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Labour migration and its impact on employment and income in a small farm economy

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Introduction

The present paper attempts to study the migration of rural labour in the setting of a predominantly small farm economy: the hill regions of northern India. In the first place it proposes to identify, in a fairly conventional way, the major determinants of rural workers' propensity to migrate. In this part of the investigation the role of both internal (i.e. regional) and external factors in shaping migration response is examined. The influence of these factors may of course be positive or negative. The propensity to migrate is assumed to vary directly with the level of education, household (or family) size, the number of household members of working age (especially under conditions of under-employment in the region), and income at the potential migrant's destination, and inversely with farm size and age. The combined effect of farm size and level of education is also evaluated. The model used to measure the migration response relationship is given in the Appendix.

However, the main originality of the present investigation lies in its second objective, which is to analyse the *effects* of outmigration on employment and income in the region of origin. The significance of this is evident when we consider some of the peculiarities of a traditional society like that of India, and particularly of the region that is the subject of this study. One such peculiarity is the dominance of joint (or extended) family systems, especially in rural areas, so that migrants often retain close links with their families (in many cases including their wives and children) who stay behind in the villages. One of the consequences of such links is that a part of the migrants' income (some-

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times a substantial part) flows back to their place of origin. To that extent migration results in intersectoral and inter-regional transfers of income, which may also change the pattern of income distribution in the migrants' home areas. These considerations can be quite significant in predominantly small farm economies that are already characterised by marked disparities in income and employment opportunities both within and among regions.

The region of the present study, like most other hill regions, has experienced a comparatively high degree of labour force mobility. In the words of an official gazetteer: " One of the most remarkable features [of the population of this region] is its fluctuating nature. . . . During the cold weather . . . the hill pattis [villages] are almost deserted." This, of course, is purely seasonal migration, not to be confused with the long-term movement of people in search of better income and employment opportunities. But in either case the volume of migration is considerably greater in the hill regions than in the plains. Studies undertaken by the author in two plains and one hill district of Uttar Pradesh, India's most populous state, show that migrants account for 12.2 and 12 per cent of the working-age population (15-55 years) in the first two districts but as much as 20 per cent in the third; indeed, if we include members of the family living with migrants from the hill district the figure comes to roughly 26 per cent of the *total* population, which is indeed substantial. Most of the migrant workers are males—a phenomenon very common among rural migrants all over India.

The higher rate of long-term outmigration of labour has to be understood against the background of a number of particular climatic, economic and agricultural circumstances. The severe climatic conditions during the winter months compel the hill people, most of whom are very small and poor landholders, to go down to the plains every year until the warmer weather returns. Again, farming in the hills is mainly primitive: terrace cultivation, lack of irrigation, small (sometimes very small) scattered holdings [1] and many other unfavourable factors have resulted in low farm yields and incomes. In addition, there is acute pressure of population on good cultivable land and a lack of employment opportunities within the region. For the hill people farming is not, as it is for the rural population of the plains for instance, the mainstay of the economy. Unsuitable topography, weather conditions and deficiencies in the irrigation system are major constraints on the adoption of the new high-yielding varieties by the hill region, which already lags well behind the plains in modernising its farming.

The data used in the present study [2] were collected—with the help of well structured questionnaires—from a cross-section of 100 households distributed among ten villages selected from the Almora hill district of Uttar

[1] The average size of operational holding in this region is less than a hectare, as against 2.3 hectares in the country as a whole.

[2] The author wishes to thank the G. B. Pant University of Agriculture and Technology, Pantnagar, Uttar Pradesh, for its valuable assistance in conducting the research on which this paper is based.

Pradesh by stratified random sampling. The district has a long-standing tradition of migration, both seasonal and permanent, among the active labour force. Though no universality can be claimed for the results, it would be safe to say that they should be largely true for the majority of northern hill regions, which have many agro-climatic and economic characteristics in common. They could also be valid for non-hill regions suffering from economic backwardness reflected in low incomes and inadequate employment opportunities.

Results and discussion

The results of the analysis will be presented in two parts, the first dealing with the determinants of migration and the second with its effects on the hill region's economy in so far as employment and income are concerned.

