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A FAMILY MODEL OF MIGRATION

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Abstract—The family is not only a social but also an economic institution. It produces some goods and services exclusively for its members. An individual contemplating migration must consider the loss of some or all of the benefits of family membership. The extent of the loss depends on the family's willingness and ability to continue to provide services to the migrant. The family, therefore, can influence the migration decision of one of its members. This paper explores the relationship between individual and family interests in the migration decision in the context of the extended family in developing countries.

1. INTRODUCTION

Traditional theoretical models of migration based on the human capital approach [1] treat the potential migrant as an individual decision maker (DM). Family ties and attachment enter into the DM's assessment of migration only as psychic costs and benefits. The works of Akin and Polacheck [2] and Mincer [3] extend the human capital approach to the family migration decision. It is assumed that the family will move as a unit and choose the location that yields the highest discounted return to migration. This may not be the location that would have been selected by some family members if they had decided as individuals without strong family ties.

This study investigates the migration decision of the extended family in the context of developing economies. Its emphasis is on migration in the absence of uncertainty. It will be shown that the existence and strength of a common family goal, and the degree of the members' identification with that goal, can lead to differences in the migration behaviors. The assumption that the family will always move as a unit is relaxed. There seem to be only few studies investigating the family migration decision under these more general assumptions. Stiglitz [4], Ohashi [5], Fan and Stretton [6], and Lucas and Stark [7], are among those who have explored the role of the family in developing countries. This research builds on their contributions.

In Section 2, the economic importance of the family is discussed to provide the motivation for the theoretical arguments that follow. In Section 3, following the contributions of Marschak [8], families are classified according to the strength of the pursuit of a common goal. Building on this, Section 4 develops a deterministic model of family migration, and compares the behaviors of a family with strong member identification with the common (family) goal, and one with only weak such identification. The model developed in Section 4 could serve as a starting point for more general theoretical developments. Some of the extensions and their possible impact on the model's implications are discussed in Section 5. Finally, Section 6 provides a summary.

2. THE ECONOMIC ROLE OF THE FAMILY: BENEFITS OF FAMILY MEMBERSHIP

The main interest of economics is to explain the market exchange of goods and services between consumers and producers. Production that takes place *and* is consumed within the family is usually neglected. For the analysis of the family migration decision, however, the production of goods and services by the family for its own consumption must be considered. For example, since the family migration decision may not be individually optimal for some of its members [3], the losses of these members must be compensated for by the advantages of family membership. There are, of course, psychological benefits such as companionship and a sense of belonging. This section will only look at the economic benefits of family membership.

The selection, preparation, and maintenance of consumption goods is essential to their enjoyment. The family allows for the division of labor among its members in carrying out these activities (e.g. [9 Chap. IV]). The gain in efficiency may be considerable. A member who leaves the family is likely to experience increased cost of providing these services.

A second economic advantage of the family is its ability to pool resources and making them available to family members. By pooling resources, for example labor, equipment, or capital, family members may achieve significant gains over what could have been obtained through individual efforts. This will be of particular advantage when credit markets are underdeveloped. The ability of the family to pool resources and to make them available for projects that are in the common interest reduces, or even eliminates, the need to incur debt to purchase resources outside of the family.

The extended family fulfills some insurance functions [10]. It is able to distribute the risks of illness and/or loss of income of individual members. The ability and willingness of the family to share risk may encourage some of its members to engage in riskier activities with higher potential returns than they would otherwise. The family may also look after its old members who no longer are able to provide fully for themselves.

Related to the insurance function is the family's ability to increase the number of options that are available to an individual, or to keep options open. For example, a rural resident may be more willing to migrate to the urban sector if he/she knows that the family members staying behind will accept him/her back into the previous occupation if the decision should yield disappointing returns. The migratory move itself may also be made less risky by urban family members who will provide food, shelter, and job hunting tips until employment is secured (e.g. [11]).

Three major economic functions that the family provides for its members have been identified: the selection, preparation, and maintenance of consumption goods; providing access to its pooled resources; and working to reduce risk, particularly in insuring its members against loss of health and/or income and in providing for its old members. An individual who breaks family ties incurs an opportunity cost in the form of the loss of goods and services provided by the family.

