

**Pathways from Poverty toward Middle Class: Determinants of the Socio-Economic Class  
Mobility in the Rural Philippines \***

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Using a unique set of longitudinal household data collected in a Philippine village over a thirty year period, we attempt to identify the pathways of exiting rural poverty and the determinants of middle class stability. We also test the changes in the returns on assets in exiting poverty after the early 1980s when opportunities for international migration from the village expanded dramatically. We find, among others, that better access to land facilitates accumulation in agriculture while schooling has positive effects on upward mobility in both agricultural and non-agricultural sectors, but that the exit path out of poverty through the ‘agricultural ladder’ narrowed considerably after the 1980s. While macroeconomic growth used to have quantitatively larger impacts on poverty-exit probabilities than that of the human capital stock before the early 1980s, both schooling *and* higher growth became equally crucial determinants of poverty exit paths due to a substantial increase in the returns to schooling after the 1980s. Returns to household labor endowments also increased after the early 1980s among the lower social strata (but *not* among the rural middle class), providing an economic incentive to have more children for the rural poor. In contrast with the findings from the US, ‘poverty spells’ do not seem to affect significantly the exit probability out of poverty.

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## 1. Introduction

Poverty dynamics in developing countries is a relatively under-studied area of research.<sup>1</sup> If major pathways for exiting poverty are empirically identified in country (or region) specific contexts, then policy interventions could be designed for facilitating escape from poverty. One reason for the paucity of studies on poverty dynamics in developing countries, despite their immediate policy relevance, is the lack of appropriate data that enable the identification of such dynamics. While a long panel such as the Michigan Panel Study of Income Dynamics (PSID) has been utilized for analyzing the determinants of poverty dynamics in the United States, for example, equivalent data sources, and studies based on such data, in developing countries remain rare. This paper exploits a unique set of longitudinal micro data covering the period between 1962 and 1994 in the rural Philippines, and seeks to identify some determinants of socio-economic class mobility among households within the village community.<sup>2</sup> Based on our econometric estimates, we attempt to sketch some stories as to what routes the households at the lower social strata could possibly take in order to escape from their current social position. We also examine what factors tend to enhance the stability of their own class position once households attain a middle class status.

In the theoretical literature, the introduction of the assumption of credit market imperfections into the household model framework led to the development of theoretical models where various patterns of social stratification emerge in equilibrium.<sup>3</sup> The conceptual framework adopted in this paper comes closest in spirit to Banerjee and Newman (1993) in that social stratification is seen as a result of occupational choices by rural households. While

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<sup>1</sup> See Baulch and Hoddinott (2000) for a survey of recent literature.

<sup>2</sup> In general, there are two distinct aspects of mobility: inter-generational mobility and intra-generational (or life-cycle) mobility. In the present paper, we will solely focus on the latter. For the former in the Philippine context, see, for example, Quisumbing (1994).

<sup>3</sup> Eswaran and Kotwal (1986) is a classic contribution in this theme in the static framework and more recent theoretical models, such as Banerjee and Newman (1993), Galor and Zeira (1993) and Ljungqvist (1993), further extend this theme in dynamic model frameworks. These dynamic models generally show that the combination of credit market imperfections and some kind of indivisibility of one of the investment activities (e. g., human capital investment) leads to various patterns of social stratification as steady-state equilibria that are dependent on the patterns of initial distribution of wealth. Earlier, Loury (1981) showed that the existence of credit market imperfection alone did not necessarily generate long-run stratification patterns that depended on the initial

theories suggest potential determinants (sources and mechanisms) of economic mobility, it would be useful for policy makers to know which factors are relatively more important in pulling the poor out of poverty. This paper is a modest attempt in such a direction. Recent theories point to the effects of initial distribution of assets for mobility, which our findings support. Our findings also suggest, however, that economic environments are just as important for poverty reduction as asset distribution.

In the empirical literature on poverty dynamics, studies based on PSID in the United States, for example, have found that age, race, education and female headship are some of the main characteristics that significantly affect exits from poverty, and they also find that higher macroeconomic growth facilitates exits from poverty (e. g., Stevens 1994, 1995). These studies utilizing PSID data are typically based on panel data covering a period of at least 20 years. On the other hand, empirical studies on poverty dynamics in developing countries tend to rely on data sets spanning for relatively shorter periods, and many of them use transition matrices to characterize the degree of mobility. (e. g., Adelman, et al, 1985, Adelman, et al. 1992, Dreze, Lanjouw and Stern 1992, Swaminathan 1991a and 1991b, etc.) There have been relatively fewer studies that examine the determinants of mobility. Those studies that do examine the determinants of economic mobility have identified factors such as household asset holdings, human capital, and life-cycle, among others (e. g., Groothart, et al. 1995, Jalan and Ravallion 2000, etc.). These studies typically examine changes over time in income or consumption expenditures for a relatively short period of time (mostly less than 5 years). Recent studies on income or consumption mobility also find, however, that a relatively large portion of such mobility (especially for a relatively short horizon) is so called ‘transitory’ poverty resulting from the changes in income or expenditure due to short term/temporary misfortunes or good luck, and factors affecting transitory poverty are quite different from those affecting chronic poverty, which really matters for policy makers (e. g., Jalan and Ravallion 2000). In addition, partly due to the relatively short time horizons observed, few studies have examined the impact of economic environments (e. g., the speed of macroeconomic growth) or the relative importance between household characteristics and

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distribution. Thus, both the credit market failure and indivisibility conditions are necessary to generate the kind of social stratification patterns discussed in these models (e. g., Bardhan and Udry 1999: 130)

economic environments in determining poverty dynamics.

This paper intends to fill in such a gap in the literature on poverty dynamics in developing countries. We focus on the processes of household mobility across social classes over the medium term, rather than the processes of mobility in income or consumption expenditures observed in shorter time horizons. We also examine the relative importance of various household-level characteristics (labor, land and human capital endowments, and life-cycle stages) and of macroeconomic environments and possible changes over time in the relative importance.

The rest of this paper is organized as follows. The next section (section 2) briefly describes the study village and the unique features of our data set. Section 3 describes the class structure in the village, its changes, and the household class mobility patterns during the thirty year period. Section 4 presents a theoretical framework to be used for the empirical analysis. Section 5 derives the empirical specification for analyzing household class mobility. Section 6 presents the estimation results and interpretations. And Section 7 draws some conclusions and policy implications.

## **2. The Village Setting and the Data Features**

Our study village is located in the central part of Pangasinan province on Luzon island in the Philippines. The village is located roughly 170 km north of Manila. While the village did not have a telephone line, 67% of households had access to electricity as of 1994. The size of the village is roughly one square mile. The principal food crop in the village is rice. Also cultivated during our data period were sugar, tobacco, vegetables (corn, mongo beans, tomatoes, beans and eggplants) and a variety of fruits (e.g., mango). Most of the farmers adopted high yielding rice varieties during the mid- to late-1970s. Unlike some other parts of Central Luzon, however, the village farmers have not been able to acquire the maximum benefit from the adoption of the high yielding rice varieties due to the insufficient irrigation<sup>4</sup>.

House-to-house censuses by total enumeration were conducted in the village six times between 1962 and 1994: 1962, 1966, 1971, 1976, 1981 and 1994. Our data include

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<sup>4</sup> The irrigation system that was constructed in the 1920s became virtually defunct since the late 1970s due to the

information on household demographics and some asset holdings such as land but little information is collected on income (except in 1994) or on consumption expenditures.<sup>5</sup> As a result, we focus on the movements of households across social-classes, rather than on changes in income (or consumption expenditures) or asset levels, in analyzing economic mobility. Our focus on class mobility, rather than income mobility, over the medium-term has a few advantages over the studies based on income or expenditure mobility typically found in the literature. Our data set is arguably suitable for identifying poverty dynamics among the ‘chronically poor’ rather than the ‘transitory poor.’ Past studies on mobility have found that observed poverty dynamics based on such welfare measures as income or consumption expenditures contain a large portion of the ‘transitory poor,’<sup>6</sup> and that the determinants of the transitory poverty are different from those of the chronic poverty (e. g., Jalan and Ravallion 2000). Policy makers would likely be more interested in interventions addressing chronic, rather than transitory, poverty. On the other hand, the group of ‘poor’ people (households) identified based on occupational categories (e. g., such as agricultural laborer) tend to be more stable where the majority are the chronically poor, and thus certain occupational categories might be a better indicator of chronic poverty than income or expenditure (Dreze, Lanjouw and Stern 1992). Our approach follows such an argument. Furthermore, our unit of observation is a change (or no-change) in social class status of a household over a period of five years. A five year period is likely to be long enough to enable us to observe at least some degree of changes in land holdings and occupations which tend to be more stable than typical welfare measures. By examining the mobility in social classes over the medium term, our attempt here is to focus on the changes in the level of economic welfare that are likely to have lasting effects on the households. Furthermore, land holdings and occupational categories are arguably easier variables to measure than are typical welfare measures. While measurement error poses major difficulties in identifying poverty dynamics based on such welfare measures (income, consumption expenditures or asset values) since it inflates the variances of the ‘true’

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mining activities south of Baguio, which is located north of the village.

<sup>5</sup> Household censuses between 1962 through 1981 were collected by James N. Anderson, an anthropologist at University of California at Berkeley, and 1994 census was carried out by the author.

<sup>6</sup> See, for example, Dreze, Lanjouw and Stern (1992), Jalan and Ravallion (2000), Walker and Ryan (1991), and Swaminathan (1991b). Bauluch and Hoddinot (2000) includes a survey.

welfare measures (Bauluch and Hoddinot 2000), our analysis of economic mobility is likely to suffer less of such difficulties.

An additional advantage of our data set is the fact that all the households in the village at the time of the surveys are included (i. e., total enumeration). In collecting longitudinal survey data in a large scale, there typically is a tradeoff between obtaining a representative sample and tracking individual dynamics (Deaton 1997), and a usual limitation of panel data where a same set of sample households is followed over time is that a representative sample in the initial time period tends to become increasingly less representative over time as the composition of the population changes, a limitation that is exacerbated as the observation period becomes longer. Since our dataset covers all households at every survey we can observe the representative (in fact, the entire) patterns of the mobility dynamics within the village throughout the thirty year period.

To be balanced against these advantages, however, are a few limitations of the data set and our study based on it. One limitation of our study is its being a single village study; conclusions derived from our study may not necessarily generalize to other parts of the rural Philippines. Another limitation, potentially a more serious one in terms of inferring poverty dynamics, is the fact that our data do not follow those households who moved out of the village (we will discuss the implications of this in the next section).<sup>7</sup>

### **3. Class Structure and Mobility Patterns in the Village**

In order to identify alternative exit paths from poverty in the study village, we categorize village households into four socio-economic classes and analyze the determinants of the mobility of households across class boundaries. Our notion of socio-economic class follows that of Anderson (1964) and based on the degree of access to agricultural land and the occupation type of the main income earner of the household,<sup>8</sup> consisting of: *Landless-*

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<sup>7</sup> This applies only to the cases where the entire households relocate out of the village. As far as some portions of the original household members remain in the village such households are recorded as the remaining households and the occupations of the household members residing outside the village are also recorded in conjunction with such household records.

<sup>8</sup> During the period between 1962 and 1981 roughly 95%, and 83% in 1994, of the main income earners were the (self-reported) household heads in the survey.

*Irregularly-Employed; Tenant-Farmer; Small-Owner; and Regularly-Employed.* The class of *Irregularly-Employed* consists of landless-laborer households who have little or no access to agricultural land nor to secure employment; the main income earners of these households are engaged in various casual agricultural or non-agricultural jobs. *Tenant-Farmer* households are the households where the main income earners are farm operators without land ownership. On the other hand, *Small-Owner* households own agricultural land of at least one third of a hectare.<sup>9</sup> In addition to these social strata based on access to land, there is a distinct class of the non-agricultural *Regularly-Employed* households which derive primary income from secure non-agricultural employment or enterprise (e. g., school teachers, full-time employees in private businesses, owner-operators of local transport services, variety store owners, etc.). This class category also includes the households deriving the major portion of their income from household members working abroad. Although all the households in the Regularly-Employed class are not uniformly wealthy, the wealthiest households in the village have tended to belong to this class and they constitute a part of the middle-class at the national level in the Philippines.

