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The Effect of Premarital Migration on Land Inheritance:

The Case of Ever-married Children from Cambodian Rural Villages

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Abstract

In recent years, an increasing number of unmarried children have migrated from the rural areas of Cambodia to seek work, which may initiate changes to the customary partible land inheritance system. The data of ever-married children from five villages were analyzed. The results indicated that children's premarital migration experience negatively impacts land inheritance to a measurable extent, though indirectly, by increasing the chance of provincial exogamy, which is negatively correlated with land inheritance. Nevertheless, premarital migration is still a minor factor resulting in the lack of land inheritance among children. In three villages, the negative effect of premarital migration was found to be larger for children from families with small land endowment. On the one hand, an increase in premarital migration increases the inequality in land ownership of children's generation as a whole. On the other hand, it reduces landholding inequality among those who receive land from their parents. This study reveals that the negative effect of premarital migration on land inheritance is increasing in recent years probably due to an improvement in the working conditions of migrant workers.

Ⅰ Introduction

For family farms, the allocation of farmland among children significantly impacts their economic welfare, especially in the rural areas of the developing countries. Furthermore, this impacts land distribution and income distribution among the younger generation. Intergenerational land transfer impacts agricultural production. Moreover, the division of land among children results in fragmentation, thereby affecting farm efficiency (Niroula and Thapa, 2007; Rahman and Rahman, 2009).

A customary land inheritance system exists in each region of the world. A partible inheritance system, where land is divided among children, is the norm in many parts of the world. However, partible inheritance has become difficult in the present-day rural areas of the developing countries due to the increase in population and decrease in unclaimed arable land. In addition, the increase in labor migration of young people from rural areas could possibly change the land inheritance practice. Premarital migration experience is theoretically

considered to both positively and negatively impact land inheritance. If a child economically helps his or her parents by working away from home, then parents might preferentially give land to that child to reciprocate the devotion to family by the child. If premarital migration expands the possibility of working in non-agricultural sectors or promotes permanent relocation after marriage, then children with premarital migration experience might be given lower priority in land transfer.

Several studies (such as Estudillo Quisumbing, and Otsuka, 2001; Quisumbing and Otsuka, 2001; Quisumbing, Payongayong, and Otsuka, 2004; Goetghebuer and Platteau, 2010; Kumar and Quisumbing, 2012; Ainembabazi and Angelsen, 2016) examined the determinants of land transfer from parents to children in rural areas of the developing countries. However, they did not analyze the effect of premarital migration experience of children on their land inheritance status.

To the best of our knowledge, the study by Yagura (2015a) on Cambodian villages is the only attempt to examine the effect of children's premarital migration experience. Yagura (2015a) argued that children with premarital migration experience would have a greater chance of marrying someone from another province ("provincial exogamy") whom they meet at the migration destination. Such children would be more likely to settle in the province of their spouse after marriage. Unable to cultivate land in their province of origin, such children are less likely to receive land from their parents. Based on this hypothesis, Yagura (2015a) examined the impact of children's place of residence on land inheritance status during the survey period; however, children may decide their place of residence based on their land inheritance status, not vice versa. In addition, Yagura (2015a) did not employ regression analysis and, hence, failed to control for the possible endogeneity of premarital migration and provincial exogamy as well as the effects of other variables. The effect of premarital migration experience also was not quantified.

This study aims at filling this gap and at addressing the weakness of the analysis in the study by Yagura (2015a). Concretely, it analyzes the data of ever-married children of the heads of households in five rice-growing villages in Cambodia to quantitatively evaluate the effects of premarital migration experience on their land inheritance status. Furthermore, it focuses on the direct effect of premarital migration and its indirect effect through provincial exogamy. Possible endogeneity of these two key variables as well as the effect of other exogenous variables will be controlled through econometric analysis. Furthermore, this study examines the changes in the impact of premarital migration experience due to the land endowment of parents and children's ages. Through this, we can predict whether inequality in land holding as well as the extent of land fragmentation increase in the children's generation. A part of the data used in this study, which was collected from three villages in 2009, overlaps with the dataset used by Yagura (2015a). In addition, this study uses data collected from another two villages in 2014.

Cambodia is chosen as a case study for three reasons. First, in the last two decades, an increasing portion of the rural population, especially unmarried children of household heads, have migrated to seek work outside their home village. Second, in rural Cambodia, parents

generally allocate their land to all of their children; however, the partible inheritance practice has become difficult to follow in recent years owing to increase in population and decrease in unclaimed cultivable land. These factors might force parents to change their inheritance practice. Third, parents usually give land to each of their children during marriage. This suggests that parents would consider a child's premarital migration status when deciding whether to give land to each child.

This paper is organized as follows. The next section presents hypotheses concerning the effect of premarital migration on land inheritance. The third section introduces villages surveyed and describes the data used for this study. The fourth section presents the situation of premarital migration of children as well as the relation among premarital migration, provincial exogamy, and land inheritance. The fifth section explains the regression model employed in this study. The sixth section presents the estimation results. The last section summarizes the findings of this study and presents the implications of the findings.

Ⅱ Hypotheses

This section proposes hypotheses regarding the effect of premarital migration experience on land inheritance.

The first hypothesis is that premarital migration experience positively impacts land inheritance. Most children who migrate before marriage intend to economically help their family, and therefore, they remit money to their parents while migrating. To reciprocate the devotion to family, parents preferentially give land to children who migrate before marriage. Hoddinott (1994) argued that migrating children may strategically remit money to their parents to get preferential treatment in land inheritance. As suggested by the strategic bequest motive hypothesis (Bernheim, Shleifer, and Summers, 1985), parents may also entice their migrating children to remit money by alluding to the possible preferential treatment.

The second hypothesis is that the premarital migration experience negatively affects land inheritance. The negative effects include both direct and indirect effects. The direct effect is related to the postmarital occupational choice of children. Skills and social network acquired while working in the non-agricultural sectors in migration destinations would help migrating children earn a living from non-agricultural activities. Such children would be given a lower priority in land transfer. Yagura (2015a) argued regarding the indirect effects of premarital migration experience and related it to children's marital partner selection. For children who migrate before marriage, people of the opposite sex at the migration destination become candidates for their marital partner. As people at the migration destination come from various parts of the country, the chance of provincial exogamy is high. Children married to someone from other than their province of origin may move to their spouse's province of origin after marriage. Such children are less likely to receive land from their parents due to inaccessibility to their province of origin and difficulty in cultivating land in their home province.

