MIGRATION INCENTIVES, MIGRATION TYPES: THE ROLE OF RELATIVE DEPRIVATION*

Oded Stark and J. Edward Taylor

Almost without exception, economic studies of labour migration in less developed countries (LDCs) focus on the potential contributions that migration may make to the *absolute* income of the relevant migration unit (the individual, the family, or the household). In contrast, Stark (1984) has hypothesised that rural-to-urban migration might be undertaken primarily to improve an individual's or a household's comparative income position with respect to that of other individuals or households in the relevant reference group (for example, the village).

A recent study (Stark and Taylor, 1989) found empirical evidence that the initial relative deprivation of households in their village reference group plays a significant role in migration from Mexico to the United States. Controlling for initial absolute income and the expected income gains from migration, the propensity of households to participate in international migration was directly related to the households' initial relative deprivation.

In this paper we expand this earlier work by addressing the role of absolute income versus relative deprivation incentives for internal and international migration in LDC households, taking into account continuities across some labour markets and discontinuities across others. The rationale for the analysis is threefold. First, there are reasons to expect that the role of relative deprivation will differ between international migration and migration within a country, as we explain below. Second, sharp discontinuities in the returns to human capital between home- and host-country labour markets may affect the ability of households that differ in their human capital endowments to achieve income position gains through international migration. Third, a relative deprivation approach to migration has important implications for development policy. For example, the effects of rural development policies on rural out-migration, as predicted by an expected income model, may be precisely the opposite of those predicted by a relative deprivation model.

In Section I of the paper we outline the relative deprivation model of migration and present an illustration of the divergent policy implications of a

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relative deprivation model versus an absolute income model. An attempt is made to identify distinct empirical implications of relative and absolute income motives for migrating. In Section II a migration decision model is estimated and is used to explore absolute and relative income motives for internal and international migration in a sample of rural Mexican households, as well as to test the extent to which discontinuity in labour markets shapes the choice of migrant destination. In Section III we present our conclusions.

I. ABSOLUTE AND RELATIVE INCOME HYPOTHESES OF MIGRATION

A. *A Relative Deprivation Hypothesis*

Stark (1984) and Stark and Taylor (1989) hypothesise that household members undertake migration not necessarily to increase the household's absolute income but rather to improve the household's position (in terms of relative deprivation) with respect to a specific reference group. The case studied in those papers is of individuals who engage in migration to improve the income position of their households relative to that of all other households in the village. We draw here on an axiomatic foundation for an index of relative deprivation reported in Stark and Yitzhaki (1988) and Stark and Taylor (1989).

Assume a continuous income distribution. Each income unit can then be represented by an income range $[x, x+\Delta x]$ where $\Delta x \to 0$. Let $F(x)$ be the cumulative distribution of income in a village. Then $1 - F(x)$ is the percentage of households whose income is higher than x. Hence $1 - F(x)$ represents the percentage of households that have incomes sufficient to obtain the commodities represented by the income range $[x, x+\Delta x]$. By hypothesis, the feeling of deprivation is an increasing function of the percentage of households with incomes larger than x. Let $g[1-F(x)]$ be the deprivation from not having $[x, x+\Delta x]$, where $g(0) = 0$ and $g' > 0$. A household with income x is deprived of all units of income above x. Thus, we can represent the relative deprivation of household i, whose income is y_i, as

$$RD^i = \int_{y^i}^{y^h} g[1 - F(x)]\, dx, \tag{1}$$

where y^h denotes the highest village income. To simplify the discussion, we shall assume a simple form of $g[1-F(x)] = 1 - F(x)$. Subject to some algebraic manipulations, the expression on the right-hand side of equation (1) can be decomposed into the product of the mean excess income of households richer than the household with income y^i and the proportion of households in the village that are richer than the household with income y^i. (For a proof and analysis of the more general form $g(.)$, see Stark and Yitzhaki, 1988.) If all rankings are left intact, any increase in the income of a household richer than household i will increase the relative deprivation of household i, whereas any rank gain by household i (resulting in a decline of the proportion of households richer than i) will reduce the relative deprivation of household i.

The relative deprivation hypothesis is that migration will be observed if $U(RD_1^i) > U(RD_0^i)$, where RD_1 is the relative deprivation associated with migration and RD_0 is relative deprivation in the absence of migration. Thus individuals or households below the upper end of the income distribution may decide to engage in migration on the assumption that they will thereby succeed in improving their positions in the village by securing an income higher than their initial income.

