# "Analysis of Rural-Origin Migration Behavior in Mexico"

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## Abstract

For many developing countries, the magnitude of rural-urban migration is an important consideration in economic planning. In this paper, we examine the determinants of such migration for Mexican families. Our work takes a general formulation to the migration decision by looking at both rural originating and urban originating migration. The multiple logit technique is utilized to obtain estimates of the probability of migrating to an urban or rural area or staying in the current location. The results support most of the generally hypothesized incentives or disincentives to migrating.

## Introduction

Studies of the causes and effects of migration movements are quite numerous. Two recent works by Greenwood (1975) and Yap (1977) summarize the great majority of work in the area. For developing countries such as Mexico, the implications of migration patterns may be far more important than for more advanced countries. Migration patterns in highly developed countries may represent preference changes which causes an outflow from the central cities to the suburban areas or may be associated with job transfers and hence involve a different set of determining variables.

Unlike highly developed countries, many of the migratory movements in less developed countries are still examined in terms of the flight to the city. The attractiveness of higher earnings in the urban area is considered to be a major factor influencing the migration decision. As such, moves of this type are undertaken for a different reason and involve a different set of determining variables than do moves in more developed countries.

Migratory patterns can be examined in one of two ways: aggregate flows and individual movement decisions. Aggregate studies typically examine movements (gross or net) between political states while micro studies are concerned with individual movement from one type of locale to another. In this study we focus on micro determinants for family movements.

There are several hypotheses concerning motivations for movement. The effect of wage differentials between rural and urban job markets has been examined extensively. These studies are used to explain the attractiveness of cities in developing areas. It is typically assumed that the wage rate in the rural sector is lower than that of the urban sector. Employment is considered a certainty in the rural sector but has a probabilistic distribution associated with it in the urban sector. Individuals, assumed to maximize some

objective function directly dependent upon the difference in expected values of employment in the urban versus the rural sector, then migrate so long as expected income in the urban sector exceeds current rural income. The flow continues until the probability of employment and/or the wage rate in the urban sector decrease sufficiently to equalize the income differentials between the two sectors.

Modifications of this model extend in several directions. One area of research has been family considerations. Mincer (1978) intended the wage differential model to include dual income families. He notes that the family maximization problem may yield a decision that differs from the individual maximization problems. He refers to such outcomes as tied partnered cases. One obvious implication of his inclusion of family considerations is that marital status significantly affects the migration decision. In particular, unmarried individuals would be much more likely to migrate other things being equal. A second important implication is the effect of the spouses employment status. Families with only one working individual or when the employment of the spouse is sporadic or low paying will be much more mobile. Other considerations of the family decision which should be included are the number of children and length of marriage. Mincer notes that such considerations will be much more important when quits rather than transfers or layoffs are involved.

The analysis using the family as the decision making unit rather than the individual obviously complicates the analysis. The alternatives of one spouse alone, no longer constitutes the choice set. Influences of both occupations, incomes, family ties, etc. must be considered in determining the move. Related to the family unit analysis are two additional hypothesis concerning risk-taking behavior.

The risk effects go into two somewhat different areas. First, as a family unit, migration may be used as a means to lower the variability of the income stream. Fan [1982] uses standard utility analysis to show that the risk-adverse individual would generally prefer short-term circular migration to permanent migration. Kothari [1982] uses the concept of family income to show that rural children may be sent off as migrants to urban areas in order to minimize the variance of the families' income taken together (an optimal portfolio problem). Obviously such a model assumes that the family head exerts a great deal of influence and control over other family members. Such a model is thus likely to be sensitive to the country in which it is applied.

Findley [1980] looks at migration as an instance of innovative behavior where the important variables are the individual's knowledge about a place and the willingness to migrate given incomplete knowledge. Better educated individuals are more able to process the limited information and thus more likely to move and generally willing to make longer moves, other things being equal. In a similar manner, individuals who are less risk averse will be first migrants and they are willing to base their decision on secondary or incomplete information. Once in place, those innovators will send back information to families and friends and thereby generate more complete information for the more risk adverse individual.