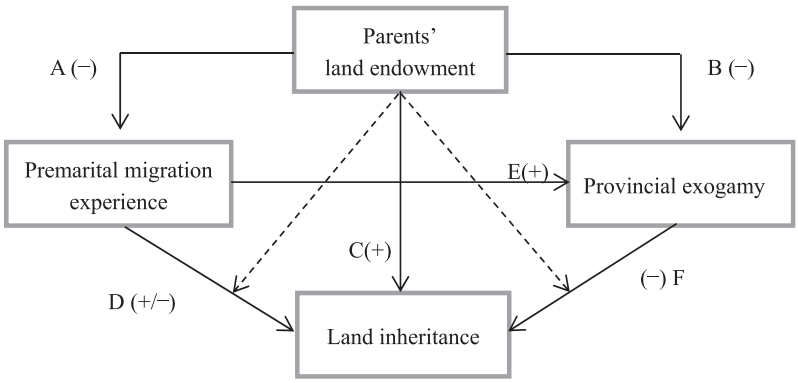
To accurately evaluate the effect of premarital migration experience, this study considers the effect of parents' land endowment. Parents' land endowment affects not only land

transfer from parents to their children but also children's premarital migration and marital partner selection. Children would be more likely to migrate before marriage to economically support their family when parents' land endowment is small. Although their family is not economically distressed, unmarried children may migrate if farm size is small due to the lack of employment opportunity in their village. Theoretical considerations presented in the study by Yagura (2012) imply that parents' land endowment impacts children's marital partner selection. If parents' land endowment is small, children are less likely to receive land from their parents. Married children would find it less attractive to live in their home village if they have no land there. Such children are relatively more likely to marry someone from other place. We can understand the reason why by considering the opposite case. Those who wish to live in their home village after marriage would marry someone from the same place of origin. This is because by doing so, the married couple can easily get social or economic support from parents of both husband and wife.

Figure 1 depicts the relation between the key variables mentioned above based on these hypotheses. In this figure, the plus and minus signs attached to arrows indicate positive and negative effects, respectively. Arrow D indicates that premarital migration experience can positively or negatively impact land inheritance.

Figure 1 illustrates that the effect of premarital migration experience on land inheritance cannot be revealed only by observing a simple correlation between these two variables. This study observes whether premarital migration experience is correlated with marital partner selection or parents' land endowment and whether either of the latter two variables is correlated with land inheritance status.

Dotted arrows pointing to arrows D and F from parents' land endowment indicate that the size of the effect of premarital migration experience and provincial exogamy on land inheritance may vary with parents' land endowment. For example, if parents' land endowment is sufficiently large to divide land among all children, then the effect of premarital



Source: Prepared by the author.

Figure 1. Hypothetical relationships among key variables

migration experience and provincial exogamy would be small or nil.

In addition, the effect of the key variables mentioned above can vary with children's age, which roughly represents the period when children migrate before marriage and the time of marriage as long as the age at marriage does not differ greatly among children. For example, if the working conditions of migrant workers have improved in more recent years, then the possible negative effect of premarital migration on land inheritance would be larger for younger children. This is because they would be able to make their living without land by continuing to work in their migration destination after marriage.

Ⅲ Data

1. Villages surveyed

The data used for this study were collected from five villages in three provinces using structured questionnaires. The survey was conducted in August 2009 in three of the five villages: Proh Srae (PS) and Prey Khla (PK) villages in Prey Veng Province and Poulyom (PY) village in Pursat Province. The data collected in these three villages, hereinafter collectively designated as the "3P villages," were also used by Yagura (2015a). The other two villages, Svay (SV) and Trapeang Ang (TA) villages, located in Takeo Province, are collectively designated hereinafter as the "Takeo villages." The survey in Takeo villages was conducted during May–June 2014 and in January 2015.

In all the five villages, few crops other than rice are grown. Only limited non-agricultural employment opportunities are available in and around the villages. Owing to the seasonality of farming and small farm size, some villagers, including unmarried children of household heads, migrated to seek work in places such as Phnom Penh even in the 1980s and the 1990s.

The average sizes of farmland per household were 0.57 ha in TA, 0.73 ha in PS, 0.87 ha in SV, 1.27 ha in PK, and 2.13 ha in PY at the time of the surveys. The percentage of landless households was 30% in SV, the highest among the five villages, and only 3% in PS (the lowest). Landless households lost their farmland because of sale or the inability to receive farmland from their parents.

As in most rural villages in Cambodia, agricultural production was collectivized in all five villages under the Pol Pot regime in the late 1970s. Under the government led by Kampuchea People's Revolutionary Party, farmland was redistributed to households by the early 1980s fundamentally based on the number of household members. Since then, land has become a de facto private property, i.e., it has changed hands through sale and transfer. Farmland was also reclaimed in the 1980s in PY, PK, and SV villages, but unreclaimed land was exhausted by the end of the decade.

In the surveyed villages, parents give farmland to their children within a few years after marriage as a common practice. The birth order and gender of children are generally not considered in the land transfer. Therefore, both husband and wife receive farmland from their own parents, and newly married couples have an option of making their living by farming. However, as indicated by data presented later, the situation of young married couples has

apparently changed in recent years because many of them have not received land from their parents.

2. Overview of the data

In our survey, we interviewed the household head or the spouse. The survey was administered to all households in the villages, except those for which the head and the spouse were both absent during our survey. Exceptionally in PK, we only visited households in the southwestern part of the village so that the numbers of households surveyed would be approximately equal in the 3P villages. Consequently, the numbers of households interviewed were 187 in PS, 208 in PK, 179 in PY, 135 in SV, and 154 in TA.

Through this survey, we collected information related to the characteristics of the heads of households and their spouse in addition to the data of their children, including those who were married and were, therefore, independent from them. For this study, ever-married children who satisfied the following two conditions were chosen. First, they must belong to a generation that did not receive land through land redistribution conducted by the government in the 1980s but through their parents. Second, data of the attributes of households headed by their parents before their marriage must be available. Of those attributes, the indispensable one for this study is the parents' land endowment. This attribute represents the size of farmland each child might receive from parents if the parents' farmland were divided equally among all siblings. It can be simply denoted as L/N, where L denotes the area of farmland owned by parents that is divisible among their children (=each child's siblings) and N denotes the number of siblings who might receive land from their parents. The parents' land endowment, defined as such, is presumed to be a major determinant of both the children's premarital migration decision and the parents' land transfer to their children.

For the 3P villages, ever-married children aged 39 years and younger at the time of the survey were deemed to satisfy these two conditions and were selected as the sample. In defining the parents' land endowment, N represents the number of siblings aged 39 years and younger and L denotes the area of farmland the household owned at the moment their parents (i.e., the household head and their spouse we interviewed) gave farmland to their child for the first time after having received land from the local authority in the 1980s.

