ECONOMIC MODELS OF PLANNED TEMPORARY MIGRATION

Susan I. Ranney

CENTER FOR RESEARCH ON ECONOMIC DEVELOPMENT
The University of Michigan
Ann Arbor, Michigan 48109

Discussion Paper No. 102

June 1983

Economic Models of Planned Temporary Migration

by

Susan I. Ranney*

Presented at the Population Association of America Annual Meeting, April 1983.

* * * *

* * * *

*Assistant Professor, Department of Economics, University of Washington; formerly Assistant Research Scientist, CRED.

Discussion Paper No. 102, June 1983.
Published by the Center for Research on Economic Development,
University of Michigan, Ann Arbor, Michigan, 48109, U.S.A.

ABSTRACT

Standard migration models generally focus on permanent migration flows as a consequence of expected wage differentials, yet much of the migration observed today is temporary. What are the economic explanations for return migration to the low wage area? Based on the descriptive literature, several models providing answers are presented and their implications explored. It is suggested that consideration of both relative real wage rates and relative price levels is critical, and that wealth effects, capital ownership, and family characteristics play important roles.

RESUME

Les modèles standard de migration sont généralement orientés vers une migration permanente incitée par des différences de salaire escomptées. Cependant, de nombreuses migrations actuelles sont temporaires. Quels sont les facteurs explicatifs du retour vers le point d'origine, où les salaires sont moins élevés? Cette analyse présente plusieurs modèles, basés sur la littérature descriptive, qui fournissent des réponses à la question posée ci-dessus. L'analyse concernera également les implications de ces modèles. Il est essentiel de tenir compte des salaires réels relatifs aussi bien que des prix relatifs. Les effets de la fortune foncière, la possession de capital et la structure familiale jouent aussi des rôles importants.

TABLE OF CONTENTS

INTRODUCTION

Standard economic migration models are generally based on the premise that individuals evaluate wage-earning opportunities, locating permanently in the area with the highest (implicit, expected, and/or net) wage.[1] Yet large amounts of temporary or return migration are observed throughout the world,[2] in spite of maintained large wage differentials between the relevant regions. Why do people return to the low wage area? In this paper economic models of planned return migration are explored. Specifically, a simple, neoclassical, utility-maximizing model is proposed incorporating the assumption of a fixed wage differential. In this context the determinants of temporary migration and the length of stay are examined, as well as the responses to changes in the wage differential. Unlike in many migration models, wealth effects are found to play a key role in migration decision making.

Before proceeding further, we dismiss the obvious noneconomic explanation for return migration. Much of the temporary migration is international, and generally the legal restrictions are stricter for permanent than for temporary immigration. Certainly, these legal barriers (and their enforcement) act as a deterrent to permanent migration for some.

A second possible explanation is also immediate. Over time we may observe fluctuations in employment rates, or perhaps individual characteristics associated with potential earnings. If these are large enough, we may observe changes in the sign of expected wage differentials. According to a simple Harris-Todaro (1970) model, migratory flows would reverse. However, given the size of the wage differentials relevant to most migratory flows, this is unlikely to be an important explanation.

Another possible explantion also follows from the Harris-Todaro model: "failure" return migration. Ex ante expected wage rates and conditions may be quite different from ex post actual wage rates and conditions. If the returns to migration don't live up to expectations, because of bad luck or initial lack of information, we may observe temporary migration. This is the type of return migration often discussed in the context of more developed countries. [See for example, Appleyard (1962), DaVanzo (1976) and (1981), Kau and Simmons (1976), Lee (1966), and Vanderkamp (1971) and (1972).]

Here, however, we are concerned with planned temporary migration -- migrants who temporarily supply labor in a different area with the intention of returning home. What are the economic explanations for anticipated return migration, given a continuing, often large, expected wage differential?

To address the question, first a standard microeconomic model of labor supply from rural areas in less developed countries is briefly reviewed and analyzed in the context of temporary migration. Then a model of temporary migration with fixed wage differentials is formulated, incorporating different cost of living indices in the two areas as well as possible disutility associated directly with the migrant area. Third, two other explanations are briefly explored: the role of capital market constraints and risk aversion in inducing temporary migration.

I. MODELS OF PEASANT FARMERS

Perhaps the existing type of model most amenable to analysis of temporary migration is that of off-farm labor supply by peasant farmers. Economic models of peasant farmers or agricultural households have existed for many years. [See Chayanov (1925), Nakajima (1969), and Sen (1966) for examples.] They are becoming increasingly popular as microeconomic data on family farm behavior becomes available. [See, for example, Barnum and Squire (1979).]

In these models the possibility of dividing working time between time at home and time as a wageworker arises because of two basic assumptions: private land ownership and diminishing productivity of labor. Indeed, with these assumptions a simple profit maximization model would require that the peasant work on the family farm until the value of the marginal product of labor is just equal to the market wage. The remaining working time is spent as a wageworker.

The standard models of peasant behavior, however, are generally stated as utility-maximizing models, with leisure and consumption as the two goods. In this framework, a time constraint must be added. Total time is allocated to leisure, time at home working on the farm, and time as a wageworker. This formulation of the model has rather different comparative static results. With a straight profit maximization model, an increase in the wage rate (w^m) unambiguously increases the amount of migrant labor, and in fact is equivalent to a reduction in the price of agricultural output (P) in its effect on labor allocation.

Now consider a utility-maximizing peasant farmer. The impact of an increase in w^m can be separated into three effects: (a) a substitution of wage (or migrant) labor, m, for labor on the home farm, h, (b) substitution of leisure, e, for consumption, c, and (c) a positive income effect increasing both consumption and leisure if they are normal goods. The net effect on the supply of wage labor is ambiguous, but labor on the home farm unambiguously decreases.

An increase in the price of agricultural output, implying an exogenous increase in the implicit wage on the farm, does not have the reverse effect. While home farm labor is substituted for migrant labor, there is no substitution effect between consumption and leisure since the relative price at the margin (w^m) remains unchanged. The income effect is positive, implying a total impact of increasing both consumption and leisure if normal goods. Thus wage labor unambiguously decreases as P rises.

To convert this peasant farmer/wageworker model to one of temporary migration, a fixed cost of migration, M (presumably round trip), is added and we treat w^m as the expected wage rate in the migrant area. It must also be assumed that there is no local labor market.[3] The model is summarized as:

(1) $\max \ U(c,e)$

subject to

(a) $PF(h) + w^m m - c - Mz = 0$ where $z=1$ if $m > 0$, otherwise $z=0$

(b) $e + h + m = 1$

Consumption goods are the <u>numeraire</u>, and total time is normalized equal to one. The production function for home output is F(h). Notation is summarized in Table 1.

The first order conditions can be written as:

(2) $\lambda = U_c = U_e/PF_h$

(3) $U_e/w \leq \lambda$ with equality if $m > 0$

(4) $m > 0$ if $\Omega(0) < \Omega(m^*)$ where $\Omega(0)$ is the solution to the maximization problem (1), constraining m and z equal to 0, and $\Omega(m^*)$ is the solution to (1) requiring that migration costs M be paid. Partial derivatives are denoted by subscripts, and λ represents the marginal utility of income.

The budget constraint is shown in Diagram 1. If the peasant farmer chooses not to migrate, migration costs are avoided and budget constraint (i) is relevant. If migration costs are paid, budget constraint (ii) outlines the feasible options. The outer boundary of these two constraints gives us the "budget frontier." Notice that very short periods of migration will never be chosen, but there may be a migrant wage (shown in Diagram 1) at which the farmer is indifferent between staying on the farm full time and spending a positive amount of time as a migrant.

Starting with a peasant farmer who is indifferent between migrating and staying at home, we can consider the impact of an increase in landholdings. The increment in

TABLE 1

SUMMARY OF NOTATION

Peasant Farmer Model:

c	=	consumption
e	=	leisure
h	=	amount of labor supplied on home farm
m	=	amount of migrant labor supplied
M	=	fixed costs of migrating
P	=	price of output produced at home
λ	=	marginal utility of income
w^i	=	wage rate in area i

Fixed Wage Differential Model:

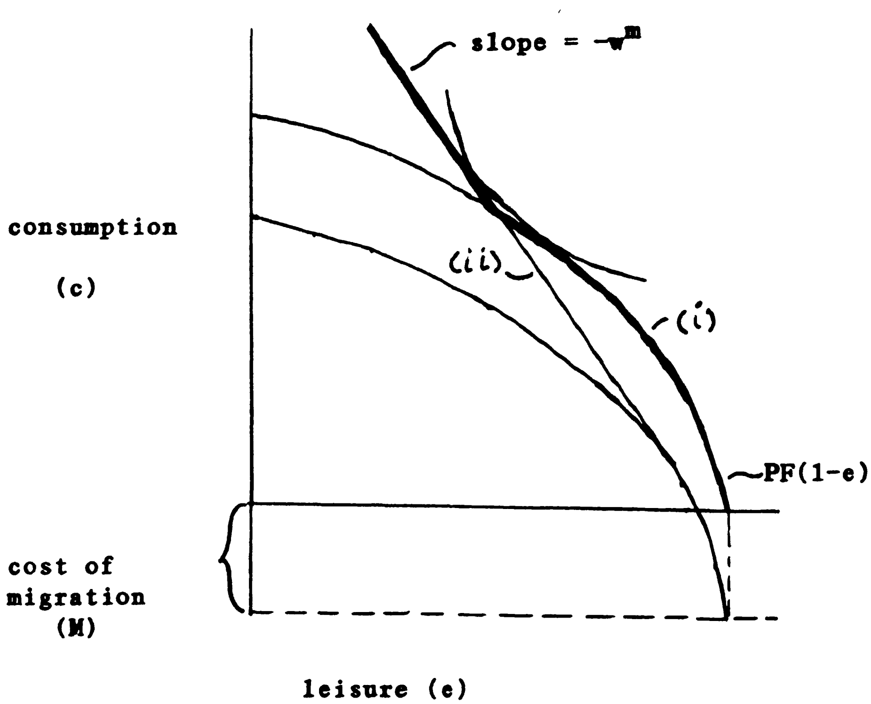
A	=	value of assets owned
c	=	consumption
e	=	leisure
M	=	fixed costs of migrating
p	=	price level in migrant area
q	=	fraction of time spent in migrant area
$\bar{q}$	=	maximum fraction of time that can be spent away from home
r	=	return earned on assets
w^i	=	wage rate in area i
λ	=	marginal utility of income
x	=	dummy variable for location

Superscripts:

m	represents values in migrant area
v	represents values in home or village area

DIAGRAM I.

