substituted a new preference system and added labour certification requirements which have had a pronounced effect on the characteristics of recent U.S. immigrants (Keely, 1975). Moreover, the question of "net" social gains or losses to the source country is likely to require different methodological approaches for international compared with internal migration. For international migration cash foreign exchange remittances and potential unemployment relief constitute the principal private and social benefits, while in cases of skilled and even some unskilled labour, the short and long-term loss of potential output, the disruption of the domestic labour market, the need for human capital replacement costs and the possibility of new unemployment, rising inflation and further induced migration may represent serious social costs, greatly in excess of any private or social gains (Rohnung, 1975). Finally, the distinction among seasonal, temporary and permanent international migrants and the relative proportions of each by age, skill and sex are in general more important to quantify at the outset than for internal migration.

But, given the above caveats, we still believe that the similarities between factors influencing the internal and international migration process are sufficiently greater than the differences to warrant a relatively common analytical and methodological approach to research on both issues. In sections V and VI we will attempt to provide such a common analytical and methodological framework.

PART TWO

MIGRATION THEORY, EVIDENCE, METHODOLOGY
AND RESEARCH PRIORITIES

IV. IN SEARCH OF A GENERAL FRAMEWORK FOR MIGRATION ANALYSIS

A. Ravenstein's "Laws" of Migration

Everett S. Lee has provided what is probably the most appealing and most concise "general", non-rigorous framework for analysing the migration process, both internal and international (Lee, 1966). Lee begins his discussion by noting that many of the generalisations or "laws" of migration developed by E.G. Ravenstein in his now classic papers (Ravenstein, 1885 and 1889) have stood the test of time and still remain starting points for much of contemporary migration theory. Ravenstein's "laws" of migration may be summarised in the form of six basic propositions:-

1. Migration and distance - The rate of migration between two points will be inversely related to the distance between these points. Migrants who travel over long distances will tend to "go by preference to one of the great centers of commerce and industry". (Ravenstein, 1885, p. 199)
2. Migration by stages - There will normally be "currents of migration" in which a country's inhabitants tend to move first towards nearby towns and eventually gravitate towards the most rapidly growing cities.
3. Stream and counterstream - "Each main current of migration produces a compensating counter current" (Ravenstein, 1885, p. 199). While rural-urban migration may dominate the overall "current" or stream of migration, there will always be a counterstream of reverse urban-rural migration so that "net" migration from point i to point j will always be less than "gross" migration between these two points.
4. Urban-rural differences in propensities to migrate - "The natives of towns are less migratory than those of the rural parts of the country" (Ravenstein, 1885, p. 199). Thus "net" internal migration streams will normally have a rural to urban predominance.

5. Technology, communications and migration - Migration streams will have a built in tendency to increase over time as a result of increases "in the means of locomotion" and a "development of manufactures and commerce" (Ravenstein, 1889, p. 288). Finally and most importantly,
6. Dominance of the economic motive - "Bad or oppressive laws, heavy taxation, an unattractive climate, uncongenial social surroundings, and even compulsion (slave trade, transportation), all have produced and are still producing currents of migration, but none of these currents can compare in volume with that which arises from the desire inherent in most men to 'better' themselves in natural respects" (Ravenstein, 1889, p. 286). In short, the economic motive is always predominant in the matrix of factors influencing the decision to migrate.

Writing in the mid-1960s, Lee notes in his review of Ravenstein's migration analysis that:-

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 meantime, few additional generalizations have been advanced (italics my own). True there have been studies of age and migration, sex and migration, race and migration, distance and migration, education and migration, the labour 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, (italics my own) or the assimilation of the migrant at destination (Lee, 1966, p. 48).

Much has changed in the ten years since Lee wrote this paragraph. The principal reason for this sudden change has been the heightened interest of a growing number of younger, better trained economists in the field of migration studies (especially with respect to migration within and from developing countries). As we shall see in the next few sections, the appearance of new theoretical models of migration and new generalisations about the migration process in the development literature, combined with the growing proficiency of economists in survey research methodologies, data analysis and econometric techniques, has produced a steadily increasing volume of new insights into the migration process. More importantly, it has for the first time permitted careful quantification of the importance of different variables influencing the migration decision at both the micro and macro level. It has, therefore, opened up the field for the exploration of alternative policies designed to influence this process. But more on this new phenomenon later.

B. Lee's "Theory of Migration"

In his paper, Lee attempts to develop a general schematic framework for analysing the volume of migration, the development of "streams" and "counterstreams" and the characteristics of migrants. He begins with a broad definition of migration simply as "a permanent or semipermanent change of residence" and goes on to note that "no matter how short or how long, how easy or how difficult, every act of migration involves an origin, a destination, and an intervening set of obstacles". (Lee, 1966, p. 49)

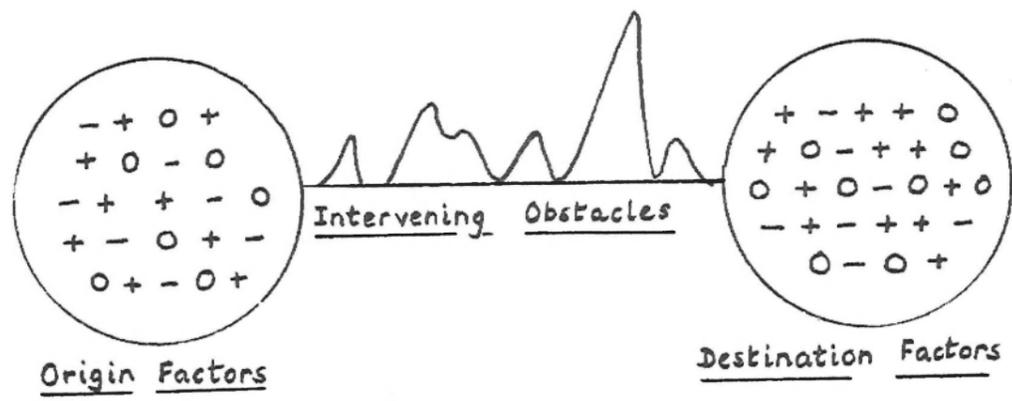
The factors which enter the decision to migrate and the migration process can therefore be summarised under four general categories:-

1. Factors associated with the area of origin,
2. Factors associated with the area of destination,
3. Intervening obstacles, and
4. Personal factors.

Lee then provides a schematic diagram, which is reproduced here as Chart 1, to illustrate the first three of the above four categories. Every origin and destination area is assumed to have positive forces (the pluses in Chart 1) which hold people within the area or "pull" others to it, negative forces (the minuses in Chart 1) which repel or "push" people from the area or zero forces (the zeros in Chart 1) which on balance exert neither an attractive nor a repellent force and towards which people are therefore essentially indifferent. The effect which each of these forces has will vary with the personality as well as other individual characteristic traits (e.g. age, education, skill level, sex, race, ethnic or tribal group, etc.) of different people.

The set of pluses, zeros and minuses may therefore be defined differently at both origin and source for different individuals - i.e., one man's plus (e.g., a good educational training programme) may be another's zero (e.g., someone who already possesses that level of education) or even negative factor (e.g. as a result of local school taxes levied on all residents of the area). But, by and large, there exist general sets of factors towards which most people tend to react in the same way (e.g. higher wages, more job opportunities, better amenities, etc.). What is important is the ability to identify these factors and to quantify their influences on different classes of people. One significant difference between origin and destination factors, however, is that people living in the former will possess better knowledge of the precise outcome of origin pluses and minuses than they will of those in the potential destination.

Chart 1: Origin and destination factors and
intervening obstacles in migration



Source: Lee, 1966, p. 50.

Thus, uncertainty, expectations and risks become an important element in the migration process as do the perceptions of destination pluses and minuses. Here the existence and nature of personal, family or ethnic contacts in destination areas can exert a significant influence on migrant perceptions.

Although origin and destination plus and minus factors adjusted for different personality traits go a long way towards providing a general explanation of internal and international migration, they are not sufficient. Lee, therefore, introduces the concept of intervening obstacles set between all origin and destination points. Some intervening obstacles may provide only minor friction (e.g. distance, transport costs, etc.), while others may be insurmountable (e.g. restrictive immigration laws, quotas by race or national origin, and physical controls over population movements). As in the case of origin and destination pluses and minuses intervening obstacles will tend to exert differing influences on different people. What may be a minor obstacle to one potential migrant (e.g. the transport cost of moving for a financially well off individual) may be a major obstacle to another (e.g. the same transport cost to a very poor person).

Lee then utilises his basic conceptualisation of migration as involving a set of origin and destination factors, a set of intervening variables and a series of personal factors to formulate a number of general hypotheses about the volume of migration, the development of stream and counterstream and the characteristics of migrants. A sample of the most important of these hypotheses is summarised below (Lee, 1966, pp. 53-7).

A. Volume of Migration

1. The volume of migration within a given territory varies directly with the degree of diversity of areas included in that territory.
2. The volume of migration varies directly with the diversity of people.
3. The volume of migration is inversely related to the difficulty of surmounting the intervening obstacles.
4. Unless severe checks are imposed, both volume and rate of migration tend to increase with time.

B. Stream and Counterstream

5. Migration tends to take place largely within well defined streams (e.g. from a variety of rural regions to regional towns and then towards the major cities).
6. For every migration stream, a counterstream develops (i.e. there will always be return migrants who find that their initial perceptions did not accord with reality or who simply failed to achieve their objectives).
7. The magnitude of the "net" stream (i.e. stream minus counterstream) will be directly related to the preponderance of minus factors at origin - that is, origin "push" factors are relatively more important than destination "pull" factors.

C. Characteristics of Migrants

8. Migration is selective - that is, migrants are not random samples of the population at the origin.
9. Migrants responding primarily to plus factors at the destination tend to be "positively" selected - i.e. they are of a higher "quality" (more educated, healthier, more ambitious, etc.) than the origin population at large.
10. Migrants responding primarily to minus factors at origin tend to be "negatively" related - e.g. most European migrants to North America in the nineteenth and early twentieth centuries were unskilled rural peasants driven off the land by economic hardship, political and/or religious persecution, etc.
11. The degree of positive selection increases with the difficulty of intervening variables.

C. A Critique of Lee's Theory

While Lee's general theory of migration summarised above is appealing because of its simplicity, and persuasive because of the obviousness of most of its hypotheses, it is of little help for policy analysis in developing countries because of its high degree of generality and the interdependence of many of its hypotheses. More importantly, the apparent validity of many of the hypotheses does not lead us to determine which plus factors and which minus factors at both origin and destination are quantitatively the most important to different groups and classes of people. Nor does the existence of intervening obstacles help us to know

which are major and which are minor. Moreover, the theory provides no insights into possible "trade-offs" between plus and minus factors, nor the range of possible migration responses to alternatives in the magnitude and/or the sign of plus and minus factors. In short, by not specifying the interrelationships between dependent and independent variables within the context of a vigorous theoretical framework, Lee's theory of migration and, indeed, most other "non-economic" social science migration models offer little practical policy guidance for decision makers in developing nations. It is in search of such practical policy guidance that we must inevitably turn to the economist's formulation of the migration problem and to econometric methods for evaluating the quantitative significance of alternative explanatory variables. Although the rigorous economic literature on migration in developing countries is a phenomenon of the very recent past, it is a potent literature with important new theoretical insights into the migration process and the beginnings of a carefully documented econometric specification and quantification of the most important determinants of internal migration in a small but growing number of Third World countries.

V. THE ECONOMICS OF INTERNAL MIGRATION IN DEVELOPING COUNTRIES: A REVIEW OF MODELS

A. The Lewis-Fei-Ranis Model of Development

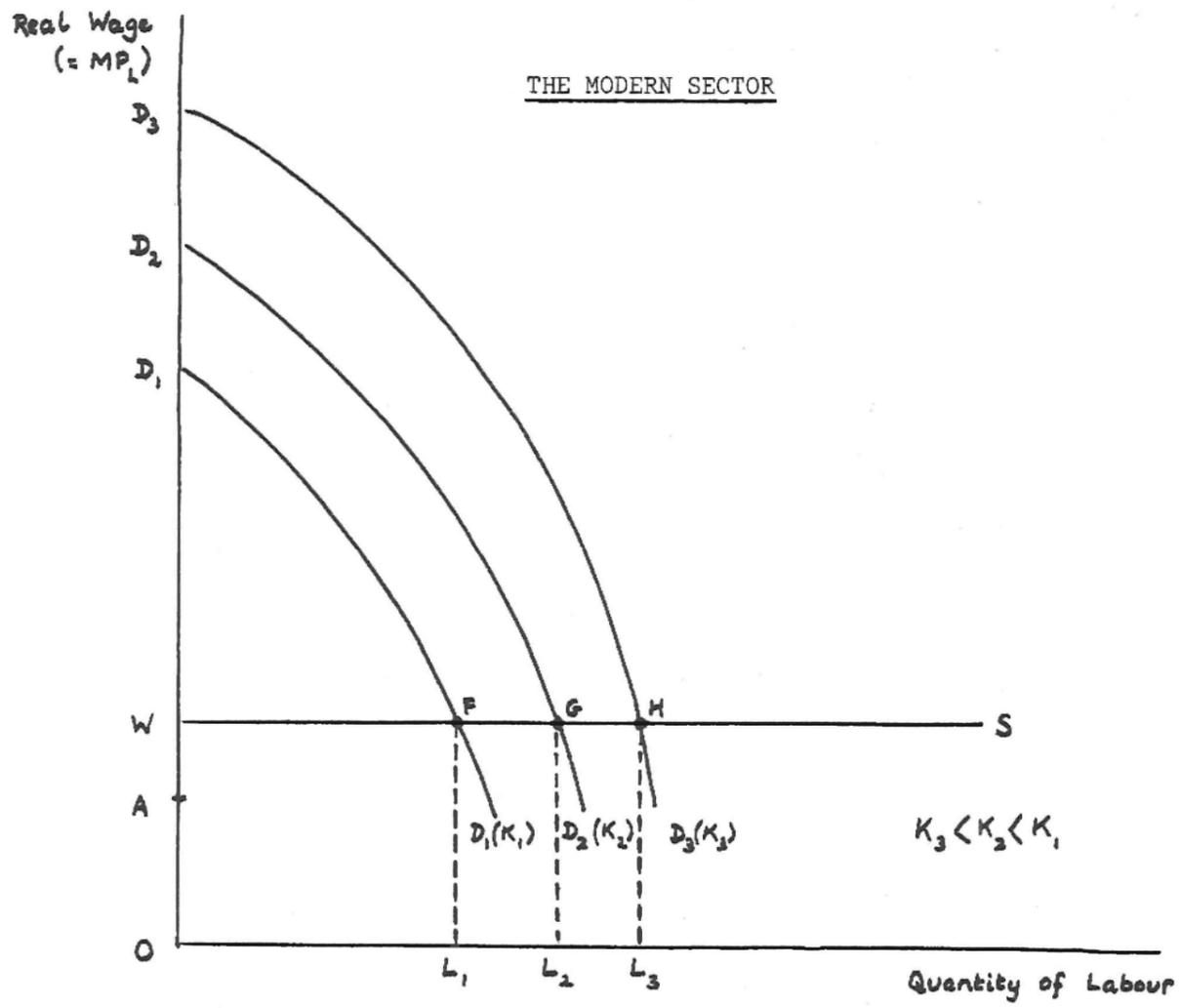
The really first and most well known model of development which at least implicitly gave consideration to the process of rural-urban labour transfer was that developed by Sir W. Arthur Lewis (Lewis, 1954) and later formalised and extended by John Fei and Gustav Ranis (Fei and Ranis, 1961). The Lewis-Fei-Ranis (L-F-R) model became the received "general" theory of the development process in "labour surplus" Third World nations during most of the late 1950s and 1960s. In the L-F-R model, the economy consists of two sectors - (1) a traditional, rural subsistence sector characterised by zero or very low productivity "surplus" labour and (2) a high productivity modern urban industrial sector into which labour from the subsistence sector is gradually transferred. The primary focus of the model is both on the process of labour transfer and on the growth of employment in the modern sector. Both labour transfer and urban employment growth are brought about by output expansion in the modern sector. The speed with which they occur is given by the rate of industrial capital accumulation in the modern sector. Such investment is made possible by the excess of modern sector profits over wages on the assumption that "capitalists" reinvest all of their profits. Finally, the level of wages in the urban industrial

sector is assumed to be constant and determined as a fixed premium over a constant subsistence level of wages in the traditional agricultural sector (Lewis assumed that urban wages would have to be at least 30 per cent higher than average rural income to induce workers to migrate from their home areas.). However, at the constant urban wage, the supply of rural labour was considered to be perfectly elastic.