It is not necessary that the whole family live at the same location for the family to fulfill its economic functions efficiently. The opposite may even be true for its insurance function. If members of the family work in geographically separated regions, the likelihood of a catastrophic loss of income for the family will usually be reduced. The consumption function may also be enhanced, as members in urban areas may have access to goods or services that are not readily available in rural areas. This implies that there may be economic benefits to the family to allow, or even encourage, the migration of some of its members [12]. It has, therefore, an incentive to play an active role in making migration decisions.

When the whole family does not live together at one location, its cohesiveness may suffer. It may not be feasible to provide equally well for all members, regardless of their place of residence. This could introduce discontent that may eventually result in a member or branch cutting its ties with the rest of the family. Frequent visits by migrants, other forms of interaction, and elevated social status for those who make sacrifices for the good of the family, will counteract possible trends to lose family members. It is clear that temporary or circular migration is less likely to result in the family to break apart than does permanent migration of some of its members.

3. THE FAMILY MIGRATION DECISION

An individual contemplating migration is assumed to evaluate the difference between expected discounted benefits and costs of migration. A move occurs if the difference is positive. The family is assumed to make a similar calculation. The discounted expected benefits and costs of the family and of an individual member will not, in general, coincide. Four outcomes are possible.

(a) Net discounted expected benefits are positive for both, family and individual members.

(b) Net discounted expected benefits are positive for the family but negative for some individuals.

(c) Net discounted expected benefits are negative for the family but positive for some individuals.

(d) Net discounted expected benefits are negative for both family and individual members.

There are no decision conflicts present in cases (a) and (d). In case (a) the individual will migrate with the blessing and support of the family and retain all rights of family membership, including access to the services that it provides. In case (d) there is agreement that migration is not desirable.

Cases (b) and (c) are more complicated. The individual potential migrant and the family differ in their assessment of the net returns to migration. Both cases can be further subdivided into one case where the "winner's" gains are sufficient to compensate the "loser", and one case where this is not possible.

In case (b), if the discounted expected net benefits of the family are larger than the net loss of the individual, the family can compensate the migrant. Thus, it is expected that migration would occur to improve the overall well-being of the family. The compensation offered to the migrant may be economic benefits; it could also consist of social benefits, such as enhanced social status and a greater influence in joint family decisions. In situations where the family is not able to compensate the potential migrant, no migration is expected to take place.

The situations in case (c) are similar, but the possibility of family break-up does exist. For example, even if the individual's net discounted expected benefits are sufficient to compensate the family for its losses, the individual may choose not to do so if the perceived costs of breaking with the family are smaller than the compensation that would have to be paid. A strong attachment to the family that makes the individual feel responsible for the family's well-being will reduce the likelihood of a member breaking away. But even in the absence of such psychological factors, the individual may agree to compensate the family to retain membership and continue to receive the goods and services that the family provides to its members. If the individual's gains are not sufficient to compensate the family, then two outcomes are possible. The gains from migration exceed the cost of the loss of family membership. Then the individual will move and risk the break with the family. If the gains are smaller than the benefits of having access to the goods and services offered by the family, no migration will occur.

It is more likely that an individual breaks away from the family in case (c) than that the family expells an individual for not making a sacrifice for the greater good in case (b). The reason for this is that any family member might one day be in the position to be asked to make a sacrifice. If refusal to do so results in expulsion, this may then happen to them, too.

The strength of family ties depends on the existence of a family goal and the correlation between family interest and the interests of individual members [8]. The classification developed by Marschak can be usefully employed to express the strength of non-economic family ties. Assume that the interests of the i-th family member can be represented by a preference ordering. The preference relation sG_is' expresses that i judges state s to be at least as good as state s'. The ordering of the family is denoted G without a subscript. S is used to denote the set of all states.

Marschak offers five propositions. Groups are classified according to the propositions that are valid for them.