Finally, an important consideration of a movement may be the decision to start a family or marriage market considerations. Inclusion of singles into the sample thus introduces a motivation source not found in the family unit decision. A recent study by Behrman and Wolf [1982] suggests that marriage market factors do at least as well as labor market factors in determining movements for females.

## The Migration Model

The migration choice at the micro level is typically simplified in terms of a decision rule involving the comparison of the expected gain of choosing a particular alternative to remaining in the current location. We follow Mincer [1978] in assuming the family is a potential two income source household (husband and wife as potential wage earners). Let the subscript i be the alternative under consideration and c be the current location. The superscript, h, denotes husband and, w, the wife. The net potential gain from a move can then be written as:

$$(1) \quad G = (W_i - W_c) + (W_i - W_c) - C$$

where W is the expected wage or income and C the cost of moving. It is assumed that the family unit migrates from the current location, c, to location i if the value of G is greater than zero and remains in the current location otherwise.

It can easily be seen from the postulated gain function that there are several different combinations of wage differentials that will yield a family migratory movement for a given cost of moving. These combinations are as follows:

1) The expected gain to both the husband and wife are individually positive with no conflict of interest between partners.
2) The individual gain to the husband is positive, negative to the wife but the overall gain is positive.
3) The individual gain to the husband is negative, positive for the wife and the overall gain is positive.

Any other combination will not yield a migratory movement. Mincer refers to cases two and three as migratory movements involving a tied partner. That is

the individual maximization is not consistent with the family maximization problem and one partner must make the move unwillingly.

As Mincer points out, marriage in itself will tend to have a negative impact on moving because of the greater probability of conflict. If the both spouses are employed, such a conflict would be especially troublesome where a transfer was involved.

Only currently married women who were married at the time of the migration movement were examined in our analysis. We summed the potential income gains for both the husband and wife and included the probabilities of wife's employment in the current location as an explanatory variable. A greater overall expected income gain is expected to increase the probability of movement and a higher probability of employment by the wife in the current location is expected to lower the probability of a movement.

The cost term in the gain function can encompass both implicit and explicit costs. Both the distance of the move and size of the family would be expected to be inversely related to the probability of a movement. Our data did not permit measurement of moving distance. We attempted to capture the implicit costs by including the number of years married and residing together at the current location. Other factors which would be important, but data limitations did not permit inclusion are size of family left behind and whether or not relatives or friends made a similar move prior to their decision (pass back information).

As previously mentioned, it is often postulated that better educated individuals are better able to process information concerning the migration decision and are thus more likely to make a move. In addition, the better educated may be much more likely to undertake rural-urban movements for career opportunities may not exist in the rural sector. We thus include the total years of education of both the husband and wife to capture this effect.

We also attempted to measure the effects of birth cohorts and the life cycle pattern by including the husbands' age and age squared as explanatory variables. It is typically believed that younger persons are more likely to move because they have longer lifespans to enjoy the gains from migrating. However the older the person is, the longer he has been exposed to the opportunity for migration. Therefore, we included the nonlinear specification of the age variable.

## The Estimation Procedure

The basic question we pose is: Given a sample of families, what factors significantly determine a migratory movement? Our data deals with two distinct populations, families from rural areas and families with urban origins. In the probabilistic model, each family in a population has three independent alternatives. The family can remain in its current location (the rural or urban stayer), the family can move to a rural location (rural-rural or urban-rural migration) or the family can move to an urban area (rural-urban migration or urban-urban migration). The population and alternative sets are illustrated below.

| | Alternatives | | |
|---|---|---|---|
| Population | Stay | Migration to Rural Area | Migration to Urban Area |
| Rural Origin | Rural-Stayer | Rural-Rural | Rural-Urban |
| Urban Origin | Urban-Stayer | Urban-Rural | Urban-Urban |

It is to be noted that the populations are separate and the empirical estimation must proceed from that standpoint. Any randomly chosen individual or family can only have one source of origin since birthplace is not a choice variable to the individual.