For Takeo villages, ever-married children who first married after 2002 were chosen as the sample because household survey was conducted in these villages in 2002, with data of households' landholdings as of 2002. Here, L denotes the area of farmland of parents as of 2002. N signifies the number of siblings who had not married by 2002, including siblings born after 2002. The statistical means of parents' land endowments, as defined above, were 0.54 ha for 3P villages and 0.25 ha for Takeo villages. The respective medians were 0.36 ha and 0.18 ha.

The numbers of ever-married children of household heads meeting these conditions were 227 in PS, 172 in PK, 183 in PY, 146 in SV, and 189 in TA villages. The average age of the sample children was 28.4 years for 3P villages and 27.0 years for Takeo villages. Those younger than 30 years constituted 60% in 3P villages and 73% in Takeo villages. Those

for whom data were missing for variables used in the analyses were removed from the descriptive and regression analyses shown below.

Ⅳ Descriptive analysis

1. Premarital migration, provincial exogamy, and land inheritance

Table 1 indicates that the premarital migration rate, or the proportion of ever-married children who migrate before marriage, is 28% for 3P villages and 73% for Takeo villages. The high premarital migration rate in Takeo villages indicates that households in Takeo villages have smaller land endowment on average than those of the 3P villages. In addition, it reveals the increasing tendency of migration from rural Cambodia because the survey in Takeo was conducted more recently (in 2014) compared with that in the 3P villages (in 2009). The increase in migration is also indicated by the higher migration rate for younger children. The migration rate does not differ so much by gender.

The most popular destination of migration was Phnom Penh, and approximately 10% of migrants went abroad, mostly to Thailand. A large majority of migrants engaged in manual labor in non-agricultural sectors in migration destinations for which educational background was not required, such as unskilled construction work and garment and other factory work.

Table 2 depicts the simple correlation among premarital migration experience, provincial exogamy, and land inheritance status. Land inheritance status at the time of the survey is considered, and some sample children may have received land from their parents later. This table reveals that the proportion of those who married someone from other than their province of origin is higher for those who have premarital migration experience than for those who do not. Though not shown in the table, the higher rate of provincial exogamy is attributable to premarital migration experience. In the case of the 3P villages, 97% of children who married someone from other than their province of origin met their marital partner in

Table 1. Premarital migration rate (%)

	3P villages (N=573)	Takeo villages (N=333)
Average	27.6	72.7
By gender		
female	25.1	78.1
male	30.5	66.5
By age		
<20	38.5	81.8
20-29	34.7	78.9
30-39	16.6	75.9
40-49	n.a.	62.5

Source: Survey by the author in 2009 and 2014.
Notes: The age group 40-49 is out of the sample for 3P villages.

Table 2. Relationship between premarital migration (*M*), provincial exogamy (*S*), and land inheritance (*R*)

			Subsample with:		Total	%
			S=0 (*a*)	*S*=1 (*b*)	(*a*+*b*)	*S*=1 (*b*/*c*)
3 P		Total (*d*)	382	33	415	(8.0)
	M=0	*R*=1 (*e*)	333	27	360	(7.5)
		% *R*=1 (*e*/*d*)	(87.2)	(81.8)	(86.7)	
		Total (*d*)	89	69	158	(43.7)
	M=1	*R*=1 (*e*)	63	25	88	(28.4)
		% *R*=1 (*e*/*d*)	(70.8)	(36.2)	(55.7)	
Takeo		Total (*d*)	79	12	91	(13.2)
	M=0	*R*=1 (*e*)	57	4	61	(6.6)
		% *R*=1 (*e*/*d*)	(72.2)	(33.3)	(67.0)	
		Total (*d*)	115	124	239	(51.9)
	M=1	*R*=1 (*e*)	60	44	104	(42.3)
		% *R*=1 (*e*/*d*)	(52.2)	(35.5)	(43.5)	

Source: Survey data collected by the author in 2009 and 2014.
Notes: *M*, *S*, and *R* respectively stands for a dichotomous variables which takes the value 1 if the sample child migrated before marriage, married with someone from other province than his/her province of origin, and received farmland from his/her parents. Figures without parenthesis refer to the number of children in each category and figures in parentheses refer to percentage.

their migration destination. This rate is as high as 89% for Takeo villages. Table 2 also shows that the proportion of children who received land from their parents is lower for those who have premarital migration experience as well as for those who married someone from other than their province of origin. This data suggest that either or both of premarital migration experience or/and provincial exogamy negatively affect land inheritance. Nevertheless, as argued in the previous section, the correlation between these key variables could be superficial if parents' land endowment had negative effects on both premarital migration and provincial exogamy.

2. Land inheritance from spouse's parents

Although children with premarital migration experience are less likely to receive land from their own parents, their spouses may receive land from the spouse's parents. However, this is less likely as shown in Table 3. For the 3P and Takeo villages, if children do not receive land from their own parents, then their spouses are also less likely to receive land from the spouse's parents irrespective of their migration status. This indicates positive assortative matching in terms of land inheritance status, which is also observed for the generation of sample children's parents in the 3P villages as demonstrated by Yagura (2015b). In addition, premarital migration experience also negatively correlated with spouse's land inheritance status, except the case of children without land inheritance (i.e., *R*=0) in Takeo villages.

Table 3. Land inheritance from spouses' parents by premarital migration status

		% of children with $Rs=1$		% of children with $R=0$ & $Rs=0$
		Subsample with:		
		$R=0$	$R=1$	
3P	$M=0$	61.1	90.4	5.1
	$M=1$	44.3	82.8	23.0
Takeo	$M=0$	25.0	82.4	26.6
	$M=1$	31.9	54.7	35.6

Source: Survey data collected by the author in 2009 and 2014.
Notes: Please see the notes of Table2 for the definition of M and R. $Rs=1$ if the spouse of sample children received land from spouse's parents and $Rs=0$ otherwise.

Consequently, the proportion of children who received land neither from their own parents nor their spouse's parents is higher for children who have premarital migration experience than for those who do not.