Figure 1 provides a simple illustration of the Lewis-Fei-Ranis model. The process of modern sector growth is depicted. On the vertical axis we have the real wage and the marginal product of labour (assumed to be equalised in the competitive modern sector) and on the horizontal axis the quantity of labour.

OA represents the average level of real subsistence income in the traditional rural sector. OW, therefore, is the real wage in the capitalist sector. At this wage, the supply of rural labour is assumed to be "unlimited" or perfectly elastic, as shown by the horizontal labour supply curve WS. Given a fixed supply of capital, K_1 , in the initial stage of modern sector growth, the demand curve for labour is determined by labour's declining marginal product and is shown by curve $D_1(K_1)$. Since profit maximising modern sector employers are assumed to hire labourers up to the point where their marginal physical product is equal to the real wage (i.e. the point "F" of intersection between the labour demand and supply curves), total modern sector employment will be equal to OL. Total modern sector output would be given by the area bounded by points OD_1FL_1 . The share of this total output which is paid to workers in the form of wages would be equal, therefore, to the area of the rectangle OWFL. The surplus output shown by the area WD_1F would be the total profits that accrue to the capitalists. Since it is assumed that all of these profits are reinvested, the total capital stock in the modern sector will rise from K_1 to K_2 . This larger capital stock causes the total product curve of the modern sector to rise which in turn induces a rise in the marginal product or demand curve for labour. This outward shift in the labour demand curve is shown by line $D_2(K_2)$ in the figure. A new equilibrium urban employment level will be established at point G with OL_2 workers now employed. Total output rises to OD_2GL_2 while total wages and profits increase to $OWGL_2$ and WD_2G respectively. Once again, these larger (WD_2G) profits are reinvested, increasing the total capital stock to K_3 , shifting the labour demand curve to $D_3(K_3)$ and raising the level of modern sector employment to L_3 .

Figure 1: The Lewis Model of growth and employment in a dual labour surplus economy



The above process of modern sector growth and employment expansion is assumed to continue until all "surplus" rural labour is absorbed in the urban industrial sector. Thereafter, the labour supply curve becomes positively sloped and both urban wages and employment will continue to grow. The structural transformation of the economy will have taken place with the balance of economic activity shifting from rural agriculture to urban industry.

Although the Lewis-Fei-Ranis model of development is both simple and roughly in conformity with the historical experience of economic growth in the West, it has three key assumptions which are sharply at variance with the realities of migration and underdevelopment in most contemporary Third World countries.

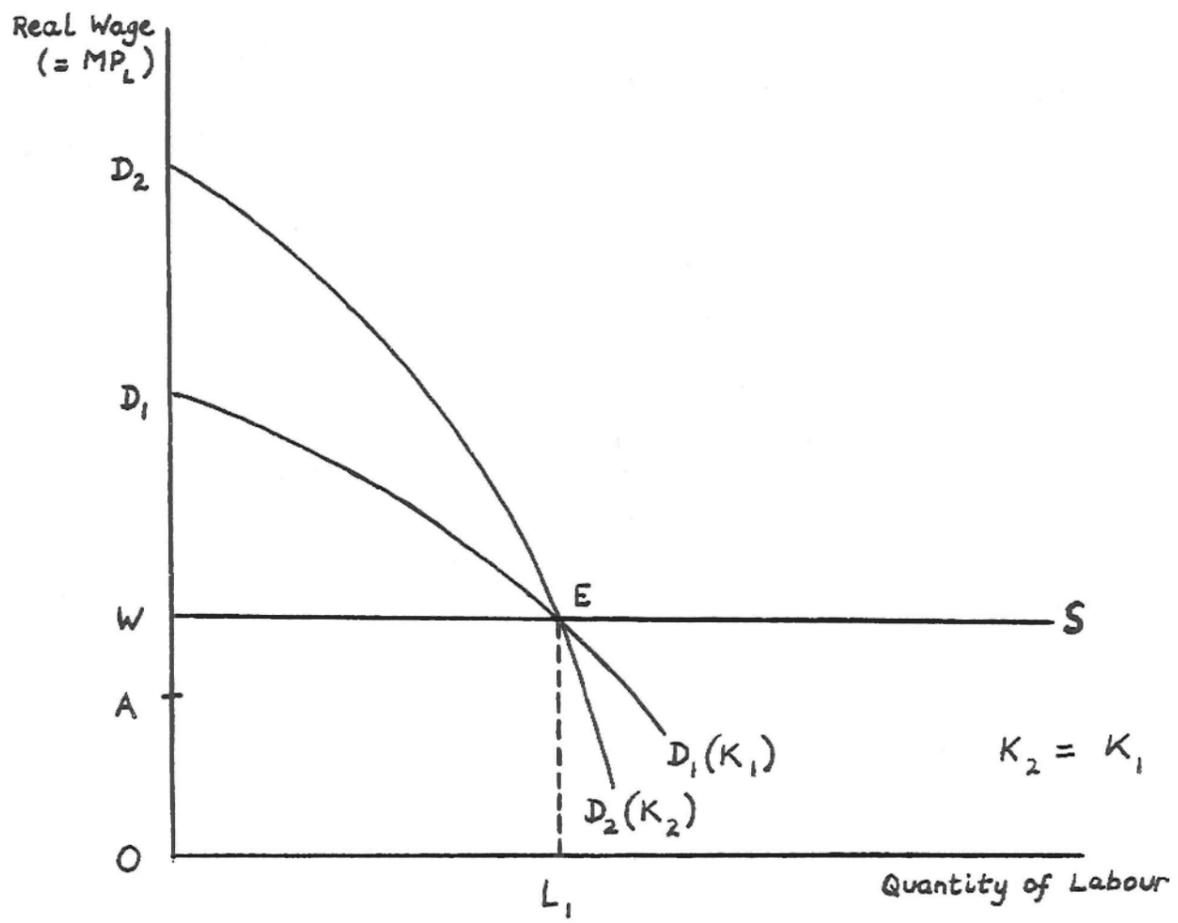
First, the model implicitly assumes that the rate of labour transfer and employment creation in the urban sector is proportional to the rate of urban capital accumulation. The faster the rate of capital accumulation, the higher the growth rate of the modern sector and the faster the rate of new job creation. But what if surplus capitalist profits are reinvested in more sophisticated labour-saving capital equipment rather than just duplicating the existing capital, as is implicitly assumed in the L-F-R model? Figure 2 reproduces the basic model, only this time the labour demand curves do not shift uniformly outward but, in fact, cross. Demand curve $D_2(K_2)$ has a greater negative slope than $D_1(K_1)$ to reflect the fact that additions to the capital stock embody labour saving technical progress.

We see that even though total output has grown substantially (i.e. OD_2EL_1 is significantly more than OD_1EL_1), total wages ($OWEL_1$) and employment (OL_1) remain unchanged. All of the extra output accrues to capitalists in the form of excess profits. Figure 2, therefore, provides an illustration of what some might call "anti-developmental" economic growth - i.e. all the extra income and output growth is distributed to the few owners of capital while income levels of the masses of workers remain largely unchanged. Although total GNP would rise, a poverty weighted index of development (see Chenery, Duloy and Jolly, 1974, Ch. 4) would show no improvement in aggregate social welfare.

The second key assumption of the model which is at variance with reality is the assumption, again implicit, that "surplus" labour exists in rural areas while there is full employment in the urban areas. Most contemporary research indicates that almost exactly the reverse is true in most Third World countries, i.e., there is substantial open unemployment in urban areas but little general surplus labour in rural locations. True, there are both seasonal and geographic exceptions to this rule (e.g. parts of the Asian subcontinent and isolated regions of Latin America where land ownership is very unequal) but, by and large, most development economists seem to agree that the assumption of urban surplus labour is empirically more valid than the opposite L-F-R assumption of a general rural surplus labour.

The third key assumption at variance with reality is the notion of the continued existence of constant real urban wages until the point where the supply of rural surplus labour is exhausted. One of the most striking features of urban labour markets and wage determination in almost all developing countries has been the tendency for these wages to rise substantially over time, both in absolute terms and relative to average rural incomes, even in the presence of rising levels of open unemployment.

Figure 2: Labour saving capital accumulation destroys the employment implications of the Lewis Model



We may conclude, therefore, that when one takes into account the labour saving bias of most modern technological transfer, the widespread non-existence of rural surplus labour, the growing prevalence of urban surplus labour, and the tendency for urban wages to rise rapidly even where substantial urban open unemployment exists, then the Lewis-Fei-Ranis model can be seen to offer little analytical and policy guidance for solving Third World employment and migration problems. Nevertheless, the model does have some redeeming analytical value in that it does at least emphasise two major elements of the employment problem: the structural and economic differences between the rural and the urban sectors and the central importance of the process of labour transfer which links them together. With these two elements in mind, we may now turn to some of the more widely utilised models of rural-urban migration and urban unemployment in developing countries.

B. Towards an Empirically Testable "Economic" Model of Internal Migration

Until recently, research on rural-urban migration in developing countries has been dominated largely by the work of geographers, demographers, and sociologists. For the most part, economists have preferred to ignore migration while operating within the confines of their traditional Lewis-type two-sector models. In the case of a closed economy, these sectors usually consisted of the agricultural and the industrial with the implicit understanding that one could substitute "rural" for "agricultural" and "urban" for "industrial". Emphasis has been placed on traditional economic variables such as output growth rates, savings and investment, and relative productive efficiency. The efficient allocation of human resources between sectors, if discussed at all, has been assumed to be a natural out-growth of a self-adjusting competitive mechanism which functioned to equate sectoral wage rates and marginal productivities. Rural-urban migration was portrayed as a manifestation of this self-adjusting mechanism (with its implicit full-employment assumptions) and, as such, was not deemed to be of sufficient intrinsic importance to warrant detailed theoretical and empirical investigation.

The discouraging record during the 1960s of rapid urbanisation and growing levels of urban unemployment in developing nations, however, has underlined the inadequacy of simply treating migration as a phenomenon of second-order importance. If nothing else, it has shaken development economists out of their complacency and faith in the long-run allocative efficiency of

their idealised competitive market mechanism. Moreover, it has forced them to question the applicability of their traditional economic models to the realities of the social, economic, and institutional environment of contemporary Third World nations.

The evidence is clear. Urban areas have grown at an extremely rapid pace and, in many cases, at unprecedented historical rates. Simultaneously, as we have seen, urban unemployment and underemployment have emerged as problems of utmost importance and concern to politicians, planners and researchers alike. Without question, the phenomenon of accelerated rural-urban labour migration has been the principal cause of both the high rates of urban population growth and the rising levels of urban unemployment.

Thus, an understanding of the causes and determinants of rural-urban migration and the relationship between migration and relative economic opportunities in urban and rural areas is central to any analysis of Third World employment problems. Since migrants comprise the majority of the urban labour force in developing nations, the level of rural-urban migration has been and will continue to be the principal determinant of the supply of new job seekers. And, if migration is the key determinant of the labour supply, then it stands to reason that in order to understand the nature and causes of urban unemployment (which, in the final analysis, simply represents an excess of job seekers over job opportunities), it is necessary to better understand the process of rural-urban migration. Government policies to ameliorate the urban unemployment problem must be based, in the first instance, on knowledge of who comes to town and why.

(1) The Migration Process: The factors influencing the decision to migrate are varied and complex. Since migration is a selective process affecting individuals with certain economic, social, educational and demographic characteristics, the relative influence of economic and non-economic factors may vary not only between nations and regions but also within defined geographic areas and populations. As pointed out above, much of the early research on migration tended to focus on social, cultural and psychological factors, while recognising but not carefully evaluating or quantifying the importance of economic variables. Emphasis has variously been placed, for example, on:-

1. Social factors including the desire of migrants to break away from the traditional constraints of inhibiting rural social structures;

2. Physical factors including climate and meteorological disasters such as floods, droughts and famine which force people to seek alternative living environments;
3. Demographic factors including the reduction in mortality rates and the concomitant high rates of rural population growth leading to rapidly rising rural population densities;
4. Cultural factors including the existence of urban extended family relationships which provide initial financial security to new migrants and the allurements of the so-called bright city lights; and,
5. Communication factors resulting from improved transportation, urban-oriented educational systems and the modernising impact of the introduction of radio, television and the cinema, all of which modify the impact of Lee's intervening obstacles.

Needless to say, all of the above non-economic factors are relevant. However, there now seems to be widespread agreement among economists and non-economists alike that both internal and international migration can be explained primarily by the influence of economic factors. These economic factors include not only the standard push from stagnating subsistence agriculture and the pull of relatively high urban wages, but also the potential push-back (Lee's counterstream) of high urban unemployment.

(2) Migrant Characteristics: It is convenient to divide the main characteristics of migrants into three broad categories: demographic, educational and economic.

1. Demographic characteristics - The principal demographic characteristic of urban migrants in Third World countries is that they tend to be single males between the ages of 15 and 25. Various studies in Africa, Asia and Latin America have provided quantitative evidence of this phenomenon. (See, for example, Caldwell (1969), Byerlee (1974), Brigg (1973), Nelson (1974), Yap (1975) and Greenwood (1975).) However, the proportion of migrating women also seems to be on the increase as their educational opportunities expand. In Latin America, Brigg's earlier review of the rural-urban migration literature indicates that women apparently are now in the majority of the migration stream, largely as a result of Latin America's relatively advanced state of urbanisation as compared to other developing areas (Brigg, 1971).