Table 1 summarizes per capita household income and poverty incidence as of 1994 by social classes. It shows that the average per capita incomes among the Irregularly-Employed and Tenant farmers are similar and are below the poverty line of P6,000,<sup>10</sup> while the average per capita income among Small-Owners is above the poverty line and that of the Regularly-Employed is more than twice the Small-Owners'. The incidence of poverty follows similar patterns across class categories. In our following discussions, we consider the households belonging to the Irregularly-Employed and the Tenant classes as the "poor households." An expanded description of some of the major characteristics of the households in each of the four classes is found in Appendix 1.

Table 2 shows the changes in the village class structure over the last three decades. We can see that the degree of dependence on the agricultural sector for livelihood among the village households declined significantly throughout the thirty year period, as reflected in the

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<sup>9</sup> Thus, those farm households who have land ownership of less than one third of a hectare are categorized as Tenant-Farmers in our classification.

sharp decline in the proportion of the Small-Owner households and in the moderate decline in the proportion of the Tenant-Farmer households. On the other hand, the proportion of the poorest section of the village community, the Irregularly-Employed, increased substantially through the 1960s and the 1970s and then declined moderately during the 1980s<sup>11</sup>. The share of the Regularly-Employed households increased drastically during the thirty year period, thereby becoming the largest social class category by 1994, partly due to the increasing number of households relying on their children who have secure non-agricultural occupations (many of them abroad) for their main income support.

As a rough summary of the mobility patterns over the thirty year period, Table 3 shows the changes in the class status of a panel of households between 1962 and 1994, as obtained by tracing the 262 households found in the first round of the census in 1962. Not surprisingly the majority of the original 262 households, 32 years later, were no longer found in the village as of 1994 (either by emigration or by household dissolution often precipitated by the death of the household head). Among those still present as of 1994, there are very few cases of downward mobility among the initial Small-Owners and the Regularly-Employed. Among the lower strata of the Irregularly-Employed and Tenant farmers, however, there appears to be a polarization of a sort; among the Tenant-Farmers as of 1962, roughly the same number of households are found in 1994 across the Regularly-Employed (i. e., upwardly mobile), Tenant (i. e., no mobility), and the Irregularly-Employed (i.e., downwardly mobile), and roughly the same number of what used to be Irregularly-Employed households as of 1962 are found, in 1994, in the Irregularly-Employed (i. e., no mobility) and in the Regularly-Employed (i. e., upwardly mobile) class. Taken together, it appears, there was more upward mobility (mostly toward the Regularly-Employed status) than downward mobility among the village households between 1962 and 1994. Table 4 and 5 indicate that much of the sharp increase in

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<sup>10</sup> The poverty line used here is based on a daily caloric requirement of 2000 Kcal plus a portion of non-food consumption with regional cost of living adjustment (for Pangasinan Province) as obtained in Balisacan (1999).

<sup>11</sup> The proportion of the Irregularly-Employed *household heads*, however, continued to increase during the 1980s. If households are classified by the occupation of the household heads rather than by the largest income supporter (which can be one of the children), the share of Irregularly-Employed households increases from 35% in 1981 to 39% in 1994 and it was by far the largest class category in 1994. This suggests that during the 1980s the impact of the increase in the Irregularly-Employed household heads was greatly mitigated by the sharper increase in the number of the children holding regular employment in the Philippines or working abroad.



the share of the Regularly-Employed between 1981 and 1994 can be attributed to the upward mobility due to the expansion of the international migration opportunities. As we can see in Table 4, while relatively small numbers of households depended on foreign income during the 1960s and the 1970s, the number increased dramatically during the 1980s.<sup>12</sup> Table 5 shows that the majority (53%) of the households who moved into the Regularly-Employed class from the other social classes between 1981 and 1994 depended on the ‘international migration strategy’ as their means of upward mobility.

More detailed patterns of household mobility can be summarized by transition matrices for each observation period, as shown in Appendix 2. We can see that in the period between 1962 and 1981 the majority of the households did not cross the class boundary over the five year period; all the diagonal entries are greater than 0.5. During the 1981-1994 period, however, the transition probability of staying in the same class is significantly smaller except for that of the Regularly-Employed class, although the 1981-94 transition matrix cannot be directly compared with the five-year transition matrices in the previous periods. Among the four class categories, the Regularly-Employed class was generally the most stable class; once one reaches this class it has been less likely to move downward than households belonging to the lower strata.

Within our framework, exit paths from poverty (i. e., upward mobility out of the Irregularly-Employed or Tenant status) could potentially take either through the “agricultural ladder” toward the Small-Owner status or through the non-agricultural regular employment. Appendix Table A-6 shows that the proportion of upward mobility going through the regular employment, rather than the agricultural route, tended to increase over the past three decades both among the Irregularly-Employed and Tenant-Farmers (with only exception being the period between 1976-81<sup>13</sup>).

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<sup>12</sup> In fact, this village has a long history of international migration. Since the early part of this century up to the late 1960s the main destinations were plantations in Guam and Hawaii. Since the late 1970s they have been replaced by construction sites in the Middle East (male) and by domestic helper contracts in Asia and Middle East (female).

<sup>13</sup> A possible reason for the high mobility toward the Regularly-Employed status in the 1971-76 period is the construction boom in Manila during the early years of the Marcos martial law regime during the 1970s. Our census data indicate that a large number of relatively young tenant farmers as well as irregularly-employed

We can also see from the transition matrices that typically 10 to 15% of those Irregularly-Employed and the Regularly-Employed households and 10 % or less among Tenant farmers or Small-Owner households moved out of the village (except for the 24% of the Regularly-Employed moved out during the 1966-1971 period). It is therefore the households from either the top (the Regularly-Employed) or the bottom (the Irregularly-Employed) of the village strata who are more likely to migrate out of the village. One would expect that the Regularly-Employed households out-migrate mainly for better economic opportunities outside the village reflecting upward mobility; this would suggest that, to the extent that the out-migration of the Regularly-Employed results in upward mobility, our estimated stability (in the sense of the probability of not moving downward) of the Regularly-Employed class could be underestimated. On the other hand, out-migration among the Irregularly-Employed class could result either from rural-urban migration seeking better economic opportunities or from rural-rural migration resulting in relatively little improvement in socio-economic status.<sup>14</sup> Thus, to the extent the former type (urban migration accompanied by upward economic mobility) dominates the out-migration among the Irregularly-Employed, then our estimate of poverty exit probability is likely to be underestimated; if the latter type (rural-rural migration accompanied with little improvement in socio-economic status) dominates, on the other hand, our estimated poverty exit probability could overestimate the poverty exit probability. The fact that our data set does not include information on those households that moved out of the village, therefore, is a major limitation of the present analysis.

#### **4. A Conceptual Model**

In this section, we present a simplified conceptual model that leads to our empirical specification. Our model follows the spirit of the theoretical models developed by Banerjee and Newman (1993), Galor and Zeira (1993) and Ljungqvist (1993) in that social stratification

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workers were employed as contract workers in the metropolitan Manila area in the early to mid 1970s. Many of them came back to the village and became (back to) tenant farmers after the boom in the late 1970s.

<sup>14</sup> Based on the author's informal interviews with village residents, one common reason for rural-rural migration in this village appears to be that they live close to alternate parents of the household head or his spouse who are from a nearby village.

and mobility emerge as a result of the credit market failure and the non-convexity of human capital investment. A village household maximizes discounted utility derived from aggregate consumption and leisure:

$$\max \sum_{t=0}^T \delta^t U(C_t, L_t^L), U_C > 0 \text{ and } U_{L^L} > 0,$$

where  $C_t$  is aggregate consumption and  $L_t^L$  is leisure, respectively, at time  $t$  and  $\delta$  is the discount factor. The household asset consists of land and human capital stock of household members and income is generated based on the household's assets:

$$\begin{aligned} Y_t &= f(p_t^F, A_t, L_t^F) + h(H_t, Z_t) L_t^{NF} \\ &= C_t + I_t^F + I_t^H, \text{ and } C_t \geq \bar{C}(L_t), \end{aligned}$$

where  $Y_t$  is the total household income at time  $t$ ;  $f(p_t^F, A_t, L_t^F)$  is the farm profit that depends on agricultural terms of trade,  $p_t^F$ , land,  $A_t$ , and labor input,  $L_t^F$ ;  $h(H_t, Z_t)$  is the return of off-farm work that depends on human capital stock,  $H_t$ , degree of off-farm work opportunities,  $Z_t$ , and off-farm labor  $L_t^{NF}$ . Income is either consumed ( $C_t$ ) or invested in land ( $I_t^F$ ) or in human capital ( $I_t^H$ ). The assumption here is that there is no credit market and thus the household is cash constrained.  $\bar{C}(L_t)$  is the subsistence consumption level as a function of total household labor force  $L_t$ . The total labor endowment of the household is given by:

$$L_t = L_t^F + L_t^{NF} + l(I_t^H) + L_t^L,$$

where  $L_t$  is the total household labor force at time  $t$ , and  $l(I_t^H)$  is the labor force enrolled in schools, which is linked to the level of human capital investment  $I_t^H$ . The household can control its total labor force endowment  $L_t$  through fertility decision and split or merger of households.

$$L_{t+1} = L_t + DL_t,$$

where  $DL_t$  is the change in household labor force.

Given the initial asset endowment ( $A_0, H_0$ ), initial labor endowment  $L_0$ , and a terminal condition, the household's problem is to choose optimal investment in land and human capital ( $I_t^F$  and  $I_t^H$ ); consumption  $C_t$ ; change in the total labor force  $DL_t$  and labor force deployment

among on-farm work, off-farm work, schooling and leisure ( $L_t^F$ ,  $L_t^H$ ,  $I_t^H$ ) and  $L_t^L$ ).

At any period  $t$ , it is possible to distinguish three social “class” categories based on household asset accumulation (land and human capital). These are:

(Class 1) Landless Irregularly Employed Class :  $A_t = 0$ ,  $H_t < \tilde{H}$ .

(Class 2) Farmer Class :  $A_t > 0$ ,  $H_t < \tilde{H}$ .

