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LABOR SUPPLY DECISIONS OF MARRIED WOMEN IN RURAL INDIA

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Yale University
and
Gujarat Institute of Development Research

June 1993

Note: Center Discussion Papers are preliminary materials circulated to stimulate discussions and critical comments. Dr. Unni is a Postdoctoral Fellow at the Economic Growth Center and is a Research Associate at the Gujarat Institute of Development Research, Ahmedabad, India.

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ABSTRACT

This paper analyses the job choice decision of married women in rural India as a joint decision between spouses in a household. The labor participation decision of married women is not based on her individual characteristics alone but is influenced also by her spouses' characteristics and the household's asset structure. Two models of labor participation are estimated: the first defines work only as market wage labor and the second defines work broadly to include wage and self employment. Interesting evidence of a differential impact of physical capital, as opposed to human capital, on the work participation decision of the married women is observed. Education of both spouses tends to raise the reservation wage and encourage withdrawal of the wife from participation, mainly in wage employment. These results could be explained if in the rural labor market in India, at relatively low levels of female education, the links between the wage rates available to women and their levels of education are weak. However, household's access to physical capital tended to encourage work participation of the married women, particularly in self employment.

KEYWORDS: Female labor supply, rural labor market

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LABOR SUPPLY DECISIONS OF MARRIED WOMEN IN RURAL INDIA

Jeemol Unni

INTRODUCTION

In an earlier paper I analysed the occupational choice behaviour of individuals in rural households in the western state of Gujarat in India (Unni, 1992). The paper examined the economic rationale for undertaking more than one job and the choice of self or wage employed jobs. The model was estimated separately for males and females and highlighted the following differences in the job choice characteristics by sex:

1. While the probability of men undertaking single jobs improved with age, that of women undertaking either single or multiple jobs appeared to decline;
2. Similarly, better educated men preferred to undertake only one job, while educated women withdrew from participation in the work force (both single and multiple job choices were negatively related to their educational level);
3. A higher village wage reduced both single and multiple job choices among women, while only the multiple job choice among men declined.

Such a marked preference for single jobs among older and educated men and a tendency to withdraw from the labor force among such women suggest that the reservation wage of an individual depends on the characteristics of other members of his or her household. In particular, the labor supply decisions of the wife are related to her husband's characteristics and household income and asset

structure.

A large body of literature during the last two decades has analysed the decision of the wife to participate in the market labor force, and the intensity of her participation. The family utility - family budget constraint model forms the basis for many studies in this area. In this paper the basic framework of this class of models is utilized to analyse the decision of married women in rural India to participate in the labor market. More specifically, the paper focuses on the question: to what extent is this decision a choice based on her individual characteristics alone and / or is influenced by the characteristics of her husband and asset structure of her household?

THE MODEL

In the simple consumer demand theory limited to a single period without uncertainty, an individual's demand for leisure can be expressed as a function of his own market offer, market prices, non-earned income, and peculiar tastes that are assumed to be distributed randomly across populations. This framework can be extended to a two person household, say husband and wife, by including only one additional price variable, the wage offer available to the other spouse, in the determinants of the reduced-form demand equation for non-market time (if both spouses engage in some market activity) (Ashenfelter and Heckman, 1973; Schultz, 1980; Smith, 1980).

The family utility model assumes that the utility maximized is total family utility, depending on total family consumption and leisure time of all the members. Utility is maximized subject to a family budget constraint including total earnings of all its members and property income (Killingsworth, 1983).

In contrast to the individual labor supply model there are two substitution effects in this model, that are relevant for each family member's labor supply. First, the substitution effect on the family member's labor supply of an income compensated increase in the family member's own wage - the own substitution effect. This is expected to be positive. Second, there is the effect on the family member's labor supply of an income-compensated rise in the wage of some other family member - the cross wage substitution effect. The cross-substitution effect of a rise in family member i's wage on family member j's labor supply is positive or negative depending on whether the leisure times of i and j are complements or substitutes. However, regardless of the sign, the symmetry condition implies the income compensated cross-wage effects will always be equal. As Ashenfelter and Heckman (1974) put it, the model implies that 'an income compensated change in the husband's wage rate has the same effect on the wife's work effort as an income compensated change in the wife's wage rate has on the husband's work effort'. However, the total observed effect of a rise in i's wage on j's labor supply need not equal the total observed effect of a rise in j's wage on i's labor supply; because

the income effects on the two family members need not be equal (Killingsworth, 1983).

