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MARRIAGE IN RURAL PHILIPPINE HOUSEHOLDS

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INTRODUCTION

Marriage decisions are influenced by tradition and culture. But they also respond to economic factors. Delays in the age of marriage have been seen as a means of controlling family size. Thus, factors influencing the desired family size also influence age-at-marriage and the probability of marriage. Marriage is also related to investments in skills and occupation choices. There are at least three reasons for this relationship. First, skills and occupational achievement may influence the "quality" of a marriage (the qualities of the partner). Second, marriage may be competitive with skills achievement in terms of time and resources. And third, marriage may conflict with perceived "remittance" obligations to the family.

These economic motives are interrelated. Both parents and children in households have a stake in the outcomes of marriages and, thus, they weigh in family decisions regarding them. When children are young, parents are the dominant decisionmakers. They anticipate and project marriage, location and occupational (and possibly fertility) outcomes for their children. As children grow older, they develop commitments and responsibilities congruent with parental projections — including remittance income support to the family. At some point their "individuality" emerges and they take increasing responsibility for marriage and skills acquisition decisions. Both parents and children recognize differences in innate abilities, tastes, and attitudes toward risk, etc. In some cases, these differences produce conflict and alienation; but in most families, parental flexibility regarding their

expectations and their children's emerging expectations produces a harmonious transition to the next generation.

Rural Philippine households are regarded to exhibit high degrees of parental support for schooling and training, high degrees of child responsibility regarding remittances and family support, and high degrees of intergenerational harmony. These family structures are based on traditions, and community and religious values. In this paper, I propose to test the proposition that rural Philippine families are also responsive to economic conditions as choices are made regarding the schooling of children, marriage and age-at-marriage of children, and the location and occupation choices of children.

I will utilize intergenerational survey data from a sample of rural households in Laguna Province in the Philippines to test this proposition. These households were originally surveyed in 1975, 1977, 1982, 1985, 1990 and 1992. The sample size was reduced over time as households aged. The 1992 survey sought data on marital status, age-at-marriage, location and occupational choice. By 1992, virtually all of the survey households had completed childbearing, a large proportion of the children had completed schooling and a substantial proportion had married and chosen occupation and location.

The second section (p. 412) of this paper discusses the economic modelling of parental and child choices. The third part (p. 416) discusses data and empirical specifications. The fourth part (p. 419) presents estimates, which are subsequently summarized in the conclusion (p. 426).

THE ECONOMIC ARGUMENT

Families ultimately make decisions regarding contraception and family size, investment in schooling and related skills acquisition, location, occupation and marriage. Parents make their own contraception decisions and support early schooling investments in their children. They make these decisions with certain projections and expectations in mind. Since children contribute income to their families, particularly as they get older, this contribution is quite important to families, since marriage typically indicates

the formation of a new family and the cessation of an income contribution to parents (except for contributions to parents when they become elderly). Thus, age-at-marriage decisions have important economic implications for the family.

The "household" model setup for this problem would be as follows:

The household utility function (1) would include child services C_i, child human capital H_i, leisure t_{lj}, age-at-marriage, M_i, and other household goods Z.

$$U^h\left(\sum_{i=1}^{n} c_i, \sum_{i=1}^{n} H_i, \sum_{j} t_{lj}, \sum_{i=1}^{n} M_i, Z\right) \tag{1}$$

At age M_i, or at a related age, the child leaves this family to form a new household. This does not preclude remittances in later years, but it is assumed that remittances after one has completed schooling end with marriage. Note that the household has some optimal M_i in mind. This may be determined by community norms. Similarly, the utility from H_i may be influenced by community norms.