(Class 3) (Non-Agricultural) Regularly Employed Class :  $A_t \geq 0$ ,  $H_t \geq \tilde{H}$ .

where  $\tilde{H}$  is the threshold level of human capital stock that is required for an economically secure occupation (i. e., Regularly Employed status)<sup>15</sup>. Given the above definition of “social classes,” “class mobility” is induced by changes in land ownership ( $A_t$ ) and in human capital stock ( $H_t$ ), which in turn is determined by household investments ( $I_t^F$  and  $I_t^H$ ). Denoting the conditions for transition from class  $j$  at time  $t$  to class  $k$  at time  $t+1$  as  $TR_{jk}(t)$ ;

$$TR_{11}(t) = \{H_t < \tilde{H}, A_t = 0 \text{ and } I_t^H < (\tilde{H} - H_t), I_t^F = 0\}$$

$$TR_{12}(t) = \{H_t < \tilde{H}, A_t = 0 \text{ and } I_t^H < (\tilde{H} - H_t), I_t^F > 0\}$$

$$TR_{13}(t) = \{H_t < \tilde{H}, A_t = 0 \text{ and } I_t^H \geq (\tilde{H} - H_t), I_t^F \geq 0\}$$

$$TR_{21}(t) = \{H_t < \tilde{H}, A_t > 0 \text{ and } I_t^H < (\tilde{H} - H_t), I_t^F = -A_t\}$$

$$TR_{22}(t) = \{H_t < \tilde{H}, A_t > 0 \text{ and } I_t^H < (\tilde{H} - H_t), I_t^F > -A_t\}$$

$$TR_{23}(t) = \{H_t < \tilde{H}, A_t > 0 \text{ and } I_t^H \geq (\tilde{H} - H_t), I_t^F \geq -A_t\}$$

$$TR_{31}(t) \equiv 0,$$

$$TR_{32}(t) \equiv 0, \text{ and}$$

$$TR_{33}(t) = \{H_t \geq \tilde{H}, A_t \geq 0 \text{ and } I_t^H \geq 0, I_t^F \geq -A_t\}.$$

Since human capital (unlike land) cannot generally be “liquidated,” we assume here that human capital investment ( $I_t^H$ ) is non-negative. Consequently class transition from “regularly employed” class to other classes cannot occur through household investments in our framework, which is denoted as “ $\equiv 0$ ” for  $TR_{31}(t)$  and  $TR_{32}(t)$ . These transitions can occur in reality through the choice of total labor endowment (such as retirement and household split) or

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<sup>15</sup>For simplicity, unlike in our empirical analysis in the later section, distinction is not made here between the ‘tenant farmer’ and the ‘small owner’ classes.

through exogenous changes (such as loss of a job that the main income supporter of the household used to hold or death of household members). This model predicts, however, that the Regularly-Employed class is likely to be more stable than the other class categories.

## 5. Empirical Specification

Our empirical specification follows McFadden (1973) in deriving multinomial logit specification as a reduced form based on the household model described above. We assume that at any time period  $t$  the household maximizes its utility over the next five year horizon by setting optimal investment in land ( $I_t^F$ ) and human capital ( $I_t^H$ ) and the change in labor endowment ( $DL_t$ ) and its allocation ( $L_t^F, L_t^H$ ), given land ( $A_t$ ), human capital stock ( $H_t$ ) and total household labor endowment ( $L_t$ ) at the beginning of period  $t$ . We then define the indirect utility function in a usual manner:

$$\max \sum_{s=t}^T \delta^s U(C_s, L_s^L) \equiv V(t, A_t, H_t, L_t, Z_t, p_t^F),$$

where period “ $T$ ” means the date five years from period  $t$  in terms of calendar time. We assume further that the household’s indirect utility function takes the additive separable form consisting of the portion dependent on the observed variables specified in our conceptual model and the portion that is only observed by the agent herself (but not by researchers). Thus, the “real” indirect utility function that agent  $i$ ’s investment and labor deployment choices are based on is:

$$v_t^i = V(t^i, A_t^i, H_t^i, L_t^i, Z_t, p_t^F) + \varepsilon_t^i.$$

The unobserved portion  $\varepsilon_t^i$  is likely to reflect variations among households in such factors as “ability” of household labor force, relative taste for leisure versus consumption, and so on. If we view the observed class transition from period  $t$  to  $T$  as a result of the household choice in an attempt to maximize the household utility, when we observe that a household moved from class  $j$  in period  $t$  to class  $k$  in period  $T$  then it implies:

$$v_t^i = v_t^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } k \text{ at } T}} = V_{jk}(t^i, A_t^i, H_t^i, L_t^i, Z_t, p_t^F) + \varepsilon_{jkt}^i$$

$$> v_t^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } l \text{ at } T}} = V_{jl}(t^i, A_t^i, H_t^i, L_t^i, Z_t, p_t^F) + \varepsilon_{jlt}^i, \text{ for } l \neq k,$$

where  $v_t^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } l \text{ at } T}}$  is the alternative-specific indirect utility function: which is the value of  $v_t^i$  subject to the investment and labor endowment decision at period  $t$  (i. e.,  $I_t^F$ ,  $I_t^H$  and  $DL_t$ ) leading to the class transition from  $j$  to  $l$  (for the class transition from  $j$  to  $k$ , the constrained value function  $v_t^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } k \text{ at } T}}$  is the same as the unconstrained value function  $v_t^i$  since the movement from class  $j$  to  $k$  is the optimal choice given the state variables).

While this model is deterministic in terms of the agent's point of view, since the  $\varepsilon_{jkt}^i$  term is unobserved from researchers' point of view we can define the household transition probability as follows:

$$\begin{aligned} P_{jkt}^i &\equiv \text{Prob}(\text{household } i \text{ moves from class } j \text{ in period } t \text{ to class } k \text{ in period } T) \\ &= \text{Prob} \left( v_t^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } k \text{ at } T}} > v_t^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } l \text{ at } T}} \right), \text{ for } l \neq k. \\ &= \text{Prob} \left( V_{jk}^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } k \text{ at } T}} + \varepsilon_{jkt}^i > V_{jl}^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } l \text{ at } T}} + \varepsilon_{jlt}^i \right) \end{aligned}$$

By denoting the set of state variables as a vector and assuming that the indirect utility can be approximated by the linear relation;

$$\mathbf{X}_t^i \equiv \{t^i, A_t^i, H_t^i, L_t^i, Z_t, p_t^F\},$$

$$V_t^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } k \text{ at } T}} \approx \mathbf{X}_t^i \boldsymbol{\beta}_{jk},$$

the transition probability can be written as:

$$P_{jkt}^i = \text{Prob}(\mathbf{X}_t^i \boldsymbol{\beta}_{jk} + \varepsilon_{jkt}^i > \mathbf{X}_t^i \boldsymbol{\beta}_{jl} + \varepsilon_{jlt}^i), \text{ where } \varepsilon_{tjl}^i \equiv \varepsilon_t^i \Big|_{\substack{\text{class } j \text{ at } t \\ \text{class } l \text{ at } T}}.$$

If we assume that the unobserved portion of indirect utility  $\varepsilon_{tji}^i$  is independently identically distributed type I extreme value (across individual  $i$ ), then the transition probability takes the familiar multinomial logit form<sup>16</sup>:

$$P_{jkt}^i = \frac{\exp(\mathbf{X}_t^i \boldsymbol{\beta}_{jk})}{\sum_{h=1}^M \exp(\mathbf{X}_t^i \boldsymbol{\beta}_{jh})}, \quad (1)$$

where  $M$  is the total number of social class categories.

### *The Uneven Data Interval*

Our census data were collected six times in 1962, 1966, 1971, 1976, 1981 and 1994. One complication in applying the above model to our data set is the uneven data interval; while the census was conducted (almost) in every five years between 1962 and 1981, there was a thirteen year interval between 1981 and 1994. The approach we take here is the following; assuming that the class mobility processes follow a first-order Markov chain, we suppose that the observed class mobility between 1981 and 1994 is the result of three sequential Markov transitions — between 1981 and 1985, between 1985 and 1989, and between 1989 and 1994.<sup>17</sup> Then the observed transition probability of a household  $i$  moving from class  $j$  in 1981 to class  $k$  in 1994, denoted by  $P_{jk}^i(1981-94)$ , can be written as:

$$P_{jk}^i(1981-94) = \sum_{l=1}^4 \sum_{m=1}^4 P_{jl}^i(1981-85)P_{lm}^i(1985-89)P_{mk}^i(1989-94), \quad (2)$$

where  $j, k, m,$  and  $l$  index social-class categories. Using equation (1) and (2), we obtain the log likelihood function for the entire data set as follows:

$$\ln L(\boldsymbol{\beta}|\mathbf{X}) = \sum_{t=1962}^{1976} \sum_{i=1}^{N(t)} \sum_{k=1}^4 \sum_{j=1}^4 \left[ y_j^i(t) y_k^i(T) \left\{ \mathbf{X}_t^i \boldsymbol{\beta}_{jk} - \ln \left( \sum_{h=1}^4 \exp(\mathbf{X}_t^i \boldsymbol{\beta}_{jh}) \right) \right\} \right]$$

<sup>16</sup>This is originally due to McFadden (1973).

<sup>17</sup> Here we are additionally assuming that the difference between the assumed 5 year transition and actually applied data years (i. e., 4 years) in some portions -- i. e., 1962-66, 1981-85, 1985-89 -- is negligible.

$$+ \sum_{i=1}^{N(1981)} \sum_{j=1}^4 \sum_{k=1}^4 \left[ y_j^i(1981) y_k^i(1994) \ln \sum_{m=1}^4 \sum_{l=1}^4 \left\{ \frac{\exp(\mathbf{X}_{1981}^i \boldsymbol{\beta}_{jl})}{\sum_{h=1}^4 \exp(\mathbf{X}_{1981}^i \boldsymbol{\beta}_{jh})} \frac{\exp(\mathbf{X}_{1985}^i \boldsymbol{\beta}_{lm})}{\sum_{h=1}^4 \exp(\mathbf{X}_{1985}^i \boldsymbol{\beta}_{lh})} \frac{\exp(\mathbf{X}_{1989}^i \boldsymbol{\beta}_{mk})}{\sum_{h=1}^4 \exp(\mathbf{X}_{1989}^i \boldsymbol{\beta}_{mh})} \right\} \right] \quad (3)$$

where  $y_j^i(t)$  is an index taking value one if household  $i$  belongs to class  $j$  in period  $t$  and zero otherwise,  $y_j^i(T)$  is the same index for the period five years after period  $t$ , and  $N(t)$  is the total number of observations in period  $t$ .<sup>18</sup> The first term of the right hand side is the usual multinomial logit log likelihood, which applies to the observations between 1962 and 1981, and the second term is the modified likelihood function for the data period between 1981 and 1994 derived above. For each origin class  $j$ , we normalize the coefficient vector  $\boldsymbol{\beta}_{jj}$  (i. e., the coefficients for the probability of staying in the same class  $j$ ) to be zero.

#### *Explanatory Variables $\mathbf{X}_t$ :*

Our explanatory variables consist of household characteristics and economic environments. Household characteristics include the age of the household head, its square and three types of household endowments —labor endowment (as measured by the total number of living children regardless of their location of residence); land (measured by the size of the land *cultivated* in hectares for Tenant Farmer households and the size of the land *owned* for Small-Owners); and human capital (as measured by the total years of schooling of the couple plus average years of schooling among children of age over 10). For the Small-Owner class, we also include a dummy variable for ‘owner-tenant’, which takes the value one if the household’s cultivated land size is larger than the size of the owned land (by renting in additional lands). We interpret the owner-tenant dummy to capture an aspect of heterogeneity among farmers; being an owner-tenant indicates a strong commitment to (or preference for)

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<sup>18</sup> While our specification does not require information on the class position of households in 1985 and 1989, it does require the  $\mathbf{X}_t^i$  vectors for those years. Among the household characteristics included in the  $\mathbf{X}_t^i$  vector, age of the household head and the number of children (abstracting from infant/child mortality) are obtained from the 1981 and 1994 data and land holding and average years of schooling among (current) household members are estimated as weighted average of the 1981 and 1994 data.



farming as an occupation.<sup>19</sup> The variables representing economic environments include:<sup>20</sup> the national GDP growth rate (annual average over the five year transition period); real wage rate (averaged over the five year transition period) –for Irregularly-Employed and Regularly-Employed Class; agricultural terms of trade<sup>21</sup> (average over the five year transition period)—for Tenant Farmer and Small Owner Class.

In addition, a major potential source of economic mobility is the change in the returns on endowments (e. g., Gunning, et. al. 2000). In the case of the study village during our observation period (1962-1994), there possibly were major changes during the 1980s, such as the major explosion of international migration opportunities as we saw earlier. Such a change could potentially have major impacts on the prospects for household class mobility. We thus intend to test a hypothesis that the returns on household endowments (labor, land and human capital), as measured by the their impact on the upward mobility probability, changed after the early 1980s by including interaction terms between these endowment variables and a dummy taking the value one for the observations on the transition between 1981 and 1994.