Determinants of migration response

INCOME

The income earned by migrants at the various destination points (MIA) emerges as the most powerful factor influencing people's decisions to migrate, especially among able-bodied males with some education. The regression results [1] (table 1) show that with a 1 per cent change in income there is a 0.3 per cent change in the number of persons moving out of the region. The elasticity coefficient for this variable is highly significant statistically, as shown by the low standard errors of estimates in all the regressions tried. It was not possible to specify the variable in any other way, e.g. in terms of income differentials net of migration costs, primarily because no data could be obtained on pre-migration earnings. In fact, however, if the migrants had stayed in the region many of them would have remained either unemployed or seriously underemployed. Of course, most migrants earn more than most non-migrants (tables 5 and 6), but this does not mean there are not substantial variations in migrants' earnings even within the same educational and age groups. Of all the migrants, 46 per cent work outside their state, mostly in high-wage areas such as Delhi, the Punjab, Ahmedabad and Bombay, 22 per cent work in large cities within the state, and the remaining 32 per cent work in the nearest urban areas to their region of origin.

EDUCATION

Education (EDN) emerges as another variable with a strong positive bearing on migration response. The elasticity coefficient ranges from +.27 to +.29,

[1] Regressions were run in both the linear and the log-linear forms; except for slightly higher values of R^2 in the linear form, more or less comparable results were obtained whether as regards the sign, the value or the significance level of the regression coefficients. However, mostly for the sake of convenience, discussion of these findings will be based on the results of the log-linear form.

Table 1. Migration response function (log-linear)

Equation	Constant *a* in logs	Regression coefficients for: MIA	OLH	EDN	OLH×EDN	AGE	SHT	SHA	R^2	*F*
1	−2.0322	.2931 [1]	−.0800	.2370 [2]	.	−.0064	.	.0217	.4711	7.84
		(.0718)	(.1311)	(.0913)		(.0062)		(.1311)		
2	−1.8838	.3050 [1]	−.0621	.2615 [2]	.	.0056	.1322	.	.4788	8.08
		(.0674)	(.0562)	(.0893)		(.0062)	(.1613)			
3	−1.8867	.3089 [1]	−.1072 [3]	.2904 [2]	.1011 [3]	−.0058	−.1541	.	.5007	7.19
		(.0668)	(.0648)	(.0908)	(.0735)	(.0062)	(.1605)			
4	−2.0670	.2973 [1]	−.1232 [3]	.2630 [2]	.0936 [3]	−.0067	.	.0117	.4901	6.89
		(.0714)	(.0657)	(.0930)	(.0741)	(.0062)		(.1305)		
5	−2.3131	.3024 [1]	−.1017 [3]	.2693 [2]	.0909 [3]	.	.	.	.4763	10.23
		(.0661)	(.0604)	(.0872)	(.0732)					

Note: Standard errors of estimates are given in parentheses.
[1] Significant at the 1 per cent level. [2] Significant at the 5 per cent level. [3] Significant at the 10 per cent level.

being highly significant statistically in all cases. Migrants' households in the sample were found to have an average level of 7.1 years' schooling per member compared with only 3.5 years in non-migrants' households. Education influences migration propensity in two main ways. First, it enhances the recipient's employability (and earning capacity) outside his home area (besides possibly making him dissatisfied with his present circumstances); and second, it helps him to gather information—probably at less cost—about outside jobs and earning prospects. It is significant that whereas nine educated migrants out of ten ascertained this information themselves, over half the illiterate migrants relied on information provided by friends, relatives or labour contractors.

OPERATIONAL LANDHOLDINGS

Increasing farm size (OLH) reduced the propensity to migrate, though the elasticity coefficient is low and statistically significant only at the 10 per cent probability level. On the larger farms there appears to be an increased demand for family labour, with a consequential adverse impact on the volume of outmigration. However, the very small size of most farms in the hills (as we saw earlier, the average farm is less than a hectare) means that the effect of this variable may very well be outweighed by factors working in the opposite direction. Another factor that may, to some extent, weaken the incentive to migrate is the modernisation of agriculture, particularly through the adoption of labour-intensive but growth-promoting modern inputs. Here again, though, we have seen that for various reasons the hill farms are not well-suited to such innovations.

COMBINED EFFECT OF FARM SIZE AND EDUCATION

The inclusion of the interaction term (OLH × EDN), besides improving the explanatory power of the model, also resulted in increasing the significance level of the two variables (see equations 3 to 5, table 1). But more interesting is the fact that the combined effect on migration is positive. This implies that the positive effect of education has swamped the negative influence of the farm size variable. This is quite plausible considering the small size of land-holdings, the shortage of opportunities for wage-earning employment in the region and the prospects of better earnings outside. Under such conditions education may be expected to have a far greater impact on migration than any other internal factor.