The constraints for this problem are cited below:

$$C_i = c_i\,(X_{ci}, t_{lj}, C, K) \tag{2}$$

Child services require child goods X_c (food, shelter), child care time t_{ij}, household capital K (which might include community capital as well) and contraceptive effort C.

$$H_i = H_i\,(S_i, H_i) \tag{3}$$

Human capital is produced by schooling S_i, and health investments H_i.

$$S_i = S_i\,(t_{si}, x_{si}, A_i) \tag{4}$$

Schooling is produced by time in school T_{si}, schooling goods X_{si}, and child ability, A_i.

$$H_i = H_i\,(t_{ij}, x_{ni}, K) \tag{5}$$

Health is produced by child care time t_{ij}, health goods (medicine, etc.) and household capital K.

$$Z = Z(X_z, t_{zj}, K) \tag{6}$$

Other household goods are produced by market goods X_z, time t_{zj}, and capital K.

$$T_j = t_{ij} + t_{sj} + t_{zj} + t_{wj} + t_{lj} \tag{7}$$

Each household member j, where j includes parents, faces a time constraint. Total time t_j is allocated to childcare time t_{ij}, time in school t_{sj}, time in home production t_{zj}, time working t_{wj}, and leisure t_{lj}.

$$V + \sum_j t_{wj}(\gamma M_j) W_j \geq \sum_i (P_c X_{ci} + P_s X_{si} + P_h X_{hi}) + P_z X_z \tag{8}$$

The budget constraint is that family income in a particular period, composed of nonlabor income V and labor income (the sum of time spent working by j members t_{wj} times wage W_j (adjusted for remittances associated with age-at-marriage) must be sufficient to pay for expenditures on child goods (X_{ci}, X_{si}, X_{hi}) and other purchased goods used to produce household goods X_z.

The period over which the problem occurs is effectively the family life cycle from marriage until the last child effectively leaves the household. The relative weights of different family members in the household utility function can be considered to shift over the life cycle as children play larger roles. One way to visualize these weights is as being associated with "threat points" in a bargaining model (Fabella 1983). This setup is not intended to suggest that the children no longer care for their parents' welfare or that they may make remittances — after they leave the household.

The time constraint (7) can be inserted into the budget constraint (8) to form the "full income" constraint in the standard way. The shadow prices or minimum costs of producing child services C_i, human capital H_i and

household goods can be expressed in the standard way as weighted averages of goods and time prices where the weights are goods and time intensities.

$$
\begin{aligned}
&\Pi_{ci} = \sum_j W_j t_{ij}/C_i + P_c X_{ci}/C_i \\
&\Pi_{Hi} = \Pi_{si} + \Pi_{hi} \\
&\Pi_{si} + W_i t_{si}/s_i + P_s X_{si}/S_i \\
&\Pi_{hi} = \sum_i W_i t_{ij}/M_i + P_h X_{hi}/M_i \qquad (9) \\
&\Pi_z = \sum_j t_{zj} W_j/Z + P_z X_z \\
&\Pi_{lj} = W_j
\end{aligned}
$$

The family can then be seen to maximize (1) subject to the full income constraint taking these prices and its full income into account. Note that ability A_i, affects the shadow price of schooling Π_{si} through a productivity effect. Higher ability allows the same S_i to be attained with less time t_{si}, and goods X_{si}.

Age-at-marriage M_i affects both utility and income. Later ages-at-mariage raise family income through remittances. For adult children, wages are related to their own human capital. This could be seen as a reduction in the shadow price of human capital (schooling), so age-at-marriage can be seen as having both income and price effects.

This maximization problem yields the following "demand" relationships:

1. the demand for number of children n, i.e., for contraception,
2. the demand for human capital per child $H_i(S_i, H_i)$,
3. the demand for other home goods Z,
4. the demand for purchased goods $(X_{ci}, X_{si}, X_{ni}, X_z)$ and
5. time allocation decisions by family members t_{ij}, t_{sj}, t_{zj}, t_{wj}, t_{lj}.

These behavioral relationships are, in principle, jointly determined by the "exogenous" variables of the problem:

C, contraceptive services and knowledge
K, household and community capital and infrastructure
A_i, child ability endowments
V, nonlabor income
P_c, P_s, P_h, P_z, prices of market goods
W_j, market wages

EMPIRICAL SPECIFICATION OF MARRIAGE DECISIONS

In this paper, no attempt will be made to provide estimates of the full set of relationships implied by the household model. The focus is on the marriage decisions. And given the timing of the marriage decision and the shift in utility weights between parents and children, a somewhat more restricted model than the one developed above is needed.