2. Educational Characteristics - One of the most consistent findings of rural-urban migration studies is the positive correlation between educational attainment and migration. (See same references above.) There seems to be a clear association between the level of completed education and the propensity to migrate - i.e. those with more years of schooling, everything else being equal, are more likely to migrate than those with fewer years. In a recent study of Tanzania by Barnum and Sabot (1975), the positive relationship between levels of education and propensity to migrate is very clearly documented for the period 1955 to 1970. Moreover the impact of declining urban employment opportunities on the educational characteristics of the more recent migrants was revealed to be quite significant. Tanzanian secondary-school leavers were found to constitute a rising proportion of the migration stream, while those with only a primary education showed a much slower increase. This phenomenon can be attributed to the fact that limited urban employment opportunities were being rationed by educational levels, and only those workers with some secondary education had much likelihood of finding a job. Those with only a primary school education or less found it very difficult to secure regular urban employment. Their proportionate numbers in Tanzania's migrant stream therefore have begun to decline.
3. Economic characteristics - It is very difficult to make any valid generalisations about the economic characteristics of migrants. For many years the largest percentage of internal and international migrants were those poor, landless, unskilled individuals whose rural opportunities were for the most part nonexistent. In colonial Africa, seasonal migration was a dominant factor, with migrants from various income levels seeking short-term urban jobs (Caldwell, 1969, Gugler 1969). Recently, however, with the emergence of a stabilised, modern industrial sector in most urban areas, the financial assets of migrants from rural areas have assumed greater importance, at least to the extent that individuals with larger financial resources can survive longer while searching for the elusive urban job. In

short, migrants appear to come from all socioeconomic strata, with the vast majority being poor only because the great percentage of rural inhabitants are poor.

(c) Toward A Generalised Theory of the Economics of Rural-Urban Migration

As we pointed out earlier, the historical development of Western Europe and the United States was closely associated with and, in fact, often defined in terms of the movement of labour from rural to urban areas. For the most part, with a rural sector dominated by agricultural activities and an urban sector focussing on industrialisation, overall economic development was characterised by the gradual reallocation of labour out of agriculture and into industry through rural-urban migration, both internal and international. Urbanisation and industrialisation, therefore, became synonymous. This historical model served as a blueprint for many early theories of development such as Rostow's "stages of growth" theory (Rostow, 1961) or the Lewis-Fei-Ranis theory of labour transfer just reviewed.

But as we have also seen, the overwhelming evidence of the 1960s, during which developing nations witnessed a massive migration of their rural populations into urban areas in spite of rising levels of urban unemployment and underemployment, largely negates the validity of these models of development. In a series of articles, Todaro and others have attempted to fill this gap in migration theory by developing a model of rural-urban migration which attempts to explain the apparently paradoxical relationship (at least to some traditional economists) of accelerated rural-urban migration in the context of rising urban unemployment.⁴ Let us therefore examine the nature of the basic Todaro model and some of its variants.

(1) The Basic Nature of the Todaro Migration Model: Starting from the assumption that migration is primarily an economic phenomenon which can be a very rational decision for the individual migrant, despite the existence of high urban unemployment, the Todaro model postulates that migration proceeds in response to urban-rural differences in expected rather than actual earnings. The fundamental premise is that migrants as decision makers consider the various labour market opportunities available

4. See, for example, Todaro (1968, 1969, 1971, and 1973) and Harris-Todaro (1970).

to them, as say between the rural and urban sectors, and choose the one which maximises their expected gains from migration. Expected gains are measured by the difference in real incomes between rural and urban work opportunities and the probability of a new migrant obtaining an urban job. A schematic framework describing the multiplicity of factors affecting the migration decision is portrayed in Figure 3. While the factors illustrated in Figure 3 include both economic and non-economic variables, the economic ones are assumed to predominate.

In essence, Todaro's theory assumes that members of the labour force, both actual and potential, compare the discounted value of their expected net income streams for a given time horizon in the urban sector (i.e. the difference between returns and costs of migration) with the discounted value of expected net rural incomes (assumed to be determined by labour's average rural productivity) and migrate if the former exceeds the latter, that is if

$$(1) \quad V_u - V_R = \int_0^T E(Y_u) e^{-rt} dt - M_t - \int_0^T W_R e^{-rt} dt > 0$$

where,

$V_u = \int_0^t E(Y_u) e^{-rt} dt - M_t$ is the discounted value of the stream of net expected urban incomes in which

$E(Y_u)$ is the expected urban income

t is the number of years remaining in an individual's working life

r is his discount rate

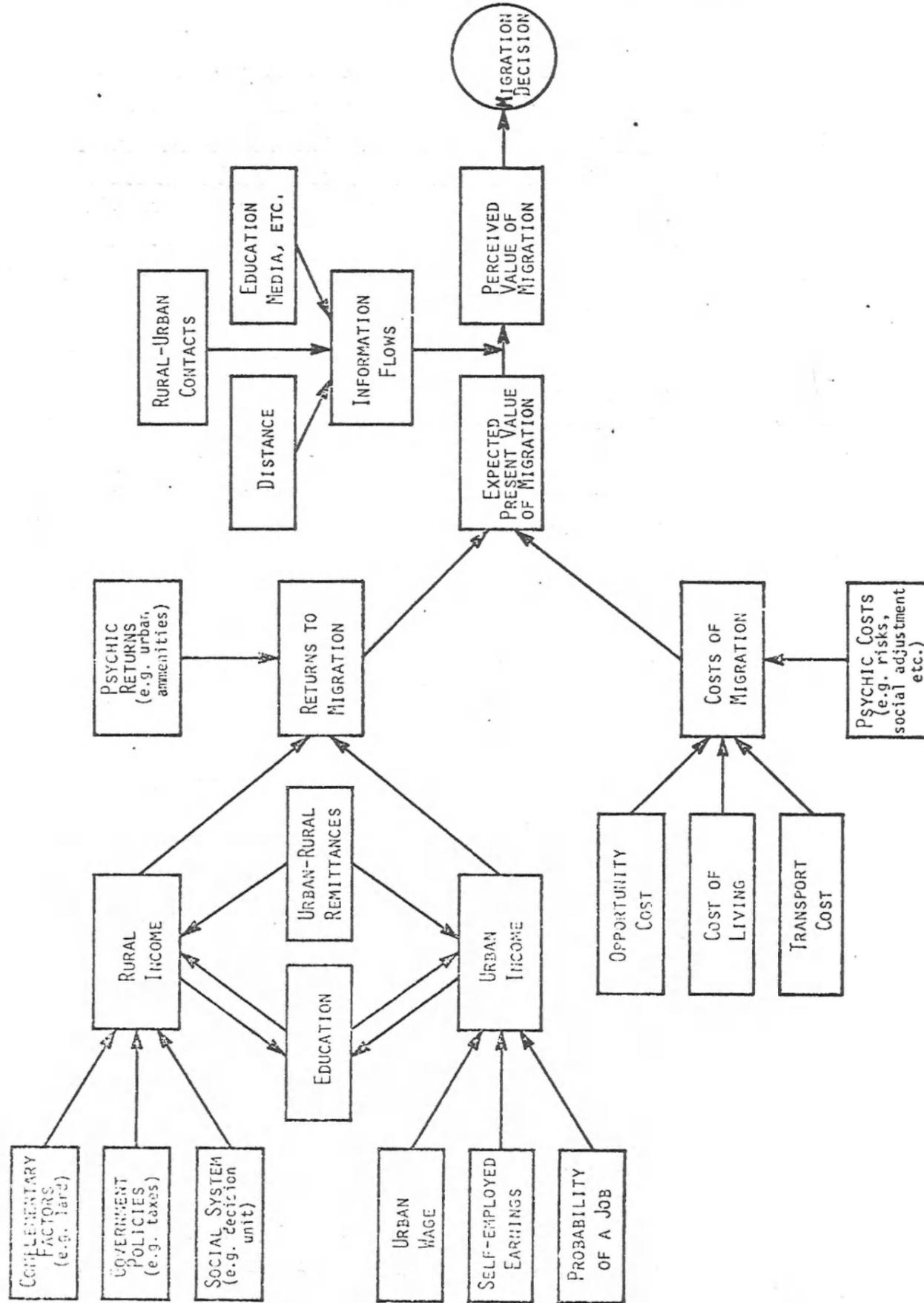
M is the direct out of pocket cost of moving to the urban area, and

$V_R = \int_0^T W_R e^{-rt} dt$ is the discounted value of the stream

of rural expected incomes where W_R is average rural income.

The thought process of the simple Todaro hypothesis can be easily explained as follows. Suppose the average unskilled or semi-skilled rural worker has a choice between being a farm labourer (or working his own land) for an annual average real income of, say, 50 units per year, or

Figure 3. A Framework for the Analysis of the Migration Decision*



*Source: Byerlee, 1974, p.553.

migrating to the city where a worker with his skill or educational background can obtain wage employment yielding an annual real income of say 100 units. The more traditional economic models of migration which place exclusive emphasis on the income differential factor as the determinant of the decision to migrate, would indicate a clear choice in this situation. The worker should seek the higher-paying urban job. It is important to recognise, however, that these migration models were developed largely in the context of advanced industrial economies and, as such, implicitly assumed the existence of full employment or near full employment in urban areas. In a full employment environment the decision to migrate can in fact be predicated solely on securing the highest-paying job wherever it becomes available, other factors being held constant. Simple economic theory would then indicate that such migration should lead to a reduction in wage differentials through the interaction of the forces of supply and demand, both in areas of out-migration (where incomes rise) and in points of in-migration (where they fall).

Unfortunately, such an analysis is not very realistic in the context of the institutional and economic framework of most Third World nations. First of all, these countries are beset as we have seen by a chronic and serious problem of urban surplus labour with the result that many migrants cannot expect to secure a high-paying urban job immediately upon arrival. In fact, it is much more likely that upon entering the urban labour market many migrants will either become totally unemployed or will seek casual and part-time employment in the urban traditional sector for some time.⁵

Consequently, in his decision to migrate the individual must in effect balance the risks of being unemployed or underemployed for a considerable period of time against the positive urban-rural real income differential. The fact that our hypothetical migrant can expect to earn twice the annual real income in an urban area as he can in his rural environment may be of little consequence if his actual probability of securing the higher-paying job within a one-year period is one chance in five. In such a situation Todaro notes that the migrant's actual probability of being successful in securing the higher-paying urban job is 20 per cent, so that his expected urban income for the one-year period is in fact 20 units and not the 100 units that a migrant in a full-employment urban environment might expect to receive. Thus, with a one-period time horizon

5. For an empirical verification of this hypothesis for Tunisia, see Hay (1974), Table 4.7, p. 78.

and a probability of success of 20 per cent it would be irrational for this migrant to seek an urban job even though the differential between urban and rural earning capacity is 100 per cent. On the other hand, if the probability of success were, say, 60 per cent so that the expected urban income is 60 units, then it would be entirely rational for such a migrant with his one-period time horizon to try his luck in the urban area even though urban unemployment may be extremely high.⁶

Returning now to the more realistic situation of longer time horizons for potential migrants, especially in view of the fact that the vast majority are between the ages of 15 and 24 years, Todaro argues that the decision to migrate should be represented on the basis of the "permanent income" calculation depicted in equation (1). If the migrant anticipates a relatively low probability of finding regular wage employment in the initial period but expects this probability to increase over time as he is able to broaden his urban contacts, then it would still be rational for him to migrate even though expected urban income during the initial period or periods might be lower than expected rural income.⁷ As long as the present value of the net stream of expected urban income over the migrant's planning horizon exceeds that of the expected rural income, the decision to migrate is economically justified. This, in essence, is the thought process that is schematically depicted in Figure 3.

Rather than wage adjustments bringing about an equilibrium between urban and rural incomes as would be the case in a competitive model, Todaro argues that rural-urban migration itself must act as the ultimate equilibrating force. With urban wages assumed to be inflexible in a downward direction, rural and urban expected incomes can only be equalised by falling urban job probabilities resulting from rising urban unemployment. For example, if average rural wages are 60 units and urban wages are institutionally set at a level of 120 units, then in a one-period model a 50 per cent urban unemployment rate would be necessary to

6. Clearly, the final decision will be influenced by migrant attitudes towards risk and uncertainty. Different migrants might react differently to the same expected urban income depending on whether the probability of success is high or low, i.e. a 90 per cent chance of 100 urban income units might be perceived as more desirable than say a 50 per cent chance of earning 180 units. We will explore this issue further in section VII when we analyse various econometric migration studies.

7. The Hay (1974), Barnum and Sabot (1975) and Oberai (1975) studies provided evidence that migrant urban incomes tend to rise rapidly over time, especially during the first few years after moving.

vitiating the private profitability of further migration. Since expected incomes are defined in terms of both wages and employment probabilities, Todaro argues that it is not only possible but likely to have continued migration in spite of the existence of sizeable rates of urban unemployment. In the above numerical example, migration would continue even if the urban unemployment rate were 30 or 40 per cent.

Mathematically, the basic Todaro model can be expressed in terms of four simple equations. The rural labour force L_R is assumed to grow at a natural rate, r , less the rate of migration to urban areas m , or

$$(1) \dot{L}_R = (r - m) L_R$$

where \dot{L}_R is the time derivative of L_R .

The urban labour force U_L also grows at a rate, r , plus the migration from the rural areas

$$(2) \dot{U}_L = rU_L + mL_R$$

or substituting $M = mL_R$ where M represents the actual amount of rural-urban migration, equation (2) can be written as

$$(2') \dot{U}_L = rU_L + M$$

The growth of urban employment opportunities (the demand for urban labour) is assumed to be constant at a rate, g , so that

$$(3) \dot{E}_u = gE_u$$

where, E_u is the level of urban modern sector employment.

So far the model is quite standard. The major innovation introduced by Todaro is his migration function which forms the core of the model. Todaro assumes that the rate of rural-urban migration, $m (= \frac{M}{L_R})$, is a function primarily of (1) the probability that an urban labourer can successfully find a modern sector job which in its most elementary form can be written as some simple (positive) monotonic function of the current urban employment rate ($\frac{E_u}{U_L}$) or a negative function of the urban unemployment rate, $\frac{U_L - E_u}{U_L}$, and (2) the urban-rural real income differential which can be expressed as a ratio $\frac{Y_u}{Y_R} = W$, where $W > 1$ and is assumed to be fixed

as a result of an institutionally determined urban wage and a given rural

average product. Migration will also be related to (3) other factors, Z, such as distance, personal contacts, urban amenities, etc., which also exert some influence on the migrant's perception of the relative "costs" and "benefits" of origin and destination areas. The basic Todaro migration equation can therefore be written as:

$$(4) \quad m = F \left(\frac{E_u}{U_L}, W, Z \right)$$

where $F' \left(\frac{E_u}{U_L} \right) > 0$; $F'(W) > 0$ and $F'(Z) < 0$.

Holding W and Z constant, the function F can be simplified to read:

$$(5) \quad F \left(\frac{E_u}{U_L}, W, Z \right) = f \left(\frac{E_u}{U_L} \right)$$

where $f' \geq 0$ for all values of $\frac{E_u}{U_L}$ between zero and one.