## 6. Estimation Results

The estimated coefficients are shown in Table 7. Table 8 summarizes the marginal impacts on the transition probabilities of the statistically significant determinants of economic mobility. Generally we tend to find that many of the household asset variables in one period are significant determinants of the asset levels in the next period (i. e., class motility), which is in accordance with the theoretical models with credit market imperfections and non-convex investments that generate social stratification. We additionally find, however, that other factors, such as macroeconomic environments, are also major determinants of economic mobility.

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<sup>19</sup> This interpretation is based on Anderson (1964), which contains a detailed discussion of the distinct characteristics of owner-tenants among the small owner farmers. The ‘owner-tenants’ in our study village tend to be committed farmers who are relatively more “innovative and progressive.”

<sup>20</sup> Since these macroeconomic variables are common across all households, the only source of variability in these variables comes from their variation over time.

<sup>21</sup> Measured by the ratio of rice price to the weighted average of the CPI and an index of farm expenditure. The index of farm expenditure was constructed as the weighted average of farm wage index and fertilizer price index. The weighting for the cost side was based on the data from Hayami *et al.*

*Exit Paths from Poverty: Class Mobility with Lower Class Origins—Landless Irregularly-Employed and Tenant-Farmers*

The first three columns in Table 7 report the estimated coefficients, with t-statistics in parentheses, on the determinants of the probability of household class mobility from the Irregularly-Employed to the other three classes (relative to the probability of remaining in the class of the Irregularly-Employed), and the first five rows in Table 8 show the estimated marginal impacts on transition probabilities of the statistically significant covariates. None of our explanatory variables turns out to be statistically significant in determining the transition probability of moving from the Irregularly-Employed to the Tenant Farmer class. This is not surprising, however, in light of the impression that I obtained during my village fieldwork. Based on our informal interviews with farmers, it appears that (apart from inheritance of tenancy) a typical way for a landless laborer to become a tenant farmer or for a tenant farmer to expand his operating farm size is that, given the land scarce and labor abundant environment, a landowner selectively approaches his prospective tenants based on the reputation such as ‘a good farmer’ or ‘being hard working.’ Thus, the acquisition of the tenant status appears to be mainly dictated by the combination of such innate ability and personal connections which are observable, via reputation within the community, to landowners but unobservable to outside researchers.

The only statistically significant determinants of the transition probability of moving from the Irregularly-Employed to the Small-Owner class are the GDP growth rate and, after the early 1980s (but not before), the number of children; one percentage point increase in (or one standard deviation increase in) GDP growth rate is associated with a 10 (or 32) percentage point increase in the transition probability and having one (or one standard deviation) additional child raises the transition probability by 8.7 (or 21) percentage points.

On the other hand, the significant determinants of the household mobility from the Irregularly-Employed toward the Regularly-Employed class are the human capital stock and GDP growth rate. As can be expected, education is a key to obtaining the Regularly-Employed status; one additional year of (or one standard deviation increase in) schooling is associated with a 0.2 (or 1.3) percentage point increase in the transition probability during the

1960s and the 1970s. Furthermore, the magnitude of the positive effects of schooling increased substantially after the early 1980s compared to the previous two decades; our estimate indicates that the marginal impact of the years of schooling on the transition probability increased fourfold after the 1980s compared to the 1960s and the 1970s. This appears to reflect the change in the international migration opportunities, which, as we saw earlier, is a main avenue toward the Regularly-Employed status. In addition, higher macroeconomic growth facilitates upward mobility either through the agricultural route (via the Small-Owner status) or through the Regularly-Employed status in the non-agricultural sector. During the 1960s and 1970s, it appears, macroeconomic growth was a quantitatively more important determinant of the mobility, as measured by the marginal impacts associated with one standard deviation change in covariates, from the Irregularly-Employed to the Regularly-Employed status than was the years of schooling; the marginal impact of one standard deviation increase in GDP growth rate was more than five times the marginal impact of one standard deviation increase in schooling. However, due to the massive increase in the ‘returns to education’ the relative importance of the marginal impacts of schooling and of GDP growth became much close after the 1980s.

Coefficient estimates for the determinants of class mobility among Tenant farmers are found in the third through the sixth columns in Table 7, and the associated marginal impacts of the statistically significant covariates in the sixth through the eleventh rows in Table 8. While none of the observable (to the researcher) household characteristics appears to be a significant determinant of the household mobility from the Irregularly-Employed to the Tenant status as we saw above, once a household obtains the Tenant-Farmer status, the key to maintaining that status (i. e., preventing itself from slipping down to the Irregularly-Employed status) is the farm size; the larger the size of the farm that a household cultivates the less likely is the household to move down to the Irregularly-Employed class—an additional 1 hectare of (or one standard deviation change in) cultivated land is associated with a 0.02 (0.01) percentage point decrease in the probability of such downward mobility.

As for upward mobility among Tenant-Farmers, the transition probability of moving from the Tenant to the Small-Owner class is significantly affected by the level of education, agricultural terms of trade and GDP growth rates. Among the household characteristics, the

level of the human capital stock seems to be a more important determinant of the upward mobility toward the Small-Owner status than the farm size, which is not a significant determinant. While schooling is a statistically significant determinant, however, its quantitative impact appears to be very small—an additional year of schooling (or one standard deviation increase in schooling) is associated with only a 0.003 (or 0.02) percentage point increase in the transition probability. In addition, higher agricultural terms of trade apparently provide an incentive for Tenant-Farmers to invest in agricultural land and to become Small-Owners; one standard deviation increase in the agricultural terms of trade is associated with a 0.3 percentage point increase in the transition probability. The significantly negative effect of higher GDP growth rates on the upward mobility toward the Small-Owner class, however, is puzzling. One possible explanation might be that when the GNP growth rate is high the members of Tenant-Farmer households may seek non-agricultural occupations (while maintaining their farms) rather than investing in agricultural land to become Small-Owners.

Among Tenant-Farmer households, one of the key factors for their upward mobility via the non-agricultural route toward the status of the Regularly-Employed is the years of schooling; an additional year of schooling (or one standard deviation increase in the years of schooling) is associated with a one (or 5) percentage point increase in the transition probability. In addition, after the early 1980s (but not during the earlier period), a larger household labor endowment (after controlling for the human capital stock) tended to facilitate upward mobility through the non-agricultural sector; an additional child (or one standard deviation increase in the number of children) is associated with a 20 (or 53) percentage point increase in the transition probability. Again this is likely to reflect the rapid expansion of the international migration opportunities which could be better captured if a household has a larger number of the household members to deploy overseas. Unlike in the case of Irregularly-Employed households, however, the estimated coefficient on the GNP growth rate was not significantly different from zero.

In sum, among the lower social strata in the village (i. e., the Irregularly-Employed and the Tenant-Farmer classes) their exit routes from poverty could potentially take two routes: the ‘agricultural ladder’ (toward the Small-Owner status) and the non-agricultural route (toward the Regularly-Employed status). In general, the key determinants are the stock of

human capital and macroeconomic growth. For Irregularly-Employed households, faster macroeconomic growth appears to be the key determinant for escaping from poverty either through the agricultural route or through the non-agricultural route, but the latter route also requires human capital investment. In addition, for Irregularly-Employed households, the impact of the years of schooling on upward mobility increased fourfold after the early 1980s; as a result, while economic growth was a quantitatively more important determinant of upward mobility than was the years of schooling during the 1960s and the 1970s, the quantitative impacts of the both factors became similar in magnitude after the early 1980s. The main determinants of the mobility from the Tenant to the Small-Owner class are also the human capital stock and the economic environments such as price incentives (the agricultural terms of trade) and GDP growth rate. The role of the human capital stock is equally important for upward mobility through the non-agricultural route, but, in addition, the size of the labor endowment in the household also was a significant determinant after the early 1980s when deploying household members in various parts of the world became one of the most conspicuous household strategy for upward mobility in the village.

While exit paths from poverty could potentially take agricultural (toward the Small-Owner status) or non-agricultural (toward the Regularly-Employed status) route, we noted earlier that the pathway through the ‘agricultural ladder’ narrowed dramatically after the 1980s. In light of this observation, therefore, a search for exit paths from poverty should perhaps focus on the non-agricultural path. Crucial determinants for poor households to be able to take such a path are expanding economic opportunities (such as higher economic growth or overseas employment) combined with access to education.

#### *The Life Courses of the Rural Middle Class: Small-Owners and the Regularly-Employed*

We now turn to the determinants of social mobility among households belonging to the upper strata within the village class structure: i. e., the Small-Owner Class and the Regularly-Employed Class (as shown in the 7<sup>th</sup> through 12<sup>th</sup> columns in Table 7 and the 12<sup>th</sup> through the last rows in Table 8). While the stability of the tenant farmer status (in the sense of the probability of not slipping down to the Irregularly-Employed status) is mainly determined by the farm size (but not by the human capital), the significant determinants of the

downward mobility from the Small-Owner to the Irregularly-Employed status are the number of children, the human capital stock, the size of land ownership, and the dummy variable indicating the 'owner tenant' status (i. e., a Small-Owner farm household which expanded the size of his farm operation through additional land renting) reflecting a strong commitment to (or preference for) farming as an occupation, and the impact of the number of children apparently increased after the early 1980s. While an additional child (or one standard deviation increase in the number of children) was associated with a 0.03 (or 0.09) percentage point increase in the transition probability toward the Irregularly-Employed status during the 1960s through the 1970s, the marginal impact of labor endowments increased further by more than threefold after the early 1980s. Thus, having a larger number of children appears to have opposite effects between the lower and the upper strata within the village; higher fertility facilitates *upward* mobility among the lower social strata (as we saw earlier) but it facilitates *downward* mobility among Small-Owners. An additional year of (or one standard deviation increase in the years of) schooling is associated with a 0.02 (or 0.1) percentage point decrease in the (downward) transition probability. An additional hectare of land ownership is associated with a 0.16 (or 0.19) percentage point decrease in the downward transition probability, while being an owner tenant is associated with a 0.6 percentage point decrease in the transition probability. On the other hand, the key determinants of the downward mobility from the Small-Owner to the Tenant-Farmer status are the number of children (after the 1980s only) and the size of land ownership. An additional child (or one standard deviation increase in the number of children) is associated with a 0.02 (or 0.06) percentage point increase in the downward transition probability, while an additional hectare (or one standard deviation increase in the landholding size) is associated with a 0.17 (or 0.2) percentage point decrease in the downward transition probability.

Main determinants of the transition probability of moving from the Small-Owner class to the Regularly-Employed class throughout our observation period are the years of schooling and the 'owner-tenant' dummy. In addition, after the early 1980s, the impact of schooling increased, and the size of land ownership also emerged as a significant determinant of the mobility from the Small-Owner to the Regularly-Employed status. While an additional year of (or one standard deviation increase in) schooling was associated with a 0.1 (or 0.6)

percentage point increase in the transition probability during the 1960s and the 1970s, such impact of schooling increased almost fourfold after the early 1980s. On the other hand, the marginal impact of the land size appears quite large; an additional hectare of land, after the 1980s, is associated with an 11 percentage point decrease in the transition probability. The size of landholding among Small-Owners may partly reflect the household's preference or commitment to farming and thus a larger landholding could indicate less willingness to shift to a non-agricultural occupation (in a similar manner as the Owner Tenant dummy).

The class of Regularly-Employed households is the most stable class with the highest probability of staying in the same class (which can be seen from the high diagonal transition probabilities in the Transition Matrices in Appendix 2). Among the Regularly-Employed households, the human capital stock is the key determinant of not moving downward either to the Irregularly-Employed or the Tenant-Farmer status. In the case of the downward mobility toward the Irregularly-Employed class, however, a higher wage rate in the skilled labor market is also associated with a lower likelihood of downward mobility. Significant determinants of the transition from the Regularly-Employed to the Small-Owner status, on the other hand, are the household labor endowment (only after the early 1980s), wage rates and the GNP growth rates. It appears that both higher wage rates and higher macroeconomic growth induces the Regularly-Employed households to invest in agricultural land. One conspicuous feature of the transition probabilities for the Regularly-Employed class, however, is that the marginal impacts of the covariates are very small in magnitude across all transition probabilities; the absolute values of the transition probabilities are not affected very much by a change in any of the covariates (the last six rows in Table 8).