Besides the wages of the family members, the non-labor income of the family also influences the individual member's labor supply. There is a presumption that the income effect of an increase in non-labor income on the work effort of the family members is likely to be negative (Ashenfelter and Heckman, 1974). In a model with two family members, the husband and wife, a rise in the husband's wage often has an income effect on the wife's labor supply which is similar to that of a non-labor income. It has a negative effect on the wife's labor supply.

The labor supply behavior of the married women is determined by two relationships: (1) the market demand equation, W, and (2) the individual's labor supply (or the reservation wage) function, S.

$$W = f(Z)$$

$$S = f(X)$$

where Z and X are a set of overlapping variables that affect the market demand wage, W and the individual supply, S. The model is identified if at least one variable among the Z's is excluded from the X's, and vice-versa. This permits statistical identification of the supply from the demand function.

The labor supply of the woman consists of two decisions taken simultaneously: the decision to participate in the labor force and

if so the number of hours to work. The woman participates in the market labor force if her market wage is higher than her reservation wage. The own market wage effect on this decision does not include an income effect because hours of work is zero. However, non-labor income and husband's wage, also acting as a non-own-labor income, influences the reservation wage and hence this decision. The second decision, on the number of hours to work, is more easily analysed in terms of the Slutsky decomposition. In this paper, due to limitations of data, we focus only on the first labor supply decision of married women on whether to participate in the labor force.

In rural agricultural economies, like India, much of the labor participation of women is not for a market wage, but is self employment on own land or household enterprise. In the sample of 3917 married women analysed in this paper, only 28 percent work for a market wage. Forty three percent of the women are self employed on their own land or enterprise, while the rest (29 percent) reported themselves to be engaged primarily in household work.

The work participation decision of the woman is thus whether to work for a market wage or be self employed versus engaging only in household tasks or leisure. This formulation is close to Gronau (1977), except that his discussion is in terms of market work, home production and leisure and market and home work produce an identical commodity. The necessary condition for an interior

solution is for the marginal product of the self employed activity to equal the marginal rate of substitution between goods and consumption time (or leisure), which in turn is equal to the shadow price of time. If the person works in the market this will also equal the real wage rate (see Gronau, 1977).

One approach to estimate the model is to assume that the participation decision is determined by a reduced form regression model

$$y_i^* = \beta_0 + \Sigma\ \beta_j x_{ij} + \mu_i$$

where y_i^* is an unobservable 'latent' variable. What we observe is a dummy variable y_i defined by

$$y_i = \begin{cases} 1 & \text{if } y^* > 0 \\ 0 & \text{otherwise} \end{cases}$$

$y_i = 1$ if the woman participates in the labor force and 0 if she does not. This can be estimated using either the probit or logit model which differ in the specification of the distribution of the error term μ (Maddala, 1988). Here we assume that the cumulative distribution of μ_i is logistic so we have what is known as a logit model.

In order to incorporate the complexity of the labor participation behaviour of married women in rural India into the analysis, two

binomial logit models are estimated. In model 1, the choice is between participation in market (wage) work versus self employment or household work (leisure). This is the narrow traditional definition of market work participation. In model 2, work participation is defined broadly to include wage work or self employment. The woman chooses between wage/self employment and engaging only in household work or leisure.

Three kinds of variables are hypothesized to influence the labor supply decision of the married woman:

1. Human capital of the wife and husband: age and education;
2. Physical capital: value of owned land holding and value of other productive assets; and
3. External regional factor: distance from the nearest town.

In view of the fact that the data set used here does not contain information on wage-rates, the education of the husband and wife are used as proxies for their wage-rates (see the description of the data below). Using these categories of variables three specifications of the work participation equation for each model are estimated.