The restricted model that I will use is a model in which the basic family decisions (1 to 5), i.e., the family size, investments in human capital, and the home goods, produced goods and time allocation decisions, are deemed to have been made in the first stage of the family life cycle. Marriage decisions are made in a second stage, and while these decisions were anticipated and projected in the first stage, the actual investments in human capital from the first stage can be taken as given in the second stage. This logic supports the inclusion of schooling as a "lagged endogenous" explanatory variable.

In addition, the empirical specification of estimates of determinants of age-at-marriage must deal with a censoring problem. In the survey data, second generation children range in age from preschoolers to children in their 30s (in 1992). Some have not completed schooling and many who have completed schooling have not married. The subsample of married children is a censored sample, even if an age cut-off is used. That is, if we consider children over 21, we have a subsample that is not censored as regards the schooling decision since almost all children over 21 have completed schoo-

ling. But many will not have married for reasons similar to the reasons for marrying at different ages.

Accordingly, in this paper, an age cut-off (over 21) is used to eliminate censoring from schooling decisions. A two-stage selection bias procedure (Heckman 1981) is used to correct for censoring bias in age-at-marriage estimates. In the first stage, a "probit" estimate of determinants of marriage is estimated. In the second, the determinants of age-at-marriage are estimated utilizing mills ratio terms from the first stage probit requirements to correct for censoring or selectivity bias (actually, the procedure utilized estimates in both stages jointly in a maximum likelihood procedure).

Table 1 provides a short definition of the variables utilized in this analysis. The two key endogenous variables are the EVER MARRIED and AGE-AT-MARRIAGE variables. However, a secondary analysis of marriage and migration from the home community (barangay) to elsewhere in the Philippines or abroad is also conducted. The four variables, MARRIED/MIGRATED, NOT MARRIED/MIGRATED, MARRIED/NOT MIGRATED, NOT MARRIED/NOT MIGRATED, show the marriage-migration pattern.

Individual characteristics include SEX, AGE, and schooling (EDUC). The EDUC variable is treated as a lagged endogenous variable.

Maternal characteristics include mother's schooling, MEDUC, and mother's age at marriage, MAGEMARR, as well as an indicator of early death of the mother, MDECEASED. These variables are intended to reflect home management skills as well as the socializing influences of the mother.

Household characteristics include farm size and distance to the nearest market, DIST POB.

Community characteristics include indexes of transactions costs, TRANS COST, transportation, TRANSPORTATION, and the mean agricultural wages for the 1977-90 period, COMMUNITY WAGE.

These community characteristics influence migration and occupational choice (Evenson 1994 and King 1982). It is expected that the more remote barangays with high transportation costs will encourage family enterprises,

TABLE 1
Variables and Definitions: Second Generation Respondents in Laguna

	Sample means	
Endogenous dependent variables	**Sons**	**Daughters**
EVER MARRIED: Dummy = 1 if married	0.41	0.54
AGE-AT-MARRIAGE: Age married = 1 if married	23.40	21.70
MARRIED/MIGRATED: Dummy = 1 if married and migrated	0.19	0.26
NOT MARRIED/MIGRATED: Dummy = 1 if not married and migrated	0.57	0.45
MARRIED/NOT MIGRATED: Dummy = 1 if married and not migrated	0.20	0.25
NOT MARRIED/NOT MIGRATED: Dummy = 1 if not married and not migrated	0.04	0.04
Exogenous Variables		
Individual Characteristics		
SEX: Dummy = 1 if male	1.00	0.00
AGE: Age of second generation respondent	28.50	28.60
EDUC: Years schooling completed	7.32	8.71
Mother's Characteristics		
MEDUC: Years of schooling completed by mother	4.51	4.56
MAGEMARR: Mother's age-at-marriage	19.40	19.40
MDECEASED: Dummy = 1 if mother deceased in 1992	0.027	0.042
Household Characteristics		
FARM SIZE: Farmed cropland (owned or rented) in hectares	1.36	1.35
Community Characteristics		
TRANS COSTS: Transactions cost index	2.21	2.22
TRANSPORTATION: Transportation index	2.15	2.22
COMMUNITY WAGE: Average community agricultural daily wage (1977- 1990) in pesos	28.44	28.58

less out-migration and earlier marriage. High agricultural wages are expected to have a similar effect.