The substitution of equation (4) and (5) into equation (2) yields the basic differential equation for urban labour force growth in the Todaro model, namely,

$$(6) \quad \frac{\dot{U}_L}{U_L} = r + \frac{R_L}{U_L} f \left(\frac{E_u}{U_L} \right)$$

By then comparing the time path of this equation with the growth rate of urban employment, Todaro is able to discuss the dynamic process of rural-urban migration and urban unemployment under differing assumptions about population and employment growth rates.

However, the main attribute of his mathematical model is its rigorous demonstration that migration in excess of the growth of urban job opportunities is not only privately rational from an individual income maximising point of view, but it will continue to exist so long as the expected urban-rural real income differential remains positive. For any given relative real wage differential ($W > 1$), there will exist some urban unemployment rate that will finally equilibrate urban and rural expected incomes. But if the relative wage differential continues to grow (as it has in most developing nations) and if real urban wages are inflexible downward (as they have proven to be throughout the Third World), the rising rates of

urban unemployment may never actually be able to exert their ultimate equilibrating influence on migration streams. On the contrary, continued and even accelerated rates of rural-urban migration can and will continue to exist simultaneously with these ever higher levels of urban unemployment.

In summary, there are four essential features of the basic Todaro migration model that should be kept in mind:-

1. Migration is stimulated primarily by rational economic considerations of relative benefits and costs, mostly financial but also psychic;
2. The decision to migrate depends on expected rather than actual urban-rural real wage differentials where the expected differential is determined by the interaction of two variables; the actual urban-rural wage differential and the probability of successfully obtaining employment in the urban modern sector;
3. The probability of obtaining an urban job is inversely related to the urban unemployment rate; and
4. Migration rates in excess of urban job opportunity growth rates are not only possible but rational and likely in the face of continued positive urban-rural expected income differentials. High rates of urban unemployment are therefore inevitable outcomes of the serious imbalances of economic opportunities between urban and rural areas of most underdeveloped countries.

(2) Later Modifications of the Basic Todaro Model: There have been a number of modifications of the basic Todaro migration model since it first appeared as a Ph.D. thesis in 1967. Many of these modifications were designed to introduce important elements of reality into the migration process, elements which were assumed away or not taken into explicit account in the original Todaro model. But, by and large, the basic features of the model remain intact to this day and they provide the framework for most contemporary econometric migration studies (see section VII below).

Among the major modifications of the original model, the following are among the most significant. First, Todaro and his colleague John Harris of M.I.T. utilised the basic Todaro framework to construct a two-sector internal trade model of migration and unemployment which permitted explicit

attention to be given to the impact of migration on rural incomes, urban and rural output and total social welfare (Harris and Todaro, 1970). The two sectors are the permanent urban and the rural. The sectors are distinguished for analytical purposes from the viewpoint of production and incomes. Thus, it is assumed that the rural sector specialises in the production of agricultural goods, part of which is traded to the urban sector in return for the manufactured goods in which it specialises. It is assumed further that the rural sector has a choice of using all available labour to produce agricultural goods, some of which are traded for urban manufactured goods, or using only part of its labour to produce food while exporting the remaining labour to the urban sector (i.e. through migration) in return for wages paid in the form of manufactured goods. Thus, it is assumed that the typical migrant retains his or her ties to the rural sector. The income that he or she earns is assumed for analytical purposes to accrue to the rural sector. Such an assumption is clearly more valid for most African countries than it is for Asia or Latin America where migrant ties to the rural sector are less pronounced.

Although the above assumptions about inter-sectoral linkages enable Harris and Todaro to assess the welfare and distributional consequences of migration, they are not necessary for demonstrating the private rationality of continued migration in the face of rising urban unemployment. The crucial assumption for this proposition is once again Todaro's hypothesis that rural-urban migration will continue so long as the expected urban real income (i.e. the wage times the probability of finding a job) exceeds real agricultural income at the margin - i.e. potential rural migrants behave as maximisers of expected utility.

The complete Harris-Todaro model represents a simple extension of traditional two-sector neoclassical trade models. Thus, there are variable proportions in agricultural and manufacturing production technologies for the rural and urban sectors, neoclassical behavioural rules for the determination of levels of factor use and output in each sector, and a traditional trade theory mechanism for determining the terms of trade between agricultural and manufactured goods. But it is the migration equation which represents the most unique and innovative feature of the overall model.

Harris and Todaro then utilise their internal trade cum migration model to draw out a number of policy implications for developing countries.

First they evaluate the welfare effects (in terms of lost or gained output in each sector) of alternative policies such as uniform or sector-specific wage subsidies, urban demand expansion and migration restriction. (See Bhagwati and Srinivasan, 1974, for a critique of some of this analysis.) Second, and more importantly, they draw attention to the critical importance of urban wage determination, commodity pricing policies and rural development programmes to relative output levels, the terms of trade and labour allocation between sectors as a result of induced migration. Perhaps most importantly, the Harris-Todaro model shows that accelerated urban employment creation may actually increase levels of unemployment. (See Todaro (1975) for a new theoretical specification and empirical formulation of this important concept of induced migration.) Finally, they demonstrate the conditions under which coercive restraints on migration can actually reduce the level of rural welfare.

The mathematics of the Harris-Todaro model can be written as follows. Letting W_R and W_u respectively represent nominal agricultural and urban wage rates, E_u the number of urban jobs and L_u the urban labour force, expected urban income, $E(W_u)$, can be written as:-

$$(1) \quad E(W_u) = W_u \frac{E_u}{L_u}$$

Expected rural income, $E(W_R)$ is simply W_R . The amount of rural-urban migration, $M = L_u$, is once again a function of the urban rural expected wage differential, i.e.,

$$(2) \quad M = L_u = f (E(W_u) - E(W_R))$$

The rural-urban equilibrium expected wage condition is then

$$(3) \quad E(W_u) = E(W_R)$$

which becomes

$$(4) \quad W_u \cdot \frac{E_u}{L_u} = W_R$$

so that the Harris-Todaro model predicts as a first approximation an equilibrium urban unemployment rate given by:-

$$(5) \quad 1 - \frac{E_u}{L_u} = 1 - \frac{W_R}{W_u}$$

The prediction should not be taken literally as it is only intended to illustrate an inverse relationship between equilibrium unemployment rates and urban-rural expected wage differentials.

While the combined Todaro, Harris-Todaro theoretical model does capture the most important labour market interactions between rural and urban sectors from the viewpoint of internal migration analysis, from an empirical or econometric estimation viewpoint the basic model clearly requires some modification and extension. For example, Sabot has identified 7 assumptions of the model which need to be modified to fit the institutional and empirical realities of certain developing nations (Sabot, 1975d, p. 5-6). They are the following:-

1. Although the assumption that urban incomes of migrants accrue to the rural sector is quite reasonable for many African societies with relative land abundance and strong extended family systems, it is less likely to apply to Asian societies where there are numbers of landless families and institutions of landlordship are prevalent.
2. The assumption of homogeneous labour is not consistent with the universally observed selectivity within the migrant stream of particular sub-groups of source area populations. The model must accommodate several types of labour.
3. Similarly, the model assumes capital stocks are given and that capital is immobile. This may be a reasonable assumption with regard to physical capital, but not for forms of human capital investment, particularly education, that complement investment in migration. To assess the welfare consequences of migration the model must take into account transfers of human capital. (See Corden and Findlay, 1975.)
4. The simple two-sector characterisation of the economy is inadequate since the choice made by a migrant to urban areas is not merely between employment in the industrial sector and unemployment. There is a large informal sector that in fact absorbs a significant proportion of such migrants (Todaro, 1969). The relationships between such flexible wage sectors and the rigid wage modern urban sector need to be investigated

much more closely than has been done to date.

5. In addition, the modern urban sector is subdivided into two or more component labour markets with significant differences in the characteristics of employees and in incomes paid.
6. Furthermore, the agricultural sector is hardly homogeneous, particularly in Asia where there is great stratification in land holding.
7. Finally, the implicit assumption that information about alternative opportunities is available everywhere, is accurate, and can be acquired costlessly, is clearly inappropriate. The consequences of imperfect information systems must be taken into account. Associated with this is the corollary problem of financing a move. With the great imperfection of capital markets, many would-be migrants are unable to undertake moves that would otherwise be desirable. At least in Africa, the workings of the extended family system are crucial to understanding how information is transmitted, risk of move is attenuated, and finance and supply for a move are provided.

Johnson (1971) was the first to theoretically modify the basic Todaro, Harris-Todaro model by explicitly introducing variables for the rate of labour turnover and the possibility of the urban employed sharing their income with the unemployed through some form of extended family network. Thus Johnson defines the actual income in urban areas as $(1 - \alpha)W_u + \alpha W_u n$ for the employed and $\alpha W_u n$ for the unemployed, where W_u is the urban wage rate, n is the urban employment rate and α (< 1) is the proportion of the total wage bill which is shared with the unemployed (Johnson, p. 22). Therefore, if p is the probability that an individual will be employed at a point in time, urban expected income at that time can be represented as:-

$$E(Y_u) = (1 - \alpha) W_u p + \alpha W_u n$$

Johnson also introduces into Todaro's basic job probability formulation a variable to reflect the rate of labour turnover in the urban modern sector. Rather than new job creation being simply $g \cdot E_u$ (which assumes no labour turnover), the rate of new urban hires can be represented by

$$E_u = g \cdot E_u + \beta E_u$$

where β is the rate of job turnover.

Although β is probably much lower in developing nations than in developed

countries due to the scarcity of urban sector job opportunities and the fact that most people who quit only do so with the knowledge that another job awaits them, Johnson's introduction of a labour turnover variable does bring the probability formula of the simple Todaro model a bit closer to reality.

Fields (1972) uses the basic Todaro and Harris-Todaro framework of quantity rather than wage adjustments as the principal equilibrating force in urban labour markets to consider four additional factors in the determination of equilibrium levels of urban unemployment in developing countries: (1) a more generalised description of the urban job search process, (2) the existence of underemployment in the urban traditional or informal sector, (3) the likelihood that educated workers will be given preferential treatment in modern sector job hiring and (4) the recognition of labour turnover in a multiperiod urban framework. Fields shows that each of these realistic extensions implies a lower equilibrium urban unemployment rate than that predicted by the simple Harris-Todaro model.

Porter (1973) provides a further theoretical exploration of the dynamics of the basic Todaro model. He attempts to demonstrate that urban unemployment cannot exist in equilibrium if employment in the urban sector is growing at a more rapid rate than the population as a whole, while other factors are unchanging. In carrying out this demonstration, however, Porter observes that his theoretical modification of the Todaro conclusion "unfortunately for practical purposes...offers no ground for optimism - the 'transitory' urban unemployment rates are depressingly high and long-lived" (some over 50 years). "Indeed, unemployment rates climb more than twice as high as the 'equilibrium' rates estimated by Todaro...for the same values of the parameters" (Porter, p. 1), and "even a growth rate of urban employment several times the growth rate of population may be unable to reduce the urban unemployment rate to a tolerable level for an intolerably long time" (Porter, p. 11).

Corden and Findlay (1975) extend the Harris-Todaro model by introducing inter-sectoral capital mobility between the rural and urban sectors in response to differentials in the return on capital. They also examine the comparative static effects of economic growth both in the original Harris-Todaro model and the modified model with perfect capital mobility and with commodity prices determined externally in an open economy framework. They then explore the policy implications of the modified model and reach a number of conclusions which both support and modify those

derived by Harris-Todaro.

Finally, Bhagwati and Srinivasan (1974) have recently provided an extensive yet positive critique of the Harris-Todaro model, identifying some of its theoretical weaknesses and modifying some of its major policy conclusions, especially those relating to the migration and employment impact of various wage and production subsidy programmes in both rural and urban areas.

(3) Conclusions: In spite of the many significant modifications of the basic Todaro model, the fact remains that its fundamental contributions - i.e. the idea that migration proceeds primarily in response to differences in expected urban and rural real incomes and that as a result of this the observed accelerated rates of internal migration in less developed countries in the context of rising urban unemployment are not only a plausible phenomenon, but in fact are entirely rational from the private expected income maximisation viewpoint of individual migrants - remains widely accepted to this day in the literature on migration and development. This general acceptance at the theoretical level is reflected also at the empirical level by the widespread utilisation of econometric migration functions which give explicit recognition to the expected income differentials as one of the most statistically significant explanatory variables in the migration decision making process. In Section VII we will take a careful look at the growing body of quantitative migration literature in a wide range of developing nations.

VI. CONVERTING THEORETICAL MIGRATION MODELS INTO ECONOMETRIC EQUATIONS:
A REVIEW OF ALTERNATIVE METHODOLOGICAL APPROACHES

In this section we attempt to summarise some of the major methodological issues relating to the conversion of theoretical migration models into empirically estimated econometric equations. We start off by distinguishing between micro and macro migration functions and their respective uses for information generation and policy analysis. We then provide a listing of those variables most commonly utilised in econometric migration studies. Next we distinguish between the census and survey methodological approaches to estimating micro and macro migration functions, identifying the strengths and weaknesses of each but opting for the survey research approach as being more appropriate for future internal migration studies. We then discuss alternative field survey approaches including rural surveys, urban surveys and combined rural-urban field surveys with

the objective of fitting means to ends. In this discussion we draw on examples of actual completed econometric studies based on these alternative survey approaches. We then examine the problem of estimating variables, both independent and dependent, in econometric migration studies, focussing particularly on the estimation of rural and urban actual and expected incomes. Finally, we conclude this methodological section with a brief discussion of alternative econometric estimation techniques, including ordinary least-squares regression analysis, probit analysis, simultaneous equation (reduced form) estimation problems and procedures and a closing paragraph on the possible use of simulation techniques for migration analysis.

A. The Econometric Migration Function: "Micro" vs. "Macro" Estimation

The fundamental assumption of all of the theoretical and empirical literature on internal and international migration is the simple one that migration is not the result of random selection or some arbitrary decisions of external authorities but, rather, that on the whole migration is the result of economically rational optimising behaviour on the part of individual or household decision-making units. Migration therefore is a selective procedure in which individuals with certain socio-economic characteristics and different sets of (mainly income-earning) opportunities are more likely to migrate than others. The major task of econometric migration research, therefore, is to (1) identify the nature of these socio-economic characteristics; (2) to devise appropriate measures of both characteristics and opportunities; (3) to specify appropriate relationships between personal characteristics, alternative economic opportunities and propensities to migrate on the basis of a well formulated and plausible theoretical model; (4) to estimate the relative quantitative significance of different factors influencing either the propensity of individuals to migrate or the aggregate rate of migration; and, hopefully, (5) to be able to devise quantitative predictive estimates of the impact of alternative policy approaches designed to influence the magnitude of one or more of the independent variables which have been identified as significant factors affecting the decision to migrate in a particular country or region.

Within this broad fivefold framework of objectives, econometric migration research tends to take on two principal forms, (1) micro and (2) macro functional estimation as reflected in the choice of dependent and independent variables. Let us examine each in turn.