To illustrate some of the new policy implications of the relative deprivation approach to migration, we consider an extreme example. In a country consisting of a village and a town, the income of every village household is 100; in the town, it is 200. As the result of a certain development policy, the income of half the village households rises to 150. What are the likely migration implications? In a world motivated solely by income differentials, the incentives for village-to-town migration will have declined unequivocally: the propensity to migrate of those earning 150 has declined, whereas that of those earning 100 remains as before. In a world motivated solely by relative deprivation, the prediction is exactly the opposite. If the village is the relevant reference group for village households, before the change no household had any inducement to migrate, since the relative deprivation of each and every household was nil. After the change, however, half of the village households – those which now experience relative deprivation (at the level of 25 units of income) – will have an incentive to migrate, whereas the incentive to migrate of the others (whose income is 150) will remain at zero.

When a household's utility is a function of both absolute income and relative deprivation arising from intra-group income comparisons, migration is observed if $U(Y_1^i, RD_1^i) > U(Y_0^i, RD_0^i)$, where Y_1^i, Y_0^i denote absolute income with and without migration, respectively. In this case, the effect of a policy change on the propensity to migrate from the village cannot be pre-signed because there are conflicting effects: the lower inducement to migrate of the households whose absolute incomes rise has to be weighed against the new inducement to migrate on the part of households whose relative incomes fall. The received theory, however, will admit only the former inducement and is completely blind to the latter. The relative deprivation theory of migration and the received theory of migration based on absolute income differentials generate conflicting predictions.

Suppose that a development agency is not indifferent to the migration implications of its policies and wishes to induce less migration, more migration, or keep migration at its existing level. If the relative deprivation theory of migration obtains, a new policy instrument is identified, and the policy mix will thereby change. For example, in an effort to stem rural-to-urban migration, equalisation of the rural income distribution could be combined with, reinforced by, or substituted for the narrowing of town–village income differentials.

B. *Reference Group Substitution, Labour Market Discontinuities, and Destination Choice*

Thus far we have assumed that the relative deprivation function is stable in the face of migration by one or more household members – that is, the household including its migrants continues to view the village as its relevant reference group. In a relative deprivation model of migration there is a risk that, through a reference group substitution of the host community for the village community, households may fail to decrease their relative deprivation – even if their relative incomes in terms of the village income distribution improve. The household's well-being is an increasing function of the well-being of all its members, regardless of their location. Migration may be associated with a rise in a household's relative deprivation if the host community becomes the relevant reference group for either the migrant or, perhaps less likely, the household members who remain in the village.

International migration to an entirely different social and cultural milieu can carry with it built-in protection against such reference group substitution and can ensure that the original reference group continues to be the relevant one for the migrant and his or her household (Stark and Taylor, 1989). By locating themselves in a host community distinct from their own, migrants are less likely to orient themselves to the host community than if they were to locate themselves in a 'neighbouring' host community. For a comparison with the host community to occur, some 'minimal similarity' between the migrant and that community must be perceived. This becomes more likely when direct social interaction or sustained social relations persist. In some cases, the host community may be intentionally selected to ensure estrangement, detachment, and social distance. Migrants may wish to guard against becoming oriented to the host community for fear that the secondary negative effects of a changing reference group might outweigh the primary positive effect of improving their position in relation to the original reference group. Thus international migration can enable households to exploit cultural and social discontinuity across international frontiers, capture this discontinuity, and transform international dissimilarities into a source of advantage. This consideration applies in particular to repetitive or temporary migration rather than to permanent, once-and-for-all migration; in the recent study cited, migration was by and large of the former type.[1]

Indeed, households may behave strategically to pre-empt reference group substitution associated with migration of a long duration by given (that is, the same) household members. Household members might be shuffled between destination and home, replacing each other as migrants. Note that, by construction, the analysis in the present paper is of a short-run nature.

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[1] There need not be a corresponding relation between absence of remittances and reference group substitution. For example, seasonal migrants who return home repeatedly may not need recourse to remittances to have their households of origin partake in the income earned at the destination of migration. Conversely, migrants who do remit may do so even though their village of origin does not constitute (part of) their reference group, as is the case when remittance flows are part of mutually beneficial, risk-sharing, implicit contractual arrangements. See Stark and Lucas (1988).

Reference group association and household attachment could become endogenous processes conditional on relative performance in a set of reference groups. Households and individuals may substitute one reference group for another to suppress the dissatisfaction arising from a high level of a group-specific relative deprivation. Such a substitution typically involves locational *and* mental migration and is bound to be time consuming.