Each new specification is tested to see if it is significantly different from the earlier specification using a Likelihood Ratio test. The likelihood ratio statistic for testing the restrictions is computed as follows,

$$LR = -2(\ln L^* - \ln L),$$

where L* is the log likelihood evaluated at the restricted estimates. This statistic is asymptotically distributed as chi-squared with J degrees of freedom, where J is the number of restrictions (Greene, 1990).

In specification 1, the labor force participation of married women, is hypothesised to be influenced by the age and education of the wife, education of the husband, value of owned land and value of other productive assets (excluding land) of the household and the distance of the village of residence from the nearest town.

In the survey, described below, information was not collected on the number of years of education completed, but rather whether the individual had attended any schooling at the specified level: primary or middle, secondary or high school and graduation. The frequency distribution of women and men by the levels of education is presented in Table 1. The proportion of illiterate women is very high and only a small proportion attended school above the seventh grade (primary and middle school).

For our analysis we have converted this information into years of education by assigning an average number of years to each level of education as follows. Illiterate persons have zero years of education while literate individuals who did not attend school are assigned one year. Persons who attended school from grades 1 to 7 (primary or middle) formed one category and they are assigned an

average of 5 years of education. Persons who attended grades 8 to 10 (secondary) are assigned 9 years, grades 11 and 12 (higher secondary) are assigned 12 years and graduates and above are assumed to have on average 15 years of education. Obviously there is a certain arbitrariness about this procedure. The years of education, computed as above, is introduced in quadratic form in specification 2. This is done to see if there is any differential impact of the levels of education of both the spouses on the wife's participation decision. We also tried alternate specifications using dummy variables for the levels of education. The results are reported in Appendix Table 1 and discussed later.

In rural India the land market is not well developed and there is little buying and selling of cultivable land. Owned land of the household is mainly inherited land and serves well as an exogenous non-earned income variable. The second variable used as a proxy for non-earned income is value of other productive assets excluding land. These two variables are correlated to each other with a correlation coefficient of 0.13, significant at one percent level. As such the correlation is too small to lead to any problem of multicollinearity. However, a third specification of the model is estimated similar to specification 2 but excluding the value of other productive assets. The sensitivity of the results to the alternative specifications (2 and 3) are examined.

DATA DESCRIPTION

A primary survey was conducted in thirty villages belonging to five districts of Gujarat state in India in 1988-89. A total of 3760 households were selected using a stratified random sample. The households in each village were stratified into four categories according to their major source of income, viz., cultivators, agricultural laborers, household industry (including skilled workers) and others. Information on individual and employment characteristics of all members of the household and household assets was collected for the year 1987-88, which was a drought year. This forms the data for estimating the married women's labor supply decision model in this study.

A major limitation of these data was that no information was collected on wages and earnings of individuals. Hence it was not possible to estimate an earnings or wage function. Further, no information was obtained on the hours of work in each job. Hence an hours of work equation could also not be estimated.

The data consisted of 5970 men and 6047 women excluding students above the age of 14 years. From these data a sample of married couples was constructed by matching the individuals by sex and relationship within each household. The matched sample consists of 3917 married couples, of whom 3207 are the male heads of household and their spouses. Only three are female heads with spouses present in the household. The relationship of the rest of the couples to

the head of the household are son and daughter-in-law (572), daughter and son-in-law (9), brother and sister-in-law (70) and father and mother (51).

This procedure of constructing a matched sample of married couples reduced the sample size considerably (from 12017 to 3917). The sample means and standard deviations of the explanatory variables used in the the model are presented in Table 2 by the alternative employment status of married women. The mean age of the married women is 36 years. However, the mean age of the non-working married women is higher than that of the working women. The mean age of the husbands of the non-working women is higher at 42 years as compared to that of the husbands of working women at 40 years. The years of education of non-working wives and their spouses is higher than that of working wives and their spouses. Wage employed women are, on the average, illiterate while the group of wage and self employed women have about 2 years of schooling. The value of land and other productive assets of the household are higher in the sample of married working women, particularly the self employed, as opposed to non-working women.