As in the typical model of migration we assume the family maximizes utility in determining the migration decision. Assuming all alternatives have a positive selection probability, that the odds that a particular move will be made are independent of the presence of other possible moves and the determination of the odds of choosing alternative moves is additively separable in the determining arguments then we can follow McFadden [1974] in the determination of selection probabilities. McFadden has shown that under the assumption of utility maximization, the probability that an individual chooses alternative i from the choice set C can be viewed as drawing from the multinomial distribution with selection probability $P(i \mid A,C)$ for i an element of C and A the attribute set of the family.

Let the subscript i represent the choice alternative and j an observation from the sample population. Under the assumption of the multivariate logistic model, we can write this probability as:

$$(2) \quad P_{ij} = \frac{e^{X_j B_i}}{\Sigma_{k=1}^{3} e^{X_j B_k}} \qquad i = 1, 2, 3.$$

In this equation, $X_j$ represents a vector of characteristics of the migratory family and the problem is to estimate the vector of coefficients, B. Taking the log of both sides of equation (2) and normalizing with respect to alternative 1, we obtain:

$$(3) \quad \log_e \frac{P_i}{P_1} = XB_i \qquad i = 2, 3$$

where the observation index has been dropped for purposes of convenience of the notation. The $B_i$ can be estimated from equation (3) by the maximum likelihood method using a Newton-Raphson algorithm.

In the migration model we employed the following alternatives:

| Rural | | Urban | |
|---|---|---|---|
| i | Choice | i | Choice |
| 1 | Rural Stayer | 1 | Urban Stayer |
| 2 | Rural-Urban movement | 2 | Urban-Rural movement |
| 3 | Rural-Rural movement | 3 | Urban-Urban movement |

All normalization is thus done with respect to the stay alternative in both the rural and urban equations. The estimated B's give the partial effect on the log odds of choosing alternative i to the alternatiave of staying in the current residence.

## Data Consideration for Estimation

To operationalize the model we selected a subsample of currently married women who were married at the time of the migratory movement and those currently married women where the family had never undertaken a migratory movement (data for estimation was obtained from the 1976 Mexican World Fertility Survey). This sample was then decompressed into the rural origin and urban origin subsets. (Husbands in each group had the same origin as the wife.) Within these subsets, three different alternatives exist for each family. The family could have migrated to a rural area, it could have migrated to an urban area, or it could have never migrated. The sample sizes for each subgroup are presented in the table below.

| Alternative | Origin | Number in Group |
|---|---|---|
| Rural Movement | Rural | 53 |
| Urban Movement | Rural | 49 |
| Stayer | Rural | 626 |
| Rural Movement | Urban | 90 |
| Urban Movement | Urban | 5 |
| Stayer | Urban | 603 |

From the gain function given by equation (1) the income differential for rural versus urban employment for both the husband and wife needs to be estimated as a primary determinant of the migratory decision. To do so, we first estimated a standard model of wage rate determination (see, for instance, B. M. Fleisher and G. F. Rhodes, Jr. [1979] using the natural log of monthly income (in pesos) as the dependent variable for both males and females, by rural and urban residence.

Results of this estimation are reported in Table 1 and Table 2. The equations were estimated separately for urban and rural workers, as shown.

The estimated coefficients in both the male and female wage equations have, in general, the anticipated sign and are statistically significant. No attempt was made to control for the selectivity bias in the female wage equations. When employing the sam[illegible] women who are working, it is argued that this group is self-selecting and does not represent a random sample for estimation purposes. This results in biased and inefficient coefficient estimates. Our purpose was to obtain an estimate of a women's monthly income given her personal characteristics and not to empirically verify the selectivity hypothesis.

Given the estimated coefficients we then constructed monthly income estimates for the gain function. The migration patterns of the women were traced with the survey but no data in the period just prior to moving was available. That is, current earnings of both husband and wife were provided by the survey respondents but earnings just prior to migrating were not reported.

Estimates of wage earnings, and labor force participation were based on occupational categories existing before marriage for both migrant and non-migrants as a proxy for their occupation prior to migrating. Education

variables employed were the current levels. By selecting only couples married before migrating we hope to minimize any bias as education is likely to be completed before marriage or soon after.