A. Individual rationality: For every $i = 1, \ldots, N$ there exists a complete ordering G_i on S.

B. Transitivity of group interests: There exists a transitive ordering G on S.

C. Pareto optimality: For any s, s' in S, if sG_is' for all $i = 1, \ldots, N$, then sGs'.

D. Completeness of group preferences: For any s, s' in S, sGs' or $s'Gs$.

E. Solidarity: For all $i = 1, \ldots, N$, sG_is' if and only if sGs'.

If all five propositions are satisfied then the family is called a team. The family as a team is characterized by great cohesiveness. The individual member identifies so strongly with the family that there is no difference between his/her preference ranking and that of the family.

A weaker union of individuals exists if only conditions A through D are satisfied. Marschak calls groups satisfying only the first four propositions foundations. There is no longer the perfect coincidence between individual and group preferences. The family (or group) is still able to arrive at a consistent ranking of choices. This raises the interesting question of how the family's preferences are determined. There is no obvious answer except that it could not be by simple majority rule. If majority rule were used, condition B could not be guaranteed when there are more than two choices and more than two voting group members.

A group that only satisfies the first three conditions is called a coalition. By implication, it is a weak union in the sense that it may not be able to resolve difficult decision problems, as expressed by the fact that condition D does not hold. As in the case of the foundation, the question arises how group decisions are made when individual preferences of members are heterogenous. The fact that no decision may be possible at all suggests that the family may break up as the result of a decision conflict.

4. THE FAMILY AS A TEAM VS THE FAMILY AS A COALITION

The characterization of groups is useful in analyzing the family migration decision. Families do differ in the strength of the ties between members, and in the existence of and identification with the family goals and objectives. In this section, the two extreme cases, those of the team and of the coalition are examined. The following model of family migration is based on the assumption that the marginal return to labor depends on the season. This is true in agriculture where returns to labor are highest during planting and harvesting. For simplicity it is assumed that the year can be separated into only two seasons, a harvesting/planting season, and the rest of the year. The notation used is summarized below:

N	number of productive family members (given)
a	planting/harvesting season
b	other time of the year
N_R^i	number of family members working in the rural sector during season i, $i = a, b$
N_U^i	number of family members working in the urban sector during season i, $i = a, b$
Q_R	value of annual output from rural production
W_U^i	urban wage during season i, $i = a, b$
C_R^i	consumption of a family member living in rural area during season i, $i = a, b$
C_U^i	consumption of a family member living in urban area during season i, $i = a, b$
P_U	unit cost of consumption in the urban sector ($P > 1$)
K_R^i	non-labor input into rural production during season i, $i = a, b$
P_K	unit cost of non-labor input

It is assumed that all family members are productive and identical. The urban wage rate is assumed to be institutionally fixed, and the price of rural consumption is set equal to 1. The production function of the family's rural activities is given by (1):

$$Q_R = F(N_R^a, N_R^b, K_R^a, K_R^b), \quad (1)$$

$F(\cdot)$ is strictly concave. Equation (2) expresses the assumption that all available labor is employed,

$$N = N_R^i + N_U^i, \; i = a, b \quad (2)$$

The family derives its utility from the level of consumption it is able to afford its members. The amount of consumption goods is the same for all family members, regardless of place of residence. This assumption is reasonable here given that all family members are identical. The interpretation is not the same for the team and the coalition, however. A team would not *want* to treat identical individuals differently. In the case of the coalition, the individual members would not *accept* unequal treatment. If there were unequal treatment in the coalition among identical members, then subgroups of such individuals would form to improve their positions. Unlike the case of the team, individuals are only looking out for their own best interest, not for that of the family as a whole,

$$C_R^i = C_U^i = C^i, \; i = a, b \quad (3)$$

The family must stay within a budget constraint. Over the length of a year the budget must be balanced. For the team, the budget constraint takes on the following form:

$$Q_R + \sum_{i=a}^{b} [(N - N_R^i) W_U^i - N_R^i C^i - (N - N_R^i) C^i P_U - K_R^i P_K] = 0 \quad (4a)$$