ESTIMATES

I begin with simple probit regressions for marriage for second generation sons and daughters over 20 years of age. These estimates are reported in Table 2. I will discuss these results by dependent variable.

The age variable has the expected sign and the expected coefficient differences for sons and daughters. Daughters marry earlier, and as age increases, the probability of marriage increases. Sons marry later, but then age has a higher impact on the probability of marriage.

Education increases the probability of marriage. The effect is larger for sons (below I note that education also delays age of marriage for sons, but not for daughters).

The education of the mother appears to have little effect on daughters, but it reduces the probability of marriage for sons (largely through causing a delay in age-at-marriage).

Both sons and daughters with mothers who marry later have a lower probability of marriage — and again this appears to be through a delay effect.

The early death of the respondent's mother appears to increase the probability of marriage.

Farm size has little effect on the probability of marriage.

The characteristics of the parents' community (barangay) have little impact on the probability of marriage of sons. They do appear to impact on the marriage probabilities for daughters. Daughters from communities with high local wages and high transactions costs are more likely to be married given their age and other characteristics.

Table 3 presents estimates of the effect of dependent variables on both the probability of marriage for the over 20 second generation respondents and on their age-at-marriage, given that they have married. The estimation procedure is the Heckman-type correction model for selection and censoring. A probit equation for the probability of marriage and a regression

TABLE 2
Probit Estimates: Probability of Marriage:
Son and Daughter Second Generation Respondents in Laguna

	Sons	Daughters
Constant	-2.20	-3.95
	(2.18)	(3.21)
Individual Characteristics		
AGE	0.101	0.088
	(5.92)	(4.84)
EDUC	0.146	0.055
	(5.81)	(2.41)
Mother's Characteristics		
MEDUC	-0.078	-0.033
	(2.17)	(0.87)
MAGEMARR	-0.042	-0.075
	(1.56)	(2.48)
MDECEASED	0.982	0.607
	(1.71)	(1.22)
Household Characteristics		
FARMSIZE	0.033	0.055
	(0.57)	(0.95)
Community Characteristics		
TRANS COSTS	-0.148	0.346
	(1.18)	(2.51)
Community WAGE	-0.008	0.073
	(0.46)	(3.19)
Observations	285.00	253.00
Chi^2	78.50	49.60
Prob > Chi^2	0.000	0.000
Pseudo R^2	0.199	0.151

TABLE 3
Selectivity Corrected Estimates: Probability of Marriage and Age-at-Marriage: Second Generation Respondents in Laguna

	Problem of marriage	Age-at-marriage
Constant	-4.32	25.73
	(4.51)	(6.89)
Individual Characteristics		
SEX (MALE)	0.819	-0.299
	(8.79)	(0.07)
AGE	0.130	
	(10.37)	
EDUC	0.049	0.272
	(2.27)	(2.61)
EDUC (MALE)	0.093	-0.483
	(2.92)	(2.99)
Mother's Characteristics		
MEDUC	0.033	-0.148
	(0.09)	(0.89)
MEDUC (MALE)	-0.074	0.532
	(1.45)	(2.36)
MAGEMARR	-0.065	0.177
	(2.20)	(0.95)
MAGEMARR (MALE)	0.017	0.129
	(0.45)	(0.76)
MDECEASED	0.531	
	(1.60)	
Household Characteristics		
FARM SIZE	0.032	0.151
	(0.66)	(0.76)
FARM SIZE (MALE)	-0.0002	-0.608
	(0.004)	(1.91)

TABLE 3 (continued)

	Problem of marriage	Age-at-marriage
Community Characteristics		
TRANS COST	0.225	0.008
	(1.84)	(0.02)
TRANS COST (MALE)	-0.343	0.176
	(2.15)	(0.26)
TRANSPORTATION	0.337	-1.62
	(2.10)	(2.36)
TRANSPORTATION (MALE)	-0.473	0.958
	(2.29)	(1.09)
COMMUNITY WAGE	0.020	-0.089
	(1.31)	(1.28)
NRHO		-5.41
		(1.97)
Sigma		1.55
		(23.04)
Observations		538.0
Chi^2		173.36
Ob > Chi^2		0.000

equation for age-at-marriage are jointly estimated using a maximum likelihood technique. The age-at-marriage estimates are thus corrected for the selectivity bias inherent in the marriage decisions.