AGE

It was confirmed that as people grow older they tend to migrate less, though the regression coefficient for the age variable is statistically not significant. The majority of the hill migrants are between 15 and 40 years old, the average age being 35. The inverse migration-age relationship is due to the fact that the return on investment in human capital declines with advancing age, while on the other hand older people tend to develop stronger attachments to their property and families. The psychic cost of migration is relatively higher and the incentive to move out weaker in tradition-bound rural societies than in industrialised ones.

FAMILY SIZE

The family size variable was defined in terms of the total number of household members (SHT) and the number of household members of working age, i.e. 15-55 years (SHA). In both cases the effect on migration response was positive but not significant statistically. The positive sign of this variable does suggest that the pressure of population on land, which is bound to be accentuated with increasing family size, forces people to seek outside employment.

Effects of migration

EMPLOYMENT

Employment here refers to the employment of wage earners.

The principal sources of employment for the households surveyed are to be found outside the hill region (table 2) inasmuch as 81.3 per cent of all the wage-paid workers in the sample are migrants having employment exclusively outside the region. The inadequacy of employment openings within the region, whether on farms or in other activities, is clearly demonstrated by the fact that fewer than 9 per cent of wage earners are employed there exclusively in agriculture and only 3.3 per cent exclusively on non-agricultural work with another 1.1 per cent employed on both agricultural and non-agricultural work.

Table 2. Employment structure of wage-paid workers

Category of employment	% of workers	No. of man-days per worker per annum
Agriculture (exclusively) within the region	8.9	89
Non-agriculture (exclusively) within the region	3.3	62
Agriculture and non-agriculture within the region	1.1	240
Agriculture within and non-agriculture outside the region	2.1	200
Non-agriculture within and work done outside the region	3.3	113
Exclusively as migrants outside the region	81.3	300
All categories	**100.0**	**264.5**

It is thus clear that farming and non-farming activities make an insignificant contribution to the provision of wage-earning employment in the region. Besides, the two largest groups of non-migrant wage earners—those engaged respectively in agricultural and non-agricultural activities exclusively and accounting for some 12 per cent of all workers in the sample—are grossly underemployed, averaging between two and three months' work a year. External sources provide the bulk of employment, with migrant labour also being almost fully employed. In present circumstances, therefore, migration acts as a powerful factor alleviating both unemployment and underemployment in the hill region's economy and thereby helping to raise its depressed levels of income.

There is, however, a pronounced difference in employment intensity between the seasonal and the permanent or regular migrants. As is evident from the data in table 3, there is considerable underemployment among seasonal migrants, who constitute about 34 per cent of the total. Similarly, all the female workers, none of whom is a permanent migrant outside the

Table 3. Percentage distribution of migrants by number of days worked during the year

No. of days worked	Seasonal migrants			Permanent migrants	All migrants		
	Male	Female	Total	Male	Male	Female	Total
0-59	17.4	100.0	29.6	—	5.3	100.0	10.0
60-119	34.8	—	29.6	—	10.5	—	10.0
120-179	17.4	—	14.8	—	5.3	—	5.0
180-239	17.4	—	14.8	—	5.3	—	5.0
240-299	8.7	—	7.4	—	2.6	—	2.5
300 and over	4.3	—	3.8	100.0	71.0	—	67.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 4. Sources of income by type of household

Source of income	% of total income earned by:		
	Migrants' households	Non-migrants' households	All households
Farming (crops only) [1]	39.1	82.4	51.9
Other local [2]	0.6	17.6	5.6
Migrants [3]	60.3	—	42.5
	100.0	100.0	100.0

[1] Gross revenue *less* cost of purchased inputs. [2] Includes income derived from livestock and non-agricultural labouring, shopkeeping, etc. [3] Gross annual income earned by migrants outside the region.

region, work for less than two months a year. On the other hand, the entire group of permanent migrants enjoy full employment in the sense of having work right through the year.