This budget constraint must be met for both the team and the coalition. For the coalition, however, this constraint may not be sufficient. The assumption of individual rationality says that the family will stay together if and only if every member is at least as well off by staying with the family as he/she could be if the family ties were severed. In the case of the team this never becomes an issue because individual and family preferences coincide. The same is not true for the coalition. For example, if some members live in the urban sector and some stay in the rural sector, then selfish behavior may lead one of the two groups to increase its consumption at the expense of the other. Because of the distance between the two groups, such behavior may not be easily detected. To prevent unfair treatment the following additional budget constraint will be imposed:

$$F(\cdot) - \sum_{i=a}^{b} [K_R^i P_K + N_R^i C^i] = 0$$

$$\sum_{i=a}^{b} (N - N_R^i)(W_U^i - C^i P_U) = 0 \qquad (4b)$$

This new budget constraint satisfies eqn (4a). The converse is not necessarily true.

The objective function of the family is given by

$$U = \sum_{i=a}^{b} [N_R^i C^i + (N - N_R^i) C^i] = \sum_{i=a}^{b} NC^i \qquad (5)$$

The decision problem of the family is to maximize U subject to constraints (1–4). The decision variables are N_R^i, C^i, and K_R^i, where $i = a$, b. The decision variable N_R^i can only assume integer values. For the moment this complication is ignored. As will be shown later, the qualitative conclusions are not affected by treating N as a continuous variable.

If constraints (1–3) are incorporated directly into the budget constraint and the objective function, the Lagrangean of the problem can be written. Equations (6a) and (6b) state the Lagrangean for the team and the coalition, respectively:

$$L(N_R^i, C^i, K_R^i; N, W_U^i, P_U, P_K) \equiv \sum_{i=a}^{b} NC^i + \lambda \{F(\cdot) + \sum_{i=a}^{b} [(N - N_R^i) W_U^i - N_R^i C^i - (N - N_R^i) C^i P_U - K_R^i P_K]\} \qquad (6a)$$

$$L(N_R^i, C^i, K_R^i; N, W_U^i, P_U, P_K) \equiv \sum_{i=a}^{b} NC^i + \lambda_1 [F(\cdot) - \sum_{i=a}^{b} (K_R^i P_K + N_R^i C^i)] + \lambda_2 \sum_{i=a}^{b} (N - R_R^i)(W_U^i - C^i P_U) \qquad (6b)$$

Application of the Kuhn–Tucker conditions yields the following first-order conditions. Because of the assumption that $F(\cdot)$ is concave, they are sufficient. They are first presented for the case of the family as a team, and then for the family as a coalition.

Team

$$\partial F / \partial N_R^i - [W_U^i + C^i(1 - P_U)] \begin{cases} \leqslant 0 & \text{if } N_R^i = 0 \\ = 0 & \text{if } 0 < N_R^i < N \\ \geqslant 0 & \text{if } N_R^i = N \end{cases} \qquad (7a)$$

$$N - \lambda [N_R^i + (N - N_R^i) P_U] = 0 \qquad (8a)$$

$$\partial F / \partial K_R^i - P_K \begin{cases} \leqslant 0 & \text{if } K_R^i = 0 \\ = 0 & \text{if } K_R^i > 0 \end{cases} \qquad (9a)$$

$$[F(\cdot) - \sum_{i=a}^{b} N_R^i C^i - \sum_{i=a}^{b} K_R^i P_K] + \left[\sum_{i=a}^{b} (N - N_R^i)(W_U^i - C^i P_U) \right] = 0 \qquad (10a)$$

The first-order conditions have sensible economic interpretations. Since it was assumed that $1 - P_U < 0$, $-C^i(1 - P_U)$ indicates the added cost of consumption when a family member migrates to the urban area. The sum $W_U^i + C^i(1 - P_U)$ is the net contribution of the migrant to the family's funds from which consumption and K_R^i are financed. If this sum is smaller than the marginal product of a rural worker, then no migration will take place [see eqn (7a)]. If it is always larger, the whole family may move to the urban sector.

The sum $N_R^i + (N - N_R^i) P_U = N_R^i + N_U^i P_U$ is the unit cost of family consumption in season is. $C^i(N_R^i + N_U^i P_U)$ is obviously the total cost. Thus, eqn (8a) yields the result that the shadow price, λ, is equal to the ratio of the family's cost of consumption if everybody stays in the rural area, divided by the family's actual cost of consumption. Since, by assumption, $P > 1$, $\lambda < 1$ if $N_U^i > 0$ and $\lambda = 1$ if $N_U^i = 0$. λ is a shadow price. It expresses by how much the family's consumption could increase if the budget constraint were relaxed slightly. $\lambda < 1$ if $N_U^i > 0$ because of the higher cost of urban consumption.