EMPIRICAL RESULTS

As noted earlier the labor supply of married women consists of two distinct decisions: (1) whether to participate in the labor market, and (2) if so, how many hours or days of work to undertake. Due to data limitations the model presented here is only concerned with

the first decision on whether to participate in the labor market. This decision hinges on the relationship between the reservation wage and market wage or the marginal value of self employed time.

Model 1

The results of the equations on the market (wage) labor participation of the married woman are presented in Table 3. Three specifications of the model are included. The Likelihood Ratio test statistic is constructed to test for the significance of specification 2 in relation to specification 1 with two degrees of freedom. The test indicates, at the .01 level of significance, a value of 9.21. The LR is above this level (46.52) implying that the two specifications are distinctly different from each other. The LR constructed to compare specifications 2 and 3 is 70.8. This is above the test value of 6.64 at one degree of freedom. Thus, specification 3 is also a valid specification.

The specification using dummy variables for various levels of education is presented is Appendix Table 1. The likelihood ratio constructed to compare this with specification 3 for wage earners is 6.76. This is below the test value of 9.21 at two degrees of freedom and .01 level of significance. Hence the two specifications are not significantly different from each other.

Human Capital: The married women's participation in the market work force declines with age. The impact of the wife's education on her

market labor supply appears to be negative and significant (in specification 1, Table 3). This goes against the received theory regarding the positive own-wage substitution effect.

The cross-wage substitution effect of the husband's education on the wife's market labor participation is also negative. However, this is plausible since both substitution and income effects of the husband's wage may be negative resulting in the negative relation between husband's education and wife's participation in market work.

In specification 2 of the model the education variable is included in a quadratic form to see if more years of schooling of the husband or wife has a differential impact on the wife's market labor participation. A significant U-shaped relationship is observed between the wife's years of education and her market labor participation. The education and its squared term are jointly significant at one percent level. The turning point is computed at 7.5 years. About ten percent of the sample women have education above this level.

More years of education of the wife is expected to improve her market wage offer. However, in this sample, the majority of the women have few years of schooling. Only at about 7 years of schooling the market wage offer is higher than her reservation wage which encourages her entry into the market labor force.

The squared term of the husband's education is not significant and there are no sample observations above the computed turning point. However, the two coefficients are jointly significant at one percent level and hence are retained in this specification. The negative relation of the woman's market work participation to her husband's wage can be explained in terms of the income effect accruing from it, similar to a non-labor income.

In rural India, market jobs available to the illiterate women and women with low levels of education are mainly casual wage labor. In such jobs there is probably very little association between wage levels and years of education. Education, however, may raise the reservation wage, for these women, by raising the productivity of women's time on their own farm and home production. This results in lower market participation rates if the local labor market does not provide greater opportunities. At higher levels of education, opportunities for non-agricultural employment at relatively high wages expand, and may result in a positive relationship between education and work participation.

Physical Capital: The value of land owned does not have any significant effect on the market labor participation of the married woman in any of the three specifications (Table 3). The expected negative income effect of land owned, a proxy for non-labor income, is not obtained in this model, even after excluding the possibly collinear value of business assets (specification 3).

The value of other productive assets excluding land, however, has a significant negative effect on the market labor participation of married women (specifications 1 and 2, Table 3). The negative income effect of value of assets tends to reduce the participation in wage employment as predicted by the theory. Higher value of productive assets raises the reservation wage of the married woman by making her labor more productive at home or on the family land or enterprise.

Both the variables, the value of owned land and other productive assets, are introduced in quadratic form to see if they have a nonlinear impact dependent on the size of the asset. The income effect of a higher value of household land and assets could be expected to have a negative effect on the labor participation of women. The model, however, does not converge with land owned in a quadratic form[1].