Ⅴ Regression model

1. Model description

This section introduces the regression model to examine the effect of premarital migration on land inheritance. In the following, premarital migration experience (*mig*), whether the spouse is from another province (*spouse_o*), and whether one received farmland from his or her parents (*r_land*) are represented by dichotomous variables M, S, and R, respectively. These endogenous variables are assumed to be determined by the following system of equations, with M^*, S^*, and R^* being latent variables determining the value of M, S, and R, respectively:

$$M^* = \boldsymbol{\beta}_1'\mathbf{X}_1 + \varepsilon_1;\ M = 0 \text{ if } M^* \le 0,\ M = 1 \text{ if } M^* > 0 \cdots\cdots (1)$$

$$S^* = \boldsymbol{\beta}_2'\mathbf{X}_2 + \mu_2 M + \varepsilon_2;\ S = 0 \text{ if } S^* \le 0,\ S = 1 \text{ if } S^* > 0 \cdots\cdots (2)$$

$$R^* = \boldsymbol{\beta}_3'\mathbf{X}_3 + \mu_3 M + \theta_3 S + \varepsilon_3;\ R = 0 \text{ if } R^* \le 0,\ R = 1 \text{ if } R^* > 0 \cdots\cdots (3),$$

where μ_2, μ_3, and θ_3 are coefficients for M and S, respectively. $\mathbf{X}_1$, $\mathbf{X}_2$, and $\mathbf{X}_3$ are vectors of exogenous explanatory variables, including parents' land endowment. $\boldsymbol{\beta}_1$, $\boldsymbol{\beta}_2$, and $\boldsymbol{\beta}_3$ are vectors of associated coefficients. ε_1, ε_2, and ε_3, are error terms or unobservable factors and assumed to jointly follow trivariate normal distribution with unit variances and coefficients for correlations ρ_{12}, ρ_{13}, and ρ_{23}. Therefore, this system of equations needs to be estimated simultaneously and can be called a "trivariate probit model." $\mathbf{X}_1$, $\mathbf{X}_2$, and $\mathbf{X}_3$ satisfy exclusion restriction: $\mathbf{X}_3$ is a subvector of $\mathbf{X}_2$, and the latter is a subvector of $\mathbf{X}_1$. As demonstrated by Han and Vytlacil

(2017), this condition is unnecessary for model identification but necessary for the proper identification of this model.

The estimation of this model requires the computation of three-dimensional cumulative normal distributions. Accordingly, maximum simulated likelihood estimation using the Geweke-Hajivassiliou-Keane (GHK) simulator is applied. The models are estimated using statistical software (Stata 14).

Based on our hypotheses depicted by Figure 1, the total effect of premarital migration experience on land inheritance is expressed as follows:

$$\delta \equiv \Delta P_{RM} + \Delta P_{SM} \times \Delta P_{RS} \cdots\cdots (4).$$

ΔP_{RM} represents the difference in the probability of R=1 between when M=1 and when M=0, with other variables being unchanged. This corresponds to the direct effect of premarital migration experience (Arrow D in Figure 1). Similarly, ΔP_{SM} denotes the difference in the probability of S=1 between when M=1 and when M=0. ΔP_{RS} represents the difference in the probability of R=1 between when S=1 and when S=0. The former corresponds to Arrow E and the latter to Arrow F in Figure 1; therefore, $\Delta P_{SM} \times \Delta P_{RS}$ represents the indirect effect of premarital migration experience.

The marginal probabilities are derived as follows:

$$\mathrm{P}[M = 1] = \Phi(\boldsymbol{\beta}_1' \mathbf{X}_1) \cdots\cdots (5)$$

$$\mathrm{P}[S = 1] = \Phi(\boldsymbol{\beta}_2' \mathbf{X}_2 + \mu_2 M) \cdots\cdots (6)$$

$$\mathrm{P}[R = 1] = \Phi(\boldsymbol{\beta}_3' \mathbf{X}_3 + \mu_3 M + \theta_3 S) \cdots\cdots (7),$$

where P[•] indicates probability, and Φ (•) denotes the standard normal cumulative distribution function.

As such, ΔP_{RM}, ΔP_{SM}, and ΔP_{RS} are expressed as follows, respectively:

$$\Delta P_{RM} = \Phi(\boldsymbol{\beta}_3' \mathbf{X}_3 + \mu_3 + \theta_3 S) - \Phi(\boldsymbol{\beta}_3' \mathbf{X}_3 + \theta_3 S) \cdots\cdots (8)$$

$$\Delta P_{SM} = \Phi(\boldsymbol{\beta}_2' \mathbf{X}_2 + \mu_2) - \Phi(\boldsymbol{\beta}_2' \mathbf{X}_2) \cdots\cdots (9)$$

$$\Delta P_{RS} = \Phi(\boldsymbol{\beta}_3' \mathbf{X}_3 + \mu_3 M + \theta_3) - \Phi(\boldsymbol{\beta}_3' \mathbf{X}_3 + \mu_3 M) \cdots\cdots (10).$$

A large value of δ does not indicate a large effect of premarital migration on land inheritance status of sample children as a whole if the migration rate is low. The substantive effect of premarital migration experience can be expressed as $\delta_o \equiv \mathrm{P}[M = 1]\delta$. This represents the expected change in the probability of receiving land from parents due to the availability of migration opportunity before marriage and can be called a "migration opportunity effect."

Assuming that premarital migration experience negatively impacts land inheritance (i.e., $\delta<0$ and $\delta_o<0$), this study evaluates the relative size of the contribution of premarital migration opportunity to the total reduction in the expected probability of land inheritance by $\delta_r \equiv -\delta_o/(1-\mathrm{P}[R=1])$. This represents the extent of reduction in the expected probability of land inheritance explained by the migration opportunity effect.

2. Explanatory variables

Variables for econometric analysis are presented in Table 4. Exogenous regressors included attributes of sample children and attributes of their parents. The values of the latter type of variable were common to sample children from the same household (that is, they are siblings). Individual-level variables included age (as of the time of the survey) (*age*), a dummy variable indicating sex (*male*), and educational level (*edu*).[1)] The difference between a child's age and the average age of the parents (*dif_age*) was also included because it was presumed to affect whether the child migrated before marriage. The small age difference indicates that parents were still young when the child reached working age. Therefore, the child would more likely migrate because the parents could do farming and household chores without the assistance of the child. The numbers of elder siblings (*n_elder*) and younger siblings (*n_younger*) were also included because they were expected to affect land transfer

Table 4. The definitions and the descriptive statistics of variables for econometric analysis