In contrast with international migration, migration within a country is more likely to generate alienation and increased relative deprivation through a smooth reference group substitution, particularly when the country is socially and culturally homogeneous. This suggests that the role of relative deprivation in internal migration may be quite different from the role of relative deprivation in international migration, owing to social and cultural discontinuities across international borders.

Indeed, the full logic of this argument could lead to a puzzling neutrality result. Consider a household that experiences intra-village relative deprivation while, at the same time, facing a positive urban-to-rural income differential for one of its members. Should that household member engage in rural-to-urban migration, his increased alienation arising from a reference group substitution could offset any absolute income gain. The village household may recognise that the migrant member would need to 'tax' his higher urban income to compensate for a rising relative deprivation, thereby leaving little for urban-to-rural remittances. In this case, a relatively deprived household would not engage in internal migration via one of its members, even though the associated expected absolute income differential is positive. Consequently, neither the estimated coefficient for relative deprivation nor that for absolute income may appear significant in an econometric migration model.

Discontinuities in labour markets across international frontiers may, however, temper the role of relative deprivation in migration decisions. Paramount among these are differences in the returns to human capital. Education, skills, and work experience in the home country may enhance the returns to internal migration. But it is less clear to what degree these human capital assets are internationally transferable. When international migration takes the form of illegal entry into the host country, as is frequently the case with migration from rural Mexico to the United States, the returns to human capital in host-country labour markets may be minimal (Taylor, 1987).

Empirical work is therefore needed to pursue further an analysis of explanations for internal and international migration motivated by absolute versus relative income considerations. By including both absolute income and relative deprivation variables in a single household model of internal and international migration decisions, it is possible to isolate empirically the differential influence of relative deprivation on these two types of migration, provided that not all migration decision units are drawn from the same reference group. Estimated absolute household income if a household member does not migrate can be used to control for the effects of both the motivations to migrate and the capital constraints associated with absolute income in the migration equation. The relative income hypothesis is that when we control for

households' initial absolute income and human capital, the initial relative deprivation of households will have a positive influence on the propensity to send migrants to destinations where the potential returns to migration are large enough to alter significantly the relative income positions in the village, and where the risk of reference group substitution is small.

II. EVIDENCE FROM MEXICO

A. Data

Data from a survey of rural Mexican households were used to test for the effects of absolute income and relative deprivation on migration both to Mexican destinations and to the United States. The sample consists of 61 randomly selected households surveyed in the Pátzcuaro region of the state of Michoacán, Mexico, during the winter of 1983. From these households we obtained data on 423 adults who were 13 years of age or older. Data were collected for a set of characteristics – of both the individuals themselves and their households – that are likely to influence the returns to households from migration versus nonmigration work by household members. Data were also collected on the allocation of each individual's labour to migration and nonmigration activities and on household income from all sources during 1982. Income from nonmigrants includes net income from household farm production (farming, handicrafts, fishing, livestock, commerce, and the like), village wage work, and rental income.[2] Income remittances from migrants, either in Mexico or in the United States, are all net of reverse (household-to-migrant) flows and of direct migration costs. A 'migrant' is defined as an individual who left the village at any time during 1982 for the purpose of working. The shortest term of migration in the sample was approximately three weeks. Nonmigrants include individuals who remained in the village throughout the year, as well as a small group of secondary and post-secondary students who studied outside the village but did not participate in migrant *labour* activities. (The empirical results are not significantly altered if students are excluded entirely from the sample.)

Selected characteristics of the households of nonmigrants, internal migrants, and Mexico–US migrants, together with individual characteristics of the migrant and nonmigrant subsamples, are summarised in Table 1. In no case in

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[2] Income contributions from household farm work were imputed from the number of days worked on the household farm, valued at the prevailing agricultural wage in the village (this wage was substantially below the minimum agricultural wage in Mexico). Income contributions by the owner (or *de facto* owner in the case of *ejidos*, or reform-sector lands) of the household farm also include farm profits. These were calculated as the difference between the gross value of farm output, evaluated at the average farm-gate sales price in the case of subsistence farming, and all direct costs plus invisible costs. Direct costs include the cost of all material inputs, hired physical capital inputs (mechanical services, animal services, land), and hired labour inputs. Invisible costs include the cost of imputed wages of unpaid family labour. Income contributions also include rental income (land rents and payments received for capital services) and income from livestock (the net additions to animal stocks as well as sales of animals and animal products) received by owners of these capital goods from other households. Income from handicrafts, wood gathering, fishing, and other household farm activities was calculated in a manner analogous to net income from farm work.