(1) Micro Function Estimation: First there is what we may call the micro economic approach to estimating migration functions. The micro approach asks the basic question, "What is the probability or propensity that an individual will migrate from source area i to destination area j if he has certain socio-economic characteristics and if economic opportunities in areas i and j can be specified?" Among the major socio-economic characteristics of individuals usually considered in these studies are the following: age, sex, level of schooling, level of skills, range of personal contacts in destination region (through perhaps tribal, religious or ethnic affiliations of the individual). The economic opportunities in the destination areas are usually measured by farm income, non-farm cash wages, urban wage levels, job opportunities, etc. (See E below for alternative income measures.) In the absence of such direct information, levels of schooling, skills, and personal contacts may be used as joint proxy variables for expected urban income by estimating "urban earnings functions" from available data. (See Hay, 1974.)

The dependent variable in the micro migration function, P , is the propensity to migrate (or, alternatively, the probability of migration). It is expressed simply as a binary, dichotomous variable taking on a value of one if the person migrated and zero if he did not. Thus, the aggregate estimated value of P over all individuals will lie somewhere between zero and one and the coefficients of the statistically significant independent variables will express the relative degree to which they individually affect a person's propensity to migrate.

Hay's study of migration in Tunisia provides a good example of the estimation of migration probability functions on the basis of, in this case, a rural sample survey of 220 households with at least one migrant and 80 households with no migrants (Hay, 1974). His actual sample consisted of 412 observations, including 141 migrants and 271 non-migrants. The probability-of-migration relationship that is estimated consisted of a binary dependent variable, either a migrant or not, as a function of a set of continuous and binary independent variables hypothesised to be determinants of migration. The actual estimated micro function and the hypothesised signs of the coefficients are (Hay, p. 107-108):-

$$P = f(S, SK, INF, AGE, AGE^2, MAR, HAMAN, Y_c)$$

$$\begin{array}{cccccccc} >0 & >0 & >0 & >0 & <0 & >0 & <0 & <0 \end{array}$$

where,

- S = Years of schooling and formal occupational training.
- SK = A dummy variable equal to 1 for those with job-learned transferable occupation skills and equal to 0 otherwise.⁸
- INF = A dummy variable equal to 1 for those who knew someone who could help in obtaining an urban job and equal to 0 otherwise.
- AGE = Age at the time of the survey for non-migrants and at the time of migration for migrants. Age was hypothesised to be parabolically related to P, i.e. AGE > 0 and AGE² < 0.
- MAR = A dummy variable equal to 1 for those who were married and equal to 0 otherwise (at time of migration for the migrants). No hypothesis was made about the sign of this coefficient and, in any case, it turned out to be statistically insignificant.
- HAMAN = The number of hectares per active man farmed by the individual household; a proxy measure of farm income.
- Y_c = Annual rural cash income in dinars from wages and non-farm self employment.

8. Hay used S and SK as proxy variables for urban expected income on the basis of an estimated urban earnings function for Tunisia. We will discuss this approach further in section E below.

Hay uses two methods of estimating the probability function: (1) a linear probability function estimated by ordinary least-squares (OLS) regression and (2) probit analysis. We will discuss these alternative estimation procedures among others in section F below.

(2) Macro Function Estimation: A much more common and more widely used procedure in econometric migration studies is the estimation of macro migration functions. By this we mean the estimation of aggregate migration functions where the dependent variable is the rate of rural-urban migration, M_{ij} , expressed as the proportion of population i that migrates to destination j over a specified period of time. M_{ij} may be further disaggregated by education, age, sex, etc. Independent variables in macro functions usually include wage and income levels (Y) in i and j ; unemployment rates (U) in j and sometimes i as well; the degree of urbanisation (Z) for the population in areas i and j ; the distance between i and j (d_{ij}), friends and relatives of residents of source area i in the destination area j (C_{ij}), and perhaps also the size of the population (P) in areas i and j , although Z and P are likely to be correlated. The specification of the migration function is usually log linear and, using the above symbols, its basic form and the hypothesised signs of the independent variables may be written as:-

$$M_{ij} = f(Y_i; Y_j; U_i; U_j; Z_i; Z_j; P_i; P_j; C_{ij})$$

$\begin{matrix} <0 & >0 & >0 & <0 & <0 & >0 & <0 & >0 & <0 \end{matrix}$

Macro migration functions similar in form to that shown above have been mostly estimated for developing countries from census data. See for example, Beals, Levy and Moses (1967), Levy and Wadycki (1972), Greenwood (1971), Sahota (1968), Schultz (1971) and Wery, Rodgers and Hopkins (1974). A growing number of others, however, have utilised either survey or combined survey-census data. See, for example, Barnum and Sabot (1975), Essang and Mabawonkoe (1974), Hay (1974), Huntington (1974), Remple (1971) and Speare (1971). We will discuss the pros and cons of census versus survey approaches below.

Both micro and macro migration functions represent important and necessary components of any comprehensive econometric analysis of migration in developing countries. Ideally, both types of estimation should be pursued. However, in order to estimate micro probability functions, survey data are required. From a policy point of view each function can yield useful insights. The micro probability function can be used to estimate the impact of rising rural and/or urban incomes,

increased educational levels and rising or falling unemployment rates on the propensity that an individual rural resident with certain characteristics will migrate. Moreover, elasticities of migration propensities can be estimated with respect to urban and rural incomes, job probabilities, etc.

Similarly, the macro function enables us to estimate the most important determinants of aggregate migration flows between two points *i* and *j*, to calculate the relative importance of these determinants and trade-offs between them (e.g. a higher destination unemployment rate against a higher destination wage premium) and to predict probable migration flows on the basis of estimated elasticities. On balance, the macro approach probably has more policy payoffs than the micro approach for the simple reason that policy makers would probably rather have information on gross flows than on individual propensities. And yet, from the viewpoint of advancing our understanding of who moves and why, the micro propensity approach is more informative. Both approaches, therefore, complement each other and thus have separate and joint desirability in future migration research.

B. Some Common Variables Used in both Micro and Macro Econometric Migration Functions

Although there is a wide variation among variables collected and/or estimated between any two migration studies, by and large there does exist a certain group of variables which are common to almost all of the existing studies. Such a listing of common variables is presented in Table 8.

Of the 50 or so variables listed in Table 8, variables which by the way provide the common core of any migration survey questionnaire, some are clearly more important than others for econometric estimation purposes (e.g. the income and employment status information). Others, however, such as marital status, ethnicity, sex, job search procedure, intentions, expectations, etc., provide valuable information of a more qualitative nature. All in all, the variables listed in Table 8 provide a good summary picture of the range of information sought in most migration studies.

C. Census versus Survey Approaches

Although both the census and survey approach to migration studies can offer valuable and useful insights into the migration process, most

Table 8. List of variables commonly collected, with both rural and urban components, in most migration surveys.

Sex
Age
Ethnicity
Status in household
Marital status
Number of children
Education

Variables Collected by the Urban Components

Region of birth
Age on arrival in receiving area
Principal reason for moving
Year of arrival in town
Economic activity prior to migration
Income prior to migration
Intention to remain in receiving area
Expected reasons for leaving
Other migrants in family
Source of information regarding receiving area
Cost of transportation from source area
Source of finance for journey
Means of support on first arrival
Type of help from family and friends
Length of time to establish an independent source of income
Marital status on arrival
Location of wife and children at time of migration
Frequency of visits to source area
Current assets in source area
Value of remittances to source area
Current employment status
Type of employer
Occupation
Size of firm
Wage income received
Supplementary benefits
Year joined firm
Hours worked
Job search procedure
Past employment experience
Self-employment income
Value of assets
Number of employees
Length of time in activity
Barriers to entry

Variables Collected by the Rural Components

Income from self-employment
Non-monetary income
Value of equipment
Size of plot
Wage income
Employment history
Mobility history
Intention to move
Perceptions of opportunities elsewhere

Source: Sabot, 1975d.

researchers would probably agree that the survey approach, supplemented where necessary by census information, offers the most promising avenue for future policy-oriented econometric migration research. Among the many reasons for this viewpoint, the following are perhaps the most significant:-

1. Censuses generally collect information on administrative areas which in many cases includes both urban and rural areas. They are thus more appropriate for interregional rather than rural-urban migration.
2. Field surveys on the other hand can be designed to classify information according to carefully delineated rural and urban areas. They thus facilitate the direct study of rural-urban, urban-rural and, where appropriate, even urban-urban migration.
3. The degree of accuracy and coverage of census data may vary considerably from one census to the next. In particular, regional boundaries may be differently defined or sampling techniques may be altered. This is especially the case in most African countries. (See, for example, Mabogunje (1970).) On the other hand, one of the main disadvantages of many field surveys is the occurrence of large sampling errors as a result of inadequate or inappropriate sampling techniques.
4. Censuses often do not include information on income at the time of the census.
5. Field surveys can be structured so as to elicit information appropriate to the testing of specific migration models. Census information on the other hand is less amenable to testing economic migration models, although it can provide valuable information about past net migration flows.
6. Census data become quickly outdated with changing socioeconomic conditions. Field sample surveys can be conducted at more frequent intervals, thus providing both a more accurate time series and more up-to-date information, especially on the income-employment situation.
7. On the other hand, faulty design of field surveys or failure to carry out the design by inexperienced or uninterested

interviewers can result in substantial sampling biases.

8. When interpreting and evaluating the results of field surveys, several important considerations must always be kept in mind (Brigg, 1971, pp.6-9):-
 - a) Is the universe being sampled a meaningful one - i.e., if just a portion of a country's rural or urban area is being sampled, is the sample representative of the whole region and/or other parts of the country? In many cases a poorly chosen sample will not yield meaningful information about the larger area of concern.
 - b) Does the survey distinguish between independent and dependent migrants - i.e. between those who voluntarily move and those who accompany an independent migrant (his family)? Migration studies should focus on independent migrants.
 - c) Along the lines of (b) above, what is the appropriate decision making unit in a particular area or region - the household, the individual or some combination of both? In many cases failure to adequately define the decision making unit and to interview the appropriate individual can lead at best to sampling errors and at worst to totally irrelevant information.
 - d) Does the definition of migration distinguish between long distance and local moves and how are these distances defined? Local moves may not necessarily reflect changing economic opportunities.
 - e) How detailed and accurate was the questionnaire? Copies of questionnaires are rarely included in survey write-ups. Do questionnaires encourage incomplete answers, or do they fail to cover an appropriate range of possible answers? Moreover, are the predesignated reasons offered to a respondent in answer to a certain question mutually exclusive and exhaustive, and is there space for volunteered answers? Although it is clearly beyond the scope of this paper to enumerate the very many pitfalls of questionnaire design, pre-testing, testing, coding, tabulation, use, etc., the design of a meaningful and appropriate questionnaire is obviously a necessary condition

if any internal or international migration study based heavily on field surveys is to be of general use.

- f) Since the field survey method is subject to problems of unreliable recall and emotional distortion by the respondents, it is essential that surveys distinguish between recent and earlier period migrants. Long-range retrospective information is notoriously unreliable, especially in the context of subjective questions about migrant perceptions and expectations at the time of the move. In general, qualitative measures (e.g. migrant satisfaction) should only be utilised where possible in conjunction with appropriate quantitative measures and carefully constructed cross-check questions.

We may conclude that although census data can be objectively more accurate than survey data, their usefulness in contemporary econometric migration studies is greatly limited by (1) their failure to distinguish between rural and urban areas, (2) their usual failure to give adequate or any coverage to economic variables such as wages, self-employment, cash transfers, job probabilities, etc., and (3) their tendency to become quickly outdated and to change their scope of coverage from one period to the next. Field surveys also have a number of inherent weaknesses, but these can be overcome by an investigator's adequate knowledge of survey research methodology and techniques.

Future research on internal migration in developing countries, therefore, should be based very largely on the generation of primary data through the sample survey approach. Sample survey information is much more difficult to collect for international migration over long distances (e.g. Filipinos in the U.S.), but not for relatively short distances (e.g. Upper Volta workers in the Ivory Coast). Long distance international migration studies, therefore, will have to be based primarily on secondary data supplemented perhaps by mailed questionnaires and selective interviews with the families and relatives of the migrants who remain in the source country.

D. Choosing Among Different Sample Survey Approaches: Fitting Objectives with Methodology

The methodology employed and the choice of location for field sample surveys obviously depend on the model or set of specific hypotheses which the survey is designed to test. Data for econometric migration studies can

be gathered exclusively in a rural sample area (as Hay did for Tunisia), exclusively in the urban area (as Sabot did for Tanzania or Rempel for Kenya) or in both areas with, say, initial interviews conducted in the rural area to identify migrants followed up by a tracer interview of these migrants in urban areas (as Essang and Mabawonku (1974) did in Western Nigeria, Nabila (1973) did in Ghana, and Speare (1971) did in Taiwan).

Clearly the initial rural survey with urban tracer follow-ups is the most desirable method. A number of on-going migration studies are currently utilising this approach. (See Appendix 5 for a brief review of these studies.) Moreover, rather than relying on "one-shot" interviews, the ideal survey method would involve follow-up interviews at later periods in order to generate accurate time-series as well as cross-sectional information.

We would, therefore, put forward the following three-step procedure as a desirable one for the organisation and conduct of future internal migration studies based on the field survey methodology. First, initial survey information should be generated in representative rural areas in order to: (1) identify potential migrants still living in the rural areas and to get an idea of their perceptions about alternative economic opportunities; (2) identify actual migrants who have already left the rural household but who can be located in urban areas for follow-up tracer questionnaires; and (3) identify return migrants to ascertain their reasons for returning and to try to calculate their economic losses, if any, as a result of their migration experience. It is important that future migration studies identify not only actual migrants but also those who did not migrate, those who are on the margin of migrating and those who did migrate but decided to return. At present, there is no comprehensive migration study in any country or region that provides detailed information and analysis of these various components of the migration process.

A major weakness of existing migration studies is the inadequate treatment and measurement of rural incomes (see E below).⁹ Our second recommendation, therefore, is that wherever possible rural field surveys

9. The policy usefulness of many migration studies, for example Rempel's study of Kenya, is largely negated by an inadequate treatment of rural incomes.

be supplemented by existing farm management or household budget surveys.

In fact, the choice of an appropriate rural location to conduct the survey should, ceteris paribus, be dictated by the existence of such household budget or farm management studies. They can provide a valuable, yet inexpensive source of additional information on average and/or marginal rural incomes by source and type of activity.