		3P villages (N=496)				Takeo villages (N=293)			
		Mean	S.D.	Min.	Max.	Mean	S.D.	Min.	Max.
Endogenous variables									
mig (M)	Migrated before marriage*[a)]	0.28	0.45	0.00	1.00	0.72	0.45	0.00	1.00
spouse_o (S)	Spouse is from another province*	0.17	0.38	0.00	1.00	0.38	0.49	0.00	1.00
r_land (R)	Received farmland from her/his parents*	0.78	0.41	0.00	1.00	0.51	0.50	0.00	1.00
Exogenous variables									
age	Age (year)	28.41	5.40	16.00	39.00	27.14	4.61	15.00	45.00
dif_age	Difference between the average age of parents and her/his own age (year)	28.85	6.62	12.50	51.00	29.18	7.31	12.00	55.00
male	Male*	0.46	0.50	0.00	1.00	0.46	0.50	0.00	1.00
n_elder	The number of elder siblings	1.89	1.78	0.00	8.00	1.28	1.39	0.00	8.00
n_younger	The number of yonger siblings	3.11	2.01	0.00	10.00	2.88	1.89	0.00	8.00
edu	Educational level[b)]	1.35	0.72	0.00	4.00	1.26	0.82	0.00	4.00
e_land	Parents' land endowment (are)	54.01	47.15	0.00	300.00	24.00	21.09	0.00	136.00
origin_v	Both parents are village native*	0.43	0.49	0.00	1.00	0.59	0.49	0.00	1.00
origin_o	Either or both of parents are from another province*	0.23	0.42	0.00	1.00	0.06	0.23	0.00	1.00
cousin	Parents are cousin*					0.16	0.37	0.00	1.00
PK	from PK village*	0.30	0.46	0.00	1.00				
PY	from PY village*	0.30	0.46	0.00	1.00				
TA	from TA village*					0.54	0.50	0.00	1.00

Source: Prepared by the author.
a) * indicates dummy variables.
b) Regarded as 5-point continuous variable, with 0: no education; 1: primary education; 2: lower secondary education; 3: upper secondary education; 4: post secondary education.

as well as premarital migration. For example, children having numerous elder siblings are less likely to migrate if their elder siblings have already migrated to support the family; they are less likely to receive land from their parents if parents preferentially give land to elder children. For Takeo villages, siblings included only those who married after 2002 because (1) parents' land endowment is evaluated as of 2002 and (2) sample children are those who married after 2002. These two conditions indicate that sample children's migration decision and parents' land transfer to them would less likely be affected by the number of siblings who married before 2002 and became independent from their parents.

Parents' attributes included land endowment (*e_land*), which is defined in the third section, and the place of the origin and relatedness of parents. As described in the third section, the parents' land endowment represents the size of farmland the sample children expect to receive from their parents if the parents' land is divided equally among their siblings. The parents' place of origin is represented by two dummy variables: (1) whether both parents are from the village surveyed (*origin_v*) and (2) whether at least one parent is from outside the province of the village surveyed (*origin_o*). The relatedness of parents is represented by a dummy variable indicating whether the parents are related (being cousin; *cousin*). For the 3P villages, this variable was not used because data were unavailable. The place of origin and the relatedness of parents were presumed to affect the nature, density, and geographic scope of their social networks. They were expected, therefore, to have some effect on children's premarital migration decision and marital partner selection. Village dummy variables (*PK*, *PS*, *TA*) were also included to control village-specific effects.

From model estimation, samples for which any variable was missing were excluded. For the 3P villages, parents' land endowment (*e_land*) larger than 3 ha was also excluded because it was considered as an outlier.[2)]

Models are estimated separately for Takeo villages and 3P villages because (1) data of these two groups of villages were collected in different years, (2) some variables were used for only one of the two groups, and (3) the definitions of some variables differed slightly between the two groups.

Sample children included those from the same household: siblings. Those children may be affected by common household-level unobservable factors, meaning that error terms would be correlated among them. To control for possible within-household correlation in error terms, we estimated cluster-robust standard errors with households as the cluster unit.

Ⅵ Estimation results

1. Determinants of premarital migration, provincial exogamy, and land inheritance

In the estimation, interaction terms were also included if they were statistically significant.[3)] All the estimation results have been based on the assumption that the error terms of equations are correlated (i.e., $\rho_{ij} \neq 0$) even if the estimated ρ_{ij} is not significant to make the model less restrictive and produce theoretically more valid results. Tables 5a and 5b present the average marginal effect (AME) of explanatory variables calculated on the basis of the

Table 5a. Average marginal effect of explanatory variables (3P villages)

	Dependent variables								
	mig (*M*)			*spouse_o* (*S*)			*r_land* (*R*)		
	AME	S.E.		AME	S.E.		AME	S.E.	
age	−0.02	(0.00)	***	0.01	(0.00)	*	0.01	(0.01)	
dif_age	−0.01	(0.00)		0.01	(0.00)	**	0.00	(0.00)	
male (*d*)	0.13	(0.04)	***	−0.07	(0.02)	***	−0.07	(0.04)	*
n_elder	0.02	(0.02)		0.00	(0.01)		0.01	(0.01)	
n_younger	0.02	(0.01)		0.01	(0.01)		0.03	(0.01)	**
edu	0.00	(0.03)		−0.02	(0.02)		−0.06	(0.02)	**
ln (*e_land*+1)	−0.03	(0.02)		−0.01	(0.02)		0.11	(0.02)	***
at *age*=18	−0.12	(0.04)	***	−0.04	(0.03)		0.24	(0.06)	***
at *age*=23	−0.07	(0.02)	***	−0.03	(0.02)		0.18	(0.04)	***
at *age*=28	−0.02	(0.02)		−0.01	(0.02)		0.12	(0.02)	***
at *age*=33	0.01	(0.03)		0.01	(0.02)		0.06	(0.03)	**
at *age*=38	0.03	(0.03)		0.03	(0.04)		0.01	(0.04)	
at *male*=0	−0.06	(0.03)	*	−0.03	(0.02)				
at *male*=1	0.00	(0.03)		0.00	(0.02)				
at *n_elder*=0	−0.02	(0.02)		−0.02	(0.02)		0.18	(0.03)	***
at *n_elder*=2	−0.03	(0.03)		−0.01	(0.02)		0.12	(0.02)	***
at *n_elder*=4	−0.03	(0.04)		0.00	(0.02)		0.04	(0.03)	
at *n_elder*=6	−0.03	(0.05)		0.01	(0.04)		−0.04	(0.05)	
at *n_elder*=8	−0.02	(0.05)		0.02	(0.05)		−0.12	(0.07)	
at *edu*=0	−0.10	(0.03)	***						
at *edu*=1	−0.05	(0.02)	**						
at *edu*=2	0.01	(0.04)							
at *edu*=3	0.07	(0.06)							
at *edu*=4	0.12	(0.08)							
at *origin_o*=0	−0.01	(0.03)							
at *origin_o*=1	−0.12	(0.04)	***						
at *spouse_o*=0							0.07	(0.02)	***
at *spouse_o*=1							0.33	(0.06)	***
origin_v (*d*)	−0.07	(0.06)							
origin_o (*d*)	0.09	(0.07)		0.01	(0.07)				
PK (*d*)	−0.04	(0.06)		−0.01	(0.04)		−0.11	(0.06)	*
PY (*d*)	−0.28	(0.05)	***	0.10	(0.06)	*	−0.01	(0.08)	
mig (*d*)				0.60	(0.16)	***	0.07	(0.13)	
at *origin_o*=0				0.68	(0.14)	***			
at *origin_o*=1				0.38	(0.22)	*			
spouse_o (*d*)							−0.31	(0.23)	
at *e_land*=0							−0.44	(0.08)	***
at *e_land*=25							−0.50	(0.25)	**
at *e_land*=50							−0.26	(0.29)	
at *e_land*=75							−0.13	(0.25)	
at *e_land*=100							−0.06	(0.20)	
at *e_land*=200							0.02	(0.09)	
at *e_land*=300							0.04	(0.06)	

Source: Author's calculation.
Notes: Figures in parentheses are heteroskedasticity-consistent standard errors. Significance level: *10%; **5%; ***1%. (*d*) Indicates a dummy variable.