Using the estimated monthly income estimate for both rural and urban areas, we then attempted to construct a real wage differential by adjusting for the cost of living in a rural versus an urban area. Average monthly expenditures in rural and urban areas as reported by the Internal Labor Office were subtracted from the total estimated husband and wife income. (Expenditures were reported for 1968 and the wage estimates were deflated for comparability with that year.) That difference represents real or excess monthly income in a given area. The difference between real income in the urban area and real income in the rural area should be the maximum real monthly gain to moving.

We included an estimate of the probability of the woman employment in the current area of residence (as a deterrent to moving) by estimating labor force participation equations for both rural resident women and urban resident women. Results of this estimation are reported in Table 3. An estimate of the probability that the woman is currently employed was then calculated by using the estimated coefficients and the characteristics of the women in the actual migration sample.

We also had to estimate the number of children at the time of migration as such data was not available. To do so we took current number of children divided by the number of years married (average number of children per year of marriage) and multiplied by the number of years married prior to migrating.

## Estimation Results

The estimation results for rural originating migrants are presented in Table 4 and those for urban originating migrant in Table 5. We first examine the results for the rural originating migrant.

The negative coefficient on the two variables used to represent the cost of moving, the number of years the couple has been married and the number of children in the family, suggest that higher moving costs lowers the log odds of migrating either to an urban area or another rural area relative to staying in the present location. The coefficient is statistically significant in three out of the four cases and confirms the predictions of the theoretical model.

The model does not make a prediction as to the impact of these variables on the choice of moving to another rural area relative to moving to an urban area. The empirical results as given by the coefficient in the third column of estimates in Table 4 indicates that increased family size significantly increases the likelihood of moving to another rural area versus moving to an urban area while the number of years married and living in a rural area decreases the likelihood of moving to another rural area. The negative effect of family size reinforces the notion that large families are incompatable with the urban lifestyle. The result for the effect of length of residence is somewhat puzzling as one would expect the longer a family lives in a particular type of environment (rural) the less likely they would be to change to another environment (urban).

The effect of education on the likelihood of migration is of the anticipated sign in the rural-urban choices but is not statistically significant in any of the equations. It was postulated that better educated families would be better able to process information and thus be more likely to move and more likely to move to an urban area.

The coefficient for the age variables, husbands age and age squared, indicate that older age heads of families are more likely to move to both another rural area or an urban area but the positive impact diminishes with

age (the negative coefficient on the age squared variable). The coefficients are not significant for these variables in the rural-rural/rural-urban migration equation. The age effect is somewhat surprising as younger groups are generally thought to be more mobile.

The coefficient on the probability of wife employment (in the rural area) is negative and significant in the rural-urban/rural-stayer equation. This variable is used to capture the effect of the tied partner concept. A higher probability of work in the current area increases the opportunity costs of moving thus lowering the likelihood of moving. The coefficient is negative but not significant in the rural-rural/rural-urban choice equation.

The results of the urban-rural income differential on the choice of rural originating migrants were disappointing. As indicated in the second and third columns of Table 4, a greater urban-rural income differential significantly deters rural-urban migration.

The reasons for this result is unclear. One possible explanation is that movement to an urban area may be for reasons of career change and the associated income change with the career. The construction of the real income differential variable assumed the migrant would have the same occupation in the rural and urban area and the income differential would be here to differences in wages between the two areas.

The evidence on this is brought out in the survey. For rural-rural migrants, 73 percent of the women and 53 percent of the men had exactly the same current occupation as they did before marriage. For rural-urban migrants. Those numbers decreased to 61 percent for women and only 27 percent for the husbands. For the rural stayers, 68 percent of the women and 65 percent of the husbands had exactly the same occupation before marriage as their current occupation. While it is possible that the rural-urban migrants could have

switched occupations prior to migrating, this seems unlikely given they are still living in the rural area and presumably would have no better opportunities than rural stayers. This evidence is highly suggestive of expected income differential gain for urban migrants through job or career switching.

The proportion of of occupation job switching for urban originating migrants was uniformly higher for all categories. For urban-urban migrants, 39 percent of the women and 47 percent of the men had exactly the same occupation before marriage and at the time of the survey. Only 27 percent of the urban-urban migrant women and 36 percent of urban-rural migrant men had the same occupation. For the urban-stayer category, 42 percent of the women and 59 percent of the men had no occupation switch between the time of marriage and the time of the survey. Again, we see that migration activity seems to imply an occupational switch, more pronounced when migrating to a different environment (rural to urban).