Table 1

Selected Household and Individual Characteristics, 1982

	Nonmigrants	Internal migrants	Mexico–US migrants
Household characteristics			
Adult family size (13 years or older)	7·84	8·47	9·11
Landholdings (in hectares)	4·75	6·48	7·14
Percentage with family contacts (sibling, parent, sibling of parent) at internal migrant destinations	0·71	0·80	0·57
Percentage with family contacts (sibling, parent, sibling of parent) at US destinations	0·50	0·44	0·89
Wealth (total value of land, animals, and machinery, in thousands of 1982 US$)	2·11	2·47	3·47
Individual characteristics			
Sex (male = 1·0)	0·43	0·49	0·63
Age	33·40	28·48	28·70
Years of schooling completed	3·93	6·50	4·06
Years of internal migration experience	0·32	4·75	0·79
Years of US migration experience	0·76	0·74	4·91
Sample size	273	80	70

the sample was a person both an internal and a Mexico–US migrant in 1982. Distinct patterns characterise the households and individuals of the three labour groups. Note in particular the differences with respect to education, migration experience, and migration networks or family contacts at migrant destinations. Overwhelmingly, internal migrants from the households in this sample migrate to Mexico City. More than a third of all individuals in the sample were labour migrants during 1982. In no case, however, did an entire household leave the village. Thus, the households covered by the sample remained as stable and meaningful entities in their respective villages while individual household members participated in labour migration, typically remitting part of their earnings to the household. Each observation in the sample represents a separate allocation of household labour time.[3]

B. *Estimation*

A procedure to test the relative deprivation hypothesis requires estimation of the effects on households' internal and Mexico–US migration decisions of initial absolute income, initial relative deprivation, and factors expected to influence the net returns to households from undertaking migration.

A multinomial logit was used to estimate the probabilities that an individual participated in internal migration or Mexico–US migration work during 1982,

[3] While the use of a household decision framework obviously overlooks any autonomy of individuals in their labour allocations, we believe (and our empirical findings suggest) that to treat each migration decision as independent of a household decision problem would entail far more severe limiting assumptions than does simplifying the analysis to a household decision problem. Economic ties between migrants and their households in the village are strong, as illustrated by remittances: for all households in the present sample, migrant remittances account for an average 36.5% of total household income; every household that participated in labour migration received remittances; and nearly 90% of all migrants remitted.

versus the alternative of engaging exclusively in activities other than labour migration.

Let $\mathbf{X}_d$ denote a vector of characteristics of the household member and his or her household that are likely to influence the net income gain to the household from allocating the member's time to migrant destination d, such that this gain can be represented as $W_d = f_d(\mathbf{X}_d)$. Thus the household's income if the member migrates to destination d can be written as

$$Y_d = Y_0 + W_d = Y_0 + f_d(\mathbf{X}_d),$$

where Y_0 is the household's income in the absence of migration by the member. For $d = 1$ (internal migration) and $d = 2$ (Mexico–US migration), the vector $\mathbf{X}_d$ includes the household member's sex, age, education, status as household head or not, and migration work experience. These variables can influence household members' earnings as migrants in different labour markets as well as migrants' motivations to remit part of these earnings to the household. The vector $\mathbf{X}_d$, $d = 1, 2$ also includes household migration networks or contacts with relatives at prospective migrant destinations which can reduce the costs and risks associated with labour migration (especially those of illegal Mexico–US migration); and household wealth which can affect the household's willingness to participate in risky migration activities and its ability to secure financing for these activities. The net gains from migration are also a function of the income household members would contribute to the household as nonmigrants. Thus, $\mathbf{X}_d$ also contains variables that affect the returns to the member's labour in the village. These include the individual characteristics mentioned above plus household adults available to assume household-farm duties, and household landholdings. Landholdings may be an indication of the demand for labour on the household farm, especially where limited land rental markets exist, as in *ejido* (land-reform) areas of Mexico. Assuming that households allocate their members' time so as to maximise utility, the member will be observed as a migrant worker at destination d^* with a probability of

$$P(d^*) = \text{Prob}\,[U(Y_{d^*}, RD_{d^*}) > U(Y_0, RD_0) \quad \text{and}$$
$$U(Y_{d^*}, RD_{d^*}) > U(Y_{d'}, RD_{d'})], \tag{2}$$

where d' denotes the 'migration route not taken'.