External Regional Factor: Distance of the village of residence from the nearest town is used in the analysis to capture the impact of employment opportunities on the married woman's labor supply decision. As such it should improve the market labor participation of women. However, no significant association is observed in any of

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[1] When both value of land owned and value of business assets are included in quadratic form the model converges, but the value of land variables are jointly non significant. The value of business assets and its quadratic term together have a chi-square value of 36.0 which is significant at one percent level. However, there are no sample observations beyond the computed turning point.

the three specifications.

Model 2

The results of the broadly defined labor participation decision, including wage and self employment, of married women are presented in Table 4. The Likelihood Ratio statistic computed to compare specification 1 and 2 is 15.6, which is above the test value of 9.21 at two degrees of freedom and .01 level of significance. The test statistic computed to compare specifications 2 and 3 is 49.34 which is also above the test value at .01 level of significance with one degree of freedom.

A specification with dummy variables for education was also estimated. The results are presented in Appendix Table 1. The likelihood ratio constructed to compare the equations for all workers with and without dummy variables for education is 2.79. The two specifications are again not significantly different from each other.

In order to compare and highlight the differential influence of the explanatory variables on the decision of married women to participate in wage versus self employment, similar equations are estimated for participation in self employment alone. The results are presented in Appendix Table 2 and discussed below.

Human Capital: The married woman's labor participation in wage and

self employment also declines with age as observed in model 1 (Tables 3 and 4). While the turning point for wage workers is 27 years that of wage and self employed workers is higher at 35 years of age. The turning point for self employed women alone is even higher at 43 years (Appendix Table 2). Married women tend to withdraw from wage work earlier than from self employment.

The level of education of the wife and husband have a similar effect on the labor participation in this model as in the earlier one. However, the negative impact of education is stronger for wage employment than when wage and self employment are combined in this model[2]. The linear and quadratic term for years of the wife's education indicate a jointly significant U-shaped relation in model 2. The turning point is computed at 11.8 years. Only about 3 percent of the sample women are above this point.

Thus, overall, years of education of women has a greater influence on her participation in wage employment. In the rural situation in India described above, the influence of education is perhaps less important (given the large proportion of self employed women), and the married women's labor participation decision is probably more

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[2] This is explained by the fact that years of schooling of the wife has no significant effect on her participation in self employment (Appendix Table 2). This is true when the variable is introduced in linear or quadratic form. The years of schooling of the husband, however, appears to encourage participation in self employment by the wife. When introduced in quadratic form the turning point occurs at 7.5 years of the husband's education. At higher levels of education the wife's participation in self employment declines.

influenced by the access to assets of the household as we shall see below.

Physical Capital: A significant positive relationship is observed for both the value of owned land and other productive assets other than land, particularly the latter (Table 4). Earlier we noted that a higher value of business assets discouraged the participation of married women in wage employment (Table 3). Thus, labor participation (broadly defined) by married women is higher in households with high value of land and other productive assets. It is likely that women's work makes a significant contribution to the production on the household land or enterprise. The increase in value of land and assets appears to raise the economic gain from participation in the family enterprise above the reservation wage of the wife, encouraging her entry into the self employed work force[3].

The difference in the impact of the value of physical assets on the participation of married women in wage versus self employment is clear when one compares the estimates in Table 3 (on wage workers) with those in Appendix Table 2 (on self employed women). While the

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[3] The value of land owned was introduced in quadratic form in model 2 but it was not found to be jointly significant at any reasonable level of significance. When both value of land and value of business assets are introduced in quadratic form also the value of land remains jointly non-significant. However, in such a specification, the value of business assets in linear and quadratic form has a chi-square of 54.5 which is significant at one percent. However, there are no sample observations above the computed turning point.

years of schooling of women have a significant negative impact on her participation in wage employment (particularly at lower levels of education), it does not have a significant influence on self employment.

In specification 2, while value of business assets had a negative and significant influence on participation in wage employment it has a significant positive influence on participation in self employment. And finally, the value of land holding did not have a significant effect on participatin in wage employment by married women, while it has a significant positive influence on her participation in self employment (specification 3, Appendix Table 2).