In sum, just as the human capital investment was one of the key determinants of upward mobility among the households in the lower social strata, the human capital stock is also a key determinant of the stable middle class status among Small-Owners and the Regularly-Employed. Within the class of Small-Owners there appears to be a sub-group of 'owner-tenants' who are highly committed to farming and thus are likely to be neither downwardly mobile *nor* moving out of agricultural production to become the Regularly-Employed status. Also among Small-Owners, a larger land ownership lowers the likelihood of moving downward (either to the Tenant-Farmer or to the Irregularly-Employed class). The

significantly negative effects of land ownership sizes after the early 1980s may indicate that (as the significant effect of the owner-tenant dummy also suggests) those committed to agriculture are less likely to exploit the expanding non-agricultural employment opportunities in general and the international migration opportunities in particular.

### *Testing for State Dependence*

Our empirical specification is based on the assumption that the patterns of household class mobility follow a first-order Markov process; i. e., the social class position of a household five years later is determined by the class position and other household characteristics at the first year, as well as economic environments over the five year period, but is not affected by the history prior to the first year. Such an assumption could be violated, however, if the probability of moving out of poverty is affected by the length of past ‘spells’ in poverty. For example, studies in the United States find that the length of poverty spells has significant effects on the exit probability from poverty (e. g., Stevens 1995). Therefore some attempts have been made, albeit in a limited manner, to test the validity of our Markov assumption. We examined whether the transition probability of class mobility is affected by the ‘true state dependence’ (*a la* Heckman 1981) by including lagged dummy variables taking the value one if the household belonged to the same social class five year prior to the ‘initial year’ (so we test the possibility that the household class position 10 years ago has any additional explanatory power, on and above its class position five years ago, of the current household class position).

The results of likelihood ratio tests are shown in Table 9. When the joint significance of the lagged-same class dummies are tested simultaneously across all origin classes then the null hypothesis that the lagged-class dummies have no significant effects (across all classes) is rejected. When the significance of the lagged class dummies are tested for each origin class separately, then the null hypothesis of no state dependence is *not* rejected for the origin class of the Irregularly-Employed and Tenant, but it is rejected for the Small-Owner (at 5% level) and the Regularly-Employed (at less than 1% level) classes. When the significance of the state dependence is tested individually for each origin-destination class pair (as shown in the t-statistics in the bottom row in Table 10), then the lagged-same class dummy has significant



(negative) effects for the transition probability of moving from the Regularly-Employed to the Small-Owner and to the Tenant classes. The negative coefficients on the dummy variables suggest that if the household belonged to the Regularly-Employed class five years prior to the initial year, then the household is less likely to move out of that class within the next five years after the initial year. Based on the series of test results taken together, therefore, our results on the significance of the state dependence are somewhat mixed, but, to the extent it exists, it is among the upper social strata (especially the Regularly-Employed) that the state dependence matters, but there is little indication of state dependence among the lower social strata. Our finding is thus in contrast with the findings from the United States where ‘poverty spells’ are typically found to be a significant determinant of the exit probability out of poverty.

## **7. Conclusions**

As predicted by the theoretical models of household asset accumulation with a credit market failure, we generally find that the size of initial endowments (labor, land and human capital) is a significant determinant of economic mobility. Furthermore, we find evidence that the returns to the household endowments increased significantly in some particular contexts after the early 1980s when opportunities for international migration from the village expanded substantially. For example, the returns to human capital (for the Irregularly-Employed) and labor endowments (for Tenants) in acquiring the Regularly-Employed status increased significantly. A parallel increase in the returns to land, however, is not observed; as a result, it appears, the relative importance for upward mobility of the human capital among the household endowments increased relative to that of land after the early 1980s. Among the household characteristics as the determinants of economic mobility, we also find that ‘preference’ for farming or agricultural specific skills possessed among ‘owner-tenants’ plays a significant role in discouraging them from entering into non-agricultural occupations (thus taking advantage of expanding opportunities in non-agricultural sectors). We also find an indication that having a larger number of children had positive impacts on *upward* mobility, especially after the early 1980s, among the lower social strata (from the Irregularly-Employed toward the Small-Owner status, and from the Tenant toward the Regularly-Employed status), but had positive impacts on *downward* mobility among Small-Owners (from the Small-Owner

to the Irregularly-Employed or to the Tenant status). Thus a larger family seems to help the poor but to hurt the middle class.

There is some evidence that higher agricultural terms of trade help accumulation in the agricultural sector (thereby becoming from a tenant to an owner farmer). In light of our observation of the rapid narrowing of the ‘agricultural ladder,’ however, the effectiveness of this route as a major pathway from poverty might be questioned. The key to the pathways out of rural poverty through the non-agricultural path appears to be the combination of human capital investment and rapidly expanding economic opportunities as reflected in higher economic growth. While in the 1960s and the 1970s economic growth was a quantitatively more important determinant (as measured by the marginal impacts on the transition probabilities associated with one standard deviation change) than the human capital investment, the substantial increase in the returns to schooling after the early 1980s has made both factors more or less equally important for poverty exit paths. Finally, unlike the case of poverty in the United States, we do not find evidence that ‘poverty spells’ significantly affect the probability of poverty exit.<sup>22</sup>

What implications can we draw in designing policies to facilitate exits from poverty in the rural Philippines? First, we should once again note that the role of the ‘agricultural ladder’ as a pathway out of poverty diminished dramatically, especially after the 1980s; thus, agricultural development and land reform alone, for example, would not be able to lift the mass of the rural poor out of poverty. Pulling the mass out of poverty through the non-agricultural path requires investment in human capital and higher economic growth—as has been found in the past, ensuring access to education would be a main avenue for paving the way out of rural poverty, but an equally crucial role is played by the expanding economic opportunities. We find that international migration also played a major role in pulling the landless poor into a higher economic status for those who could take advantage of the opportunities with human capital endowments. We find evidence, however, that returns to labor endowments also increased among the lower social strata (but not among the upper

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<sup>22</sup> Initially we also included the female headship as a potential determinant, but it was not a significant determinant in any of the transition probabilities and thus subsequently dropped from the analysis. This finding is also in contrast with the findings from poverty studies in the United States.

strata within the village). A possibly disturbing implication is that policy efforts at promoting family planning among the poor could be frustrated (and have been frustrated indeed in the Philippines) due to such an economic incentive.

One potential determinant of poverty dynamics that has not been addressed here is the possible role of shocks. Our data set does not include enough information on (covariate or idiosyncratic) shocks experienced by the village households, and relatively few studies have addressed the role of shocks in the context of chronic poverty dynamics explicitly (Baulch and Hoddinott 2000). It would be an important area for future research.

## References

- Adelman, Irma, K. Subbarao, and P.S. Vashishitha. (1985) "Some Dynamic Aspects of Rural Poverty in India" *Economic and Political Weekly* 20: A103-A116.
- Adelman, Irma, Samuel Morley, Christoph Schenzler, and Matthew Warning. (1994) "Estimating Income Mobility from Census Data." *Journal of Policy Modeling* 16: 187-213.
- Anderson, James N. (1964) "Land and Society in a Pangasinan Community." In *Social Foundations of Community Development* (Socorro C. Espiritu and Chester L. Hunt, eds.). Manila: R. M. Garcia Publishing.
- \_\_\_\_\_. (1975) "Social Strategies in Population Change: Village Data from Central Luzon." In *Population and Development in Southeast Asia* (J. F. Kauter and L. McCaffrey, eds.). Lexington Books.
- Balisacan, Arsenio M. (1999). "Poverty Profile in the Philippines: an update and reexamination of evidence in the wake of the Asian crisis." Mimeo. Quezon City: University of the Philippines School of Economics.
- Banerjee, Abhijit V. and Andrew F. Newman (1993). "Occupational Choice and the Process of Development." *Journal of Political Economy*. Vol. 101, No. 2. pp. 274-298.
- Banzon-Bautista, Cynthia (1989). "The Saudi Connection: Agrarian Change in a Pampangan Village, 1977-1984." In *Agrarian Transformation: Local Processes and the State in Southeast Asia*. (Gillian Hart, Andrew Turton, and Benjamin White, eds.) Berkeley: University of California Press.
- Bardhan, Pranab K., and Christopher Udry (1999). *Development Microeconomics*. Oxford: Oxford University Press.
- Baulch, Bob and John Hoddinott (2000). "Economic Mobility and Poverty Dynamics in Developing Countries." *The Journal of Development Studies*. Vol. 36, No. 6. Pp. 1-24.
- Deaton, Angus. (1997) *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*. Baltimore: Johns Hopkins University Press.
- Dreze, Jean, Peter Lanjouw and Nicholas Stern. (1992) "Economic Mobility and Agricultural Labour in Rural India: A Case Study." *Indian Economic Review: Special Number in Memory of Shukhamoy Chakraverty*.
- Eswaran, Mukesh and Ashok Kotwal. (1986) "Access to Capital and Agrarian Production Organization." *Economic Journal* 96: 482-98.
- Gaiha, Raghav (1988). "Income Mobility in Rural India." *Economic Development and Cultural Change*. Pp. 279-302.
- Gaiha, Raghav and Anil Deolalikar (1993). "Persistent, Expected and Innate Poverty: estimates for semi-arid rural South India, 1975-1984. *Cambridge Journal of*

- Economics*. Vol. 17. pp. 409-421.
- Galor, Oded and Joseph Zeira (1993). "Income Distribution and Macroeconomics." *Review of Economic Studies*. Vol. 60. pp. 35-52.
- Grootaert, Christiaan, Ravi Kanbur and Gi-Taik Oh (1995). "The Dynamics of Poverty. Why Some People Escape from Poverty and Others Don't: An African Study." World Bank Policy Research Working Paper 1499.
- Gunning, Jan Willem, John Hoddinott, Bill Kinsey and Trudy Owens (2000). "Revisiting Forever Gained: Income Dynamics in the Resettlement Areas of Zimbabwe, 1983-96." *The Journal of Development Studies*. Vol. 36, No. 6. Pp. 131-154.
- Hayami, Yujiro and associates. (1978) *Anatomy of a Peasant Economy: A Rice Village in the Philippines*. Los Banos: International Rice Research Institute.
- Heckman, James J. (1981) "Statistical Models for Discrete Panel Data." In *Structural Analysis of Discrete Data with Econometric Applications* (Charles F. Manski and Daniel L. McFadden, eds.). Cambridge: MIT Press.
- Jalan, Jyotsna, and Martin Ravallion (2000). "Is Transient Poverty Different? Evidence for Rural China." *The Journal of Development Studies*. Vol. 36, No. 6. Pp. 82-99.
- Kerkvliet, Benedict J. Tria. (1990) *Everyday Politics in the Philippines: Class and Status Relations in a Central Luzon Village*. Berkeley: University of California Press.
- Ljungqvist, Lars. (1993) "Economic Underdevelopment: the case of missing market for human capital." *Journal of Development Economics*. Vol. 40. pp. 219-239.
- Loury, Glenn (1981). "Intergenerational Transfers and the Distribution of Earnings." *Econometrica*. Vol. 49, No. 4. pp. 843-867.
- McFadden, Daniel L. (1973) "Conditional Logit Analysis of Qualitative Choice Behavior." In *Frontiers in Econometrics* (P. Zarembka, ed.). New York: Academic Press.
- Maddala, G.S. (1983) *Limited-dependent and Qualitative Variables in Econometrics*. Cambridge: Cambridge University Press.
- Quisumbing, Agnes R (1994). "Intergenerational Transfers in Philippine Rice Villages: Gender Differences in Traditional Inheritance Customs." *Journal of Development Economics*. Vol. 43. pp. 167-196.
- Stevens, Ann Huff (1995). "Climbing out of Poverty, Falling back in: Measuring the Persistence of Poverty over Multiple Spells." NBER Working Paper 5390.
- \_\_\_\_\_ (1994). "The Dynamics of Poverty Spells: Updating Bane and Ellwood." *American Economic Review Papers and Proceedings*. Vol. 84, No. 2. pp. 34-37.
- Swaminathan, Madhura. (1991a) "Gainers and Losers: A Note on Land and Occupational Mobility in a South Indian Village, 1977-85." *Development and Change* 22: 261-277.