Replacing $U(Y_{d^*}, RD_{d^*})$ and $U(Y_{d'}, RD_{d'})$ by their Taylor-series approximations around Y_0, we obtain

$$P(d^*) = \text{Prob}\,(\Delta_{d^*,0} > 0 \quad \text{and} \quad \Delta_{d^*,d'} > 0), \tag{3}$$

where $\quad \Delta_{d^*,0} = U(Y_0 + W_{d^*}, RD_0 + RD_0' W_{d^*}) - U(Y_0, RD_0)$

and $\quad \Delta_{d^*,d'} = U(Y_0 + W_{d^*}, RD_0 + RD_0' W_{d^*}) - U(Y_0 + W_{d'}, RD_0 + RD_0' W_{d'})$.

Substituting $f_d(\mathbf{X}_d)$ for $W_d, d = d^*, d'$, the probability that the member is assigned to migrant destination d^* becomes

$$P(d^*) = \phi(Y_0, RD_0, \mathbf{X}), \tag{4}$$

where $\mathbf{X}$ is a vector containing the variables in $\mathbf{X}_{d^*}$ and $\mathbf{X}_{d'}$.

Table 2

Definition of Variables

(Time period 1982)

Decision variable

$d = 0$ if the individual did not participate in labour migration;
1 if the individual was an internal migrant;
2 if the individual migrated to the United States

Income variables

Y = instrument for total household income without migration by household member j, in thousands of US\$
YSQ = Y squared
RD = instrument for relative deprivation associated with Y, in thousands of US\$
$RDSQ$ = RD squared

Household characteristics

$SIZE$ = household size
$LAND$ = household landholdings (in hectares)
$ADULTS$ = number of adult household members in the village
$WEALTH$ = total value of household's major physical assets (land, animals, and machinery), in thousands of US\$
$MEXNET$ = 1 if a close relative (sibling, parent, sibling of parent) of person j was residing outside the village in Mexico at the start of 1982; 0 otherwise
$USNET$ = 1 if a close relative (sibling, parent, sibling of parent) of person j was residing in the United States at the start of 1982; 0 otherwise

Individual characteristics

SEX = 1 if male;
0 if female
AGE = age
$AGESQ$ = age squared
ED = highest level of schooling completed
$HEAD$ = 1 if the individual is a household head;
0 otherwise
$MEXEX$ = years of experience as an internal migrant
$USEX$ = years of experience as a Mexico–US migrant

Let $\mathbf{Z}$ denote a $1 \times K$ vector whose components z_k are the explanatory variables $\widehat{Y}_0$, $\widehat{RD}_0$, and $\mathbf{X}$ (where $\widehat{Y}_0$ is the household's estimated income if the member does not migrate and $\widehat{RD}_0$ is the household's estimated level of relative deprivation associated with this income). The logit equations are given by

$$P(d^*) = \exp(\mathbf{Z}\boldsymbol{\beta}_{d^*}) / \left[1 + \sum_{d=1}^{2} \exp(\mathbf{Z}\boldsymbol{\beta}_d) \right] \qquad (5)$$

for migration types $d^* = 1$ (internal migration) and $d^* = 2$ (Mexico–US migration), where $\boldsymbol{\beta}_d$ is a $K \times 1$ vector whose components $b_{d,k}$ are the coefficients on characteristic k that correspond to migrant labour destination d. The logit reference category is nonmigration. The logit probability of nonmigration is

$$P(0) = 1 / \left[1 + \sum_{d=1}^{2} \exp(\mathbf{Z}\boldsymbol{\beta}_d) \right].$$

Definitions of the variables used in the logit analysis appear in Table 2. Instrumental variable techniques were used to obtain estimates of household

income in the absence of migration by a household member, correcting for sample selection bias. Instrumental variable techniques were also used to obtain estimated incomes of all other households in the corresponding village sample. An instrument for relative deprivation was obtained using the discrete form of equation (1). These procedures are presented in detail in Stark and Taylor (1990). The household sample was drawn from two villages. Thus, two similar absolute incomes do not necessarily imply similar levels of relative deprivation, and absolute income and relative deprivation can be treated as independent.[4] These absolute income and relative deprivation variables are the basis for testing the relative and absolute income hypotheses empirically.