INCOME

That income generated through migration contributes significantly to the resources of the region is evident from the fact that the income earned by migrants accounts for as much as 42.5 per cent of the income earned by all households in the region from all sources. If only migrants' households are considered, however, the proportion rises to 60.3 per cent (table 4). The better employment opportunities enjoyed by migrants' households are reflected in significantly higher levels of annual income than those of non-migrants' households. Table 5 shows that 82 per cent of the latter have annual incomes of less than Rs. 3,000, and that none of them has more than Rs. 6,000, whereas 12 per cent of migrants' households have over Rs. 10,000. Over-all, external sources of income contribute appreciably to the general economic well-being of the region, as can be seen from the last column in table 5. This conclusion is confirmed when an estimate of income per head and per household is obtained for the sample by adding the external income to the income generated internally as under:

Category of household	Income per head (Rs.)	Income per household (Rs.)
All households	**617**	**3 680**
Migrants' households	746	5 180
Non-migrants' households	437	2 179

Whether or not migration results in further inequalities in the distribution of household income in the region can be gauged from the distribution by

Table 5. Percentage distribution of households by income level

Annual income (Rs.)	Migrants' households	Non-migrants' households	All households
0-999	2	22	12
1,000-1,999	10	28	19
2,000-2,999	8	32	20
3,000-3,999	12	8	10
4,000-4,999	6	6	6
5,000-5,999	6	4	5
6,000-6,999	16	—	8
7,000-7,999	12	—	6
8,000-8,999	12	—	6
9,000-9,999	4	—	2
10,000-14,999	8	—	4
15,000-19,999	4	—	2
	100	100	100

decile group shown in table 6. The standard deviations of logs of income have also been worked out for the three cases, i.e. migrants', non-migrants' and all households, in the last case by adding the external sources of income to the internal sources in order to show the post-migration income and its distribution. The inequalities may be examined from two angles: inequalities between migrants' and non-migrants' households; and inequalities in the overall distribution of household income in the region when account is taken of both the internal and the external sources of income—the latter representing the contribution of migration to regional income. As shown by the standard deviation of logs of income, used here as a measure of income inequalities, income due to migration does in fact lead to further inequalities in the distribution of household income. The standard deviation of logs of income, which is 0.64 in the case of the non-migrants' households (this may be considered to represent the general income in the region in the absence of migration), increases to 0.76 when all household incomes (internal and external) are taken into account; it rises still further to 0.83 in the case of migrants' households. The share of income received by the poorer households consistently declines as a result of migration (compare the incomes of non-migrants' and all households in table 6), while that of the relatively high income households increases. For example, the top 30 per cent of households receive about 52 per cent of total income in the absence of migration (let us call this the pre-migration period), as against some 55 per cent in the post-migration period. The share of the bottom 30 per cent, on the other hand, declines from 12.2 per cent in the pre-migration to 9.8 per cent in the post-migration period. The share of the migrants' high income group is still higher than that of the non-migrants'.

Table 6. Distribution of households by annual income [1]

Decile group	Migrants' households			Non-migrants' households			All households (all sources)		
	Rs.	%	Cumulative %	Rs.	%	Cumulative %	Rs.	%	Cumulative %
1	819	1.6	1.6	608	2.8	2.8	714	1.9	1.9
2	1 637	3.2	4.8	942	4.3	7.1	1 290	3.5	5.4
3	2 135	4.1	8.9	1 104	5.1	12.2	1 620	4.4	9.8
4	3 674	7.1	16.0	1 498	6.9	19.1	2 586	7.0	16.8
5	4 367	8.4	24.4	1 762	8.2	27.3	3 064	8.3	25.1
6	4 660	9.0	33.4	2 123	9.7	37.0	3 391	9.2	34.3
7	5 658	10.9	44.3	2 441	11.2	48.2	4 049	11.0	45.3
8	6 943	13.4	57.7	2 862	13.1	61.3	4 902	13.3	58.6
9	8 074	15.6	73.3	3 585	16.4	77.7	5 830	15.8	74.4
10	13 835	26.7	100.0	4 865	22.3	100.0	9 350	25.6	100.0
Mean income	5 180.20			2 179.00			3 679.60		
Standard deviation of income	3 810.27			1 313.23			2 556.33		
Standard deviation of logs of income	0.83			0.64			0.76		

[1] Based on income estimates for 1973-74 at current prices.

If one looks at the average levels of income received by each of the decile groups, a similar picture emerges of migration widening the gap between the lowest and the highest income group in the region. The top 10 per cent of income recipients among the migrants earn 17 times as much as the bottom 10 per cent, whereas the differential is only eight times in the case of the non-migrants. When internal and external sources of income are taken together, the income of the top decile works out at 13 times that of the bottom decile. Thus, whichever way one looks at it, the existence of external sources of income seems to increase the inequality of household income distribution in the region.