BUDGET CONSTRAINT FOR PEASANT FARMER
WITH FIXED MIGRATION COSTS



utility for this increase is λPF_K, where F_K is the marginal product of land. We ask "under which option (migrate or not) is utility increased by more?" First, remember that initially the nonmigrant uses more labor on the farm than does the migrant. If labor and land are complements ($F_{LK} > 0$), this implies that F_K is greater for the nonmigrant. Second, in the Appendix it is shown that the marginal utility of income (λ) is greater for the nonmigrant if both goods are normal. Intuitively, consider that while utility is initially equal for both options, as is the price of consumption goods, the implicit price of leisure is higher for the migrant. An extra unit of income goes partially towards the purchase of leisure if it is a normal good, but "buys less utility" for the migrant. Thus, λPF_K is larger for the nonmigrant option, and the farmer with more land will choose not to migrate at all.

For the migrating peasant farmer, the qualitative comparative static results presented earlier (changes in w^m and P) continue to hold; the marginal conditions for a utility maximum have not changed.

One other exogenous change is of interest -- that of an increase in the fixed cost of migration. First, notice that an increase in M reduces the net income and thus utility of any migrant, while it does not affect any nonmigrant. Any peasant farmer previously indifferent between migrating and staying at home now unambiguously chooses to stay at home. Second, for those continuing to migrate this increase in costs is equivalent to a lump sum decrease in income. Assuming normal goods, this implies a decrease in leisure exactly compensated by an increase in time spent in the migrant area. Thus an increase in migration costs decreases the number of migrants, but increases the length of stay for those who do go. The net impact on the supply of migrant labor is ambiguous.

In sum, the model suggests that under conditions of private landownership and diminishing labor productivity at home, where labor market opportunities are available at fixed migration cost, temporary migration is a likely outcome. The supply of migrant labor is likely to be inelastic with respect to the migrant wage, or even backward bending, while home farm labor (and thus agricultural output) always responds positively to an increase in the price of that output. Those with more land are less likely to migrate, and an increase in migration costs may increase or decrease the total supply of migrant labor.

II. TEMPORARY MIGRATION WITH A FIXED EXPECTED WAGE DIFFERENTIAL

While the above model is quite sufficient for understanding temporary migration in some areas, it is inappropriate for many parts of the world and times in history.

First, in the model above no local labor markets exist, and when migration occurs the implicit wages in the two areas (w^m and PF_h) are equated; the expected wage differential ex post is zero for any migrant, although PF_h is less than w^m for those who don't choose to migrate. Second, the price index of consumption goods is assumed to be independent of the amount of time spent in the migrant area. This is inappropriate if high wage areas also have a high cost of living. Third, many temporary migrants are not land or productive-capital owners in the region of origin, but are wage earners in both the sending and receiving areas. And fourth, in some areas (for example, colonial Africa[4]) land is not considered to be a scarce factor. Under these conditions the marginal productivity of labor is likely to be relatively constant. We are essentially back to a model with exogenous wages (from the individual migrant's point of view) in both regions. Why does the potential migrant choose not to go permanently to the area with the highest (implicit) (expected) wage rate?

In discussions of temporary or return migration in the descriptive literature of less developed countries, five reasons are most commonly cited. They are:

1) The cost of living in the receiving area is "too high." Money earned as a migrant goes much further in the home region, and the family's standard of living would have to be reduced substantially if they were all to live in the receiving area [see Connell et al. (1976, p. 122) , Cornelius (1976, p. 122), Elkan (1960, p. 134), Garbett (1975, p. 115), Grant and Zelenietz (1980, p. 231), Hugo (1981, p. 199), and Manona (1980, p. 189)].
2) There is disutility associated directly with being away from the home region. This may be due to separation from friends and family, major cultural and language differences between the sending and receiving areas, or discrimination in the receiving area [see Azmaz (1980, p. 35-36), Cornelius (1976, p. 42-43), DaVanzo (1981, p. 93), Elkan (1960, p. 133), Lucas (1981, p. 87), Power (1979, p. 2)].
3) Asset ownership and the claim to returns on assets cannot be maintained if some time is not spent in the region of origin. In addition, assets cannot be capitalized at their true value [see Berg (1965, p. 163), Cornelius (1976, p. 43), DaVanzo (1981, p. 116), Elkan (1960, p. 135 and 1980, p. 585), Garbett (1975, p. 116-117), Nagata (1974, p. 318)].
4) Working capital is the scarce factor in the home region due to capital market imperfections. Migration to earn cash for use in production in the sending area maximizes income given the financial market constraints [see

Azmaz (1980, p. 37), Colclough and McCarthy (1980, p. 174), Connell et al. (1976, p. 122), Cornelius (1976, p. 36-37), Elkan (1960, p. 131), Kayser (1972, p. 21), Miracle and Berry (1970, p. 96-98)].

5) Earnings in both the sending and receiving area are uncertain. Working in two regions is a way of diversifying the earnings portfolio [see Connell et al. (1976, p. 122), Cornelius (1976, p. 12), DaVanzo (1981, p. 113), Elkan (1960, p. 136), Nagata (1974, p. 318), Sabot (1982, p. 29)].

A. A Utility Maximization Model

Here a simple two-region utility maximization model is specified, derived largely from standard labor supply models. The conditions under which planned temporary migration maximizes utility is discussed in the context of reasons (1) - (3) above;[5] discussions of (4) and (5) are postponed to the following section.

1. The model description. -- In the model presented here the allocation of time between two areas is considered, as is consumption and leisure in each area. The expected wage rate in each area is exogenously determined and the price level is assumed to be higher in the receiving area. There may be some disutility derived directly from being in the migrant area. It is shown that the predictions of this model are frequently qualitatively the same as for the peasant farmer models, although for quite different reasons. Important differences in the implications of the models are also pointed out.

In the model an individual (or family) maximizes utility over a given time period. The amount of leisure (e) and consumption (c) in each area, as well as the fraction of time spent in the migrant area (q) must be chosen. Income is derived from wage earnings and an exogenous level of return on assets (rA). The wage in the home region or village is represented by w^v, and the expected migrant wage is w^m. In addition to expenditures on consumption, some income may have to be allocated to the fixed costs of migration (M).

Normalizing time equal to one, the model is stated as:[6]

$$(5) \quad \max \ (1-q)U(c^v,e^v,x) + qU(c^m,e^m, x)$$

subject to

$$(a) \quad rA + w^v(1-q)(1-e^v) + qw^m(1-e^m) - (1-q)c^v - pc^m q - Mz = 0$$

where $z=1$ if $q > 0$, otherwise $z=0$

(b) $0 \leq q \leq \bar{q} \leq 1$

Notation is summarized in Table 1.

The instantaneous utility function U is assumed to be concave in its arguments. The variable x is a dummy variable representing location. We define U_x as the increment to utility during any instant of time derived from being at home rather than in the migrant area, holding levels of leisure and consumption fixed. We assume that location is an additively separable component of utility, so U_x can be treated as a parameter in the model.

Constraint (1a) is the budget constraint for a given time period. Total income is composed of returns to assets and wage income in both sectors, while expenditures go to consumption and migration costs. Reutrns to assets can be considered as a proxy for any other nonwage sources of income (such as gifts from other family members) or other expenditure requirements if negative (such as support of dependents). The price of village consumption goods is normalized to one, while p must be paid in the migrant area.

Constraint (5b) indicates the limits on the fraction of total time that can be spent in the migrant sector while still maintaining asset ownership and returns in the sending area. Implicitly we are suggesting that at some point, ($q=\bar{q}$), U_x becomes a rapidly increasing function of time away. Thus the migrant will never respond to small parameter changes by staying away longer. While the endogenous determination of the upper boundary, $\bar{q}$, is out of the scope of this paper, it merits some discussion. Largely it may be determined by cultural and institutional factors such as family structure and land tenure systems. In addition, heterogeneity of labor and the linkages to asset returns may be important. For example, while male labor may have relatively high returns in the receiving area, the reverse may be true for women and children. In addition, the returns to assets (particularly land) may depend on the availability of labor in the sending area. Thus short run income maximization might require that males migrate while women and children remain, but maintenance of family ties requires that the men spend a certain portion of time, ($1-\bar{q}$), at home.

Utility maximization yields the following first order conditions for each household:

(6) $$U_c^m/p = U_c^v = U_e^v/w^v = U_e^m/w^m = \lambda$$

where λ is the marginal utility of income,

(7) $\Omega(0) \geq \Omega(q^*)$ if $q = 0$, where $\Omega(0)$ is the solution to the maximum in (4) subject to $q = 0$ and setting $z = 0$, and $\Omega(q^*)$ is the solution when requiring that M be paid but allowing q to be positive.

(8) $$-U(c^v, e^v) + U(c^m, e^m) - U_x$$
$$+\lambda[-w^v(1-e^v) + w^m(1-e^m) + c^v - pc^m] = 0 \text{ if } 0 < q < \bar{q}$$
$$\geq 0 \text{ if } q = \bar{q}$$

Under the assumption that U is concave, it can be shown that the second order conditions for a maximum are satisfied.