Table 5b. Average marginal effect of explanatory variables (Takeo villages)

	Dependent variables								
	mig (*M*)			*spouse_o* (*S*)			*r_land* (*R*)		
	AME	S.E.		AME	S.E.		AME	S.E.	
age	−0.02	(0.01)	***	0.00	(0.01)		0.02	(0.01)	***
dif_age	−0.01	(0.00)	***	0.01	(0.00)		0.01	(0.00)	
male (*d*)	−0.06	(0.05)		0.02	(0.06)		−0.01	(0.05)	
n_elder	0.00	(0.03)		−0.01	(0.02)		0.02	(0.02)	
n_younger	−0.01	(0.02)		0.01	(0.02)		−0.02	(0.02)	
edu	−0.04	(0.03)		0.07	(0.04)	*	0.03	(0.03)	
ln (*e_land*+1)	−0.03	(0.03)		−0.03	(0.03)		0.11	(0.03)	***
at *edu*=0	−0.01	(0.02)		−0.05	(0.03)	*	0.19	(0.03)	***
at *edu*=1	−0.03	(0.02)		−0.04	(0.03)		0.13	(0.03)	***
at *edu*=2	−0.05	(0.04)		−0.02	(0.05)		0.07	(0.04)	
at *edu*=3	−0.07	(0.07)		−0.01	(0.07)		0.00	(0.07)	
at *edu*=4	−0.09	(0.09)		0.00	(0.09)		−0.08	(0.09)	
at *origin_o*=0	−0.03	(0.03)		−0.04	(0.03)				
at *origin_o*=1	−0.13	(0.06)	**	0.07	(0.02)	***			
at *mig*=0				−0.04	(0.02)				
at *mig*=1				−0.04	(0.04)				
origin_v (*d*)	0.05	(0.05)							
origin_o (*d*)	0.05	(0.11)		0.25	(0.06)	***			
cousin (*d*)	−0.04	(0.08)		0.15	(0.06)	***			
TA (*d*)	0.32	(0.05)	***	0.00	(0.06)		0.11	(0.07)	
mig (*d*)				0.48	(0.08)	***	0.09	(0.17)	
at *age*=18				0.40	(0.08)	***			
at *age*=23				0.49	(0.07)	***			
at *age*=28				0.50	(0.09)	***			
at *age*=33				0.40	(0.12)	***			
at *age*=38				0.24	(0.16)				
at *age*=43				0.09	(0.19)				
at *male*=0				0.39	(0.11)	***	0.22	(0.18)	
at *male*=1				0.56	(0.08)	***	−0.05	(0.18)	
at *e_land*=0				0.39	(0.17)	**			
at *e_land*=25				0.48	(0.08)	***			
at *e_land*=50				0.47	(0.08)	***			
at *e_land*=75				0.46	(0.09)	***			
at *e_land*=100				0.45	(0.09)	***			
at *e_land*=125				0.45	(0.10)	***			
spouse_o (*d*)							−0.52	(0.05)	***
at *age*=18							−0.38	(0.11)	***
at *age*=23							−0.56	(0.05)	***
at *age*=28							−0.48	(0.06)	***
at *age*=33							−0.52	(0.08)	***
at *age*=38							−0.74	(0.10)	***
at *age*=43							−0.78	(0.17)	

Source: Author's calculation.
Notes: Figures in parentheses are heteroskedasticity-consistent standard errors. Significance level: *10%; **5%; ***1%. (*d*) Indicates a dummy variable.

estimation results. Those AMEs are partial effects and are based only on the equation in question, not combining the effect of each variable on other endogenous regressors. For the three key variables (*e_land*, *mig*, and *spouse_o*), Tables 5a and 5b also show AMEs at some specific values of the interacted variables. Mainly, the effects of these three key variables are discussed in the following part of this section because of limited space.

As indicated in Tables 5a and 5b, for both the 3P and Takeo samples, the AME of age on premarital migration is significantly negative, indicating an increasing tendency toward premarital migration in the sample villages. Land endowment does not significantly impact premarital migration by itself. The effect of education is also insignificant, indicating that most migrants engage in jobs that do not require high educational background as mentioned above.

As predicted, premarital migration experience positively impacts provincial exogamy for both the 3P and Takeo samples. The size of the effect is also large. For the 3P sample, the proportion of provincial exogamy is 60 percentage points higher for those who have premarital migration experience than those who do not. For the Takeo sample, the size of the effect is 48 percentage points. The interaction effect is also significant. For the 3P sample, the size of the effect of premarital migration experience is smaller for children either of whose parents comes from another province. This is a reasonable result because such children would have a chance to marry someone from another province even if they did not migrate before marriage owing to the social network of their parents being extended to the other province. For the Takeo sample, the size of the effect of premarital migration experience is larger for those who are male or in their 20s, suggesting that male or younger children seek a marital partner in their migration destination relatively more aggressively.

Consistent with our hypothesis, the AME of land endowment on provincial exogamy is negative but insignificant for both the 3P and Takeo samples. In Takeo villages, however, due to interaction effects, the AME of land endowment is significantly negative for those who have no formal education and significantly positive if parents come from other than their province of origin (Table 5b).

For both the 3P and Takeo samples, the effect of premarital migration experience on land inheritance is insignificant. This holds true even if premarital migration experience is interacted with age.[4)] For the Takeo sample, the interaction term of premarital migration experience and the male dummy variable is significant, but AMEs of premarital migration evaluated separately for each sex are insignificant (Table 5b). These results suggest that the hypothesized positive and negative effects of premarital migration experience offset each other.

Furthermore, supporting our hypothesis, the AME of provincial exogamy on land inheritance is significantly negative for the Takeo sample (Table 5b). Provincial exogamy reduces the probability of land inheritance by 53 percentage points, and the size of the effect varies with age due to the interaction effect.