For this procedure, observations for sons and daughters are pooled. However, separate coefficients for sons and daughters are estimated for most of the important variables (the interactions with the sex = 1 if male dummy, mean that the coefficient for the uninteracted variable is the coefficient for daughters. The coefficient for sons is the sum of the uninter-

acted variable and the interacted variable). It is expected that most variables affecting the probability of marriage will also affect age-at-marriage. Age of the respondent is the key variable used to identify the model as it does not appear in the age-at-marriage equation. (Strictly speaking, the model could be identified by the "functional form" of the probit — but most economists argue for more identifying variables.)

For the most part, the probit estimates for the probability of marriage are approximately as reported in the simple probits. By comparing the probit estimates with the age-at-marriage estimates, however, we can obtain more insights into the process. In some cases, we expect the higher probability of marriage to be achieved through lowering the age-at-marriage. For example, it was noted in the discussion of Table 2 that the education of both sons and daughters increased the probability of marriage. But for daughters, education increased age-at-marriage — i.e., caused them to marry later — while, for sons, education led to earlier age-at-marriage. Yet for both sons and daughters, education led to higher probabilities of marriage given the respondent's age and other characteristics.

Interestingly, the education level of the mother has the opposite effect for sons. More educated mothers have little effect on the marriage patterns of their daughters. But they do induce their sons to marry later, and this produces a net reduction in the probability of marriage for this group. (It is likely, however, that marriage probabilities will go up as this group gets older. The same comment applies to daughters with higher schooling levels.)

Mother's age-at-marriage does not appear to have an impact on the daughter's marriage pattern. There is some indication that sons marry later if their mothers married later. Early death of the mother leads to higher probabilities of marriage.

The size of the farm operation apears to have little effect on the marriage probability but does appear to lead to earlier age-at-marriage for sons. The opportunity to farm appears to lead to lower out-migration and earlier marriage. (See next section for further discussion.)

As noted in the ealier discussion, high transaction costs in the home community lead to higher marriage probabilities for daughters, but this is

not achieved through an impact on age-at-marriage. Better transportation facilities in the home community also appear to lead to higher marriage probabilities for daughters, and these are achieved via earlier age-at-marriage. The effect of higher agricultural wages is similar.

MARRIAGE AND MIGRATION: AN EXTENSION

Marriage is related to migration. As noted earlier, most of the second generation children who have not migrated from their home barangay (and associated town) have in fact married at a relatively young age. One can imagine a number of links between migration and marriage. Education is acquired to enhance earning opportunities for children who do not plan to migrate. But for many families, educational investments are made to facilitate migration and to enhance earning opportunities after migration. The marriage decision is also related to this. Migration, on the one hand, expands the scope for finding marriage partners as does education. Marriage after migration is thus likely to occur at a later age than is marriage without migration.

A simple probit procedure is not suited to analyzing the joint marriage-migration decision. The multinomial logit procedure does allow us, however, to assess the effects of the various independent variables in this analysis on multiple choices relative to a reference choice. Table 4 reports multinomial logit estimates for a three-choice model, where the choices are —

1. Not migrating (the reference choice)
2. Migrating-married
3. Migrating-not married

The determining variables are the same as those determining the probit choice of marrying or not marrying. Since most of the nonmigrating children have actually married, it is not possible to consider the not migrating-not married choice.

The estimated coefficients thus tell us something about both the decision to migrate and the decision to marry, given that migration has taken place.