The first condition, (6), states the standard result that the value of the marginal utility is equated across goods. In this case, the price of leisure is equal to w^v in the village and w^m in the migrant area.

Condition (7) states that for any migration to occur the utility maximum allowing for migration but requiring payment of the fixed migration costs must exceed that of the maximum where all time is spent at home and payment of the fixed migration costs is avoided. Because of the fixed costs, q will never be chosen very close to zero.

Condition (8) determines the fraction of time spent in the migrant sector, given that (6) holds and some migration is optimal. If $0 < q < \bar{q}$, the marginal utility of more time spent at home $[U(c^v, e^v) - U(c^m, e^m) + U_x]$ divided by the "price" of staying home $[w^v(1-e^v) - w^m(1-e^m) + c^v - pc^m]$ is equal to the marginal utility of income. Note that even if U_x is equal to 0, temporary migration may be chosen.

Not surprisingly condition (7) implies that if either the psychic migration costs are positive or p is greater than 1, then the migrant's nominal wage must exceed the nominal wage in the village for migration to occur. Condition (8) implies that if migration does occur, then utility maximization requires that the utility during a unit of time spent residing in the village will exceed the utility during time as a migrant. This is shown formally in the Appendix. With the wage and cost of living higher in the migrant area, it is optimal to work harder and/or consume less while there -- implying a lower level of utility, and to take more leisure and/or consume more in the village where the opportunity cost is less.

2. A framework for analysis. -- Before proceeding with the comparative statics, a framework for the analysis is presented. It is convenient to first write demand functions for leisure and consumption in both areas as functions of prices and the marginal utility of income (λ), holding the fraction of time as a migrant constant. Differentiation of (6) yields the following:

(9) $c^i = c^i(\overset{-}{\lambda}, \overset{?}{w^i}, \overset{-}{p^i})$, $i = v, m$

(10) $e^i = e^i(\overset{-}{\lambda}, \overset{-}{w^i}, \overset{?}{p^i})$, $i = v, m$

Signs of partial derivatives are indicated above the variable.

Next the first order condition for an interior solution for q, (8), is differentiated to give:

(11) $g\, d\lambda - d(U_x) - \lambda(1-e^v)\, dw^v + \lambda(1-e^m)\, dw^m - \lambda c^m dp = 0$

where $g = -w^v(1-e^v) + w^m(1-e^m) + c^v - pc^m$

Since $U_x \geq 0$ by assumption and $U(c^v, e^v) > U(c^m, e^m)$, the first order condition for q implies that g is positive, or that the surplus (wage earnings minus implicit expenditures on consumption and leisure) during time as a migrant worker exceeds that during time in the village. That is, the price of staying home must be positive if the migrant chooses to migrate but be away for less than the maximum amount of time.

For comparative statics, the only step remaining is to fully differentiate the budget constraint. Here it will only be noted that an increase in λ, holding q and prices constant, relaxes the budget constraint. Since all expenditures (except for migration) decrease with an increase in λ, the derivative of the budget constraint with respect to λ is positive for a given q.

It can be seen that the system of differential equations (9) - (11) and the differentiated budget constraint take a block recursive form. If q is chosen between zero and the maximum, then any comparative static change in λ can be calculated in equation (11). Substituting this and the exogenous parameter change into (8) - (10), the changes in demand can be found. Last, these solutions can be substituted into the budget constraint to find the change in the amount of time spent as a migrant.

If q is constrained at 0 or $\bar{q}$, the problem becomes a standard one-location utility maximization problem, and equation (11) is dropped.

Unlike many migration models, a key driving force in this model is the wealth or income effect. How does an exogenous change in income or wealth alter the amount of migrant labor supplied?

First, suppose that there is an individual that is just indifferent between choosing a positive level of migration and no migration at all. If we marginally increase asset holdings, staying home will be the preferable option. This is because, as in the peasant farmer model, the marginal utility of income is greater under the stay at home option. But the reason for this is quite different. Intuitively, under the migrant option, time at home is traded for more consumption while at home. This higher level of consumption corresponds to a lower marginal utility of income. This is shown formally in the Appendix.

If a migrant is spending some, but not all time away from home, then staying home can be treated as another good. Utility is higher while at home (even if $U_x = 0$) but net savings less. Thus an increase in wealth can be spent on spending more time at home.

B. Comparative Static Results

Here we examine the impact of exogenous changes in economic conditions. The analysis begins with the introduction of migrant wage-earning opportunities into a village community, and the transition from village workers to temporary migrants. This is followed by an examination of economic responses of temporary migrants, and finally an analysis of migrants who migrate for the maximum amount of time ($\bar{q}$), or "full-time migrants."

1. The introduction of migrant wage-earning opportunities. -- Not surprisingly, a first implication of the model is that if the migrant wage offered is high enough, an individual can be induced to spend at least some time working in the migrant area, all else held fixed. The reservation wage is defined as the migrant's wage that makes the individual just indifferent between the two options, or $\Omega(q^*)$ just equal to $\Omega(0)$, holding values of all other exogenous variables fixed. Beginning at a very low migrant's wage, how do these utility maximums change as the migrant's wage increases?

First, if the migrant's wage is low enough, it is not worthwhile to spend any time as a migrant even if the fixed migration costs must be paid. That is, q* will be chosen equal to zero. Here, the marginal benefit of spending time in the migrant area is less than the marginal cost. As the migrant's wage increases from this level, the marginal benefit also increases. Eventually, the marginal benefit becomes equal to the marginal cost, and it is optimal to choose some positive level of migration, given that the fixed costs must be paid. Further increases in w^m increase $\Omega(q^*)$, since it results in a direct increase in income, but leaves $\Omega(0)$ unchanged. A continued increase in w^m will eventually increase $\Omega(q^*)$ just equal to $\Omega(0)$. This is the reservation wage. Any higher migrant's wage will result in temporary migration.

We also know that a wealthier individual (with identical preferences) will have a higher reservation wage, even though he/she faces identical labor market opportunities as the poorer individual. Beginning at a point of indifference, higher asset holdings will result in a decision not to migrate. To induce this wealthier individual to migrate, a higher migrant's wage must be paid.

We can also say something about the impact of migrant wage opportunities on the distribuiton of villagers' standard of living. Migration has a very strong equalizing effect for those that in fact migrate. All households choosing q between 0 and $\bar{q}$ will choose the same levels of village and migrant consumption and leisure. This can be seen first looking at equation (11). Holding wages and migration costs constant, λ must remain constant. Thus from (9) - (10), all consumption and leisure expenditures for both worker types are unaffected by an increase in assets. The only difference between richer and poorer households is that the poor spend more time away from home, given that the amount of time spent away is constrained neither by zero nor its upper boundary. Any further analysis of the distributional impact would require consideration of i) a cash constraint for migration (households too poor to come up with the fixed migration costs); and ii) the impact of remittances on village prices, particularly the price of land.

2. The temporary migrant. -- Here we examine the impact of changes in wages and migration costs on the economic behavior of temporary migrants, assuming that the amount of time spent in the migrant sector is less than the feasible maximum.

a.) An increase in the village wage. -- The impact of an increase in the village wage can be divided into three effects: i) an income effect, ii) a substitution effect away from village leisure, and iii) a direct substitution effect away from migration. All three effects act to decrease the amount of migration, but differ somewhat from the peasant farmer analysis.

If the amount of leisure in each area were held constant, then the wage increase would directly increase income. At the initial levels of consumption, the individual could afford to stay in the village longer. However, the increase in the village wage also results in a substitution effect away from village leisure. This has a positive impact on village consumption, but also provides a further increase in income. This allows a further reduction in the amount of time spent in the migrant area. Additionally, the "price" of staying home, or the difference between the migrant's and villager's surplus, has decreased. This is a disincentive to migrate.

It should be noted that the decrease in income due to this last additional decrease in migration must be compensated by decreases in leisure and consumption in both areas. Technically this is due to the increase in the marginal utility of income indicated by equation (11). Thus the net impact of an increase in w^V is a decrease in the amount of time spent away, but also an unambiguous decrease in village leisure. In addition, village consumption may decrease. Also, consumption and leisure are both decreased during time as a migrant. This implies that remittances (or saving) per unit of time would be higher for migrants from a high wage that a low wage village, all else held constant.

The response to an increase in the village wage is quite different from the peasant farmer model. Here work effort in both areas increases; the peasant farmer increases leisure. Here consumption may even decrease in both areas; the peasant farmer unambiguously increases consumption. Both, however, spend more time in the village.

This response also differs sharply from a simple labor supply model. In the standard labor supply analysis (setting $q=0$), the impact of an increase in the village wage results in a positive income effect for consumption and leisure, and a substitution effect away from leisure. Thus consumption unambiguously increases, while village labor supply may increase or decrease. That is, the temporary migrant in general has a larger positive labor supply response to an increase in the village wage than a standard labor supply analysis would predict.

b.) An increase in the migrant wage. -- The impact of an increase in the migrant wage can also be divided into three effects. This time, however, the signs of the effects differ. As with the increase in the village wage, the increase in the migrant wage directly increases income which has the impact of reducing migration. Also the substituion effect away from migrant leisure has a net positive effect on income, which in turn acts to reduce migration. This time, however, there is an increase in the price of staying at home. There is an incentive to increase migration, which provides a further increase in income. The marginal utility of income declines, which has a positive effect on levels of consumption and leisure. Thus, the total impact of an increase in the migrant wage is ambiguous with respect to the amount of migration. Consumption in both areas and leisure of the village worker, however, unambiguously increase.