This is not to suggest that outmigration *per se* has, or might have, adverse economic consequences. The main purpose of the above analysis has been rather to show the impact it appears to have on the economy of the region of origin by reducing unemployment and raising incomes, and also on the distribution of its benefits among the region's households.

Summing up

Among the explanatory variables considered, income—representing peoples' expectations about outside earnings—and education appear to be the most powerful factors having a positive influence on migration propensity.

The effect of family size is also positive, though very weak. Increasing farm size and age, on the other hand, tend to discourage migration, though the relationship between migration and age is not statistically significant. The combined effect of farm size and education is both positive and significant, the influence of the former being more than offset by the overwhelming impact of the latter. Migrants' households enjoy markedly higher levels of both schooling and per capita income than non-migrants' households.

The data on employment clearly reveal the dire lack of wage-earning opportunities within the region and the consequent existence of acute underemployment among those engaged solely in agricultural or non-agricultural activities. Migrants working outside the region, on the other hand, have almost full employment.

As a consequence of better employment opportunities, the migrant workers' households also enjoy higher levels of income. Remittances from migrants contribute more than two-fifths of total income in the region. At the same time, however, the influx of external income results in a more unequal distribution of household income in the region.

At its present level of technology and development, not to mention other constraints, hill agriculture is incapable of providing the labour force with anything approaching a satisfactory level of employment or earnings, and the same applies to other activities in the region. This has led to continuous migration of the able-bodied adult population in search of jobs outside it. Although the resulting depletion of the active labour force may be a contributory factor in the neglect of farming, it is difficult to visualise any measures to prevent it which would be either desirable or effective unless remunerative employment opportunities were created in sufficient quantity by modernising agriculture and developing other activities that have some potential in the region; and even then it seems unlikely that the entire labour force could be absorbed, particularly in the farming sector.

Thus, in view of the fact that the region will not be self-sufficient with respect to employment opportunities in the near future, that lucrative opportunities in the growing urban-industrial centres outside the region will continue to exercise a strong attraction, and that education will greatly enhance people's willingness and ability to migrate (as well as their earning capacity), it will be desirable to promote qualitative improvements in the labour force through the provision, inter alia, of appropriate vocational training. At the same time, of course, it is important not to neglect the infrastructural and other conditions for economic development in the hill region itself. In a labour-abundant area where small, barely viable farms predominate, the solution to rural poverty must lie to a great extent outside agriculture. Hence the need, too often ignored in developing countries, to eliminate the various imperfections in their rural labour markets so as to facilitate the mobility of labour and its absorption in the desired directions. In this context, the importance of education, information and training must be repeatedly impressed on public policy-makers.

Appendix. The model

In accordance with the hypotheses postulated in the text, the migration response relationship was expressed in the form of the following regression model:

$$MIG_{ij} = a + b_1 MIA_j - b_2 OLH_i + b_3 EDN_i \pm b_4 OLH_i \times EDN_i + b_5 SHT_i + b_6 SHA_i - b_7 AGE_i$$

where MIG_{ij} = the number of persons having migrated from the i (hill) region to the j (destination) region (the number of migrants relates to households, i.e. migrants per household in region i);

MIA_j = migrants' income at j (assumed to reflect expected earnings);

OLH_i = operational landholdings (i.e. land owned *plus* land hired in *less* land hired out; this variable is also referred to as farm size in the discussion);

EDN_i = number of educated persons per household (i.e. with primary or secondary schooling);

SHT_i = size of household in terms of total number of persons living together (also referred to as family size);

SHA_i = size of household in terms of number of members of working age; and

AGE_i = average age of workers in the household.

The parameters of the model have been estimated through ordinary least squares.

Migration (the dependent variable) refers to gross migration from rural households in region i to region j. Income earned by migrants at j is assumed to reflect the earnings expectations of potential migrants at different destination points. [1] In the absence of data on the income or earnings of persons of comparable education, age, etc., in region i, it was not possible to work out income differentials net of migration costs—definitely a better specification of the income variable—for incorporation in the model. The fact is that most if not all of the migrants would have faced serious underemployment, and in many cases unemployment, had they not moved out of their village or region. Hence the recourse to migrants' absolute income as an approximate indicator of the extent to which peoples' expectations about outside incomes influence their migration behaviour. ■

[1] Variations in expected post-migration earnings according to destination can exert a major influence on the decision to migrate.