Having interviewed non-migrants and potential migrants, the third step would be to trace as large a proportion as possible of those migrants who have been identified from the sample of rural households as having migrated some time in the recent past. Having located them in urban areas, information can be generated on their employment and income experience, as well as other relevant factors (e.g. costs of moving and living, urban contacts, cash receipts and/or remittances to families in rural areas, etc.). This data can then be compared with similar information obtained about them from questions put to, say, the head of their households in rural areas. This will not only provide an accuracy and consistency check, but it will also give some idea of the relative marginal costs and benefits of urban tracer interviews for future migration studies.¹⁰

E. Problems of Measuring Variables in Migration Functions

1. Measuring Migration: One of the most difficult and persistent problems in utilising econometric techniques in migration research (or, for that matter, in almost any area of econometric research) is the problem of adequately measuring the major variables under review. In the case of the dependent migration variable, especially in macro functions, this problem is reflected in difficulties associated with the appropriate degree of aggregation, both geographic (interstate census data, for example, mask many different patterns) and demographic (which may hide the differential migration responses to the same stimuli of different subgroups within the population). Moreover, in point-to-point migration studies it is preferable to use a dependent variable which measures the proportion of people who moved from point i to point j during the year t, rather than the people enumerated in point j in year t who were born in area i. The latter measure

10. One of the methodological weaknesses of the Hay study in Tunisia was that all information on migrant incomes in urban areas had to be generated from interviews with the migrants' relatives in the rural area - i.e. there was no tracer follow-up in the cities. (Hay, 1974)

is cumulative and may produce biased coefficients (Yap, p.15) since past migration levels are likely to be influencing present wage and employment levels. Ideally from an analytical and policy point of view, gross annual migration flows would be preferred, but even where such annual migration data are available for use as the dependent variable, there may still be some simultaneous equation biases since wages and especially employment levels both affect and may be affected by migration. However, the sign and significance of the independent variables should not be too much affected by this bias, although coefficient sizes and standard errors may be affected to a greater degree. (Sahota, pp. 239-41).

2. Measuring Rural Incomes: It is with regard to the independent income variables that many of the measurement problems in econometric migration studies become most pronounced. Accurate measurements are particularly difficult for rural incomes. Various studies have used different measures including actual cash incomes, cash incomes plus some estimates of income in kind, net agricultural output per rural labour force member, or simply rural per capita incomes. Knight has argued for Africa that the relevant measure of rural income varies according to the nature of the social system in the area. This typically includes the nature of the decision making unit (individual or household) and the pattern of land tenure (Knight, 1972). Whether the opportunity cost to a migrant of leaving the farm can be measured by average or marginal value products depends on whether the household (average product) or individual (marginal product) is the decision maker. Similarly, the land tenure system may dictate whether an individual is able to rent or sell his land or to retain a long-term claim to the land as a form of future financial security.

Normally one might hope to estimate rural incomes in micro migration functions by including a short farm management questionnaire as part of the interview schedule for households that own or operate farms. As an alternative, rural income may be divided into two components: (1) cash income from wages and non-farm self employment and (2) a proxy measure of the individual's share of income from the household farm. One such proxy measure could be the number of hectares of operated farm land per active man in the household (Hay, p.94). This proxy assumes that farm income is equally shared and that a migrant foregoes his average product when he leaves. For any given individual then, rural income normally will consist of either household farm and cash (farm or non-farm) earnings or it may consist of only one of these sources.

3. Measuring Urban Incomes - Actual and Expected: Urban incomes are normally easier to ascertain than rural incomes. If nothing else, to obtain an estimate for actual wages, government statistics on modern sector average rates of remuneration by different skill categories may be used. However, it is greatly preferable if specific migrant urban earnings can be generated from primary survey data. In such cases, however, care must be taken to recognise the dual structure of most urban labour markets in less developed countries - i.e. the coexistence of a modern, high wage (regulated) sector with a usually much larger traditional (flexible wage) informal sector. In most instances, it will also be desirable to disaggregate urban incomes by educational and/or skill levels. Finally, it is important to get some estimates of private transfer payments (whether urban to rural or rural to urban) to arrive at more realistic estimates of urban (and rural) incomes.

In the absence of reliable urban income data from published sources and lacking sufficient responses to survey questions on income, one could resort to the use of a "human capital earnings function" in which an individual's urban earnings can be estimated by a long linear regression of, say, years of schooling, levels of training, experience, etc. on current earnings of those in the sample who did provide income information. (See, Hay, pp. 89-104, for a description of this proxy method of estimating urban and rural incomes.)

With regard to expected urban earnings, a job probability variable may be introduced separately or incorporated as a single measure of the urban expected wage (Barnum and Sabot, p. 11-14). With regard to the probability variable, one would ideally like to have a measure of the ratio of the number of modern sector job openings (both new hires and turnovers) for a given job search period to total urban surplus labour (i.e. the unemployed and underemployed - identified by an appropriate income measure - in the informal sector). Lacking this information, the probability variable may be measured for any job search period (Barnum and Sabot use 4 months for Tanzania.) as the ratio of modern sector job openings to the number of unemployed or simply $p = \frac{g(1-u)}{u}$ where, as before, g is the rate of modern sector employment growth and u is the unemployment rate, which may be disaggregated by educational subgroups. (See Barnum and Sabot, pp. 14-15.)

F. A Final Note on Econometric Estimation Techniques and Simulation

As we saw earlier almost all econometric migration studies, whether based on census or survey data, use ordinary least squares regression

techniques, typically with log linear specifications, for estimating the parameters of both micro and macro migration functions. Some of the limitations of this approach have already been alluded to, including sampling errors, problems of aggregation and measurement problems of both dependent and independent variables.

In the case of micro migration studies with dichotomous dependent variables, there are a number of additional special problems associated with the estimation of linear probability functions using ordinary least squares (OLS) regression techniques (Hay, Chapter VI). Normally the function expresses the probability of migration P , as a linear function of the independent variables

$$P_i = \beta_0 + \beta_1 X_{i1} + \dots + \beta_R X_{ik} + \epsilon_i$$

where,

$P_i = 1$ if a migrant; 0 if not a migrant,

$X_1, \dots, X_k =$ the independent variables, and

$\epsilon_i =$ a disturbance term.

P can be interpreted then as the conditional probability of migration for an individual with a given set of values for the variables X_1, \dots, X_k .

Among the objectives raised against the use of OLS methods to estimate parameters of the above linear probability model are that:-

1. It can yield predicted probabilities outside of the acceptable $0 - 1$ interval;
2. The true probability relationship is more likely to be S-shaped than linear, approaching the limiting probability values of zero and one asymptotically;
3. The OLS assumption that ϵ_i is normally distributed and that $E(\epsilon_i) = 0$ is violated when the dependent variable is a dummy - in the above case $P_i = 0$ or 1 ;
4. In actuality, the var (ϵ_i) can be shown to be dependent on X_{i1}, \dots, X_{ik} so that the OLS assumption of homoskedasticity is violated. Thus, the OLS estimators of the β s are linear and unbiased but not efficient;
5. Finally, given the heteroskedastic nature of the error term, the OLS estimators, $\hat{\beta}$, will not be normally distributed and var ($\hat{\beta}$) is biased. Thus, t tests of significance can not apply.

Given the serious limitations and statistical weaknesses of the linear probability function, probit analysis has been proposed as a preferential technique for estimating relationships with dichotomous dependent variables. Hay uses probit analysis in his estimation of the migration probability function for his Tunesian sample and demonstrates that this formulation more closely approximates the likely true function than does the linear probability function with OLS estimators (Hay, pp. 111-114).

While it is beyond the scope of this paper to delve any deeper into the many problems associated with ordinary least-squares estimators of the linear probability migration function, it should be pointed out that there often also exist simultaneous equation biases in both micro and macro migration functions. This is especially true where wages, employment and migration affect each other in ways that make each variable endogenous within a larger system. In such cases simultaneous equation, reduced form and two-stage least squares estimates are normally preferred to linear regression techniques.¹¹ Unfortunately, econometric migration research is still in its infancy so that we cannot as yet cite specific estimation improvements arising out of these more advanced techniques. We can only cite the theoretical weaknesses of OLS methods under certain conditions.¹²

We may point out finally that the use of simulation techniques in migration analysis offers promising avenues for future research, especially when the general range of parameters for the most important variables begins to be better known. The outstanding example to date of the use of simulation for migration analysis can be found in Jones (1974). Porter (1973) also demonstrates the use of simulation in considering some of the dynamic properties of the basic Todaro model.

VII. A SUMMARY REVIEW OF QUANTITATIVE MIGRATION STUDIES

Having set forth in previous sections a broad theoretical framework and a methodological analysis, we are now in a good position to review and summarise the results of completed migration studies. We will first summarise the results of the non-rigorous descriptive migration literature and then look at the results of recently concluded econometric studies. Our main objective in this section is to determine what now seems to be known about migrant characteristics and the migration process in developing nations. This will allow us in the final section to delineate questions and issues that remain unanswered and, therefore, to suggest the most promising areas for future migration research.

11. See, for example, Stuart and Gregory, 1974, for an analysis of Soviet migration using TSLS estimates.

12. But see Hay, Chapter 6, for a demonstration of the improved results arising from probit analysis and reduced form estimators over the linear probability migration function using Tunesian data.

A. Summary Results of the Non-Rigorous Descriptive Literature

Our best source of information on the range of descriptive migration literature for developing countries is the comprehensive surveys by Pamela H. Brigg of the I.B.R.D. (Brigg, 1971) and Natalia Carynnyk-Sinclair of the I.L.O. (Carynnyk-Sinclair, 1974). Descriptive economic, sociological and demographic migration literature for a wide range of countries in Latin America, Asia and Africa was examined by Brigg and Carynnyk-Sinclair and, on the basis of these and other surveys (e.g. Byerlee, 1974 and Greenwood, 1975), the following well-known generalisations can be made.

1. Who Migrates?: As pointed out earlier, neither internal nor external migrants represent a random sample of the overall population. On the contrary migrants (both internal and international) tend to be disproportionately young, better educated, less risk averse, more achievement oriented, and have better personal contacts in destination areas than does the general population in the region of out-migration. In Africa, the problem of migrant school leavers is widespread (Byerlee, 1974, Caldwell, 1969, Remple, 1970). While many migrants are unskilled, landless peasants (especially in Asia), many others possess job transferable skills, have increasingly more years of schooling and have some regular source of financial support for the period immediately following migration. While single men still appear to dominate the migration streams in Africa and Asia, married men (many of whom are accompanied by the families) and single women are now more prevalent in Latin American migration patterns. International independent migrants are also disproportionately male.

2. Why Do People Migrate?: The overwhelming conclusion of almost all migration studies, both descriptive and econometric, is that people migrate primarily for economic reasons. The greater the difference in economic opportunities between urban and rural regions, the greater the flow of migrants from rural to urban areas. While distance is usually a significant intervening obstacle, its negative impact can be largely offset by these income differentials, especially for the more educated migrants. The same generalisation can be made about international migration.

In addition to the primary economic motive, people migrate: (1) to improve their education or skill level (also an ultimately economic motive), (2) to escape social and cultural imprisonment in homogenous rural areas,

(3) to escape from rural violence (Colombia) and political instability, and
(4) to join family and friends who had previously migrated to urban areas.
Few studies seem to support the oft-heard hypothesis that migrants are attracted to cities in search of better entertainment or "bright city lights".

3. What is the Effect of Migration on Economic Development?: The quantitative evidence necessary to begin to answer this most crucial of all questions is almost non-existent in both the descriptive studies and most econometric studies. It is thus a major priority area for future research (see section VIII). While there is no absence of hypotheses and/or conjectures about the relationship between migration and development, such hypotheses are rarely supported by empirical evidence. As pointed out earlier in the paper, internal and international migration was traditionally viewed as a socially beneficent process. Workers were shifted from low productivity, labour surplus source regions to high productivity, labour scarce destination areas. Seasonal migrants were able to supplement their incomes by short term circular migration in accordance with seasonal variations in labour requirements. If real wages were imbalanced between two locations, in-migration would work to restore the balance in the good old neoclassical tradition of competitive price determination.

More recently both internal and international migration has been viewed less sanguinely. Rural-urban migration appears to be accelerating in spite of rising levels of urban unemployment and vast numbers of urban surplus workers. Rather than adjusting to rising unemployment, urban wage levels continue to rise as a result of institutional rather than competitive economic forces. While individual migrants appear to be behaving in a privately rational manner, the net social costs to both rural and urban areas resulting from this process now appear to exceed any private net benefits. But, in spite of the relatively widespread acceptance of this new view of the contemporary relationship between migration and economic development, little empirical evidence can be gleaned from the descriptive migration studies reviewed in either the Brigg survey or in other descriptive studies.

Let us, therefore, turn to the recent appearance of a limited but growing number of technically sophisticated econometric migration studies to see if anything more can be learned.

B. A Survey of Recent Econometric Migration Literature

Yap (1975) has provided the most extensive review of the limited but growing econometric literature on internal migration in developing countries. The econometric studies examined by Yap cover Ghana (Beals, Levy

and Moses, 1967), Kenya (Huntington, 1974), and Tanzania (Barnum and Sabot, 1975) in Africa; Colombia (Schultz, 1971), Brazil (Sahota, 1968), and Venezuela (Levy and Wadycki, 1972, 1973 and 1975) in Latin America; Taiwan (Speare, 1971) and India (Greenwood, 1971, 1971a) in Asia; and Egypt (Greenwood, 1969) in the Near East. All of the above are cross-section studies, although Barnum and Sabot utilise both cross-section and time series data. Most explain point-to-point migration, usually between states or regions, although Barnum and Sabot, Huntington and Hay's 1974 study of Tunisia deal with rural-urban migration. (Hay's study was not included in Yap's review but will be included in what follows.) All except the Taiwan and Tunisia study considered aggregate flows between areas, and most utilised census data (again with the notable exception of Barnum and Sabot, Huntington and Hay). Most dealt with male migration only.

With the exception of Hay's micro probability function for Tunisia which was explained earlier, all are macro migration functions. They typically are specified in log linear form with the basic general formulation:-

$$M_{ij} = f(Y_i, Y_j; U_i, U_j; Z_i, Z_j; d_{ij}; C_{ij})$$

where, as before

M_{ij} = rate of migration from i to j expressed in terms of the labour force in i

Y = wage or income levels

U = unemployment rates

Z = degree of urbanisation

d_{ij} = distance between i and j, and

C_{ij} = friends and relatives of residents of i in destination, j.

The following is a summary of the major findings of these studies (Yap, pp. 16-33).

1. The Importance of Income and Employment Differentials: As might be expected, all of the above cited econometric work demonstrates once again the overwhelming importance of economic variables in explaining migration movements. Differences in average income or wage levels between two places invariably turn up among the most important explanatory factors. When income levels are included as

separate variables, migration is positively associated with the urban wage and negatively related to the rural wage. When urban-rural differentials are combined into a single variable, the rate of migration increases with the size of the differential.