Here the results correspond more closely to the peasant farmer model. Consumption (in both areas) unambiguously increases. The amount of time spent in the migrant area may increase or decrease. However, here leisure per unit of time in the village increases, while total time spent working in the village is ambiguous. The peasant farmer may increase or decrease leisure, but unambiguously works less on the family farm.

c.) An increase in migration costs. -- Last, an exogenous change in the fixed migration costs are considered. Holding prices and wages constant, and assuming that the choice of the amount of migration is unconstrained by 0 or $\bar{q}$, an increase in the fixed migration costs (M) results in an increase in the amount of time away from home.

This is seen by first examining equation (11), which indicates that the marginal utility of income is unchanged. Also, from equations (9) and (10), it can be seen that M does not enter directly into the demand functions. Therefore, consumption and leisure in each area are unaffected by this change. Differentiating the budget constraint, the impact of an increase in M is to directly reduce income. In order to maintain the existing expenditure patterns the amount of migration must increase. In the peasant farmer model, migration increases but due to a decrease in leisure resulting from the income effect.

3. The full-time migrant. -- The full-time migrant, who spends the maximum amount of time in the migrant sector while maintaining asset holdings and ties in the village,[7] responds quite differently to economic incentives than the temporary migrant.

With q at its upper boundary, an increase in the wage in the migrant sector will have no impact on the amount of migration (unless the individual decides to give up asset holdings and village ties, and increase q from $\bar{q}$ to 1). There will be the usual income and substitution effects, and migrant work effort might increase or decrease. Consumption and leisure in the village increase.

An increase in the village wage also has the usual income and substitution effects, but the supply of village labor is small in this case since most working time is spent in the migrant sector. Thus the wage increase results only in a small positive income effect for consumption and leisure in the migrant area. There is a substitution away from village leisure, and thus an ambiguous impact on total village labor supply.

III. OTHER MODELS OF PLANNED TEMPORARY MIGRATION

Two additional models providing insight into the motives for temporary migration are briefly discussed here. In these models a capital market constraint and riskiness of earned income are considered.

A. Capital Market Imperfections and Temporary Migration

A number of authors have suggested that the lack of financial markets in certain areas has created the motive for temporary migration. Waters (1973) cites much evidence from Africa, and it has been also suggested as a possible motive in sending regions such as Mexico [Cornelius (1976, pp. 36-37]. The essence of the argument is as follows: although wage-earning opportunities are better in the migrant area, investment opportunities have a higher return in the region of origin. Two other conditions are required for temporary migration. It must be difficult (impossible) to borrow in the sending region, so that self-finance is instead prevalent, and the returns to labor in the sending region must be critically linked to that individual's ownership of capital.

As a starting point, consider the case of human capital acquisition, where a migrant receives not only wages, but training as well.[8] Even if we observe sequential one-period utility maximization, we may find temporary migration. This occurs if the training received has a substantially higher value in the sending area than in the migrant area[9] -- enough to reverse the sign of the wage differential. The standard Harris-Todaro migration model is in force, and each period the individual chooses the region with the highest wage rate for him or her. A two-period maximization model is likely to yield the same predictions concerning migration, although temporary migration might even occur if the initial village wage exceeds the initial migrant wage.

Now the conditions for temporary migration with physical capital accumulation can be illustrated in a two-period utility maximization model, where for simplicity leisure is assumed to be exogenously determined. The problem is to:

(12) $\max \; U(c_1, c_2)$

subject to:

(a) $S_i = q_i w^m + v_i w^i + F[aK_i, (1-q_i-v_i)] - c_i \geq 0$

for $i = 1, 2$, where $0 < q_i < \bar{q}$ and $0 < v_i < 1$

(b) $S_1 = K_2 - K_1 \geq 0$

In the model the individual can allocate working time proportionately to three different activities during each period: time as a migrant wage worker (q), as a village wageworker (v), and as an entrepreneur in the village (1-q-v). The proportion of time spent as a migrant has an upper boundary, $\bar{q}$, which may be less than 1. This maximum may be of importance, for it is likely necessary to spend at least some time in the village in order to retain the investment opportunities initially available. That is, time in the village is required to maintain connections, acquire information, and perhaps even to retain initial capital holdings.

Income is earned from these three activities, at the fixed wages w^m or w^v, or through the production function for entrepreneurial activities, F. Entrepreneurial output depends on labor and effective capital inputs, and is assumed to display the usual neoclassical properties of diminishing but positive returns. Also it is assumed that F_{KL} is positive, so that an increment of effective capital increases the marginal product of labor.

The amount of capital owned in period i is K_i and a is a measure of the productivity of capital, so that effective capital is equal to aK_i. The amount of saving is S_i. Since borrowing is impossible, saving in each period must be nonnegative. Any saving in period 1 is invested, and thus is equal to the increment to the capital stock (ignoring depreciation). Since this is only a two-period model, utility maximization requires that saving in the second period be set equal to zero.

The first order conditions for a maximum can be expressed as follows, letting L equal labor inputs into entrepreneurial activities and assuming $w^m > w^v$:

(13) $U_{c1} \geq F_K U_{c2}$ with equality if $S_1 > 0$

(14) For each period,

(a) If $F_L < w^v < w^m$, then $q = \bar{q}$ and $v = (1-\bar{q})$

(b) If $w^v < F_L < w^m$, then $q = \bar{q}$ and $v = 0$

(c) If $w^v < w^m, < F_L$, then $q = 0$ and $v = 0$

(d) If $w^v < F_L = w^m$, then $0 < q < \bar{q}$ and $v = 0$

Temporary migration is a likely outcome of this model, where an individual migrates the maximum amount in the first period (condition 14 (a) or (b) holds), but less or even not at all the second period (condition 14 (c) or (d) holds). Three assumptions are critical for this result. First, the productivity of capital (a) must be relatively large. Second, capital and labor must be close substitutes (F_{KL} positive and large), but the capital individual specific (other entrepreneurs can't be hired at a wage less than the opportunity cost of the individual's time). Third, borrowing for investment must be infeasible (or at least limited).

Consider an individual initially with very small amounts of capital, so that the marginal product of labor is small. The individual chooses to migrate for the maximum period of time, with the remainder of working time spent as a village wage earner. If no savings occurs, the conditions and choices are identical in the second period. Thus, c_1 is chosen equal to c_2, and $U_{c1} = U_{c2}$. Now consider the first order condition for saving, equation (13). Lack of saving implies that the marginal product of effective capital, aF_K, must be less than one. If the scaling factor for capital productivity, a, were to be increased, eventually saving would begin. Thus it is critical to the analysis that investment opportunities be sufficiently productive to induce saving.

How does this higher level of capital in the second period affect the allocation of labor? The answer depends on F_{KL}. If, for example, F_{KL} is equal to zero (such as when investment opportunities consist of simply putting money in a bank), then we still observe migration at its maximum the next period. Returns to capital and labor are independent, and thus factors are allocated to the region where the return is highest. If, however, the returns to capital and labor are sufficiently positively interdependent, the larger capital increases F_L up to or beyond the migrant wage. Migration decreases or ceases. Note that if borrowing were possible the investment would occur in the first period, and migration would be at lower levels throughout.

In this model the impact of a wage change is similar to the peasant farmer model if each period is considered in isolation. The intertemporal effects are more complex. An increase in the migrant's wage during the first period, for example, would increase the amount of savings and thus reduce the amount of time spent away in the second-period. However, an (expected) increase in the second period migrant's wage suggests a decrease in savings, assuming some migration occurs in the first period, and thus an increase in migration in the second period. If savings were constant, an increase in second period w^m would increase second-period migration. This increases income in the second period and reduces the marginal product of capital, both disincentives to saving.

B. Risk Aversion and Temporary Migration

The last motive for temporary migration discussed here is that of risk aversion. In the standard Harris-Todaro migration model, expected income is maximized. As cited above, it has been suggested in the literature that instead both expected income and risk enter into the utility maximization problem. It is well known from theories of portfolio selection [Tobin (1958), Hirshleifer (1970)] that diversification is often an optimal choice for a risk-averse individual.

Migration decisions can be easily analyzed in this framework.[10] Suppose there are two income-earning opportunities: migrant wage earnings have a high expected value per unit of time -- w^m but also a high variance (V_m^2), while village earnings have a relatively low mean (w^v) and variance (V_v^2). In addition, there is a fixed transactions cost, M, associated with migration. Utility depends positively on expected income (Y) and variance (V_y^2), where

(15) $Y = qw^m + (1-q)w^v + rA - Mz$, where rA represents riskless nonwage income;

(16) $V_y^2 = qV_m^2 + (1-q)V_v^2 + 2q(1-q)V_{vm}$, where V_{vm} is the covariance between w^m and w^v.

As long as the variance of income (risk) increases as the amount of time spent as a migrant increases, and the marginal utility of risk, U_V, is negative, the utility-maximizing outcome is likely to be temporary migration.

We are again able to analyze the impact of wage increase, which is exactly analagous to an increase in expected returns in a standard portfolio model. If the return (wage) for the riskier option (migration) increases, it has an ambiguous effect, assuming expected income and safety are both normal goods. A substitution effect suggests more migration, but the income effect acts to reduce risk. The net effect on migration is unclear. An increase in the village wage, however, unambiguously reduces migration through both income and substitution effects. Similarly, an increase in riskless nonwage income reduces the amount of migration; both expected income and safety are increased. Migration costs now play their usual role of preventing migration if too high, but increasing the amount of time spent away if migration is chosen.

This model is attractive, particularly since it can easily be extended to multiple wage-earning opportunities and/or family-level decision making, as discussed by Roberts (1982). However, it should not be pushed too far for several reasons. First, there are the well-known problems and strong implicit assumptions associated with the mean-variance model [see Holthausen (1981)]. Second, and perhaps more importantly, it is assumed in the model that labor allocation decisions must be made before the state of the world is known. In actuality, however, labor allocation decisions can be frequently revised. If the harvest is bad, for example, the remainder of that year's working time can be spent as a migrant.[11] Third, we have assumed that the village wage has both a low mean and variance. It is not at all clear that many village activities are in fact less risky than migrating, farming being the obvious example.[12]

IV. CONCLUSION

In this paper the economic conditions consistent with planned temporary migration are reviewed. A standard Harris-Todaro model generally considers an "either/or" migration option. Here we present a variety of circumstances, based on the descriptive literature, where temporary or circulating migration may be optimal. In particular we consider the case of continuing fixed wage differentials.