The condition represented by eqn (9a) is straight forward. Non-labor inputs into rural production are only acquired if their unit cost does not exceed the marginal product. Finally, eqn (10a) restates the budget constraint. The term inside the first bracket is the net contribution of the rural part of the family to the family's consumption during season i. The term in the second bracket defines the contribution of the urban section of the family. Over the period of one year these two terms must balance. It is also clear that each term must be zero. If this were not true, then members in one sector would be earning more than those in the other. Hence overall consumption could still be increased by reallocating member to the sector with the higher earnings. It is possible, however, that members of the urban sector subsidize those in the rural sector during one season in return for a share of the benefits of increased productivity during the second season.

Coalition

$$\lambda_1(\partial F / \partial N_R^i - C^i) - \lambda_2 (W_U^i - C^i P_U) \begin{cases} \leqslant 0 & \text{if } N_R^i = 0 \\ = 0 & \text{if } 0 < N_R^i < N \\ \geqslant 0 & \text{if } N_R^i = N \end{cases} \qquad (7b)$$

$$N - \lambda_1 N_R^i - \lambda_2 N_U^i P_U = 0 \qquad (8b)$$

$$\partial F / \partial K - P_K \begin{cases} \leqslant 0 & \text{if } K_R^i = 0 \\ = 0 & \text{if } K_R^i > 0 \end{cases} \qquad (9b)$$

$$\lambda_1 \{F(\cdot) - \sum_{i=a}^{b} [K_R^i P_K + N_R^i C^i]\} = 0$$

$$\lambda_2 \left[\sum_{i=a}^{b} N_U^i (W_U^i - C^i P_U) \right] = 0 \qquad (10b)$$

Because of the family objective function the shadow prices λ_1 and λ_2 will not be zero. Thus, in eqn (10b) the terms in brackets must be zero. Let N_U^* be the number of family members working in the urban sector all year. Individual rationality of each member implies that

$$\sum_{i=a}^{b} (W_U^i - C_U^i P_U) = 0.$$

Then there are those family members who spend only one season working in the urban sector. Without loss of generality, assume that it is season b. Then it must also be true that $(N_U^b - N_U^*)\ (W_U^b - C_U^b P_U) = 0$. Since, by assumption, $N_U^b - N^* > 0$, it follows that $W_U^b/P_U = C_U^b$. Because this condition holds for the N^* full year urban residents, it follows that $W_U^a/P = C$ also. Individual rationality then forces $W_U^i/P_U = \partial F/\partial N_R^i$ for $i = a, b$; the real wage in the urban sector must be equal to the marginal product in the rural sector. It can be concluded from (7b) that $\lambda_1 = \lambda_2 P$. Substituting this for λ_1 in eqn (8b) yields $\lambda_1 = 1$ and $\lambda_2 = 1/P$. Unlike in the case of the team, members of the coalition who are working in the urban sector will not subsidize rural consumption during one season in return for higher productivity over the whole year. Equation (9b) is simply the condition that the marginal product of K should equal P_K, and (10b) is a restatement of the budget constraint.

The first-order conditions have been derived assuming that N_R^i is a continuous variable. It is clear that the conditions still hold even if N_R^i must always be integer valued. It should be noted, however, that a small N will then limit the extent to which the family can benefit from division of labor.

Comparison of team vs coalition

Are there significant differences in the migration behaviors of the family as a team compared to that of the family as a coalition? In both cases it was assumed that the family attempts to maximize average consumption. Both are subject to the same number of constraints. The constraints under which the coalition is maximizing consumption are more restrictive, however. It can be therefore concluded that the team affords a level of consumption to its members that is at least as high as that of the members of a coalition. That is, the solidarity that is expressed by the budget constraint (10a) has a non-negative economic payoff. The migration decision, and the level of consumption, are the same if and only if $W_U^i/P_U = W_U^i + C^i(1 - P_U)$. This follows from first-order conditions (7a) and (7b), and from the observation that $\lambda_1 = 1$ and $\lambda_2 = 1/P$. The migration decision is the same if and only if either $C^i = W_U^i/P_U$, where C^i is the average consumption of the team, or $P_U = 1$.