This provides interesting evidence of a differential impact of physical capital, as opposed to human capital, on the work participation decision of the married women. Education of both spouses tends to raise the reservation wage and encourage withdrawal of the wife from participation mainly in wage employment. However, household's access to physical capital tended to encourage work participation of the married women, particularly in self employment.

External Regional Factors: The greater is the distance from village to a town the greater is the chance of a married women working. There is a positive and significant association between work

participation in model 2 and distance from town. Participation in self employment is also higher the greater the distance of the village from a town. This could perhaps be explained in terms of a negative income effect on the married woman's labor participation of her spouse's better access to higher (perhaps urban) wage jobs due to nearness to the town.

CONCLUSION

This paper argues that the job choice decisions of married women in rural India should not be modeled as an individual labor supply decision. This ignores a major factor in this decision making process. The decision regarding the labor force participation of married women is likely to be a joint decision between spouses in a household. To incorporate this dimension of the problem a matched sample of married couples is analysed to assess whether the labor participation decision of married women is based on her individual characteristics alone or is influenced also by her spouses' characteristics and the household's asset structure.

Two models of labor participation are estimated in this paper. The first defines work only as market wage labor and the second defines work broadly to include wage and self employment.

The puzzle raised by the results is that the level of education of the married woman, being used here as a proxy for her wage rates, has a significant negative relation to her labor force

participation. In order to further investigate this seemingly contradictory result, the education variable is introduced in a quadratic form. Only a small segment of the women have sufficient years of schooling to raise her market wage offer relative to her reservation wage and encourage increasing entry into the market work force.

The results could be explained if in the rural labor market in India, at relatively low levels of female education, the links between the wage rates available to women and their levels of education are weak. However, female education tends to raise a married women's productivity in the home and hence her reservation wage is higher compared to the market wage and this discourages her participation in the labor market.

As compared to human capital, the household's access to land and business assets has the opposite effect of encouraging the labor participation of married women, particularly in self employment. Among households with productive assets and land, the value of the wife's labor on the household enterprise is perhaps higher than her home reservation wage explaining her increased labor participation.

To sum, it is necessary to define labor participation in a broader sense, including self employment, to differentiate the impact of physical and human capital on the the majority of women residing in rural India. This also helps in better understanding of the

influence of the family's access to assets on the labor supply of married women.

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Table 1: Frequency Distribution of Husbands and Wives by Levels of Education, Rural Gijarat

	Wife		Husband	
	Frequency	Percentage	Frequency	Percentage
Illiterate	2,629	67.1	1,410	36.0
Literate	6	0.2	18	0.5
Primary/Middle School	883	22.5	1,590	40.6
Secondary School	294	7.5	558	14.2
High School	76	1.9	237	6.1
Graduates	29	0.7	104	2.6
No. of Observations	3,917		3,917	

Table 2: Sample Means and Standard Deviations by Employment Status of Married women, Rural Gijarat

Variables	All Women		Wage Employed		Self-Employed		Non-Workers	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age of Wife	36.11	12.47	33.33	10.14	36.74	11.70	37.84	14.90
Age of Husband	40.27	13.44	37.02	11.03	41.10	12.81	42.14	15.71
Years of School, W	2.15	3.40	0.74	2.30	2.04	3.20	3.64	3.91
Years Squared, W	16.18	33.89	5.87	23.50	14.42	30.22	28.49	42.45
Years of School, H	4.44	4.08	2.65	3.44	4.50	3.92	6.06	4.18
Years Squared, H	36.38	49.64	18.93	35.00	35.50	45.70	54.18	59.84
Primary School, W	0.23	0.42	0.07	0.26	0.25	0.43	0.34	0.47
Secondary School, W	0.07	0.26	0.02	0.15	0.06	0.24	0.14	0.35
High School/Graduate, W	0.03	0.16	0.01	0.11	0.02	0.14	0.05	0.22
Primary School, H	0.41	0.49	0.33	0.47	0.43	0.50	0.46	0.50
Secondary School, H	0.14	0.35	0.07	0.26	0.15	0.36	0.19	0.39
High School/Graduate, H	0.09	0.28	0.03	0.16	0.08	0.27	0.16	0.36
Value of Land Holding	25,023.27	174,520.96	21,279.51	30,5275.46	32,844.95	78,285.39	17,184.45	78,855.38
Value of Business Assets	6,234.97	17,700.10	3,198.79	8,081.02	9,807.18	23,021.70	3,924.10	14,177.41
Distance from Town	14.71	7.59	16.03	7.71	15.27	7.57	12.65	7.07
Number of Observations	3,917		1,092		1,674		1,152	

Note: W = Wife, H = Husband.