Several factors stand out in the analysis. First, consideration of both nominal wages and price levels rather than simply real wages is critical in understanding temporary migration when leisure and consumption decisions are made separately in the two areas. Temporary migrants can optimize intertemporally by working hard and consuming little in the high price, high nominal wage area. This suggests that, for example, exchange rate policy will have a large influence on international temporary migration flows.

Second, wealth effects and capital ownership play important roles in determining the characteristics of temporary migration. Wealthier individuals can "afford" to stay at home, may be less willing to put in long hours working in the high wage area, and find the higher price levels particularly costly because of their higher levels of consumption. However, wealthier individuals may have better investment opportunities. Under certain conditions including constraints on borrowing, this may provide an incentive for migration. Also, maintaining claims on assets in one region may require frequent visits, even though wages are higher in an alternative area.

Finally, family characteristics appear to be important. The need to support dependents and the desire to be with family members, as well as the possible family-level unit of decision making are important in determining temporary migration behavior. In addition, other family members' economic activities can enter importantly in a risk-reducing strategy.

NOTES

[1]See Todaro (1976) for a survey of this massive literature.

[2]For descriptions of some of these migration flows, for migration within Africa: see Amin (1974), Berg (1965), Elkan (1960, 1980), Garbett (1975), and Manona (1980); for migration within Latin America: see Feindt and Browning (1972) and Simmons and Cardona (1972); for within Asia and the South Pacific: see Grant and Zelenietz (1980) and Nagata (1974); for the Middle East and North Africa: see Birks and Sinclair (1980); for migration to Europe: see Azmaz (1980), Bohning (1975), Dayser (1972), Paine (1974), and Power (1979); and for migration to the U.S.: see Cornelius (1976), Hernandez-Alvarez (1968), Piore (1979), Selby and Murphy (1982), and Weist (1979). See also Kritz et al. (1981) for more on international migration and Connell et al. (1976) for more of a focus on internal migration.

[3]If a local labor market exists (with a fixed wage), temporary migration will never be chosen in this model. A given individual will spend either all working time away or all at home.

[4]Hansen (1979, p. 612) argues that "... surplus land probably was the rule rather than the exception in the heyday of imperialism and... surplus land, albeit rapidly disappearing, still characterizes the situation in some LDC's."

[5]The model also encompasses theories of "target" migration, where a migrant returns after earning a fixed amount [Berg (1961), Connel et al. (1976, p. 124), Grant and Zelenietz (1980,p. 230), Lucas (1981, p. 87), and Power (1979, p. 2)]. However, here that target amount is determined endogenously.

[6]This model is similar to a two-period version of Heckman and MaCurdy's (1980) model of female labor supply. The key difference is the endogenous choice in the amount of time spent under the high wage regime (q), and the possibility of q entering directly into the utility function.

[7]For evidence on this type of migration see, for example, Nagata (1974).

[8]The brain drain literature comes close to analyzing skill acquisition in the context of return migration. Bhagwati (1976) suggests in the comprehensive study of the brain drain that an increase in access to better jobs back in the LDC after migrating may play an important role. He also points out that savings in the developing country could be spent in the LDC at the lower cost of living (p. 18-19). Further theoretical analysis of temporary migration, however, is not within the scope of the study. "The skilled immigrants from LDC's do occasionally happen to return to their countries of origin, or to other LDC's, ... They also, most unfortunately for statisticians and economists, do not seem to make up their minds even then and, like the present author, seem sometimes to swing to and fro between developing countries and LDC's." (p. 15).

[9]See Connell et al. (1976, p. 125), Miracle and Berry (1970, p. 89) and Nagata (1974, p. 317-318) for examples of skill acquisition, education, and return migration.

[10]David (1974) presents (more rigorously) a similar model in a somewhat different contest. He considers different locations as "assets" and treats search costs endogenously in a model of permanent migration decisions.

[11]Cornelius (1976, p. 8) states, "Some [Mexicans] ... migrate to the U.S. only when there is severe economic necessity caused by drought, a crop failure due to premature frosts, or some other temporary condition which severely reduces the family income."

[12]"The peasant often estimates that the risk of not finding a job, or of being caught and deported by the INS, is substantially lower than the risk of having an inadequate income in his home community, due to the uncertainties of rainfall and temperature, fluctuations in the market prices for what he produces, the frequent unavailability of fertilizer and other necessary inputs to agricultural production, and many other factors." (Cornelius, 1976, p. 12).

APPENDICES

This appendix contains two parts. Appendix I relates to characteristics of the peasant farmer model with migration. Characteristics of the fixed wage differential temporary migration model are shown in Appendix II.

APPENDIX I.

Given a peasant farmer indifferent between migrating and staying at home, the marginal utility of income (λ) is higher under the staying at home option.

For the staying at home option $PF_L < w$, while for the migrant option $PF_L = w$. Let w^* represent the price of leisure (or implicit wage rate) for a peasant farmer indifferent between the two options. In choosing levels of leisure and consumption the difference in the two options arises from the difference in w^*. Using the first order conditions for a utility maximum and requiring that utility remain constant as we move along the indifference curve, the marginal change in λ due to a change in w^* can be calculated:

$$d\lambda/dw^* = [\lambda(U_{ce} - w^*U_{cc})]/[U_c(U_{ee} - w^*U_{ce}) + U_e(U_{cc}w^* - U_{ce})]$$

The expression is negative if goods are normal. Since w^* is higher for the migrant option, the marginal utility of income must be higher for the stay at home option.

APPENDIX II.

A. For any λ, $U(c^v, e^v) > U(c^m, e^m)$ if $p > 1$ and $w^m > w^v$.

Writing out the expression for the difference in the two utilities:

$$U(c^m, e^m) - U(c^v, e^v) = \int_1^p [U_c \partial c/\partial p)|_\lambda + U_e(\partial e/\partial p)|_\lambda] dp$$

$$+ \int_{w^v}^{w^m} [U_c(\partial c/\partial w)|_\lambda + U_e(\partial e/\partial w)|_\lambda] dw$$

The first order conditions in (6) allow us to solve for the c's and e's as functions of λ, wages, and prices. Holding λ fixed,

$$dc^i = (U_{ee}\lambda dp^i - \lambda U_{ec}dw_i)/(U_{ee}U_{cc} - U_{ec}^2)$$

$$dc^i = (-U_{ec}\lambda dp^i + \lambda U_{cc} dw^i)/(U_{ee}U_{cc} - U_{ec}^2)$$

Substitution gives,

$$U(c^m, e^m) - U(c^v, e^v) = \int_1^p [\lambda(U_c U_{ee} - U_e U_{ec})/(U_{ee}U_{cc} - U_{ec}^2)] dp$$

$$+ \int_{w^v}^{w^m} [\lambda(U_e U_{cc} - U_c U_{ec})/(U_{ee}U_{cc} - U_{ec}^2)] dw$$

which is less than zero if both goods are normal, $p \geq 1$ and $w^m > w^v$.

B. Demand functions, given an exogenous q.

$$dc^i = [(p^i U_{ee} - w^i U_{ce}) d\lambda - \lambda U_{ce} dw^i + \lambda U_{ee} dp^i]/(U_{cc}U_{ee} - U_{ec}^2)$$

$$de^i = [(w^i U_{cc} - p^i U_{ce}) d\lambda + \lambda U_{cc} dw^i - \lambda U_{ce} dp^i]/(U_{cc}U_{ee} - U_{ec}^2)$$

for $i = v, m$

C. If an invidivudal is indifferent between staying home and migrating, then an individual, identical except for a higher level of initial wealth, will choose not to migrate.

Define $\Omega(0)$ as the utility maximum in (4) subject to q=0.

Define $\Omega(q^*)$ as the utility maximum when fixed migration costs must be paid, where an asterisk denotes the optimal solution values of variables.

Define $Q = \Omega(q^*) - \Omega(0)$. An individual is indifferent between migrating and staying at home if Q=0.

Initially setting Q=0, it is differentiated with respect to initial wealth (A):

$$\partial Q/\partial A = (\lambda^* - \lambda) r$$

where λ^* = marginal utility of income for $\Omega(q^*)$,

λ = marginal utility of income for $\Omega(0)$.

Since Q = 0 initially, we have initially,

$$\Omega(0) = \Omega(q^*) = U(c^c, e^v) = q^*U(c^m*, e^m*) + (1-q^*)U(c^v*, e^c*) - U_x q^*.$$

Since it is shown above that $U(c^m*, e^m*) < U(c^v*, e^v*)$, then $U(c^v, e^v)$ must be less than $U(c^v*, e^v*)$. Assuming normal goods, this implies that $c^v < c^v*$ and $e^v < e^v*$. From first order condition (6), this implies that $\lambda > \lambda^*$, and that $\partial Q/\partial A$ is less than zero.

BIBLIOGRAPHY

Amin, Samir (ed.). Modern Migrations in Western Africa. London: Oxford University Press, 1974.

Appleyard, R.T. "Determinants of Return Migration - A Socioeconomic Study of United Kingdom Migrants Who Returned from Australia," Economic Record, 38 (September 1962): 352-368.

Azmaz, Adviye. Migration of Turkish "Gastarbeiters" of Rural Origin and the Contribution to Development in Turkey, Socioeconomic Studies on Rural Development, Vol. 37. Saarbrucken (Germany): Institute for Rural Development, Breitenbach, 1980.