The multinomial logit estimates for the urban originating migrants are presented in Table 5. The results from this estimation closely parallel those from the rural originating migration. The most notable exception concerns the effect of the urban-rural income differential. As can be seen, a higher urban-rural differential significantly deters urban-rural migration relative to staying in an urban area and is also of the anticipated sign in the urban-rural versus urban-urban choice, but lacks slightly in significance. The urban-rural migrants in this study are not return migrants and hence do not represent the so called failed or unsuccessful rural-urban return migrant.

The coefficient that is somewhat surprising is the positive and statistically significant effect of education on the choice between urban-rural migration and urban-urban migration. One typically expects better educated families to have a preference towards the urban sector. This is supported by

the negative (though not significant) educator coefficient in the urban-rural/urban-stayer equation. The fact that the education levels of both husband and wife are added together may account for this sign. If the woman were highly educated but the migration decision was mostly determined by the husbands influence, such a sign reversed may be possible.

Our results are further illustrated in Table 6 and Table 7. These tables report the partial effects of the variables on the unconditional probabilities of the migration decision. As can be seen in Table 7, higher education levels negatively impact both urban-rural and urban-urban migration. This is in direct contrast to the rural-originating movers where education positively affects the rural-urban migration but negatively affects the other two rural bound choices as indicated in Table 6. This results appears to be in general agreement with the selectivity hypothesis. It may also suggest that urban-stayers are as select a group as the rural-urban migrants.

Our other results are also further supported by Tables 6 and 7. Note that the variables representing higher costs of moving, number of children and number of years married both have negative impacts on the decision to undertake a move of any type. The same is also true with respect to the probability of the wife's employment in the current area of residence.

## Summary and Conclusions

The purpose of this study was to examine the factors influencing migrating movements from a family decision basis. We utilized the multiple logit technique as a way of including all possible alternatives in the choice set. In addition, we estimated equations for both urban originating and rural originating migratory movements.

The results of the estimation are very much in agreement with the major theoretical models of migration and with other empirical studies. The exception to this concerns our findings related to the urban-rural income differential as an incentive in the rural-urban migratory movement. We have speculated that the reason for this result is the failure to control for the switching of occupations once such migration occurs. This is obviously a major avenue of future research.

Table 1

Ordinary Least Squares Estimates of Male Wage Equation

| Variable | Rural | Urban |
|---|---|---|
| Constant | 6.661<br>(55.64) | 7.571<br>(110.13) |
| Education | 0.113<br>(2.48) | 0.079<br>(2.79) |
| Education Squared | -0.010<br>(1.99) | -0.008<br>(2.46) |
| Administrative & Professional Dummy | 1.005<br>(9.14) | 0.691<br>(17.91) |
| Service Workers Dummy | 0.765<br>(7.91) | 0.106<br>(2.48) |
| Non-agricultural Workers & Machinists Dummy | 0.635<br>(9.69) | 0.101<br>(2.76) |
| Owner | -0.465<br>(5.46) | 0.404<br>(6.26) |
| Work Experience | 0.002<br>(0.75) | 0.003<br>(2.36) |
| Self Employed | -0.257<br>(3.85) | -0.020<br>(0.55) |
| N | 1326 | 2594 |
| $R^2$ | .211 | .198 |
| F | 44.10 | 76.76 |

Table 2

Ordinary Least Squares Estimates of Female Wage Equation

| Variable | Parameter Estimates | |
|---|---|---|
| | Rural | Urban |
| Constant | 6.241<br>(25.98) | 6.570<br>(56.13) |
| Education | 0.174<br>(2.22) | 0.131<br>(5.77) |
| Education Squared | .005<br>(0.66) | -0.002<br>(1.82) |
| Administrative & Professional Dummy | -0.861<br>(1.68) | 0.383<br>(3.68) |
| Service Workers Dummy | -0.695<br>(3.27) | -0.548<br>(5.82) |
| Non-agricultural Workers & Machinists Dummy | -1.420<br>(5.55) | -0.113<br>(1.35) |
| Work Experience | -0.003<br>(0.32) | 0.004<br>(0.89) |
| N | 158 | 714 |
| $R^2$ | .406 | .466 |
| F | 17.23 | 102.93 |