\_\_\_\_\_. (1991b) "Measuring Mobility in Wealth: Some Estimation from A South Indian Village." *Oxford Bulletin of Economics and Statistics* 53: 171-183.

**Table 1. Mean Income and Poverty Incidence by Social-Class Categories 1994**

|                            | Irregularly employed | Tenant  | Small owner | Regularly employed |
|----------------------------|----------------------|---------|-------------|--------------------|
| average per capita income: | P 5,934              | P 5,230 | P 8,620     | P 20,575           |
| Poverty incidence*         | 0.6643               | 0.7188  | 0.5588      | 0.1787             |

\* poverty line: P 6,091.62

(source: household censuses collected by James N. Anderson and the author. See text.)

**Table 2. Percentage Distribution of Households by Social Class, 1962-1994**

| Year  | 1962            | 1966            | 1971            | 1976            | 1981            | 1994             |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
| 1. Irregularly employed                       | 24.4%           | 28.8%           | 28.6%           | 28.3%           | 33.1%           | 29.3%            |
| 2. Tenant                                     | 32.1%           | 28.8%           | 30.9%           | 27.1%           | 28.2%           | 20.1%            |
| 3. Small owner                                | 29.0%           | 24.0%           | 17.6%           | 17.9%           | 14.1%           | 7.1%             |
| 4. Regularly employed<br>(% OFW* supported) * | 14.5%<br>(1.2%) | 18.5%<br>(1.1%) | 22.9%<br>(2.0%) | 26.7%<br>(3.3%) | 24.5%<br>(7.2%) | 43.6%<br>(17.4%) |
| Total   | 100%            | 100%            | 100%            | 100%            | 100%            | 100%             |
| Total number of households                    | 262             | 271             | 301             | 329             | 347             | 478              |

\*:Percentage of the household mainly supported by international migrants or 'OFWs' (Overseas Filipino Workers)

(source: household censuses collected by James N. Anderson and the author. See text.)

**Table 3. Original Households in 1962 by Social Class and Their Destination in 1994**

| Class in 1962        | Destination in 1994  |        |             |                    |             | Class total in 1962 |
|----------------------|----------------------|--------|-------------|--------------------|-------------|---------------------|
|                      | Irregularly employed | Tenant | Small owner | Regularly employed | not present |                     |
| Irregularly employed | 6                    | 0      | 2           | 7                  | 49          | 64                  |
| Tenant               | 12                   | 13     | 1           | 13                 | 45          | 84                  |
| Small owner          | 3                    | 2      | 6           | 12                 | 53          | 76                  |
| Regularly employed   | 0                    | 0      | 1           | 9                  | 28          | 38                  |
| Total                | 21                   | 15     | 10          | 41                 | 175         | 262                 |

(source: household censuses collected by James N. Anderson and the author. See text.)

**Table 4. The Number of Household Members Abroad by Destination<sup>1</sup>**

|             | Mainland<br>US <sup>2</sup> | Hawaii/<br>Guam <sup>3</sup> | Europe | Middle East | Southeast<br>Asia <sup>4</sup> | Japan | Total |
|-------------|-----------------------------|------------------------------|--------|-------------|--------------------------------|-------|-------|
| <b>1962</b> | 0                           | 1                            | 0      | 0           | 0                              | 0     | 1     |
| <b>1966</b> | 0                           | 4                            | 0      | 0           | 0                              | 0     | 4     |
| <b>1971</b> | 2                           | 11                           | 1      | 0           | 0                              | 0     | 14    |
| <b>1976</b> | 5                           | 11                           | 5      | 0           | 0                              | 0     | 21    |
| <b>1981</b> | 7                           | 8                            | 10     | 16          | 3                              | 0     | 44    |
| <b>1994</b> | 35                          | 20                           | 22     | 74          | 50                             | 11    | 212   |

<sup>1</sup> The number represents the number of heads, spouses or children of the households in the village (who did or did not make income contributions to these households in the village) or others who gave financial support to the households residing in the village. <sup>2</sup> includes Canada. <sup>3</sup> The 1994 figure includes one in Palau. <sup>4</sup> The 1994 figure includes four in Taiwan.

(source: household censuses collected by James N. Anderson and the author. See text.)

**Table 5. Upward Mobility toward Regularly-Employed Status and International Migration between 1981-1994**

|   | Origin class             |             |                 | Total moved into<br>Regularly-<br>employed class |
|---|--------------------------|-------------|-----------------|--|
|   | Irregularly-<br>employed | Tenant      | Small-<br>owner |  |
| Number of upwardly mobile<br>households                               | 25                       | 24          | 8               | 57   |
| Upwardly mobile households with<br>international 'migration strategy' | 14<br>(56%)              | 10<br>(42%) | 6<br>(75%)      | 30<br>(53%)                                      |

(source: household censuses collected by James N. Anderson and the author. See text.)

**Table 6. Descriptive Statistics for Regression Covariates**

| Variable                                | mean   | std.dev | min    | max    |
|---|--------|---------|--------|--------|
| HH age                                  | 45.449 | 13.080  | 20     | 90     |
| Number of children <sup>1</sup>         | 4.875  | 2.621   | 0      | 12     |
| Education <sup>2</sup>                  | 13.854 | 6.786   | 0      | 38     |
| Land size, cultivated (hectare)         | 0.658  | 0.912   | 0      | 8      |
| Land size, owned (hectare)              | 0.390  | 0.887   | 0      | 9      |
| Ag. terms of trade <sup>3</sup>         | 10.693 | 1.400   | 8.610  | 12.766 |
| Wage rate index, unskilled <sup>4</sup> | 2.451  | 0.607   | 1.699  | 3.251  |
| Wage rate index, skilled <sup>4</sup>   | 2.679  | 0.726   | 1.895  | 3.682  |
| GDP growth rate <sup>4</sup>            | 4.063  | 3.077   | -1.933 | 6.671  |
| Number of observations                  | 1199   |         |        |        |

<sup>1</sup> total number of the children of the household head, including those living outside the household. <sup>2</sup> sum total years of schooling among the household head, his/her spouse and the average years of schooling among the children older than age 10. <sup>3</sup> ratio of rice price to the weighted average of CPI and an index of farm expenditure which is constructed as the weighted average of farm wage index and fertilizer price index (averaged over the 5 year transition period). <sup>4</sup> averaged over the 5 year transition period

(source: household censuses collected by James N. Anderson and the author. See text.)



**Table 7. Estimated Coefficients (Maximum Likelihood Estimation)**

(t statistics in parentheses: \*\* : significant at 5% level \* : significant at 10% level)

Number of observations: 1199 Log likelihood: -915.099 Pseudo-R squared: 0.1819

| Independent Variables | origin class = Irregularly-Employed |                     |                    | origin class = Tenant |                     |                      | origin class = Small owner |                    |                      | origin class = Regularly-Employed |                    |                      |
|-----------------------|-------------------------------------|---------------------|--------------------|-----------------------|---------------------|----------------------|----------------------------|--------------------|----------------------|-----------------------------------|--------------------|----------------------|
|                       | destination class =                 |                     |                    | destination class =   |                     |                      | destination class =        |                    |                      | destination class =               |                    |                      |
|                       | Regularly-Employed                  | Small-Owner         | Tenant Farmer      | Regularly-Employed    | Small-Owner         | Irregularly-Employed | Regularly-Employed         | Tenant Farmer      | Irregularly-Employed | Small-Owner                       | Tenant Farmer      | Irregularly-Employed |
| Constant              | -4.1166<br>(-1.01)                  | -16.0459<br>(-3.25) | 3.2365<br>(1.08)   | 6.2851<br>(1.35)      | -11.6208<br>(-2.64) | 2.7888<br>(0.97)     | 0.7021<br>(0.17)           | -3.1010<br>(-0.73) | 5.0720<br>(1.04)     | -24.4500<br>(-2.80)               | -4.8255<br>(-0.68) | 6.0099<br>(0.71)     |
| HH Age                | -1.6749<br>(-1.19)                  | 0.8983<br>(0.43)    | -1.4130<br>(-1.20) | -5.3790<br>(-2.78)    | -0.6112<br>(-0.47)  | -1.6175<br>(-1.69)   | -0.8449<br>(-0.81)         | 0.7744<br>(0.51)   | -1.043<br>(-0.91)    | 5.4831<br>(1.73)                  | 1.3062<br>(0.37)   | 2.2600<br>(0.72)     |
| HH Age squared        | 0.1777<br>(1.20)                    | -0.1357<br>(-0.57)  | 0.1296<br>(1.01)   | 0.5382<br>(2.74)      | 0.1061<br>(0.79)    | 0.1935<br>(1.97)     | 0.0814<br>(0.84)           | -0.1156<br>(-0.74) | 0.0628<br>(0.58)     | -0.5084<br>(-1.65)                | -0.2090<br>(-0.47) | -0.2739<br>(-0.82)   |
| No. Children          | 0.0289<br>(0.26)                    | 0.0439<br>(0.24)    | 0.1255<br>(0.98)   | 0.2298<br>(1.26)      | -0.0695<br>(-0.76)  | 0.0418<br>(0.48)     | 0.0765<br>(0.69)           | 0.0231<br>(0.25)   | 0.1900<br>(1.87)     | -0.0829<br>(-0.43)                | 0.2129<br>(0.67)   | 0.0867<br>(0.61)     |
| No. Children*80s      | -0.7701<br>(-1.35)                  | 1.1892<br>(2.01)    | -1.3088<br>(-0.74) | 3.0027<br>(1.89)      | 0.1305<br>(0.18)    | 0.4155<br>(0.92)     | 0.3909<br>(1.61)           | 0.4303<br>(1.69)   | 0.6643<br>(1.84)     | 0.5188<br>(1.80)                  | 0.3325<br>(0.69)   | -3.0302<br>(-0.26)   |
| Education             | 0.0880<br>(1.65)                    | 0.1098<br>(1.60)    | 0.0101<br>(0.22)   | 0.1452<br>(1.95)      | 0.1643<br>(3.39)    | -0.0307<br>(-0.60)   | 0.0631<br>(1.71)           | 0.0273<br>(0.71)   | -0.0907<br>(-1.85)   | -0.0846<br>(-1.47)                | -0.1446<br>(-1.81) | -0.0992<br>(-2.06)   |
| Education*80s         | 0.3167<br>(2.19)                    | -0.1662<br>(-0.71)  | 0.0088<br>(0.03)   | -0.6860<br>(-1.12)    | -0.3378<br>(-0.97)  | 0.1250<br>(0.84)     | 0.1673<br>(2.01)           | 0.0295<br>(0.37)   | -0.0767<br>(-0.41)   | 0.1279<br>(1.52)                  | 0.0309<br>(0.17)   | -0.3184<br>(-0.50)   |
| Land size             |                                     |                     |                    | -0.5993<br>(-1.00)    | 0.3851<br>(1.39)    | -0.7731<br>(-2.75)   | -0.0170<br>(-0.10)         | -3.0226<br>(-3.21) | -0.9193<br>(-2.22)   |                                   |                    |                      |
| Land size *80s        |                                     |                     |                    | -10.2238<br>(-1.08)   | -3.5492<br>(-0.89)  | -9.9631<br>(-1.54)   | -6.5724<br>(-3.47)         | -4.2297<br>(-1.40) | -5.7847<br>(-1.04)   |                                   |                    |                      |
| Owner Tenant          |                                     |                     |                    |                       |                     |                      | -2.0551<br>(-3.48)         | 0.4246<br>(0.79)   | -2.6767<br>(-4.54)   |                                   |                    |                      |
| Ag. Term of Trade     |                                     |                     |                    | -0.6802<br>(-0.99)    | 1.8806<br>(3.65)    | 0.1350<br>(0.35)     | 0.0187<br>(0.05)           | 0.0824<br>(0.24)   | -0.3784<br>(-0.76)   |                                   |                    |                      |
| Wage                  | -0.1255<br>(-0.21)                  | 0.8823<br>(0.87)    | 0.0733<br>(0.20)   |                       |                     |                      |                            |                    |                      | 1.1039<br>(1.87)                  | -1.1313<br>(-1.21) | -1.3020<br>(-2.35)   |
| GDP Growth            | 0.8195<br>(2.34)                    | 1.4296<br>(3.50)    | -0.4183<br>(-1.32) | 1.5303<br>(1.45)      | -2.3573<br>(-3.45)  | -0.3576<br>(-0.63)   | -0.2753<br>(-0.84)         | 0.1957<br>(0.48)   | 0.5586<br>(0.84)     | 1.1150<br>(2.38)                  | 0.7565<br>(1.25)   | -1.4522<br>(-1.57)   |

(source: household censuses collected by James N. Anderson and the author. See text.)