Barnum, Howard N. and Squire, Lyn. A Model of an Agricultural Household: Theory and Evidence. Baltimore: Johns Hopkins University Press, 1979.

Berg, Elliot J. "Backward-Sloping Labor Supply Functions in Dual Economies -- The African Case," Quarterly Journal of Economics, 75 (August 1961): 468-514.

--------. "The Economics of the Migrant Labor System," in Hilda Kuper (ed.), Urbanization and Migration in West Africa. Berkeley: University of California Press,1965.

Bhagwati, Jagdish N. "The International Brain Drain and Taxation: A Survey of the Issues," in J.N. Bhagwati (ed.), The Brain Drain and Taxation: Theory and Empirical Analysis (Vol. II). New York: North-Holland, 1976.

Birks, J.S. and Sinclair, C.A. International Migration and Development in the Arab Region. Geneva: I.L.O., 1980.

Bohning, W.R. "Some Thoughts on Emigration from the Mediterranean Basin," International Labour Review, 3 (March 1975): 251-277.

Chayanov, A.V. Peasant Farm Organization, Moscow: The Cooperative Publishing House, 1925 (in Russian), translated in Daniel Thorner, Basile Kerblay and R.E.F. Smith (eds.), A.V. Chayanov on the Theory of Peasant Production. Homewood (Ill.): Richard D. Irwin, Inc., 1966.

Colclough, Christopher and McCarthy, Stephen. The Political Economy of Botswana: A Study of Growth and Distribution. New York: Oxford Univeristy Press, 1980.

Connell, John, et al. Migration from Rural Areas: The Evidence from Village Studies. Delhi: Oxford University Press, 1976.

Cornelius, Wayne A. (with the assistance of Juan Diez-Canedo). "Mexican Migration to the United States: The View from Rural Sending Communities," Migration and Development Study Group Paper C76-12. Boston (Massachusetts): Center for International Studies, M.I.T., June 1976.

DaVanzo, Julie. "Differences between Return and Nonreturn Migration: An Econometric Analysis," International Migration Review, 10 (Spring 1976): 13-17.

Sen, Amartya K. "Peasants and Dualism With or Without Surplus Labor," Journal of Political Economy, 74 (October 1966): 425-450.

Simmons, Alan B. and Cardona G., Ramiro. "Rural-Urban Migration: Who Comes, Who Stays, Who Returns? The Case of Bogota, Colombia, 1929-1968," International Migration Review, 6 (Summer 1972): 166-181.

Tobin, James. "Liquidity Preference as Behavior Towards Risk," Review of Economic Studies, 25 (February 1958): 65-86.

Todaro, Michael P. Internal Migration in Developing Countries. Geneva: ILO, 1976.

Vanderkamp, John. "Migration Flows, Their Determinants and the Effects of Return Migration," Journal of Political Economy, 79 (September-October 1971): 1012-1031.

--------. "Return Migration: Its Significance and Behavior," Western Economic Journal, 10 (December 1972): 460-465.

Walters, Alan Rufus. "Migration, Remittances, and the Cash Constraint in African Small-holder Economic Development," Oxford Economic Papers, 25 (November 1973): 435-454.

Weist, Raymond E. "Implications of International Labor Migration for Mexican Rural Development," in Fernando Camara and Robert Van Kemper (eds.), Migration Across Frontiers: Mexico and the United States. Albany (New York): Institute for Mesoamerican Studies, State University of New York, 1979.

PUBLICATIONS

CRED publications can be obtained by writing to the Publications Coordinator. An order form is provided on the last page of this brochure. Payment should accompany your order, unless otherwise indicated.

NEWSLETTER

CRED publishes a periodic newsletter entitled "CREDITS" which is available free of charge. Write to the Publications Coordinator if you wish to be placed on this mailing list.

PROJECT REPORTS

1. Berg, Elliot J. The Economic Evolution of the Sahel. 1975. 258 p. $7.50

2. Berg, Elliot J., et al. Marketing, Price Policy and Storage of Food Grains in the Sahel: A Survey - Volume I, Synthesis with Statistical Compilation and Annotated Bibliography. 1977. 152 p. $8.00.

3. Berg, Elliot J., et al. Marketing, Price Policy and Storage of Food Grains in the Sahel: A Survey - Volume II, Country Studies. 1977. 105 p. $10.00.

4. Berg, Elliot J., et al. Commercialisation, Politique des Prix et Stockage des Céréales au Sahel: Etude Diagnostique - Tome I, Synthèse avec Compilation Statistique et Bibliographie Annotée. 1977. 164 p. Tome II, Etudes des Pays. 1977. 129 p. [Tome II - Out of Print.]

5. Shapiro, Kenneth H. Livestock Production and Marketing in the Entente States of West Africa: Summary Report. 1979. 528 p. $12.50.

6. Delgado, Christopher L. Livestock versus Foodgrain Production in Southeastern Upper Volta: A Resource Allocation Analysis (Monograph I - Livestock Production and Marketing in the Entente States of West Africa Project). 1979. 427 p. [Out of Print.]

7. Staatz, John M. The Economics of Cattle and Meat Marketing in Ivory Coast (Monograph II - Livestock Production and Marketing in the Entente States of West Africa Project). 1979. 589 p. $15.00.

8. Eddy, Edward D. Labor and Land Use on Mixed Farms in the Pastoral Zones of Niger (Monograph III - Livestock Production and Marketing in the Entente States of West Africa Project). 1979. 493 p. [Out of Print.]

9. Herman, Larry A. The Livestock and Meat Marketing System in Upper Volta: An Evaluation of Economic Efficiency (Monograph IV - Livestock Production and Marketing in the Entente States of West Africa Project). 1983. 266 p. $10.00.

10. Shapiro, Kenneth H. La Production et la Commercialisation du Bétail dans les Pays du Conseil de l'Entente: Rapport de Synthèse. 1980. 445 p. $15.00.

11. Delgado, Christopher K. L'Elevage par Rapport à l'Agriculture au Sud-Est de la Haute-Volta: Analyse de l'Allocation des Ressources au Niveau de l'Exploitation (Monographie I - La Production et la Commercialisation du Bétail dans les Pays du Conseil de l'Entente). 1980. 405 p. [Out of Print.]

12. Staatz, John M. L'Economique de la Commercialisation du Bétail et la Viande en Côte d'Ivoire (Monographie II - La Production et la Commercialisation du Bétail dans les Pays du Conseil de l'Entente). 1980. 536 p. $15.00.

13. Eddy, Edward D. L'Utilisation de la Terre et de la Main-d'Oeuvre à l'Interieur des Exploitations Agricoles Intégrées de la Zone Pastorale Nigérienne (Monographie III - La Production et la Commercialisation du Bétail dans les Pays du Conseil de l'Entente). 1980. 406 p. [Out of Print.]

14. Ariza-Niño, Edgar J.; Herman, Larry A.; Makinen, Marty; and Steedman, Charles. Synthesis: Upper Volta (Volume I - Livestock and Meat Marketing in West Africa Project). 1980. 204 p. $15.00.

15. Josserand, Henri P., and Sullivan, Gregory. Benin, Ghana, Liberia, Togo (Volume II - Livestock and Meat Marketing in West Africa Project). 1980. 446 p. $15.00.

16. Delgado, Christopher L., and Staatz, John M. Ivory Coast and Mali (Volume III - Livestock and Meat Marketing in West Africa Project). 1980. 439 p. $15.00.

17. Ariza-Niño, Edgar J., and Griffith, J.L.P. Suppliers: Argentina, Australia and New Zealand (Volume IV - Livestock and Meat Marketing in West Africa Project). 1979. 239 p. [Out of Print.]

18. Ariza-Niño, Edgar J.; Manly, D.W.; and Shapiro, Kenneth H. The World Meat Economy: Other Supplier and Consumer Countries (Volume V - Livestock and Meat Marketing in West Africa Project). 1980. 183 p. [Out of Print.]

19. Ariza-Niño, Edgar J.; Herman, Larry A.; Makinen, Marty; et Steedman, Charles. Rapport de Synthèse: Haute-Volta (Tome I - La Commercialisation du Bétail et de la Viande en Afrique de l'Ouest). 1981. 258 p. $15.00.

20. Josserand, Henri P., et Sullivan, Gregory. Bénin, Ghana, Libéria, Togo (Tome II - La Commercialisation du Bétail et de la Viande en Afrique de l'Ouest). 1980. 441 p. $15.00.

21. Delgado, Christopher L., et Staatz, John M. Côte d'Ivoire et Mali (Tome III - La Commercialisation du Bétail et de la Viande en Afrique de l'Ouest). 1981. 567 p. $15.00.

22. Ariza-Niño, Edgar J. et Griffith, J.L.P. Les Fournisseurs - Argentine, Australie, Nouvelle-Zélande; et Ariza-Niño, Edgar J.; Manly, D.W. et Shapiro, Kenneth H. L'Economie Mondiale de la Viande: Autres Pays - Fournisseurs et Consommateurs (Tome IV/V - La Commercialisation du Bétail et de la Viande en Afrique de l'Ouest). 1981. 476 p. $15.00.

23. Makinen, Marty and Ariza-Niño, Edgar J. The Market for Livestock from the Central Niger Zone (Niger Range and Livestock Project). 1982. 55 p. $7.50.

24. Makinen, Marty et Ariza-Niño, Edgar J. Le Marché du Bétail dans la Zone Nigérienne Centrale (Le Projet de Gestion des Pasturages et de l'Elevage). 1982. 63 p. $7.50.

25. Barlow, Robin (editor). Case Studies in the Demographic Impact of Asian Development Projects. (Contributors: J. Anderson, H. Barnum, J. Bauer, P. Gosling, A. Jain, H. Mohtadi, and E. Mueller). 1982. 204 p. $10.00.