2. The Importance of Job Probabilities and Urban Unemployment Rates: Perhaps even more importantly from a theoretical as well as practical policy viewpoint is the finding in the Levy and Wadycki and especially the Barnum and Sabot studies that the job probability variable appears to have independent statistical significance and to add to the overall explanatory power of the regressions when isolated from the relative or absolute income differential (Levy and Wadycki, p. 79; Barnum and Sabot, p. 17-18). Thus, for example, Barnum and Sabot in the first really comprehensive and significant test of the Todaro hypothesis find that "the addition to the explained sum of squares in moving from the specification without probability to the specification including probability as a separate variable is significant at a 99 percent confidence level" (Barnum and Sabot, p.22).¹³ Moreover, when the wage and probability variables are combined to form an expected wage variable, the result is a definite improvement over the nominal wage rate in terms of the amount of variation explained. Levy and Wadycki obtained similar results for Venezuela (p.79). This seems to confirm the Todaro hypothesis of the importance of the expected wage in migration, at least for Tanzania and Venezuela - the only two countries where econometric studies have given explicit attention to a separate probability variable. It should also be pointed out, however, that Hay in his study of migration in Tunisia also confirmed the statistical significance of urban expected incomes, only in the Tunisia case urban earnings functions in combination with proxy variables for urban expected income levels (schooling and level of skills) had to be utilised due to the absence of actual urban income and employment rate data.¹⁴

3. Urban Employment Expansion, Wage Differentials, Job Probabilities and Induced Migration:

- a) Job Expansion and Induced Migration - An important hypothesis

13. In his study of Kenyan migration, Rempel (1970) sets out to test the Todaro model and finds no independent significance for the expected wage differential, or for that matter for the urban wage per se which in some regressions even had a negative sign! But, as pointed out earlier, Rempel's study surveyed only urban migrants, did not deal effectively with estimations of rural, or for that matter urban incomes, had a statistically inadequate specification of the job probability variable, and in general suffered from a number of other methodological weaknesses. To this extent, it was not a real test of the Todaro model.

14. In their study of Soviet rural-urban migration, Stuart and Gregory use the "tightness of the urban labour market" as a proxy variable for urban job probabilities and find it to be an "important explanatory variable" (Stuart and Gregory, 1974, p.24).

implicit in the original Todaro model and spelled out mathematically in the Harris-Todaro model concerns the elasticity of migration (i.e. the induced migration) response to changes in urban-rural wage differentials and urban employment probabilities. Todaro (1975) has recently refined the concept and derived simple formulas based on readily available migration, employment and labour force statistics for estimating the conditions under which an autonomous increase in urban job creation designed to lower both levels and rates of urban unemployment may in fact lead to increased levels and rates of urban unemployment. The outcome is shown to depend on two threshold values of the elasticities of migration with respect to urban job probabilities - a threshold level related to the amount of unemployment and one related to the rate of urban unemployment. Using secondary data for fourteen Third World nations, Todaro estimates both threshold elasticities to be in the range +.20 to +.60, although the unemployment rate threshold elasticity is always higher than the unemployment level elasticity (Todaro, 1975, Table 1).

In his latest paper, Todaro argues that if the actual econometrically estimated migration-job-probability elasticity is higher than either or both of these threshold values, then an expansion of urban employment opportunities can be expected, through the mechanism of higher job probabilities inducing additional migration, to lead to either a higher level, a higher rate or both a higher level and higher rate of urban unemployment. In the only two cases where these job probability migration elasticities have been econometrically estimated, both were found to be significant and greater than +0.60. Thus, for Tanzania Barnum and Sabot estimate an elasticity of +0.65 (Barnum and Sabot, regression 8, p.21), while for Venezuela, Levy and Wadycki estimate an elasticity of +2.45 (Levy and Wadycki, Table 1, p.79).¹⁵ Thus, using Todaro's threshold elasticity levels one could tentatively conclude that in both countries urban job expansion, *ceteris paribus*, will lead not only to higher levels of unemployment but also to higher rates of unemployment.

B. Wage Differentials and Induced Migration - With regard to the impact of changing urban and rural wage levels on migration rates - i.e. the migration elasticity with regard to urban and rural wage levels - the studies by Huntington for Kenya, Greenwood for India, Barnum and Sabot for Tanzania, and Levy and Wadycki for Venezuela provide some initial evidence of the possible values of these differential elasticities. First with regard to the

15. Note that Levy and Wadycki use the destination unemployment rate as their independent variable and obtain a (correct) negative sign for the elasticity; since job probabilities and unemployment rates are assumed to be inversely correlated the sign of the coefficient changes from minus to plus when the elasticity is expressed in terms of job probabilities.

Table 9. Partial income elasticities migration functions for men.

	Kenya Huntington $\overline{1974}$	Tanzania Barnum and Sabot $\overline{1975}$ b	Venezuela Levy and Wadycki $\overline{1972}$	India Greenwood $\overline{1971}$ c
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Dependent Variable ^a	$\frac{M_{ij}}{P_i P_j}$	$\frac{M_{ij}}{P_i}$	$\frac{M_{ij}}{P_i}$	M_{ij}
Destination Wage (W_j) Wage (W_j)	+6.79* (4.61)	+1.26*	+0.94* (2.59)	+0.56* (2.02)
Origin Wage (W_i)	-1.15* (2.69)	-0.56	-0.85* (2.32)	-1.24* (4.48)

Notes:

* Significant at the five per cent level.

a. Definitions: M_{ij} = Migration from place i to j

P_i, P_j = Population in place i, k, respectively.

b. Barnum and Sabot estimated a linear function, using lifetime earnings, undiscounted. The elasticities are calculated at the mean of the variables, using the income coefficients, .0024 (destination income), and -.0070 (origin income).

c. Greenwood's dependent variable is M_{ij}/P_i , rather than M_{ij}/P_i . However, the income coefficients would not change if his model were re-estimated, using the rate M_{ij}/P_i , for P_i , included on the right-hand side of the equation, has a coefficient of approximately one.

In other words, the income coefficient α , is the same for

$$M_{ij} = Y^{\alpha} Z^{\beta} X^{\gamma} P^{\delta}$$

$$\text{and } \frac{M_{ij}}{P_i} = Y^{\alpha} Z^{\beta} X^{\gamma}$$

Source: Yap (1975), Table 3.

relative importance of urban job probabilities compared to urban wage rates, the Tanzania study estimates that a given percentage increase in urban wages will induce twice as much rural-urban migration as the same percentage increase in employment (Barnum and Sabot, Table 4, regression 7), while the Venezuela study predicts roughly the same effect for interstate migration (Levy and Wadycki, Table 1).

Table 9 provides the relevant data from the four studies cited above for destination and origin income elasticities of migration. In the two rural-urban studies (Huntington, and Barnum and Sabot) the urban wage elasticities are higher than the rural elasticities, indicating that rural incomes will have to rise at a faster rate than urban incomes simply to affect the migration effects of a given increase in urban incomes.¹⁶ The interstate regressions for Venezuela show little difference between origin and destination income elasticities, while Greenwood's results for India show that origin wages are twice as important as destination wages - the reverse of the Barnum and Sabot study for Tanzania.

C. Conclusions - Although the above information provides us with the beginnings of a policy-relevant econometric approach to migration analysis, it is only a beginning. A major priority for future research focussed on rural-urban migration and based on carefully collected field survey information along the lines suggested in section VI is, therefore, a more scrupulous and detailed estimation of income and employment elasticities of migration for different countries at different points in time. From the policy point of view a knowledge of such migration elasticities would go a very long way towards improving the empirical base from which effective wage, employment and income policies designed to induce a socially more efficient spatial allocation of human resources can be formulated.

4. Differential Responsiveness of Population Subgroups and the Effects of Personal Contacts and Distance: The econometric literature in general supports most of the conclusions of the descriptive literature with regard to the differential responses of population subgroups to migration opportunities. More importantly, however, it provides quantitative estimates of the relative significance of these differential responses. The results can be summarised as follows (Yap, pp. 21-33).

16. Not much credence, however, should be placed on Huntington's urban and rural elasticity parameters since they are derived from Rempel's income data which, as we have seen above, are very deficient from a number of viewpoints.

1. At time of migration, most migrants tend to be both younger and better educated than those who do not move. Even when age is controlled for, migration and education are positively correlated.
2. In Africa and South Asia, men predominate, although female migration is increasing, while in Latin America there is a slight excess of women over men in the migration stream.
3. In each of the above cases ~~age, education, sex~~ economic motivations are paramount in the migration decision.
4. The relative abundance of urban services and amenities does not seem to exert an independent positive effect on migration. The evidence on this point, however, is very tentative and imprecise since none of the econometric work measures a migrant's utilisation of urban services. Additionally, one must be careful when including an urban amenity variable to avoid multicollinearity difficulties with other independent variables in the regression equation (e.g. wage levels, degree of urbanisation, level of employment, etc.).
5. Almost all studies show a positive correlation between migration rates (or propensities to migrate in the Tunisia case) and urban or state destination contacts in the form of friends and relatives. Such contacts can provide important information on job openings as well as lowering the effective costs of the job hunt by offering costless or low cost accomodation to the migrant. When contact variables are dropped from regression equations, however, the destination income elasticities remain significant and are reduced in size only slightly. Thus, the presence of friends and relatives, while representing positive factors in a migrants decision to move, are not substitutes for economic incentives.
6. Finally, the negative effect of distance on migration is pronounced in all studies. Migrants tend to move to cities and towns in their own state or region and will only move over longer distances if the destination wage is considerably higher (destination elasticities were also calculated in most studies but obviously do not have the same policy significance as income or employment elasticities). The more educated migrants are therefore more likely to travel over longer distances.

5. Private Economic Benefits of Migration: With regard to the employment experience of migrants on arrival, their income gains and their economic status relative to those born in urban areas, the following seems to summarise the evidence to date.

1. Private Returns - Migrants on the whole do appear to have increased their private welfare as a result of migration in spite of high and rising levels of unemployment. By and large, they seem to have realised their private expected gains. A number find regular employment soon after arrival and most seem to definitely improve their economic status over time. Many start out in the informal sector and move to formal sector employment over time. As Yap notes, however, "the proportion who have difficulty in finding work is probably greater than the reported number. The surveys use retrospective information, and the failures who left the area would not be included in the surveys" (Yap, p.39).
2. Education and Income - The studies strongly support the hypothesis that the incomes of migrants are highly correlated with education and skill level, while being little associated with their status as migrants. To the extent, therefore, that migrants are more educated and have better skills than the average urban native, their incomes will be higher and their unemployment rates lower than urban non-migrants.

VIII. LOOKING TOWARDS THE FUTURE: PRIORITIES FOR MIGRATION RESEARCH

Having carefully reviewed both the theoretical structure of existing migration models and the empirical information generated by the available descriptive and econometric literature, we are now in a better position to answer the question "what do we still need to know about the internal and international migration process and its impact on economic development?". The delineation of this knowledge gap enables us to formulate a list of research priorities which then provide the foundation for a comprehensive and imaginative research programme focused on the causes and consequences of internal and international migration. The following is such a suggested list.

A. Migration and Development: A List of Research Priorities

Although our general knowledge based on the characteristics of migrants and the migration process, especially the paramount nature of economic

factors in the migrant's decision-making process, is now well established, the literature on both internal and international migration is only just beginning to explore, albeit rather unsystematically, some of the really interesting and crucial issues surrounding the migration problem. The major knowledge gaps which remain to be carefully and systematically researched, therefore, include the following seven elements.

1. Migrant Perceptions, Expectations and Experiences: How are migrant perceptions about job opportunities in potential destination areas formulated? Have their subjective perceptions been confirmed by experience and, if not, how can the information system about destination job opportunities be improved?¹⁷
2. Characteristics of Non-Migrants, Potential Migrants and Return Migrants: We know little about the job histories of return migrants and only slightly more about why certain people or groups of people do not migrate. Better information generated by initial rural sample surveys followed up by urban tracer surveys would widen the net of migration studies to identify not only actual migrants, but also non-migrants, potential migrants and return migrants. Comparative information on all four categories could greatly broaden our knowledge base about migrant and non-migrant characteristics and the principal factors that influence their mobility decisions.
3. Importance of Job Probabilities and Expected Incomes: In situations where there exist positive income differentials between potential destination and source areas and an excess supply of labour in the destination area, does a separate probability variable related to destination unemployment (or, better, surplus labour) rates help to better explain differentials in migration rates? In such situations, what are the private returns to migration? In short, do expected income differentials along the lines suggested in the Todaro models better explain variations in migration rates and patterns than simple nominal differentials? These crucial questions need to be carefully researched in future studies.
4. Wage and Job Probability Elasticities, Induced Migration and Urban Unemployment: Perhaps the most important parameters in need of careful estimation in future econometric migration studies, at least from a

17. Gugler (1974) argues for the use of employment exchanges and recruiting offices located in rural areas along the lines of the Mexican bracero programme to improve migrant information systems.

policy perspective, are the partial wage and job probability elasticities of migration. By generating empirical evidence on the relative size of the destination (urban) and source (rural) income elasticities as well as the (mainly) destination job probability elasticity both for individual countries and for a cross-section of countries, general conclusions can be reached about the relative importance of wage and job creation policies in affecting the size and redirecting the flow of migration into more socially desirable patterns. The linkage between migration policy and general development policy can be best revealed by knowledge of how diverse development policies directly or indirectly affect urban and rural real incomes and job opportunities and, therefore, influence the magnitude and spatial distribution of national and regional populations. This formulation of the migration question underlines the intimate two-way linkages between demographic variables and economic variables as expressed, for example, in the I.L.O. Bachue series of models.

5. The Short and Long-Term Social and Economic Impact of Migration on Source and Destination Areas: A major and persistent knowledge gap in migration studies, both internal and international, is the lack of detailed assessments of the consequences of migration for both sending and receiving areas. In the case of internal rural-urban migration, the consequences of urban migration for rural source areas in terms of household incomes, outputs and opportunity costs for different rural subgroups (e.g. educated and uneducated, small-holders, landless labourers and peasant farmers as well as medium to large-scale holders) needs to be carefully assessed. On the other side of the coin, the consequences of internal migration for urban unemployment, the provision of housing, sanitation, health facilities and other social services, the social, political and psychic problems associated with urban congestion and slum developments and, finally, the relative impact of all of these on the welfare of migrants as well as urban born residents need to be carefully and systematically examined. In both cases, better knowledge of the flow of private transfer payments in the form of the inflow and outflow of cash remittances will give us a better picture of both the short and long-run distributional impact of migration in terms of rural and urban household incomes.

Regarding international migration, a more careful than heretofore social benefit/cost framework focussing on potential trade-offs between unemployment relief and the acquisition of scarce foreign currencies through cash remittances for source areas on the one hand and the loss of skilled rather than unskilled workers and the impact of this on domestic

labour markets, incomes, production and prices on the other needs to be further researched. Moreover, a more thorough understanding of the relative economic impact of seasonal, temporary and permanent emigration as well as that of short versus long-distance moves is required. A good analytical starting point for this investigation is Bohnung's human resources approach to analysing the impact of emigration from the Mediterranean Basin (Bohnung, 1975).