**Table 8. Marginal Impacts on Transition Probability of Statistically Significant Covariates**

| Class Transition and statistically significant covariates: | Marginal impact on probability as measured by: |                 |            |
|--|--|-----------------|------------|
|  | dP/dx  | dP/dx*std. dev. | elasticity |
| <b>From Irregularly-Employed to Small-Owner:</b>           |  |                 |            |
| Number of Children (after 80s)                             | 0.0870   | 0.2131          | 4.9966     |
| GDP growth rate  | 0.1003   | 0.3232          | 5.1724     |
| <b>From Irregularly-Employed to Regularly-Employed:</b>    |  |                 |            |
| Education  | 0.0024   | 0.0127          | 0.8822     |
| Education (after 80s)                                      | 0.0099   | 0.0527          | 3.6745     |
| GDP growth rate  | 0.0212   | 0.0682          | 2.6729     |
| <b>From Tenant-Farmer to Irregularly-Employed:</b>         |  |                 |            |
| Land size  | -0.0002  | -0.0001         | -0.2350    |
| <b>From Tenant-Farmer to Small-Owner:</b>                  |  |                 |            |
| Education  | 0.00003  | 0.0002          | 0.3506     |
| Ag. terms of trade   | 0.00188  | 0.0027          | 20.4162    |
| GDP growth rate  | -0.00222                                       | -0.0070         | -8.9080    |
| <b>From Tenant-Farmer to Regularly-Employed:</b>           |  |                 |            |
| Number of children (after 80s)                             | 0.2000   | 0.5345          | 1.1234     |
| Education  | 0.0096   | 0.0513          | 0.1228     |
| <b>From Small-Owner to Irregularly-Employed:</b>           |  |                 |            |
| Number of children   | 0.0003   | 0.0009          | 0.9781     |
| Number of children (after 80s)                             | 0.0011   | 0.0030          | 3.4079     |
| Education  | -0.0002  | -0.0010         | -1.3785    |
| Land size  | -0.0016  | -0.0019         | -1.0818    |
| Owner-tenant dummy   | -0.0058  |                 |            |
| <b>From Small-Owner to Tenant-Farmer:</b>                  |  |                 |            |
| Number of children (after 80s)                             | 0.0002   | 0.0006          | 2.1932     |
| Land size  | -0.0017  | -0.0021         | -3.5662    |
| <b>From Small-Owner to Regularly-Employed:</b>             |  |                 |            |
| Education  | 0.0010   | 0.0064          | 0.9358     |
| Education (after 80s)                                      | 0.0027   | 0.0169          | 2.4773     |
| Land size (after 80s)                                      | -0.1076  | -0.1311         | -7.6194    |
| Owner-tenant dummy   | -0.0390  |                 |            |
| <b>From Regularly-Employed to Irregularly-Employed:</b>    |  |                 |            |
| Education  | -9.936D-13                                     | -8.0957 D-12    | 1.8515     |
| Wage rate  | -1.3048 D-11                                   | -8.7447 D-12    | -3.2731    |
| <b>From Regularly-Employed to Tenant-Farmer:</b>           |  |                 |            |
| Education  | -0.0001  | -0.0009         | -2.7008    |
| <b>From Regularly-Employed to Small-Owner:</b>             |  |                 |            |
| Number of children (after 80s)                             | 9.8736 D-06                                    | 0.00003         | 2.3674     |
| Wage rate  | 0.00002  | 0.00001         | 2.7795     |
| GDP growth rate  | 0.00002  | 0.00007         | 4.3149     |

**Table 9. Likelihood Ratio Test Results for State Dependence**

**1. State dependence tested simultaneously among all origin classes**

| H <sub>0</sub>  | H <sub>1</sub>   | Chi-square test statistic (d.f.) | P-value |
|---|--|----------------------------------|---------|
| Unrestricted full model with lagged-same-class dummies across all classes | Lagged-same-class dummies has no effects (full model with no lagged-class dummy) | 26.9010 (12)                     | 0.008** |

**2. State dependence tested separately for each origin class**

| Origin class         | H <sub>0</sub>   | H <sub>1</sub>                            | Chi-square test statistic (d.f.) | P-value  |
|----------------------|--|---|----------------------------------|----------|
| Regularly-Employed   | Unrestricted full model with lagged-same-class dummies among all classes | Lagged-same-class dummies have no Effects | 12.8281 (3)                      | 0.0050** |
| Small-Owner          |  |   | 7.6883 (3)                       | 0.0529*  |
| Tenant Farmer        |  |   | 0.8644 (3)                       | 0.8340   |
| Irregularly-Employed |  |   | 4.5584 (3)                       | 0.2071   |

**Table 10. Estimated Coefficients (Maximum Likelihood Estimation): A Model with State Dependence**

(t statistics in parentheses: \*\*: significant at 5% level \*: significant at 10% level)

Number of observations: 776 Log likelihood: -571.642 Pseudo-R squared: 0.2314

| Independent variables                | origin class = Irregularly-Employed |                     |                    | origin class = Tenant |                     |                      | origin class = Small owner |                    |                      | origin class = Regularly-Employed |                    |                      |
|--------------------------------------|-------------------------------------|---------------------|--------------------|-----------------------|---------------------|----------------------|----------------------------|--------------------|----------------------|-----------------------------------|--------------------|----------------------|
|                                      | destination class =                 |                     |                    | destination class =   |                     |                      | destination class =        |                    |                      | destination class =               |                    |                      |
|                                      | Regularly-Employed                  | Small-Owner         | Tenant Farmer      | Regularly-Employed    | Small-Owner         | Irregularly-Employed | Regularly-Employed         | Tenant Farmer      | Irregularly-Employed | Small-Owner                       | Tenant Farmer      | Irregularly-Employed |
| Constant                             | -3.6687<br>(-0.47)                  | -92.3583<br>(-0.64) | -0.6921<br>(-0.12) | 8.9263<br>(1.15)      | -13.1792<br>(-1.66) | 1.7226<br>(0.36)     | -4.4382<br>(-0.49)         | -3.3516<br>(-0.62) | 2.6757<br>(0.34)     | -24.6067<br>(-2.09)               | -5.2472<br>(-0.49) | 4.1663<br>(0.39)     |
| HH Age                               | 0.0483<br>(0.01)                    | 6.4822<br>(0.84)    | 0.1122<br>(0.04)   | -7.8441<br>(-2.59)    | 0.3218<br>(0.11)    | -1.6170<br>(-0.93)   | -0.1103<br>(-0.05)         | 0.4523<br>(0.24)   | -0.7888<br>(-0.37)   | 6.9431<br>(1.49)                  | -0.4942<br>(-0.14) | 3.3292<br>(0.64)     |
| HH Age squared                       | 0.0005<br>(0.00)                    | -0.8238<br>(-0.85)  | -0.0479<br>(-0.17) | 0.7902<br>(2.68)      | 0.0153<br>(0.05)    | 0.2062<br>(1.20)     | 0.0486<br>(0.27)           | -0.0668<br>(-0.34) | 0.0444<br>(0.23)     | -0.6177<br>(-1.44)                | 0.0036<br>(0.01)   | -0.3866<br>(-0.71)   |
| No. Children                         | 0.1159<br>(0.70)                    | -0.4017<br>(-1.35)  | 0.0652<br>(0.31)   | 0.2324<br>(0.91)      | -0.0407<br>(-0.31)  | 0.0311<br>(0.25)     | 0.1494<br>(1.13)           | -0.1446<br>(-1.13) | 0.0765<br>(0.64)     | -0.2099<br>(-0.70)                | 0.1841<br>(0.63)   | 0.0543<br>(0.24)     |
| No. Children*80s                     | -1.5044<br>(-1.49)                  | 5.7633<br>(0.67)    | -1.4362<br>(-0.27) | 4.0795<br>(1.83)      | 0.0622<br>(0.07)    | 0.3926<br>(0.78)     | 0.0243<br>(0.05)           | 0.6201<br>(2.14)   | 0.9778<br>(2.40)     | 0.7994<br>(2.17)                  | 0.7427<br>(1.59)   | -2.9302<br>(-0.27)   |
| Education                            | 0.0740<br>(0.81)                    | -0.0330<br>(-0.19)  | 0.0457<br>(0.56)   | 0.2330<br>(2.24)      | 0.1399<br>(1.97)    | 0.0248<br>(0.35)     | 0.0973<br>(1.88)           | 0.0600<br>(1.28)   | -0.0416<br>(-0.71)   | -0.0685<br>(-0.78)                | -0.1106<br>(-1.07) | -0.1337<br>(-1.37)   |
| Education*80s                        | 0.4273<br>(1.68)                    | -0.4770<br>(-0.36)  | 0.1921<br>(0.18)   | -0.7878<br>(-1.32)    | -0.2528<br>(-0.45)  | 0.0171<br>(0.09)     | -0.0714<br>(-0.54)         | -0.1370<br>(-1.48) | -0.2329<br>(-1.41)   | 0.0213<br>(0.20)                  | 0.0092<br>(0.06)   | -0.0716<br>(-0.11)   |
| Land size                            |                                     |                     |                    | -0.6601<br>(-0.89)    | 0.4990<br>(1.30)    | -0.7901<br>(-2.16)   | -0.3344<br>(-0.86)         | -2.5038<br>(-2.29) | -0.2925<br>(-0.59)   |                                   |                    |                      |
| Land size *80s                       |                                     |                     |                    | -12.1221<br>(-1.46)   | -3.8279<br>(-0.74)  | -9.1924<br>(-1.29)   | -8.9047<br>(-2.24)         | -5.3989<br>(-1.70) | -5.1697<br>(-1.11)   |                                   |                    |                      |
| Owner Tenant                         |                                     |                     |                    |                       |                     |                      | -1.7273<br>(-2.19)         | 0.7463<br>(1.18)   | -2.7629<br>(-2.82)   |                                   |                    |                      |
| Ag. Term of Trade                    |                                     |                     |                    | -1.2116<br>(-0.97)    | 1.8292<br>(2.71)    | 0.3971<br>(0.69)     | 1.4233<br>(1.94)           | 0.4283<br>(0.93)   | -0.2462<br>(-0.35)   |                                   |                    |                      |
| Wage                                 | -0.0808<br>(-0.11)                  | 11.7037<br>(0.49)   | -0.0229<br>(-0.05) |                       |                     |                      |                            |                    |                      | 0.2182<br>(0.24)                  | -0.1227<br>(-0.08) | -1.2923<br>(-1.03)   |
| GDP Growth                           | 0.1294<br>(0.32)                    | 7.9829<br>(0.65)    | -0.1580<br>(-0.39) | 2.8893<br>(1.26)      | -2.3248<br>(-2.22)  | -0.7930<br>(-0.88)   | -2.9844<br>(-2.84)         | -0.3216<br>(-0.50) | 0.5620<br>(0.58)     | 1.0560<br>(1.74)                  | 1.2183<br>(1.30)   | -1.2970<br>(-1.27)   |
| dummy: same class in previous period | -1.0828<br>(-1.21)                  | -2.0937<br>(-1.06)  | -0.5768<br>(-0.99) | -0.1022<br>(-0.12)    | -0.3502<br>(-0.50)  | -0.4282<br>(-0.71)   | 1.0817<br>(1.31)           | -0.5771<br>(-0.90) | -1.1956<br>(-1.38)   | -1.7766<br>(-2.08)                | -1.9611<br>(-1.76) | -1.1188<br>(-1.09)   |

(source: household censuses collected by James N. Anderson and the author. See text.)