TABLE 4
Multinomial Logit Regression Estimates: Probability of Marriage and Migration: Son and Daughter Second Generation Respondents in Laguna

	Sons		Daughters	
	Migrated married	**Migrated not married**	**Migrated married**	**Migrated not married**
Constant	-2.82	-5.34	-5.64	-9.15
	(1.46)	(2.52)	(2.31)	(3.73)
Individual Characteristics				
AGE	0.175	0.175	1.56	0.156
	(5.23)	(4.79)	(4.39)	(4.34)
EDUC	0.190	0.333	0.064	0.116
	(3.84)	(5.86)	(1.42)	(2.55)
Mother's Characteristics				
MEDUC	-0.238	-0.017	-0.075	-0.016
	(3.21)	(0.23)	(0.97)	(0.23)
MAGEMARR	-0.127	-0.035	-0.183	-0.084
	(2.33)	(0.65)	(2.98)	(1.46)
MDECEASED	1.58	1.49	1.36	0.162
	(1.53)	(1.36)	(1.56)	(0.15)
Household Characteristics				
FARM SIZE	0.159	-0.717	0.064	0.104
	(1.50)	(1.15)	(0.52)	(0.97)
Community Characteristics				
TRANS COSTS	-0.184	-0.325	0.568	0.532
	(0.48)	(1.26)	(2.10)	(2.01)
Community WAGE	-0.010	-0.039	0.108	0.142
	(0.27)	(0.96)	(2.35)	(3.12)
Observations	285.000		253.000	
Chi^2	107.400		62.200	
Prob > Chi^2	0.000		0.000	
Pseudo R^2	0.177		0.113	

First, consider the effects of age. It appears that age increases migration. Older children are more likely to have migrated than the reference group. ' ge appears to have little differential effect on marriage.

Education also affects migration and marriage. More educated children e more likely to have migrated. They are also more likely to migrate and ıt marry than the reference group.

More educated mothers appear to stimulate their sons to migrate and arry. But this is not the case for their daughters.

Mothers who marry later have lower migration probabilities and mar- ıge probabilities for both sons and daughters.

Early deaths of mothers tend to stimulate migration and marriage.

Larger farm sizes do not have strong effects.

Higher transaction costs and higher local wages stimulate migration of daughters, but have little impart on sons.

SUMMARY

The data available for second generation sons and daughters allow us to draw some conclusions regarding the effect of several variables measuring individual, maternal, household and home community characteristics on marriage probabilities and age-at-marriage. Since this is an age truncated sample, i.e., not all sons and daughters have completed marriage decisions, the reader is cautioned regarding conclusions on probabilities of ever marrying. In cases where age-at-marriage is delayed, current probabilities of being married may be lower as a result, but this may not hold for probabilities of ever marrying. The reverse may be the case for factors accelerating age-at-marriage.

The evidence on marriage based on moderate levels of statistical significance ($t > 1.5$) suggests the following conclusions.

Higher levels of educational attainment by sons increase the marriage probability by accelerating age-at-marriage. For daughters, marriage probabilities are also increased, but age-at-marriage is delayed. For both sons

and daughters, higher educational attainment is associated with higher marriage opportunities via migration from the home community.

Higher levels of maternal educational attainment, on the other hand, appear to have little effect on the marriage outcomes of daughters. For sons, marriage is delayed and migration is increased by higher levels of maternal education.

Early deaths of mothers stimulate higher levels of marriage.

Availability of farm land (hence farming opportunities) has little effect on daughter's marriage outcomes. It encourages earlier marriages for sons and discourages migration.

Home community characteristics have little effect on the marriage outcomes of sons. For daughters, high transactions costs stimulate higher marriage probabilities and migration. High agricultural wages have similar effects. Better transportation options also have similar effects.

Most of these measured effects are predicted by the economic logic of the household model — although little modeling of marriage has actually been undertaken. If there is a surprise in these estimates, it is that marriage opportunities for daughters are apparently more circumscribed by community and household factors than are marriage opportunities for sons. Maternal characteristics have stronger effects on sons. And while farming opportunities hold sons in the local community and encourage early marriage, high transactions costs and employment opportunities do so for daughters.

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