Table 3: Maximum Likelihood Logit Estimates of Wage Labor Participation of Married women, Model 1

Explanatory Variables	Specifications		
	1	2	3
Constant	-1.002 (-2.48)	-0.931 (-2.29)	-0.858 (-2.381)
Age of Wife	0.085 (3.94) [0.014]	0.086 (3.99) [0.014]	0.082 (3.82) [0.014]
Age of Wife Squared (10^{-2})	-0.157 (-5.62) [-0.027]	-0.158 (-5.64) [-0.027]	-0.156 (-5.60) [-0.028]
Years of Schooling, Wife	-0.169 (-9.04) [-0.029]	-0.398 (-9.61) [-0.066]	-0.377 (-9.40) [-0.067]
Years of School Squared, Wife (10^{-1})		0.025 (6.36) [0.004]	0.025 (6.26) [0.004]
Years of Schooling, Husband	-0.128 (-9.94) [-0.022]	-0.166 (-5.98) [-0.028]	-0.174 (-6.30) [-0.031]
Years of School Squared (10^{-1})		0.004 (1.58) [0.001]	0.005 (1.68) [0.001]
Value of Land Holding (10^{-4})	0.001 (0.36) [0.000]	0.001 (0.27) [0.001]	-0.001 (-0.59) [-0.000]
Value of Business Assets (10^{-3})	-0.044 (-6.83) [-0.007]	-0.044 (-6.84) [-0.007]	
Distance from Town	0.010 (2.05) [0.002]	0.008 (1.59) [0.001]	0.006 (1.28) [0.001]
Log Likelihood	-1,982.34	-1,959.08	-1,994.46
Chi-Square	671.50	718.02	647.25

Notes: Figures in parentheses are asymptotic t-ratios. Figures in square brackets are partial derivatives.

Table 4: Maximum Likelihood Logit Estimates of Participation in Wage/Self-Employment of Married Women, Model 2

Explanatory Variables	Specifications		
	1	2	3
Constant	-1.672 (-4.65)	-1.617 (-4.45)	-1.558 (-4.33)
Age of Wife	0.172 (9.48) [0.033]	0.175 (9.59) [0.033]	0.174 (9.64) [0.033]
Age of Wife Squared (10^{-2})	-0.246 (-11.09) [-0.047]	-0.249 (-11.17) [-0.048]	-0.245 (-11.17) [-0.047]
Years of Schooling, Wife	-0.122 (-9.07) [-0.024]	-0.213 (-7.14) [-0.041]	-0.214 (-7.27) [-0.041]
Years of School Squared, Wife (10^{-1})		0.009 (3.33) [0.002]	0.010 (3.52) [0.002]
Years of Schooling, Husband	-0.097 (-8.07) [-0.020]	-0.121 (-4.34) [-0.023]	-0.118 (-4.24) [-0.023]
Years of School Squared (10^{-1})		0.002 (0.96) [0.000]	0.002 (0.99) [0.000]
Value of Land Holding (10^{-4})	0.020 (2.88) [0.004]	0.019 (2.71) [0.004]	0.035 (4.63) [0.007]
Value of Business Assets (10^{-3})	0.023 (5.80) [0.005]	0.023 (5.71) [0.004]	
Distance from Town	0.039 (7.34) [0.008]	0.038 (6.97) [0.007]	0.039 (7.10) [0.007]
Log Likelihood	-2,023.20	-2,015.40	-2,040.07
Chi-Square	699.31	714.91	665.58

Notes: Figures in parentheses are asymptotic t-ratios. Figures in square brackets are partial derivatives.