For the 3P sample, the AME of provincial exogamy on land inheritance is also negative but insignificant (Table 5a). The interaction term of provincial exogamy and age is insignificant even if included in the model. However, the AME of provincial exogamy is significantly

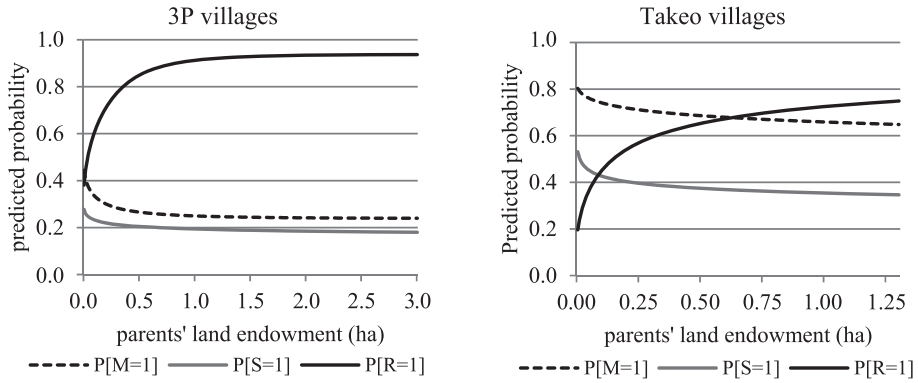
negative when land endowment is smaller than 0.3 ha due to the interaction effect, and the size of the effect is as large as 50 percentage points. This interaction effect indicates that parents with small land endowment in the 3P villages have difficulty in dividing land to all of their children; thus, they exclude children married to someone from other than their province of origin from inheritance.

These results reveal that premarital migration experience does not significantly impact land inheritance by itself, but it negatively affects land inheritance indirectly through its positive effect on provincial exogamy. Though our analysis cannot identify the reason why provincial exogamy deters land inheritance, parents may not give land to children who are considered less likely to live in their province of origin after marriage.

As predicted, land endowment significantly positively impacts land inheritance for both the 3P and Takeo samples. Some interaction effects are also significant for the 3P sample (Table 5a). First, the effect of land endowment is larger for younger children. This means that small land endowment is more likely to lead to the lack of land inheritance for younger children. A possible reason for this result is that non-agricultural employment opportunities were more available at the time of their marriage, and hence, land became less important for them to make a living. Second, the effect of land endowment is significantly positive only for children who have no or only a small number of elder siblings (which implies they are relatively older among their siblings). This suggests that parents give land to their elder children only if their land endowment is relatively large.

For the Takeo sample, the effect of land endowment on land inheritance is significantly positive only for children with a lower educational background. This result is puzzling. Because the AME of education is significantly positive only when parents' land endowment is small (< 0.13 ha) (not shown in Table 5b), this result does not indicate that parents give schooling opportunities to some of their children in substitution for land.

Figure 2 depicts how the predicted probabilities of premarital migration, provincial



Source: Prepared by the author based on regression results.

Figure 2. Predicted probabilities of premarital migration, provincial exogamy, and land inheritance

exogamy, and land inheritance change with parents' land endowment based on the model estimation results. This figure clearly indicates that the probability of land inheritance significantly increases with land endowment. Furthermore, the probabilities of premarital migration and provincial exogamy slightly change by land endowment, except the range of very small land endowment wherein those probabilities increase as land endowment decreases.

2. Effect of premarital migration on land inheritance

Table 6 shows the total effect of premarital migration experience (δ) calculated on the basis of the regression results. The sample average (the row "Average" in Table 6) of δ is −0.12 for 3P and −0.16 for the Takeo samples, and both are statistically significant at the 1% level. This means that premarital migration experience reduces the predicted probability of land inheritance by 12 and 16 percentage points, respectively, if indirect effect is also considered. The size of the effect is not negligible because the predicted probability of receiving land is 77% for 3P and 52% for the Takeo samples on average.

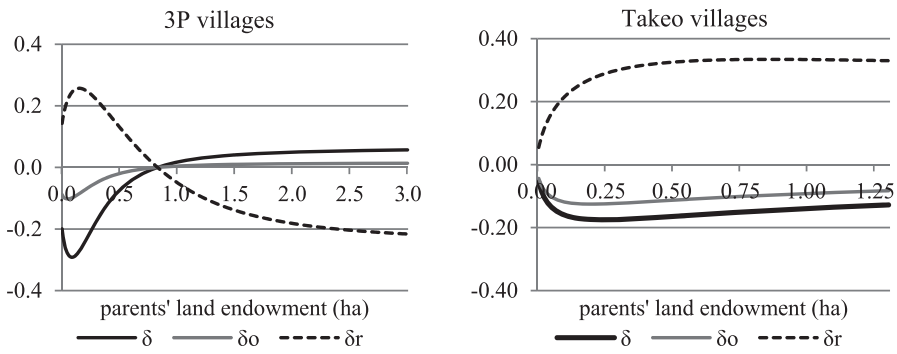
Owing to a high migration rate, the migration opportunity effect (δ_o) is −0.12 for the Takeo sample. This means that on average, the availability of premarital migration opportunities reduces the predicted probability of receiving land by 12 percentage points. By contrast, δ_o is merely −0.03 for the 3P sample because of low migration rate.

Figure 3 depicts how the values of δ and δ_o change with land endowment. For the 3P sample, the absolute value of δ is large when land endowment is small. The value of δ approaches zero and even becomes positive as land endowment increases. This reflects the regression result that the size of the effect of provincial exogamy on land inheritance decreases with land endowment (Table 5a). Because the predicted probability of premarital migration decreases with land endowment (Figure 2), δ_o is also large when land endowment

Table 6. Effect of premarital migration on land inheritance

		δ	δ_o	δ_r
3P	Average	−0.12	−0.03	0.14
	Age: 18–22	−0.09	−0.04	0.15
	23–27	−0.11	−0.04	0.16
	28–32	−0.13	−0.03	0.14
	33–37	−0.14	−0.02	0.10
Takeo	Average	−0.16	−0.12	0.24
	Age: 18–22	−0.13	−0.11	0.16
	23–27	−0.18	−0.14	0.27
	28–32	−0.12	−0.08	0.21
	33–37	−0.12	−0.07	0.16
	38–42	−0.09	−0.04	0.08

Source: Author's calculation.
Notes: The value of δ, δ_o and δ_r for each age group is the average of these indicators for each age.



Source: Prepared by the author based on regression results.

Figure 3. Effect of premarital migration on land inheritance by land endowment

is small.

For the Takeo sample, because the effect of provincial exogamy on land inheritance does not change with land endowment, the value of δ does not change much with land endowment, except for land endowment below around 0.2 ha. For the Takeo sample, the value of δ_o slightly changes with land endowment because the predicted probability of premarital migration is relatively large even when land endowment is large (Figure 2).