26. Ariza-Niño, Edgar J. et al. Consumption Effects of Agricultural Policies: Cameroon and Senegal - Part I: Country Reports; Part II: Methodology. 1982. 465 p. $15.00.

27. Ariza-Niño, Edgar J. et al. Effets nutritifs de politiques agricoles: Cameroun et Sénégal - Partie I: Rapport de Pays. 1982. 369 p. $8.00. Partie II: Méthodologies d'Analyse et Modalites d'Enquête. 1982. 284 p. $7.00.

These prices include postage and handling charges. Please refer to the Project Report Number (PR #) when placing an order.

DISCUSSION PAPERS

CRED normally publishes 5-8 discussion papers annually, which provide preliminary reports on the research (institutional or personal) of its senior staff. In many cases, revised versions of these papers are later published in academic journals or elsewhere. Individual discussion papers can be purchased for $3.00 each; an annual subscription (based on a July 1 - June 30 subscription year) is available for $15.00. Subscriptions are also available on an exchange basis for publications from other institutions.

1. Berg, Elliot J. "Wage Structure in Less-Developed Countries," January 1968. 51 p. (Republished in Wage Policy Issues in Economic Development, edited by Anthony D. Smith, International Institute for Labour Studies, Geneva, 1969.)

2. Eckstein, Peter C. "Accounting Prices as a Tool of Development Planning," February 1968. 84 p.

3. Stolper, Wolfgang F. "Economic Growth and Political Instability in Nigeria: On Growing Together Again," November 1968. 38 p. (Republished in Growth and Development of the Nigerian Economy, edited by Carl K. Eicher and Carl E. Liedholm, Michigan State University Press, East Lansing, 1970.)

4. Berg, Elliot J. "Industrial Relations Systems in Colonial West Africa: A Comparative Analysis of French West Africa and the Gold Coast," December 1968. 50 p. (Republished in African Dimensions: Essays in Honor of William O. Brown, edited by Mark Karp, Boston University, Boston, 1975.)

5. Berg, Elliot J. "Trade Unions and Wage Levels - The Nigerian Case," January 1969. 19 p. (Republished in Economic Development and Cultural Change, Volume 17, No. 4, July 1969.)

6. Porter, Richard C. "Some Implications of Post-War Primary Product Trends," February 1969. 17 p. (Republished in Journal of Political Economy, Vol. 78, No. 3, May - June 1970.)

7. Eckstein, Peter C. "Quantitative Measurements of Development Performance: A Critique by Peter Eckstein and a Reply by Irma Adelman and Cynthia Taft Morris," April 1969. 37 p. (Republished in American Economic Review, Vol. 60, No. 1, March 1970.)

8. Porter, Richard C. "The Effectiveness of Tax Exemption in Colombia," July 1969. 41 p. (Republished in Weltschaftliches Archiv/Review of World Economics, Vol. 108, No. 3, September 1972.)

9. Eckstein, Peter C. "Toward an Integrated Theory of Tariffs," August 1969. 41 p.

10. Stolper, Wolfgang F. "Limitations of Comprehensive Planning in the Face of Comprehensive Uncertainty: Crisis of Planning or Crisis of Planners," October 1969. 44 p. (Republished in Weltschaftliches Archiv, Vol. 107, No. 1, March 1971.)

11. Porter, Richard C. "Birth of a Bill Market," August 1970. 20 p. (Republished in Journal of Development Studies, Vol. 9, No. 3, April 1973.)

12. Adalemo, Isaac Aylinde. "Distribution of Market Centers, Market Periodicities and Marketing in Northwestern Nigeria," August 1970. 57 p. (Republished in African Urban Notes, Vol. 5, No. 2, Winter 1970.)

13. Berg, Elliot J. "Wages and Employment in Less-Developed Countries," December 1970. 23 p. (Republished in The Challenge of Unemployment to Development and the Role of Training and Research Institutes of Development, O.E.C.D., Paris, 1971.)

14. Hutcheson, Thomas L. and Porter, Richard C. "The Cost of Tying Aid: A Method and Some Colombian Estimates," January 1971. 58 p. (Republished in Princeton Studies in International Finance, No. 30, March 1972.)

* 15. Andriamananjara, Rajaona. "Labor Mobilization: The Moroccan Experience," April 1974. 119 p.

16. Aho, C. Michael. "The Use of Export Projects in Allocating Foreign Aid Among and Domestic Resources Within Developing Countries," July 1971. 59 p. (Republished in Journal of Development Studies, Vol. 10, No. 3/4, April/July 1974.)

17. Kennedy, Michael. "An Empirical Evaluation of the Two-Gap Model of Development," November 1971. 29 p.

18. Naranjo, John and Porter, Richard C. "The Impact of the Commonwealth Preference System on the Exports of Latin America to the United Kingdom," March 1972. 37 p. (Republished in Journal of Development Studies, Vol. 9, No. 4, July 1973.)

19. Fields, Gary S. "Private Returns to Investments in Higher Levels of Education in Kenya," April 1972. 16 p. (Republished in Education, Society and Development: New Perspectives from Kenya, edited by David Court and Dharam P. Ghai. Oxford University Press, Nairobi, 1974.)

20. Osayimese, Izevbuwa G. "An Application of Control Theory to Rural-Urban Migration and Urban Unemployment," May 1972. 19 p. (Republished in Geographical Analysis, Vol. 4, No. 2, April 1974.)

21. Johnson, George E. "The Determinants of Hourly Earnings in Urban Kenya," May 1972. 36 p.

22. Staelin, Charles P. "The Cost and Composition of Indian Exports," May 1972. 41 p. (Republished in Journal of Development Economics, Vol. 1, No. 2, June 1974.)

23. Heller, Peter S. "A Model of Public Sector Expenditure Dynamics in Less-Developed Countries: The Kenyan Case," May 1972. 50 p. (Republished in Quarterly Journal of Economics, Vol. 88, No. 2, May 1974.)

24. Heller, Peter S. "The Strategy of Health-Sector Planning in the People's Republic of China," July 1972. 62 p. (Republished in Medicine and Public Health in China, edited by M. Wegman and T. Lin, Josiah Macy Foundation, New York, 1973.)

25. Winegarden, Calman R. "Determinants of International Differences in Educational Effort," September 1972. 31 p. (Republished in Eastern Economic Journal, Vol. 2, No. 1, January 1975.)

26. Staelin, Charles P. "A General Equilibrium Model of Tariffs in a Non-Competitive Economy," March 1973. 29 p. (Republished in Journal of International Economics, Vol. 6, No. 1, February 1976.)

* 27. Barlow, Robin. "Planning Public Health Expenditures with Special Reference to Morocco," April 1973. 68 p. (Republished in International Journal of Health Services, Vol. 6, No. 1, February 1976.)

28. Dia Bondo, Theophil Lukusa and Porter, Richard C. "A Constant Market-Share Look at African Exports in the 1960s," June 1973. 25 p.

29. Porter, Richard C. "Labor Migration and Urban Unemployment in Less-Developed Countries: Comment," July 1973. 19 p.

30. Heller, Peter S. "An Econometric Analysis of the Fiscal Behavior of the Public Sector in Developing Countries: Aid, Investment and Taxation," October 1973. 39 p. (Republished in American Economic Review, Vol. 65, No. 3, June 1975.)

31. Porter, Richard C. "Some Doubts About Kenya's Future as an Exporter of Manufactures," October 1973. 30 p. (Republished in Eastern Africa Economic Review, Vol. 6, No. 1, June 1974.)

32. Weisskopf, Thomas E. "Sources of American Imperialism: A Contribution to the Debate between Orthodox and Radical Theories," November 1973. 46 p. (Republished in Review of Radical Political Economics, Vol. 6, No. 4, Fall 1974.)

33. Hoopengardner, Thomas. "Rural-Urban Migration: A Dynamic View," January 1974. 15 p.

34. Porter, Richard C. and Staelin, Charles P. "On the Rationality of 'Cascaded' Export Subsidies and Taxes," March 1974. 9 p.

35. Weisskopf, Thomas E. "American Economic Interests in Foreign Countries: An Empirical Survey," April 1974. 56 p.

36. Shapiro, Kenneth H. and Muller, Jurgen. "Sources of Technical Efficiency: The Roles of Modernization and Information," April 1974. 40 p. (Republished in Economic Development and Cultural Change, Vol. 25, No. 2, January 1977.)

* 37. Stolper, Wolfgang F. "Investments, Employment and Output per Man in the Tunisian Economy, 1961-1971," September 1974. 112 p. (Republished in Weltschaftliches Archiv, Vol. 114, No. 3, September 1978, and in Annales Economiques, No. 14, 1980, in French.)

38. Porter, Richard C. "Measuring the Cost of Granting Tariff Preferences," September 1974. 44 p.

39. Herman, Barry M. "Multinational Oligopoly in Poor Countries: How East Africa Got its Petroleum Refineries," September 1974. 32 p. (Republished in Journal of Development Economics, Vol. 2, 1975 and in Readings on the Multinational Corporation in Kenya, edited by Raphael Kaplinsky, Oxford University Press, Nairobi, 1978.)

40. Elliott, Howard J.C. "Animation Rurale and Encadrement Technique in the Ivory Coast," September 1974. 33 p.

41. Weisskopf, Thomas E. "China and India: A Comparative Survey of Economic Performance," October 1974. 43 p. (Republished in Economic and Political Weekly, Vol. 10, Nos. 5-7, February 1975.)

42. Heller, Peter S. "Factor Endowment Change and the Structure of Comparative Advantage: The Case of Japan, 1956-1969," January 1975. 23 p. (Republished in Review of Economics and Statistics, Vol. 58, No. 3, August 1976.)

43. Heller, Peter S. "An Analysis of the Structure, Equity and Effectiveness of Public Sector Health Systems in Developing Countries: The Case of Tunisia, 1960-1972," February 1975. 105 p.