The first-order conditions for the team say that migration to the urban area takes place if and only if $\partial F/\partial N_R^i \leqslant W_U^i + C^i(1 - P_U)$. In the case of the coalition, the equivalent condition is that $\partial F/\partial N_R^i \leqslant W_U^i$.

There are three possible outcomes to the family's migration decision.

Case 1: no migration

Team: $\partial F/\partial N_R^i \geqslant W_U^i + C^i(1 - P_U)$

Coalition: $\partial F/\partial N_R^i \geqslant W_U^i/P_U \quad i = a, b$

Work in the rural sector is more rewarding than work in the urban sector.

Case 2: circular migration

Team: $\partial F/\partial N_R^a \geqslant W_U^a + C^a(1 - P_U)$

Coalition: $\partial F/\partial N_R^a \geqslant W_U^a/P_U$

$\partial F/\partial N_R^b = W_U^b + C^b(1 - P_U)$

$\partial F/\partial N_R^b = W_U^b/P_U$

In this case the family sends some of its members to work in the urban sector for part of the year, but during the planting/harvesting season all family members work in the rural sector. Thus in case 2 there is no permanent migration.

Case 3: permanent migration

Team: $\partial F/\partial N_R^i \leqslant W_U^i + C^i(1 - P_U)$

Coalition: $\partial F/\partial N_R^i \leqslant W_U^i/P_U \quad i = a, b$

If the above condition holds then, some family members will remain in the urban sector for the full year. It is possible that the whole family leaves the rural sector permanently, but it is also possible that only a part of the family will stay in the urban sector, while some members will become circular migrants, and some members will remain in the rural sector. In this latter case, the ties that exist between the permanent migrants and the rest of the family may weaken over time and a new "independent" branch of the family may be established in the urban sector.

It was shown above that the family team may subsidize members in the rural sector during one season. That is, because of the relationship between N_R^a and N_R^b, agricultural output may be maximized if rural workers are employed such that the marginal product of agricultural labor is larger than real urban wages in one season but smaller in the next. This implies that the interseasonal differences in the number of migrants are more pronounced for the team, or, equivalently, that circular migration is more likely to occur if the family is a team than if it were a coalition. It also follows that permanent migration is less likely.

It is not obvious that a difference, like the one just described, would actually exist in the absence of uncertainty. Recall that the difference in behaviors is the result of the pursuit of self-interest by coalition members, without regard of the effect on other members. The coalition's decision problem is akin to a prisoners dilemma. The optimal solution can be reached only if there is a mechanism that punishes those who are free riders. For this to work, however, it is necessary that free riders can be detected with reasonable ease. If this is the case (i.e. if there is no uncertainty about the behaviors of others), then the difference between team and coalition would disappear.

Detection of free riders will be more difficult if family members live far apart, so that communications and visits are infrequent. Hence, it is expected that differences between teams and coalitions become more pronounced as distance between origin and destination increases.

5. EXTENSIONS OF THE MODEL

Uncertainty

The model presented above accounts only for the benefits of pooling of labor resources in the absence of uncertainty. The ability of the family to insure its members may also be important. To avoid the complexities of dealing with different degrees of risk aversion, we assume that the family only seeks to maximize the chance of survival of all its members. Assume that S is the subsistence level below which survival is not possible. Let $E[W_U]$ be the expected urban wage and assume that $P_U S < E[W_U]$. For simplicity we have dropped the subscript i, that is, we assume that the year has only one season. Let q be the chance of obtaining a job in the urban sector that is paying W. Then $E[W_U] = qW_U$. The urban migrant has no savings to fall back on.