As mentioned above, for the 3P sample, premarital migration experience has a measurable negative effect only when land endowment is small. In addition, as shown in Table 3, if children migrated before marriage and did not receive land from their own parents, then their spouse is also less likely to receive land from the spouse's parents. These findings have the following implications for the case of the 3P villages. First, children whose parents have only small land endowment are more likely to start their marital life without land to cultivate if they have migrated before marriage. Second, parents with small land endowment give land only to children who did not migrate before marriage. This means that land fragmentation is restrained for small-scale farms. Third, land fragmentation is less constrained for large-scale farms because parents with large land endowment give land even to children who migrate before marriage. Finally, while increases in premarital migration of children increase landlessness in their generation—thereby increasing the inequality in landholding of children's generation as a whole—it can reduce landholding inequality among those who receive land from their parents.

As argued above, for the Takeo sample, the size of the effect of premarital migration slightly changes with parents' land endowment. This suggests that in Takeo villages, unlike the 3P villages, the increase in premarital migration among children is unlikely to significantly change land distribution among children who receive land from their parents; however, it will increase the prevalence of landlessness among children irrespective of the size of parents' land endowment.

The relative contribution of premarital migration to lack of land inheritance (δ_r) is 0.14 for

the 3P sample and 0.24 for the Takeo sample (Table 6). This means that premarital migration explains 14% and 24% of the reduction in the probability of land inheritance, respectively. As depicted in Figure 3, the value of δ_r varies with land endowment. For the 3P sample, it is larger than 0.20 when land endowment is small. For the Takeo sample, δ_r is over 0.30 when land endowment is larger than 0.30 ha. Nevertheless, δ_r does not surpass 0.5 for either the 3P or Takeo sample for any size of land endowment. This means that premarital migration is a minor factor resulting in the lack of land inheritance among married children.

As shown in Table 6, we also calculated δ, δ_o, and δ_r by age to see if the effects of premarital migration vary with age. For the 3P sample, the value of δ seems to increase with age, but the difference by age is not statistically significant. For the Takeo sample, except for the age group of 18–22, the value of δ decreases with age and the difference by age is statistically significant.[5] The value of δ is small for the age group of 18–22 possibly because a relatively large proportion of children of this age group had just married at the time of the survey and, hence, are yet to receive land from their parents even if they did not migrate before marriage. In addition, the absolute values of δ_o and δ_r are also larger for younger children as a result of a higher probability of premarital migration for that generation. In short, in Takeo villages, premarital migration experience is more likely to lead to a lack of land inheritance among the younger generation. This suggests that the negative effect of premarital migration on land inheritance has increased in recent years.

The age dependency of the effect of premarital migration experience for the Takeo sample is because the wage level of jobs in which migrant workers are mainly engaged started to show an upward tendency in Cambodia when the younger children migrated. In concrete terms, the real wage of garment factory workers and unskilled construction workers started to increase to a large degree in 2009.[6] Furthermore, labor migration from Takeo villages to Thailand, where migrant workers' wages are much higher than those in Cambodia, started to increase in the early 2010s. Due to the higher wages in migration destinations, children might begin to have a prospect that they can make their living after marriage even without land by continuing to work in Cambodian cities or in Thailand. This supposition can also explain the reason why the effects of premarital migration do not vary by age in the 3P villages: as the survey in 3P villages was conducted in 2009, children of all age groups there did not experience the significant improvement in wage level of migrant workers; thus, their perception of the economic importance of land did not vary by age.

Ⅶ Conclusion

Using the data of ever-married children of household heads in Cambodian rural villages, this study evaluates the effect of children's migration experience before marriage on their land inheritance status. The findings based on the econometric analysis and their implications are summarized as follows.

First, in the sample villages, children's premarital migration experience does not directly affect their land inheritance status. It negatively affects land inheritance to a measurable

extent indirectly by increasing the chance of provincial exogamy, which is negatively correlated with land inheritance. Second, nevertheless, premarital migration is a minor factor resulting in the lack of land inheritance among married children. This implies that even without the expansion of migration opportunities, an increasing number of married children would have not received land from their parents in recent years due to other factors.

Third, in the 3P villages, premarital migration experience has a significant effect only for children with small land endowment. This suggests that premarital migration increases landlessness of married children from small-scale farms. This, however, means that parents with small land endowment give land only to a limited number of their children; hence, land fragmentation of small-scale farms is curbed. Furthermore, premarital migration does not constrain land fragmentation of large-scale farms as it does not deter land transfer to children by parents with large land endowment. Consequently, while an increase in premarital migration of children would increase the inequality in land distribution of the children's generation as a whole, it can reduce landholding inequality among those who received land from their parents.

Fourth, in Takeo villages, the negative effect of premarital migration on land inheritance is larger for younger children. This suggests that an increasing number of children would not receive land from their parents in the foreseeable future due to their premarital migration experience. This trend is probably caused by a large increase in migrant workers' wage rates in recent years, which could make farmland less important for newly married couples in making their living and reduce the necessity of land inheritance for them.

There are limitations in this study. First, this study used the data of only a small number of villages. We need to conduct research on the same topic using data from other parts of Cambodia as well as from other developing countries to examine whether and to what extent the findings of this study can be generalized. Second, this study found that a large number of married children in rural Cambodia did not receive farmland from their parents partly due to their premarital migration experience. However, it did not examine how they make their living without land and what factors affect their livelihood strategies. Third, this study predicted how children's premarital migration would change land distribution by affecting land inheritance. However, it did not examine how land distribution would change through sales and purchase of land after land is given to children. These issues should be addressed by future research.

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NOTES

1) Educational level (*edu*) is specified as 5-point continuous variable, with 0: no education; 1: primary education; 2: lower secondary education; 3: upper secondary education; 4: post-secondary education.

2）Two observations are excluded as a result. The value of *e_land* for these two observations is 7 and 10 ha, respectively.
3）In the model estimation, some of interaction terms were necessary for the model to converge.
4）This refers to the case of 3P sample. For Takeo sample a model in which premarital migration experience is interacted with age was not estimable (failed to converge).
5）For example, the differences in the value of δ between 23 and 28 years old and between 23 and 33 years old are statistically significant at the 5% level.
6）According to data collected by Cambodia Development Resource Institute presented in each issue of "Cambodia Development Review," annual real wage increase rate for garment factory workers was −5.3% in the 5 years period from 2004 to 2009, but it was 9.5% from 2009 to 2014. For unskilled construction workers, the rate was 5.5% from 2004 to 2009 and 12.9% from 2009 to 2014.

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