Quadratic transformations of the two income variables are included in the empirical analysis to capture potential nonlinearities created by credit constraints (in the case of absolute income) and subsistence concerns (in the case of relative deprivation). Both the absolute and relative income hypotheses would predict a greater desire to engage in migration among households or individuals at the lower end of the village income spectrum. However, in the absence of smoothly functioning credit markets that give explicit preference to the poor – a condition characteristic of village economies in LDCs – households or individuals at very low levels of absolute income may be unable to engage in migration if migration is costly and the initial risks associated with it are high.[5] This is particularly likely in the case of international migration. In addition, at incomes very near or below subsistence, relative income considerations are not likely to matter as much as concerns for mere survival. Thus, we would expect a small increase in income (and a small decrease in relative deprivation) to have a positive effect on migration from households at the very bottom of the village income distribution – owing, first, to a loosening of capital constraints on migration and, second, to the increasing importance of relative deprivation considerations in these households' labour allocations. At higher income levels, in contrast, both the relative and absolute income hypotheses predict that increases in income will reduce the likelihood that households or individuals will engage in migration.

Strong dissimilarities between labour markets imply substantial differences in the returns to human capital for migrant workers. Although migration to a foreign labour market tends to minimise the added relative deprivation to which the household is exposed, there is evidence that returns to human capital are low in the labour-intensive, low-skill sectors in which opportunities for undocumented migrants in the United States are concentrated (Taylor, 1987; Stark and Taylor, 1989). In addition, skills acquired through work experience in Mexico may not be readily transferable to the United States. Thus, in choosing between international and internal migration, households may be confronted with a tradeoff between the risk of increased relative deprivation

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[4] The correlation between absolute income and relative deprivation for the sample is −0.41. This low correlation indicates sharp differences between the income distributions of the two villages.

[5] Borrowing against future earnings expected to arise from present investment in human capital is difficult even in developed countries, although the difficulty is eased somewhat by the availability of physical (nonhuman capital) assets that act as collateral. Such perfection of credit markets, limited as it is, does not typically apply to the poor in LDCs.

(through a smooth reference group substitution) yet high returns to human capital in the case of internal migration, and a low return to human capital yet low risk of increased relative deprivation in the case of migration to the United States. Should we therefore expect households to sort themselves out such that those with high relative deprivation and low skills engage in international migration, whereas those with lower relative deprivation and high skills resort to internal migration?

In light of the postulated tradeoff, it is not clear *a priori* how differences in relative deprivation, on the one hand, and human capital of household members, on the other, will jointly influence the allocation of household labour between internal and international migration when investment in human capital is taken as exogenous.

C. *Logit Findings*

The estimated coefficients in the decision model corresponding to each of the two migration labour categories are reported in Table 3. Standard errors appear in parentheses below each estimated coefficient. The coefficient on variable k for category d corresponds to the effect of variable k on the probability that a person migrated to place d *versus* the probability that he or she did not participate in any form of labour migration.

When interpreting these results, note that an insignificant coefficient with respect to a specific migration category does not imply that the corresponding variable does not affect the probability that an individual will be observed in that category. By equation (5), each probability depends on *all* the coefficients in the table. A variable that has a significant effect on one migration probability has at least an indirect effect on the other probabilities, since by construction the probabilities of the three destination choices must sum to unity.

In Section I we argued that absolute income may have a positive effect on migration from poor village households when migration is costly, credit markets are imperfect, and households therefore must self-finance migration costs. Our empirical findings confirm this expectation. The logit estimation yields a positive coefficient on absolute income and a negative coefficient on absolute income-squared for Mexico–US migration, both significant at below the 0·10 level. United States migration costs for the households in our sample include the costs of hiring *coyotes*, or smugglers, to assist with a risky, illegal border crossing. These costs averaged US$350 per migrant in 1982, representing a large 'sunk-cost' relative to average village incomes. By comparison, internal migration entails low costs and little risk. The negative coefficient on income-squared indicates that the probability of Mexico–US migration declines at the highest income levels.

When all other variables in Table 3 and also the effect of absolute income on international migration are controlled for, income does not have a significant *direct* effect on internal migration. It does, however, have a negative indirect effect on internal migration through its positive effect on international migration.