6. The Relationship Between Education and Migration: Although it is well known that more education increases the propensity of an individual to migrate, we are still unclear as to how much of this increased propensity can be explained solely by economic factors (i.e., more educated migrants have higher expected urban incomes due both to higher wages and greater employment probabilities. See, for example, Barnum and Sabot, Table 1.), and how much is due to the impact of education on a rural individual's world outlook. In other words, does education exert a non-economic independent effect on propensities to migrate? It may do this, for example, by altering a rural individual's overall utility function so that his psychic benefit/cost calculation of the private returns to migration works to reinforce his economic benefit/cost calculations. Those with more education, therefore, may have acquired personality factors which cause them to respond disproportionately to non-economic as well as to economic incentives to migrate. Carefully designed and well-structured econometric models can help us to separate out these different effects of education.
7. Migration, Income Distribution and Population Growth: The relationship between migration and income distribution on the one hand and migration and fertility on the other is probably the least explored, yet potentially one of the most significant areas of migration analysis within the broader context of economic and social development. Migration can have a direct affect on social welfare by altering the pattern of income distribution and thereby indirectly affecting the level of national fertility and future population growth. While the effect of migration on the spatial distribution of existing populations is a crucial issue, its impact on future population growth remains unexplored. There are a number of reasons, however, why we might expect migration to influence the geographical pattern and rate of population growth. First, migration affects the pattern of income distribution in rural and urban areas, and income distribution is known to be an important determinant of aggregate population growth (Rich, 1973). In general for any level of per capita GNP, countries with

a more egalitarian distribution of income tend to have lower fertility rates as a result of the widened range of choice that higher incomes more equitably distributed bring to peasant families (Kuznets, 1974).

Unfortunately, the relationship between migration and rural and urban income distribution is little understood. While migration may improve the private or even the household economic status of individual migrants, it is not clear what its effects are on aggregate rural incomes and production. Since migration is selective of the younger, more able-bodied, better educated rural dwellers, on balance the rural sector as a whole may stagnate as a result of the rapid depletion of its most dynamic human resources. While individual families may become better off, the sector as a whole may be made worse off. As a result, the existence of high rural fertility rates may be indirectly reinforced by the out-migration of the most talented elements of the rural areas. On the other hand, if economic incentives and higher income earning opportunities were promoted in rural areas, there might be the fourfold beneficial effect of lower rates of out-migration, less urban unemployment, higher rural incomes and potentially lower levels of rural fertility.

All of the above is obviously highly speculative ad hoc theorising. However, it hopefully does suggest that a broader perspective on the relationship between migration, income distribution and population growth is in order. Future migration theoretical and empirical research should begin to focus explicitly on this relationship as well as on the other six issues outlined above.

IX. SOME FINAL SUGGESTIONS

Pulling together all of the preceding material on the nature and characteristics of theoretical migration models, the methodological issues surrounding the empirical estimation of micro and macro migration functions, the results of available published and unpublished migration studies, both descriptive and econometric, and the priority areas for future research, we may conclude by formulating a series of general propositions designed to strengthen the effectiveness of future migration research.¹⁸

18. Specific theoretical, methodological and research priority proposals have already been set forth in previous sections and therefore will not be repeated here.

First, emphasis should be placed simultaneously on the gradual refinement of the best and most widely accepted existing theoretical models based both on emerging empirical evidence and on the generation of additional empirical information by means of a few carefully selected and judiciously conducted country studies of internal and international migration.

Second, the empirical content of internal migration country studies should be based upon an agreed theoretical framework to be tested by means of the generation of primary data through the rural and urban field survey methods outlined in section VI. The same would hold true for the study of short distance international migration e.g. from Upper Volta to the Ivory Coast. If the study of long-distance migration is contemplated, field surveys are less feasible and more reliance will have to be placed on census and other secondary data supplemented perhaps by mailed questionnaires.

Finally, the policy content of statistical migration functions should be emphasised by more careful definitions of migration rates, wage and probability variables, adjustments for possible simultaneous equation biases in macro functions, and the use of probit as well as OLS regression analysis for micro propensity functions. Larger disaggregated, cross-section samples of migrants, non-migrants and return migrants which are more representative of underlying rural populations, combined with carefully collected time series information over, say, a five-year period, would add substantially to the policy relevance of future econometric migration studies.

APPENDIX 1: SELECTED MIGRATION FUNCTIONS (COMPILED BY YAP, 1975)

(1) H. N. Barnum and R. H. Sabot /75/: Rural-Urban Migration in Tanzania
1955-71

DEPENDENT VARIABLE: Male migrants, by age and education categories in urban area j who came from origin region i as a proportion of the comparable population in origin i.

MIGRANT: Person in town j in 1971 who was born in the countryside and who moved to town after age 13.

FUNCTIONAL FORM : Linear.

DATA SOURCE : Migration from the 1971 National Urban Mobility, Employment and Income Survey; Population from population census.

Variables	Regression Coefficients (t-statistics in parentheses)
Constant	0.11 (.3)
Value of urban wage stream, undiscounted, by age-education group (using mean time of arrival for the age-education group)	0.0024 (4.0)
Value of rural per capita income stream, undiscounted (monetary and subsistence income included)	-.0070 (1.1)
Job openings in 4-month job search period as a proportion of number unemployed, by mean time of arrival	0.666 (4.1)
Average urban population in urban area j	0.023 (5.8)
Weighted average linear distance between receiving towns and sending regional centres	-0.0077 (2.1)
\bar{R}	0.55
No. of observations	108

Reference: Table 4, regression 7, p. 21.

- (2) M. Greenwood [71]: Interstate Migration in India in 1961.
- DEPENDENT VARIABLE: Male migrants from state i to state j (M_{ij}).
- MIGRANT: Person who was born in state i and who has been living in state j for less than one year.
- FUNCTIONAL FORM : Log linear.
- DATA SOURCE : 1961 Census of India.

Variables	Regression Coefficients (t-statistics in parentheses)
Average annual income of workers in industrial establishments, 1961	
State i	-1.24 (4.48)
State j	0.56 (2.02)
Male population, 1961	
State i	1.01 (10.79)
State j	0.79 (8.46)
Percent of male population residing in urban areas (5000 or more), 1961	
State i	0.38 (2.52)
State j	0.16 (1.07)
Percent of males who were literate, 1961	
State i	0.79 (2.93)
State j	1.11 (4.14)
Rail distance (kilometers) between representative cities and states i and j	-1.97 (16.18)
\bar{R}^2	0.70
F	59.8
No. of observations	240

Reference: Table 2, p. 142.

- (3) H. Huntington /74/: Rural-Urban Migration in Kenya, 1964-68.
- DEPENDENT VARIABLE: Male migrants who moved from province i to urban area j in 1964-68, as a proportion of the 1962 urban population multiplied by the rural population i ($M_{ij}/P_i P_j$).
- MIGRANT: Person 15-50 years of age enumerated in urban area j in 1968 who had moved during 1964-68 period.
- FUNCTIONAL FORM : Log linear.
- DATA SOURCE : Migration from a 1968 sample survey of 1000 urban migrants, conducted by Henry Rempel; population from the 1962 population census.

Variables	Regression Coefficients (t-statistics in parentheses)
Constant	-44.23 (6.00)
Average male modern sector earnings	6.79 (4.61)
Rural cash income per adult male	-1.15 (2.69)
Secondary school enrollment, 1966, as a proportion of population, 1969	
Urban Town j	0.901 (1.35)
Rural Province i	1.083 (2.19)
Road mileage between urban town j and district centre i	-0.429 (1.51)
Potential contacts (the ethnic composition of urban area j weighted by the ethnic composition in rural province i)	0.69 (2.97)
\bar{R}^2	0.61
F	11.2
No. of observations	39

Reference: Table 5.1.

(4) M. Levy and W. Wadycki /727: Interstate Migration in Venezuela in 1961.

DEPENDENT VARIABLE: Male migrants from state i to state j as a proportion of the population in state i (M_{ij}/P_i).

MIGRANT: Person who has been living in state j for one year or less.

FUNCTIONAL FORM : Log linear.

DATA SOURCE : 1961 Census of Venezuela.

Variables	Regression Coefficients (t-statistics in parentheses)	
	Men 15-24	Men 25-54
Constant	-62.51 (8.61)	-19.52 (3.34)
Average wage of economically active males, age 10 or over, 1961		
State i	-0.08 (0.19)	-0.85 (2.32)
State j	1.89 (4.69)	0.94 (2.59)
Percent of economically active males, age 15-24 (25-54), who were unemployed, 1961		
State i	-0.21 (0.74)	0.73 (3.28)
State j	-2.45 (8.75)	-0.78 (3.47)
Total population, 1961		
State i	0.14 (1.18)	0.29 (2.69)
State j	0.98 (8.12)	0.73 (6.72)
Percent of population residing in urban areas (2500 or more), 1961		
State i	-0.72 (2.16)	-0.75 (2.49)
State j	1.10 (3.29)	0.81 (2.69)
Percent of population, age 17-24, enrolled in school, 1961		
State i	3.07 (2.93)	1.14 (1.29)
State j	4.10 (3.91)	0.16 (0.18)
Road mileage (kilometers) between capital cities of states i and j	-1.06 (13.01)	-1.17 (15.92)
R ²	0.61	0.60
No. of observations	380	380

Reference: Table 1, p. 79.

Study	Principal Researchers	Institutional Affiliation
1) Bombay	T.P. Ambonnavar L.K. Deshpande	University of Bombay
2) New Delhi	B. Banerjee	Oxford University and Institute of Economic Growth, Delhi
3) Indonesia	J. Harris	M.I.T.
4) Sierra Leone	D. Byerlee J. Tommy	Michigan State University, Ohio State University, Njala University College
5) West Africa (Upper Volta, Ghana, Ivory Coast)	R. Collier R. Lucas	Oxford University, Boston University
6) Nigeria	T. McDivitt	University of Michigan
7) Kenya	H. Rempel	University of Manitoba
8) Malaysia	D. Mazumdar	I.B.R.D.
9) Iran	G. Scully	Harvard Institute for International Development

Non-Project Sources of Funds	Survey Locality and Size
I.L.O.	Rural and urban (approximately 6,000 respondents - random sample plus tracing)
Rockefeller Foundation	Rural and urban (approximately 12,000 respondents - random sample)
USAID and U.S. National Institute of Child Health & Development	Rural and urban (approximately 30,000 respondents - random sample)
USAID and Population Council	Rural and urban (approximately 2,000 respondents - random sample plus tracing)
Smithsonian Institution I.D.R.C.	Rural and urban (approximately 10,000 respondents - random sample)
Not known	Rural and urban (approximately 10,000 respondents - random sample)
Rockefeller Foundation	Urban (approximately 1,400 male migrants - random sample)
I.B.R.D.	Rural and urban (approximately 2,000 employers - random sample)
Government of Iran	Rural and urban survey

APPENDIX II: SOME CURRENT (1975) MIGRATION STUDIES

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NOTES: The field design for seven of the nine above studies is outlined below (Sabot (1975)) pp.12-14).

(1) Indonesia. The survey was conducted during the period January-September 1973 in thirteen Indonesian cities and towns and in eleven rural areas that have been important sources of outmigration. Some 32,000 respondents gave information on age, education, time of migration, occupational and income history both prior and subsequent to migration, intentions to remain, attitudes, degree of satisfaction with the move, expressed reasons for moving, assistance received from others, sources of information, education, occupation and wealth of parents and access to land. The survey was funded by USAID and carried out jointly by BAPPENAS (the Indonesian Economic Planning Board), LEKNAS (the Indonesian Social Science Research Institute) and nine Indonesian universities. The preliminary evaluation of the survey reveals reasonable internal consistency of the answers and general consistency with independent sources of evidence. Both the survey and a 10% sample of the 1971 Indonesian census of population are on tape at M.I.T. Further data from Indonesia will be available in 1976. Between October 1975 and April 1976 an inter-censal survey will be carried out by the Central Bureau **of statistics and tentative agreement has been reached** for including a number of migration-related questions in the survey.

(2) Sierra Leone. The rural migration survey is one part of a survey of a sample of 500 randomly selected households (approximately 2,500 individuals). While the number of respondents is considerably smaller than in Indonesia each individual is interviewed twice weekly over a complete cropping year to obtain data on labor utilization and allocation, production techniques, cash flows, expenditures and revenues. The survey will yield accurate data on rural incomes, educational expenditures and urban-rural remittances. A special migration questionnaire will be administered to those same rural households to obtain information on migration history, migration intentions, perceptions of destination areas with particular attention to urban incomes and job opportunities, information channels, participation in social organizations and attitudes to migration and urban living. Names and locations of migrants away from the household will be recorded for tracing to the destination area.

The urban sample will be based on the migrants traced from the rural areas. Migrants will be interviewed at weekly intervals, for a period of up to three months to obtain accurate data on urban incomes, urban-rural remittances, migration history and job search as well as information on migrants' perceptions of and attitudes toward rural and urban living.

(3) Kenya. Interviews with 1,400 male migrants in eight Kenya towns have been supplemented with data from the 1970 Kenyan census. Stratified random sampling techniques were utilized in the survey and each respondent was interviewed for approximately one and a half hours. Information parallel to that gathered by the Indonesian survey was obtained. In general, the information appears to be internally consistent and checks quite well with independent sources of information. Several problems are evident with the survey. When stratified by several demographic and educational variables, there are frequently too few observations of migration between particular origin-destination years to estimate relationships for each of the five years covered in the survey. Also there is the fundamental weakness that interviews were conducted only in urban areas. While the Kenya survey is not as useful for analytic purposes as the others, more complementary work on **changing patterns of production and demand**, the structure of labour markets, and relevant institutional development has been done by the principal researcher in this case than in most of the others.

(4) New Delhi. The survey will have rural and urban components. The questionnaire will elicit information similar to that obtained in the Indonesia survey. Somewhat more detailed information will be gathered from return migrants on their economic activity and incomes in the receiving area as a means of assessing the proportion of economic "failures" in short-term migration flows. The sample will be designed by the principal researcher, B. Banerjee, in collaboration with the survey research unit at the Institute of Economic Growth.

(5) Bombay. This survey is similar in design to that of Sierra Leone, though the rural survey will be administered only once. Approximately 1,500 rural households in 25 villages in Ratnagiri District plus 900 migrants from these households currently resident in Bombay will constitute the sample population. The migrants will be traced and interviewed in the urban area. Ratnagiri, one of the 20 districts (including Greater Bombay) of Maharashtra State, was selected as the focus for the study as this district accounts for 55% of the migrants from the State to the Greater Bombay metropolis. Information on migrants and non-migrants will be similar to that gathered in the other surveys.

(6) Nigeria. The four urban areas, Ibadan, Lagos, Benin and Kano, are surveyed with a total sample of approximately 7,900-8,900 adults. There is also a survey of the rural areas within a fifty mile radius of Ibadan. The urban and rural surveys generate data on the same range of economic, demographic and other variables as the Indonesia survey. In addition, for all female respondents complete pregnancy histories are generated which will provide the basis for testing of hypotheses on the relationships among migration, fertility and infant mortality.

(7) Malaysia. Three urban areas, Kuala Lumpur, Kuantan and Kota Bahru, are surveyed as part of Phase II of RPO 243 with a total sample of 2,000 adult males. The survey generates data on the same range of economic, demographic and mobility variables as in the surveys for the other country studies. Once the principal source areas of the migrants are identified from the urban surveys, a rural survey will be administered to generate data on the range of variables contained in the other rural surveys.

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