Appendix Table 1: Maximum Likelihood Estimates of Participation in Wage Employment, Self-Employment and All Work of Married Women

Explanatory Variables	Wage Workers	All Workers	Self-Employed
Constant	-0.941	-1.571	-3.067
	(-2.33)	(-4.34)	(-9.62)
Age of Wife	0.081	0.176	0.115
	(3.79)	(9.69)	(7.37)
	[0.014]	[0.034]	[0.029]
Age of Wife Squared (10^{-2})	-0.156	-0.247	-0.132
	(-5.58)	(-11.19)	(-6.97)
	[-0.027]	[-0.048]	[-0.032]
Primary School, Wife	-1.291	-0.805	0.033
	(-9.71)	(-8.29)	(0.37)
	[-0.229]	[-0.155]	[0.008]
Secondary School, Wife	-1.267	-1.226	-0.374
	(-5.51)	(-8.09)	(-2.49)
	[-0.224]	[-0.236]	[-0.091]
High School/Graduate, Wife	-0.637	-1.118	-0.523
	(-1.89)	(-4.74)	(-2.18)
	[-0.113]	[-0.216]	[-0.128]
Primary School, Husband	-0.768	-0.662	0.292
	(-8.70)	(-6.41)	(3.48)
	[-0.136]	[-0.128]	[0.069]
Secondary School, Husband	-1.195	-0.750	0.528
	(-7.92)	(-5.34)	(4.38)
	[-0.211]	[-0.144]	[0.129]
High School/Graduate, Husband	-1.55	-1.207	0.190
	(-6.59)	(-7.21)	(1.24)
	[-0.275]	[-0.232]	[0.046]
Value of Land Holding (10^{-4})	-0.001	0.034	0.018
	(-0.60)	(4.59)	(3.53)
	[-0.000]	[0.007]	[0.004]
Distance from Town	0.007	0.039	0.021
	(1.29)	(7.03)	(4.81)
	[0.001]	[0.007]	[0.005]
Log Likelihood	-1,991.09	-2,038.67	-2,611.11
Chi-Square	654.00	668.37	124.95

Notes: Figures in parentheses are asymptotic t-ratios. Figures in square brackets are partial derivatives.

Appendix Table 2: Maximum Likelihood Logit Estimate of Participation in Self-Employment of Married Women

Explanatory Variables	Specifications		
	1	2	3
Constant	-2.965 (-9.29)	-3.134 (-9.68)	-3.050 (-9.64)
Age of Wife	0.112 (7.10) [0.028]	0.114 (7.13) [0.028]	0.114 (7.34) [0.028]
Age of Wife Squared (10^{-2})	-0.132 (-6.82) [-0.032]	-0.134 (-6.90) [-0.033]	-0.131 (-6.96) [-0.032]
Years of Schooling, Wife	-0.031 (-2.42) [-0.008]	0.038 (1.28) [0.009]	0.027 (0.94) [0.006]
Years of School Squared, Wife (10^{-1})		-0.007 (-2.19) [-0.002]	-0.005 (-1.85) [-0.001]
Years of Schooling, Husband	0.024 (2.30) [0.006]	0.089 (4.22) [0.024]	0.105 (4.59) [0.026]
Years of School Squared (10^{-1})		-0.007 (-3.61) [-0.002]	-0.007 (-3.69) [-0.002]
Value of Land Holding (10^{-4})	0.001 (0.70) [0.000]	0.002 (0.81) [0.000]	0.018 (3.52) [0.004]
Value of Business Assets (10^{-3})	0.040 (9.91) [0.010]	0.040 (9.95) [0.009]	
Distance from Town	0.018 (3.97) [0.004]	0.021 (4.55) [0.006]	0.022 (4.88) [0.005]
Log Likelihood	-2,547.12	-2,534.00	-2,612.56
Chi-Square	252.93	279.16	122.04

Notes: Figures in parentheses are asymptotic t-ratios. Figures in square brackets are partial derivatives.

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