Table 3
Logit Results

Variable	Estimated coefficient	
	Internal migration	Mexico–US migration
Intercept	−10·309**	−16·491**
	(2·81)	(3·77)
SIZE	0·089	0·063
	(0·13)	(0·16)
LAND	0·017	−0·067
	(0·06)	(0·06)
ADULTS	0·130	0·422**
	(0·19)	(0·23)
Y	0·440	2·501*
	(1·36)	(1·90)
YSQ	−0·074	−0·400*
	(0·21)	(0·30)
RD	0·109	0·571**
	(0·21)	(0·28)
RDSQ	0·004	−0·039**
	(0·01)	(0·02)
WEALTH	0·027	0·185
	(0·24)	(0·22)
MEXNET	0·374	−0·021
	(0·52)	(0·55)
USNET	−0·315	1·993**
	(0·56)	(0·79)
SEX	0·186	0·602*
	(0·36)	(0·43)
AGE	0·348**	0·552**
	(0·11)	(0·14)
AGESQ	−0·006**	−0·009**
	(0·002)	(0·002)
ED	0·266**	−0·129*
	(0·06)	(0·09)
HEAD	0·067	−3·129**
	(0·82)	(1·09)
MEXEX	0·467**	0·144*
	(0·08)	(0·11)
USEX	0·141*	0·487**
	(0·10)	(0·09)

Log-likelihood = −194·22; * indicates significance at below the 0·10 level; ** indicates significance at below the 0·05 level; standard errors appear in parentheses.

Like absolute income, relative deprivation (*RD* in Table 3) has a significant impact on migration to US destinations but does not have a significant (direct) effect on internal migration. With everything else in the logit equation held constant, relatively deprived households are more likely to participate in Mexico–US migration than are less relatively deprived households. The coefficient on *RD* of 0·57 for Mexico–US migration is significant at below the 0·05 level, indicating an important role for relative income motives in Mexico–US migration.

The influence of relative deprivation on international migration is not the

same at all points in the village income spectrum. Relative income motives for Mexico–US migration are lower in the most relatively deprived households. The negative coefficient on the square of relative deprivation ($RDSQ$) is significant at the 0·05 level for Mexico–US migration. This result is consistent with the hypothesis, put forward in Section IIB, that subsistence concerns tend to dampen relative income considerations in the poorest village households.[6]

The findings suggest that the income neutrality result of relative deprivation theory, posited in Section IB, may hold in the case of internal migration for the households in this sample. If the perceived risk of a reference group substitution through internal migration is high, then internal migration ceases to be an effective means for achieving relative deprivation gains for households in the village. If the household perceives that the cost of reducing the migrant's sense of relative deprivation in the city is high, then internal migration may also cease to be viewed as an effective device for village households to achieve absolute income gains, even if there is a positive urban-rural income differential. This interesting possibility is ruled out by conventional, absolute income models of migration.

The remaining variables in the decision model are included for their hypothesised influence on the returns to migration versus nonmigration activities and on the motivation of household members to contribute all or part of their earnings to their respective households. We would expect migrating household members to be those whose attributes are most likely to be associated with high differentials in returns to the household from migration versus nonmigration activities. In addition, certain household characteristics are likely to have an important effect on both the probability of migration and the choice of migrant destination.

The logit analysis reveals striking differences between migrants and nonmigrants as well as between the two groups of migrants. On average, migrants tend to be male, 20–30 years of age, not heads of households, and to possess past migration experience. However, two of these variables affect the migration categories in very different ways. Although males are significantly more likely than females to participate in Mexico–US migration, sex plays an insignificant role in explaining internal migration. Household heads, in contrast, are very unlikely to engage in international migration but are no less likely to be internal migrants than are those who are not heads of households. The latter result no doubt reflects differences in opportunity costs between internal and international migration for household heads. For heads of households, administrative responsibilities on the family farm and other obligations in the village generally preclude migration to the United States, which typically entails a large commitment of both time and capital. Household members' schooling (ED) has a significant positive effect on the

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[6] Note that, even if subsistence concerns in poor households are captured by absolute income, we would nevertheless expect RD to lose its positive effect on migration probabilities in these households if relative income objectives are unimportant next to survival objectives. In the present sample, a marginal increase in RD ceases to have a positive effect on migration probabilities in the 14% of the sample that constituted the most relatively deprived households.

probability of internal migration but is negatively related to Mexico–US migration. Not surprisingly, better-educated villagers are much more likely to migrate to destinations in Mexico, where returns to schooling are likely to be high, than to low-skill undocumented immigrant labour markets in the United States.