The output Q_R in the rural sector is subject to random fluctuations. Assume that Q_R has a uniform distribution over the interval $(0, Q_{\max})$. The number of family members is N. The probability that a rural resident will not survive is the probability that $Q < NS$. This probability is equal to $N_R S/Q_{\max}$. The probability that a migrant to the urban area will not survive is $(1-q)$. If $(1-q) > [N-1]S/Q(N-1)_{\max}$, then, an individual assumes a greater risk by moving than by staying. This constitutes a disincentive to migration. If the $N-1$ rural family members agree to "insure" the migrant against unemployment, this disincentive may be overcome. The probability that the whole family, rural family *plus* urban migrant, falls below the subsistence level, is equal to:

$$(1-q)\frac{[N-1]S + P_U S}{Q_{\max}} + q\frac{[N-1]S - [W_U - P_U S]}{Q_{\max}} = \frac{[N-1]S + P_U S - E[W_U]}{Q_{\max}}$$

Since, by assumption, $P_U S - E[W_U] < 0$, it follows that a risk sharing arrangement benefits both the rural family members and the urban migrant. It should be clear that the result would not hold if the two sectors are very strongly positively correlated. The ability of the family to act as insurer creates an incentive to maintain family ties. Indeed, if the probability of serious crop failure is sufficiently high, then the family may encourage some migration to better distribute risks.

Foresight

As presented above, the model implies myopic behavior on the part of the family and its members. Consumption is optimized over one year only. A more realistic approach should allow for a longer planning horizon. Present consumption may be foregone in favor of higher consumption in the future.

A family that has a planning horizon of several years is likely to consider the benefits and cost of investing not only in migration, but also in capital equipment or land. For example, remittances from urban migrants may be used to improve production conditions in the rural sector. If these investments increase the marginal productivity of rural labor, then migration will decrease and may eventually even come to a complete halt. Under this condition, migration will ultimately strengthen the rural economy.

Remittances can also be used, however, to invest in labor saving devices. In this case, less labor will be absorbed by the rural sector and initial migration will lead to additional migration in the future. The same happens if the family's budget constraint limits the extent of desired migration. Remittances can then be used to finance additional migration. This discussion illustrates that the net long run effect of urban migration cannot, therefore, be decided on theoretical grounds.

Property rights in land

The family that owns the land it uses in agricultural production not only gets the marginal product of its labor, but the whole agricultural output. Suppose that all family members hold equal property rights in the land and that they are able to retain them when they migrate. Contrast that with a family where members can exercise ownership rights only if they are present in the rural area. In the latter case, a rational member will migrate to the urban sector only if $W_U/P_U \geqslant F(\cdot)/N_R$. That is, the average product is compared to real urban wages, not the marginal product. A disincentive to migrate exists when ownership rights in land cannot be sold or held in abstentia. The arrangement of ownership rights is, therefore, of potential significance.

Optimal family size

If the family is defined as a production unit, then one can ask questions about optimal size. Because the family produces several commodities there will generally not be a unique family size that is optimal for all production processes. For example, a large number of members is advantageous for fulfilling the family's insurance function, while economies of scale may be quickly exhausted in the provision of consumer services. Rather than seeking a unique optimal size, there may be different family units providing different services. Consumer services may then be provided by the nuclear family, while some insurance functions may be the domain of the extended family.

6. SUMMARY

Most migration models analyze the decisions of individuals. Family ties, of course, are considered, but no economic role is usually assigned to the family. In reality, the family is not only a social but also an economic institution. It produces some goods and services exclusively for its members. Family membership, therefore, has economic rewards. A migrant might lose some or all of the economic benefits of family membership. This loss is to be counted as one of the costs of migration.

If the migrant moves against the will of the family, then exclusion from family provided goods and services is much more likely. But the individual may well be encouraged to move, as the family may also gain from migration. That this can happen was clearly demonstrated. This shows that the migration decision is a collective decision, reached by the family and the potential migrant, although the latter has the deciding "vote." "Voting" against the family's decision may be costly and an individual will do so only if the benefits are larger than the costs.

The value of services and goods provided by the family is likely to be larger in poor countries where capital and insurance markets are not well developed. Substitutes for the services provided by the family are, therefore, not readily available. In principle, however, the argument put forward in this article are general enough to apply to families in industrialized nations as well.

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