## **Appendix 1: A Brief Description of the Socio-Economic Class Categories in the Study Village**

James N. Anderson (1963) observed that there were marked differences in the degree of economic security and socio-economic behavior among different classes of households. For a Filipino household its relative social status vis-a-vis fellow villagers is one of its major life-time concerns,<sup>23</sup> and they “aspire to higher status and seriously work at strategies that will bring about that goal.” (Anderson 1975: 156) The original categorization of the socio-economic classes is based on such observation. The following description is based on Anderson (1963) and Fuwa (1996).

### *Landless-Irregularly-Employed*

This category consists of landless-laborer households. They had little or no access to agricultural land nor any secure employment and thus were economically the most insecure in the village. They formed the bottom group in the village status hierarchy. Their occupations varied widely among different households and over time, but they shared the common characteristic of economic insecurity and low level of economic welfare. Occupations of this type include: seasonal agricultural labor (e. g., planting and harvesting) and occasional non-agricultural workers (e. g., house building, selling vegetables in the market, hired tricycle driving, carpentry, plumbing, etc.). Through different seasons of the year, these households supported themselves often by moving from one of these occupations to another. These households typically received some support also from relatives, especially during the later part of the rainy season (“lean season”) when opportunities for economic activities dry up while the rice price goes up substantially<sup>24</sup>.

### *Tenant-Farmer*

Households in this category owned little or no land (the cut-off size of land ownership distinguishing the Tenant-Farmer from the Small-Owner category is set at one third of a hectare), but they had access to land through land tenancy contract. Their farm size tended to be smaller than that of the small owners’ and the share of the produce of the land was often insufficient to support the family by minimum local standards without supplementary activities or earnings. However, they still enjoyed a certain margin of security against hard times by virtue of the traditional system of mutual obligations between tenants and landowners, which the landless Irregularly-Employed households did not.

### *Small-Owner*

These households owned small parcels of agricultural land. Land holdings by the village residents are quite small; during our data period, the maximum size was 24 hectares

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<sup>23</sup> For example, the perceptions of Filipino rural households in different social classes were illustrated vividly by Kerkvleit (1990).

<sup>24</sup> According to village residents, between the harvest season and the “lean season” during the 1993 season, the price of rice in nearby town market went up from P5/kg to P7.50/kg.

and average was between 1 and 2 hectares<sup>25</sup>. Although their size of land holdings was very small by Philippine standards, they were still relatively secure among village households, and formed the highest status group among the farm households residing in the village. Their land holdings were large enough to feed and support their families relatively well by local standards.

#### *Non-Agricultural Regularly-Employed*

In addition to the above, there is a distinct group of households who derive primary income from secure non-agricultural employment or enterprise. Some of the households in this group also owned agricultural land and thus acted as proprietors earning land rent at the same time. Main occupations in this category include: school teaching, full time employment in the township or in Manila, military service, and so on. A fraction of this group consisted of owners of non-agricultural businesses, such as rice mill operators or transport operators. Also included in this class are the households deriving the major portion of their income from contract labor in foreign countries. International migration has been a noticeable phenomenon in the village since the early part of this century. While relatively small number of households depended on foreign income during the 1960s and the 1970s, the number increased dramatically during the 1980s<sup>26</sup>. Although all the households in this category were not uniformly wealthy, the wealthiest households in the village have always belonged to this class throughout our data period. In order to keep a perspective, however, it is probably worth noting that the “wealthiest” households in the village are far from the “wealthiest” by the national standard and these “wealthiest” of the villagers perhaps belong to the middle-class within the class structure at the national level.

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<sup>25</sup> There were a very small number (six of them as of the early 1960s) of what Anderson called “medium land owner” households who lived *outside* the village (mostly in the nearest township) but owned land in the study village as well as in other neighboring villages. They formed a distinct socio-economic class of its own that lay above small owners’. However, since they are not village residents and thus our census data excludes these households, they will not be included here.

<sup>26</sup> Similar processes in another Central Luzon village are documented by Banzon-Bautista (1989)

**Appendix 2: Transition Matrices**

**Table A-1. Transition Matrix 1962-1966**

| 1966 |                | irreg.employed | tenant farmer | small owner  | reg.employed | hh dissolution | emigration |
|------|----------------|----------------|---------------|--------------|--------------|----------------|------------|
| 1962 | irreg.employed | <b>0.531</b>   | 0.109         | 0.047        | 0.016        | 0.141          | 0.156      |
|      | tenant farmer  | 0.131          | <b>0.571</b>  | 0.119        | 0.036        | 0.071          | 0.071      |
|      | small owner    | 0.132          | 0.105         | <b>0.513</b> | 0.079        | 0.066          | 0.105      |
|      | reg.employed   | 0.026          | 0.000         | 0.079        | <b>0.605</b> | 0.132          | 0.158      |
|      | hh formation   | 0.317          | 0.268         | 0.195        | 0.220        | NA             | NA         |
|      | immigration    | 0.391          | 0.174         | 0.087        | 0.348        | NA             | NA         |

**Table A-2. Transition Matrix 1966-1971**

| 1971 |                | irreg.employed | tenant farmer | small owner  | reg.employed | hh dissolution | emigration |
|------|----------------|----------------|---------------|--------------|--------------|----------------|------------|
| 1966 | irreg.employed | <b>0.564</b>   | 0.128         | 0.013        | 0.038        | 0.115          | 0.141      |
|      | tenant farmer  | 0.115          | <b>0.679</b>  | 0.090        | 0.013        | 0.038          | 0.064      |
|      | small owner    | 0.092          | 0.077         | <b>0.585</b> | 0.108        | 0.062          | 0.077      |
|      | reg.employed   | 0.040          | 0.020         | 0.040        | <b>0.600</b> | 0.060          | 0.240      |
|      | hh formation   | 0.357          | 0.333         | 0.071        | 0.238        | NA             | NA         |
|      | immigration    | 0.250          | 0.250         | 0.050        | 0.450        | NA             | NA         |

**Table A-3. Transition Matrix 1971-1976**

| 1971 |                | irreg.employed | tenant farmer | small owner  | reg.employed | hh dissolution | emigration |
|------|----------------|----------------|---------------|--------------|--------------|----------------|------------|
| 1966 | irreg.employed | <b>0.547</b>   | 0.081         | 0.081        | 0.128        | 0.093          | 0.070      |
|      | tenant farmer  | 0.118          | <b>0.570</b>  | 0.118        | 0.075        | 0.054          | 0.065      |
|      | small owner    | 0.113          | 0.170         | <b>0.604</b> | 0.075        | 0.038          | 0.000      |
|      | reg.employed   | 0.014          | 0.058         | 0.043        | <b>0.725</b> | 0.043          | 0.116      |
|      | hh formation   | 0.429          | 0.321         | 0.143        | 0.107        | NA             | NA         |
|      | immigration    | 0.421          | 0.184         | 0.053        | 0.342        | NA             | NA         |

**Table A-4. Transition Matrix 1976-1981**

| 1981 |                | irreg.employed | tenant farmer | small owner  | reg.employed | hh dissolution | emigration |
|------|----------------|----------------|---------------|--------------|--------------|----------------|------------|
| 1976 | irreg.employed | <b>0.531</b>   | 0.109         | 0.047        | 0.016        | 0.141          | 0.156      |
|      | tenant farmer  | 0.131          | <b>0.571</b>  | 0.119        | 0.036        | 0.071          | 0.071      |
|      | small owner    | 0.132          | 0.105         | <b>0.513</b> | 0.079        | 0.066          | 0.105      |
|      | reg.employed   | 0.026          | 0.000         | 0.079        | <b>0.605</b> | 0.132          | 0.158      |
|      | hh formation   | 0.317          | 0.268         | 0.195        | 0.220        | NA             | NA         |
|      | immigration    | 0.391          | 0.174         | 0.087        | 0.348        | NA             | NA         |

**Table A-5. Transition Matrix 1981-1994**

|                | 1994           |               |              |              |                |            |
|----------------|----------------|---------------|--------------|--------------|----------------|------------|
| 1981           | irreg.employed | tenant farmer | small owner  | reg.employed | hh dissolution | emigration |
| irreg.employed | <b>0.357</b>   | 0.035         | 0.009        | 0.217        | 0.217          | 0.165      |
| tenant farmer  | 0.153          | <b>0.408</b>  | 0.051        | 0.245        | 0.082          | 0.061      |
| small owner    | 0.041          | 0.122         | <b>0.245</b> | 0.163        | 0.306          | 0.122      |
| reg.employed   | 0.035          | 0.035         | 0.024        | <b>0.588</b> | 0.165          | 0.153      |
| hh formation   | 0.322          | 0.217         | 0.066        | 0.395        | NA             | NA         |
| immigration    | 0.353          | 0.118         | 0.047        | 0.482        | NA             | NA         |

(source: household censuses collected by James N. Anderson and the author. See text.)

**Table A-6. Upward Mobility Probabilities: Agricultural vs. Non-agricultural Routes**

| period  | Irregularly-Employed            |   |                  | Tenant-farmer                   |   |                  |
|---------|---------------------------------|---|------------------|---------------------------------|---|------------------|
|         | agriculture <sup>1</sup><br>(A) | non-<br>agriculture <sup>2</sup><br>(B) | ratio<br>(A)/(B) | agriculture <sup>3</sup><br>(A) | non-<br>agriculture <sup>4</sup><br>(B) | ratio<br>(A)/(B) |
| 1962-66 | 0.156                           | 0.016                                   | 9.750            | 0.119                           | 0.036                                   | 3.306            |
| 1966-71 | 0.141                           | 0.038                                   | 3.711            | 0.090                           | 0.013                                   | 6.923            |
| 1971-76 | 0.162                           | 0.128                                   | 1.266            | 0.118                           | 0.075                                   | 1.573            |
| 1976-81 | 0.156                           | 0.016                                   | 9.750            | 0.119                           | 0.036                                   | 3.306            |
| 1981-94 | 0.044                           | 0.217                                   | 0.203            | 0.051                           | 0.245                                   | 0.208            |

<sup>1</sup> transition probability of moving from the Irregularly-Employed to the Tenant or the Small-Owner class.

<sup>2</sup> transition probability of moving from the Irregularly-Employed class to the Regularly-Employed class.

<sup>3</sup> transition probability of moving from the Tenant to the Small-Owner class.

<sup>4</sup> transition probability of moving from the Tenant to the Regularly-Employed class.

(source: household censuses collected by James N. Anderson and the author. See text.)