44. Blake, Robert. "Import Controls and Production in Tunisia During the 1960s," March 1975. 41 p.

45. Kleve, Jacob G. and Stolper, Wolfgang F. "Changes in Income Distribution, 1961-1971 (Tunisia)," March 1975. 30 p.

46. Kleve, Jacob G. "The Financing of Investments in Tunisia, 1961-1971," March 1975. 41 p.

47. Ketkar, Suhas L. "Economics of Education in Sierra Leone," April 1975. 37 p. (Republished in Manpower Planning and Utilization in West Africa, International Labor Organization, 1979.)

48. Berg, Elliot J. "Some Problems in the Analysis of Urban Proletarian Politics in the Third World," March 1976. 17 p. (Republished in Comparative Urban Research, Vol. 4, No. 1, April 1976.)

49. Monson, Terry D. and Pursell, Garry G. "An Evaluation of Expatriate Labor Replacement in the Ivory Coast," April 1976. 75 p. (Republished in Actualité Economique, Vol. 53, No. 2, April - June 1977, in French, and in Journal of Development Economics, Vol. 6, No. 1, March 1979.)

50. Kendrick, Robin, J. "A Survey of Labor Relations in Cameroon," May 1976. 39 p. (Republished in Industrial Relations in Africa, edited by Ukandi G. Damachi, International Institute for Labor Studies, Geneva, 1979.)

51. Berg, Elliot J. "The Economic Impact of Drought and Inflation in the Sahel," May 1976. 35 p.

52. Shapiro, Kenneth H. "Efficiency Differentials in Peasant Agriculture and Their Implications for Development Policies," June 1976. 13 p. (Republished in International Association of Agricultural Economics Occasional Paper No. 1, November 1977.)

53. Saulniers, Alfred H. "Unit Equivalent Scales for Specific Food Commodities: Kinshasa, Zaire," August 1976. 22 p.

54. Saulniers, Alfred H. "The Economics of Prestation Systems: A Consumer Analysis of Extended Family Obligations with Application to Zaire," August 1976. 27 p.

55. Elliott, James A.M. "Will Rising Wages in the Controlled Sector Increase Total Employment in Less-Developed Countries?," August 1976. 37 p. (Republished in Journal of Development Studies, Vol 16, No. 1, October 1979.)

56. Barlow, Robin. "A Test of Alternative Methods of Making International Product Comparisons," September 1976. 15 p. (Republished in Economic Journal, Vol. 87, September 1977.)

57. Heller, Peter S. "Interactions of Childhood Mortality and Fertility in West Malaysia: 1947-1970," September 1976. 33 p.

58. Heller, Peter S. and Drake, William D. "Malnutrition, Child Morbidity and the Family Decision Process," September 1976. 43 p. (Republished in Journal of Development Economics, Vol. 6, No. 2, June 1979.)

59. Staelin, Charles P. and Jurado, Gonzalo M. "The Impact of Export Incentives and Export-Related Policies on the Firms of the Less-Developed Countries: A Case Study of the Philippines," September 1976. 29 p.

60. Porter, Richard C. "A Model of a South African-type Economy," October 1976. 42 p. (Republished in American Economic Review, Vol. 68, No. 5, December 1978.)

61. Montgomery, Barbara B. "The Economic Role of the Ivorian Woman," February 1977. 49 p.

62. Heller, Peter S. "A Model of the Demand for Medical and Health Services in West Malaysia," October 1976. 52 p. (Republished in Social Science and Medicine, Vol. 16, 1982.)

63. Monson, Terry D. "A Note on Measuring Educational Returns in LDCs," February 1977. 12 p. (Republished in Journal of Developing Areas, Vol. 13, No. 4, July 1979.)

64. Lopez, Michael. "The Determinants of Income and its Distribution in Four Villages in India," February 1977. 76 p.

65. Cross, John G. "A Stochastic Learning Model of Migration," February 1977. 17 p. (Republished in Journal of Development Economics, Vol. 5, No. 2, June 1978.)

66. Weisskopf, Thomas E. "Dependence as an Explanation of Underdevelopment," February 1977. 32 p.

67. Heller, Peter S. "Issues in the Allocation of Resources in the Health Sector of Developing Countries," February 1977. 33 p. (Republished in Economic Development and Cultural Change, Vol. 27, No. 1, October 1978.)

68. Porter, Richard C. "Economic Sanctions: The Theory and Evidence from Rhodesia," March 1977. 19 p. (Republished in Journal of Peace Science, Vol. 3, No.2, Fall 1978.)

69. Henning, Peter H. "The Urban Popular Economy and Informal Sector Production," March 1977. 66 p.

70. Nziramasanga, Mudziviri T. "Production from an Exhaustible Resource Under Government Control in LDCs," December 1977. 17 p.

71. Barnum, Howard N. and Squire, Lyn. "Labor Heterogeneity and Rice Production in Malaysia," December 1977. 11 p.

72. Bloch, Peter C. "Labor Relations in Senegal - History, Institutions and Perspectives," January 1978. 41 p.

73. Barnum, Howard N. and Squire, Lyn. "Consistent Aggregation of Family and Hired Labor in Agricultural Production Functions," January 1978. 12 p.

74. Delgado, Christopher L. "An Investigation of the Lack of Mixed Farming in the West African Savannah: A Farming Systems Approach for Tenkodogo, Upper Volta," November 1978. 71 p.

75. Pinckney, Annette M. "An Analysis of Grain Storage in Three Interior Sahel Countries," January 1979. 75 p.

76. Berg, Nancy and Elliot J. "Graduate Training of LDC Economists in U.K. Universities - A Statistical Note," January 1979. 35 p.

77. Porter, Richard C. "The Potential Impact of International Trade and Investment Sanctions on the South African Economy," February 1979. 80 p. (Republished in Journal of Conflict Resolution, December 1979.)

78. Barnum, Howard N. and Barlow, Robin. "Reducing Mortality When Diseases are Interdependent," August 1978. 25 p.

79. Berg, Elliot J. "Reforming Grain Marketing Systems in West Africa," June 1979. 50 p.

* 80. Ross, Clark G. "Grain Demand and Consumer Preferences: Dakar, Senegal," June 1979. 26 p. (Republished in Food Policy, Vol. 5, No. 4, November 1980.)

* 81. Ross, Clark G. "A Village Level Study of Producer Grain Transactions in Rural Senegal," June 1979. 51 p. (Republished in African Studies Review, FORTHCOMING ISSUE 1983.)

82. Barlow, Robin. "Economic Growth in the Middle East, 1950-1972," June 1980. 41 p. (Republished in International Journal of Middle East Studies, Vol. 14, 1982.)

83. Eddy, Edward D. "Prospects for the Development of Cattle Production on Mixed Farms in the Pastoral Zone of Niger: A Summary," June 1980. 91 p.

84. Berg, Elliot J. "Alternative Strategies for Zimbabwe's Growth," June 1980. 27 p.

85. Ross, Clark G. "A Modeling of the Demand and Supply of Food Grains in Senegal," June 1980. 68 p.

86. Staatz, John M. "The Economics of Cattle and Meat Marketing in Ivory Coast: A Summary," June 1980. 84 p.

87. Ranney, Susan I. "The Open Door Policy and Industrialization in Egypt: A Preliminary Investigation," August 1980. 47 p.

88. Ranney, Susan I. "A Note on the Proletarianization of the African Peasantry in Rhodesia," August 1980. 18 p.

89. Barnum, Howard N. "The Economic Cost and Benefits of an Immunization Program in Indonesia," January 1981. 37 p.

90. Makinen, Marty; Herman, Larry A.; Staatz, John M. "A Model of Meat Versus Live-Animal Exports from Upper Volta," February 1981. 27 p.

91. Grosse, Scott D. "A Skeptical Perspective on Income Redistribution and Poverty Reduction in Sri Lanka," May 1981. 27 p.

92. Kemal, A.R. and Porter, Richard C. "Learning by Doing While Remembering Forgetting, With Reminders From Pakistan Manufacturing Data," May 1981. 21 p.

93. Berg, Elliot J. "Intergovernmental Health Assistance in Francophone West Africa," June 1981. 46 p.

94. Ranney, Susan I. "Terms of Trade and Domestic Distribution: A Comment," July 1981. 11 p.

95. Porter, Richard C. "Apartheid, the Job Ladder, and the Evolutionary Hypothesis: Empirical Evidence from South African Manufacturing, 1960-1977," September 1981. 34 p.

96. Makinen, Marty. "A Benefit-Cost Analysis of Measles Vaccinations in Yaounde, Cameroon," November 1981. 20 p. (Republished in Social Science and Medicine, FORTHCOMING ISSUE 1983.)

* 97. Thomas-Peterhans, Randall. "The Stratification of Livestock Production and Marketing in the Zinder Department of Niger," September 1982. 39 p.

* 98. Berg, Elliot J. and Ainsworth, Martha. "A Strategy for Health Care in West Africa," November 1982. 35 p.

99. Josserand, Henri P. and Brazee, Richard J. "Domestic and Foreign Effort Applied to a Fish Stock: Getting the Most over Time, for a Change," May 1983. 14 p.

100. Ranney, Susan I. "Time Allocation and Remittance Flows: The Case of Temporary Mexican Migration to the U.S.," June 1983.

101. Ranney, Susan I. "International Capital Transfers and the Choice of Production Technique: A Simple Two-Country Model," June 1983.

102. Ranney, Susan I. "Economic Models of Planned Temporary Migration," June 1983.

103. Grosse, Scott D. "Rural Development and Rural-Urban Migration: The Elusive Relationship," June 1983.

Please refer to the Discussion Paper Number (DP#) when requesting one of these titles. Postage and handling charges are included in the individual and subscription prices.

*Available in French and English.