Table 3

Probit Estimates of Female Labor Force Participation

| Variable | Parameter Estimates* | |
|---|---|---|
| | Rural Areas | Urban Areas |
| Constant | -2.926<br>(13.32) | -2.076<br>(15.69) |
| Ownership** | 0.128<br>(0.90) | -0.547<br>(3.02) |
| Age | 0.037<br>(5.41) | 0.025<br>(5.94) |
| Number of Children | -0.028<br>(1.60) | -0.024<br>(2.11) |
| Work Experience Before Marriage | 0.016<br>(3.71) | 0.008<br>(2.96) |
| Education | 0.109<br>(5.83) | 0.084<br>(8.79) |
| Husband's Income | 0.0002<br>1.08 | -0.0001<br>(1.34) |
| **Summary Statistics** | | |
| N | 1812 | 2928 |
| X2 | 75.37 | 151.96 |
| dg. freedom | 6 | 6 |

*Absolute value of the asymptotic t-statistic given in parenthesis below the parameter estimate.

**Ownership in rural imples land or farm ownership and in urban areas it implies buisness ownership.

Table 4

Multiple Logit Estimates of Migration Movements: Rural Originationa

| Independent Variable | $\ln\left[\frac{\text{Rur-Rur}}{\text{Rur-Sty}}\right]$ | $\ln\left[\frac{\text{Rur-Urb}}{\text{Rur-Sty}}\right]$ | $\ln\left[\frac{\text{Rur-Rur}}{\text{Rur-Urb}}\right]$ |
|---|---|---|---|
| Constant | -11.1170<br>(4.33) | -11.7768 | 0.6598<br>(0.20) |
| Number of Years Married | -0.1087<br>(2.15) | -0.0083<br>(0.22) | -0.1003<br>(1.68) |
| Number of Children | -0.2869<br>(1.86) | -0.8569<br>(4.72) | 0.5699<br>(2.66) |
| Prob. Wife Employed | -26.9626<br>(3.75) | -18.9134<br>(3.53) | -8.0492<br>(0.99) |
| Education | -0.0256<br>(0.33) | 0.0826<br>(1.18) | -0.1083<br>(1.17) |
| Husband's Age | 0.5487<br>(3.85) | 0.5079<br>(4.76) | 0.0408<br>(0.24) |
| Age Squared | -0.0052<br>(2.69) | -0.0041<br>(3.22) | -0.0011<br>(0.51) |
| Urban-Rural Real Income Differential | 0.0005<br>(0.96) | -0.0021<br>(2.91) | 0.0026<br>(3.20) |
| $X^2$ (d.f.) | | | 243.73 (14) |

[a]The absolute value of the asymptotic t-ratios appears in parenthesis below each coefficient. The Chi-square statistic in the last line of the table tests the null hypothesis that all parameters except the constant are zero.

Table 5

Multiple Logit Estimates of Mexican Family Migration Movements: Urban Origination[a]

| Independent Variable | $\ln\left[\frac{\text{Urb-Rur}}{\text{Urb-Sty}}\right]$ | $\ln\left[\frac{\text{Urb-Urb}}{\text{Urb-Sty}}\right]$ | $\ln\left[\frac{\text{Urb-Rur}}{\text{Urb Sty}}\right]$ |
|---|---|---|---|
| Constant | -12.1805<br>(6.14) | -31.9566<br>(2.02) | 19.7761<br>(1.25) |
| Number of Years Married | -0.0580<br>(1.97) | -0.0309<br>(0.21) | -0.0271<br>(0.19) |
| Number of Children | -0.5211<br>(5.16) | -0.0190<br>(0.05) | -0.5020<br>(1.21) |
| Prob. Wife Employed | -9.2247<br>(3.35) | -0.7377<br>(0.04) | -8.4867<br>(0.46) |
| Education | -0.0631<br>(1.43) | -0.9626<br>(2.71) | 0.8995<br>(2.53) |
| Husband's Age | 0.6105<br>(5.82) | 1.7254<br>(2.09) | -1.1149<br>(1.35) |
| Age Squared | -0.0058<br>(4.49) | -0.0207<br>(1.96) | 0.0149<br>(1.41) |
| Urban-Rural Real Income Differential | -0.0003<br>(1.77) | 0.0020<br>(1.29) | -0.2269<br>(1.45) |
| $X^2$ (d.f.) | | | 87.42 (14) |