Household members' experience as migrants in the United States and experience as migrants in Mexico have a positive association with the probability of migration to *both* destinations. However, the estimated coefficient on US migration experience in the US migration equation (0·487, significant at below the 0·05 level) is more than three times the coefficient on US experience in the Mexico migration equation (0·141, significant at the 0·10 level). Similarly, although experience as an internal migrant is positively related to both types of migration, it has a larger and more significant effect on internal migration than on international migration. On the one hand, these findings suggest that migration experience has a general positive effect on migration propensities and that some migration work experience may be transferable across migrant destinations. On the other hand, they indicate that destination-specific migration experience plays a powerful role in shaping migration decisions. These general and destination-specific migration experience effects are analogous to the differential effects of general training and firm-specific training in employment and earnings studies.

Several other variables in Table 3 stand out as significantly influencing migration decisions. Mexico–US migrants tend to originate from households with other adult members in the village (*ADULTS* in the table) who can assume the household farm duties of those who migrate. In addition, households with kinship networks in place in the United States (*USNET*) are significantly more likely to send additional members to the United States. The particularly large and significant coefficient on *USNET* for the Mexico–US migration category reflects the important role that kinship contacts play in international migration where risks are highest, labour market information is most costly and scarce, and the penalty for failure (that is, lost time and capital) is most severe. Internal migration networks (*MEXNET*), in contrast, do not significantly affect internal migration. This reflects the relative ease with which individuals in this sample can migrate and re-migrate internally (that is, take corrective action in case of a failure).

III. CONCLUSIONS

The findings from Mexico reported in this paper provide evidence that, if absolute income is controlled for, relatively deprived households are more likely to engage in international migration than are households more favourably situated in their village's income distribution. In contrast, the findings suggest an interesting 'income neutrality' result, unique to relative deprivation theory, in the case of internal migration. The perceived risk of a reference group substitution through internal migration is likely to be high. In this case, rural-to-urban migration may cease to be an effective vehicle for achieving either

relative or absolute income gains for village households. This possibility is ruled out by conventional, absolute income models of migration. The empirical finding that both relative deprivation and absolute income are significant in explaining international migration but have no significant (direct) effects on internal migration from the households in our sample is consistent with this 'income neutrality' hypothesis. The results for Mexico–US migration support the relative deprivation hypothesis in the case where a reference group substitution is less likely.

Choice of migrant destination is also influenced by the differential returns to human capital in internal and foreign labour markets. Our econometric results suggest that, independent of relative deprivation considerations, households wisely pair their members with the labour markets in which the returns to their human capital are likely to be greatest.

This analysis leads to several new policy implications. Contrary to the assumption that all types of migration can be attributed to the same explanatory variables, our results suggest that (at least in the context studied) a specific type of migration constitutes a response to a specific configuration of variables. Thus a distribution-neutral development policy that shifts a village income distribution to the right would reduce the incentive to engage in internal migration for all but the richest households (that is, in the present case, by relieving credit constraints on international migration). Conversely, a distribution-biased policy leading to a more equal income distribution (for example, provision of stronger support for the poorest households) could tip a migration balance from international migration to internal migration.

The possibility that different variables may be the cause of different types of migration could lead to the paradoxical result that interference – say, to stem migration – will result in its rise. Raising the incomes of highly relatively deprived households in a poor village may reduce these households' relative deprivation incentive to engage in international migration but, in the presence of imperfect credit markets, may also unleash their hitherto constrained propensity to engage in such migration.

Finally, *if* the disutility from relative deprivation and the migration response to it are an increasing function of own (absolute) income, a 'relative deprivation paradox of migration' may operate: economic development that does not redress intra-village income inequalities (that is, a distribution-neutral rise in income) may be associated with *more* international migration.

Harvard University

University of California, Davis

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<div align="center">REFERENCES</div>

Stark, O. (1984). 'Rural-to-urban migration in LDCs: a relative deprivation approach.' *Economic Development and Cultural Change*, vol. 32 (3), pp. 475–86.
—— and Lucas, R. E. B. (1988). 'Migrants, remittances, and the family.' *Economic Development and Cultural Change*, vol. 36 (3), pp. 465–81.

Stark, O. and Taylor, J. E. (1989). 'Relative deprivation and international migration.' *Demography*, vol. 26 (1), pp. 1–14.
—— and —— (1990). 'Relative deprivation and migration: theory, evidence and policy implications.' University of California, Davis, Department of Agricultural Economics, Working Paper No. 90-13
—— and Yitzhaki, S. (1988). 'Labor migration as a response to relative deprivation.' *Journal of Population Economics*, vol. 1 (1), pp. 57–70.
Taylor, J. E. (1987). 'Undocumented Mexico–U.S. migration and the returns to households in rural Mexico.' *American Journal of Agricultural Economics*, vol. 69, pp. 626–38.