[a]The absolute value of the asymptotic t-ratios appears in parenthesis below each coefficient. The Chi-square statistic in the last line of the table tests the null hypothesis that all parameters except the constant are zero.

Table 6

First Derivatives of the Variables in the Unconditional Probability Functions Evaluated at Their Means: Rural Origination

| Variable | Rural-Rural Movement | Rural-Urban Movement | Rural Stay |
|---|---|---|---|
| Constant | -0.2107 | -0.3253 | 0.5361 |
| Number of Years Married | -0.0021 | -0.0002 | 0.0023 |
| Number of Children | -0.0051 | -0.0240 | 0.0291 |
| Prob. Wife Employed | -0.5167 | -0.5172 | 1.0339 |
| Education | -0.0005 | 0.0023 | -0.0018 |
| Husband's Age | 0.0104 | 0.0140 | -0.0244 |
| Age Squared | -0.0001 | -0.0001 | 0.0002 |
| Urban-Rural Real Income | -0.00001 | -0.00006 | 0.00005 |
| Probability evaluated at mean of all variables | 0.0199 | 0.0291 | 0.9510 |

Table 7

First Derivatives of the Variables in the Unconditional Probability Functions Evaluated at Their Means: Urban Origination

| Variable | Urban-Rural Movement | Urban-Urban Movement | Urban Stay |
|---|---|---|---|
| Constant | -0.7681 | -0.0011 | 0.7691 |
| Number of Years Married | -0.0037 | -0.0000009 | 0.0037 |
| Number of Children | -0.0329 | -0.0000006 | 0.0329 |
| Prob. Wife Employed | -0.5817 | -0.000004 | 0.5818 |
| Education | -0.0039 | -0.00003 | 0.0040 |
| Husband's Age | 0.0385 | 0.00006 | -0.0386 |
| Age Squared | -0.0004 | -0.0000007 | 0.0004 |
| Urban-Rural Real Income Differential | -0.00002 | -0.00000007 | 0.00002 |
| Probability evaluated at mean of all variables | 0.06765 | 0.000035 | 0.9323 |

## References

J. R. Behrman and B. L. Wolfe. "Micro Determinants of Female Migration in a Developing Country: Are Labor Market or Marriage Market Considerations More Important?" Paper presented at the Population Association of America Meetings, (May 1982).

Y. K. Fan. "Risk Aversion and Migration Behavior: A Theoretical Note on Circular Migration in South East Asia." Paper presented at the Midwest Economics Association Meeting, (April 1982).

S. E. Findley. "Migration as a Household Innovation." Paper presented at the Population Association of America Meetings, (April 1980).

B. M. Fleisher and G. F. Rhodes, Jr. "Fertility, Women's Wage Rates, and Labor Supply." American Economic Review, Vol. 69, No. 1, (March 1979), pp. 14-24.

M. J. Greenwood. "Research on International Migration in the United States: A Survey." Journal of Economic Literature, Vol. 13, (June 1975), pp. 397-433.

D. K. Kothari. "Household Structure and Migration Behavior in India." Paper presented at the Population Association of America Meetings, (May 1982).

D. McFadden. "Conditional Logit Analysis of Quantitative Choice Behavior," in Frontiers in Econometrics, P. Zarembkra, ed., New York: Academic Press, (1974), pp. 105-142.

J. Mincer. "Family Migration Decisions." The Journal of Political Economy, Vol. 86, No. 5, (October 1978).

L. Y. L. Yap. "The Attraction of Cities: A Review of the Migration Literature." Journal of Economic Development, Vol. 4, (1977), pp. 239-243.