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# Choosing to Migrate or Migrating to Choose: Migration and Labor Choice in Albania

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**Contributed paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-18, 2006**

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## 1. Introduction

A decade and a half into the socio-economic and political transition to an open, market-oriented democracy, Albania has changed dramatically. GDP per capita in constant Purchasing Power Parity (PPP) dollars has doubled to US$ 4330 in just over 10 years (WDI, 2005). This growth was both stimulated and accompanied by profound changes in the economic structure and social fabric of the country.

Despite this progress, approximately 25 percent of Albanians, and 30 percent of rural Albanians, live in poverty (World Bank, 2003). Persistent poverty, and the large income differential with its EU neighbors fuel a steady flow of international migration, which has become the single most important political, social and economic phenomenon in post-communist Albania. Notwithstanding its policy relevance, the impact of the migration phenomenon on the livelihood strategies of the families that stay in Albania is an issue that has received relatively little attention. We take advantage of the 2002 Albania Living Standards Measurement Study (*ALSMS*) survey[1] to identify the principal income strategies of Albanian households and investigate the role of migration, and access to migration networks, in different livelihood strategies and individual labor activity choice. In addition to migration, we also focus on the role of agricultural and livestock activities given their still predominant role in the economic strategies of the poor.

We begin by focusing on the role of agriculture and migration in household economic strategies, based on an analysis of income shares. We then posit how international migration, human capital and agricultural assets may affect labor market participation including activity choice, and use multivariate analysis to identify the determinants of participation in different labor activities.

[1] The 2002 ALSMS was carried out by the Albania Institute of Statistics (INSTAT) with the technical assistance of the World Bank. The survey, conducted on a sample of 3599 households and based on a two-stage cluster design, is nationally representative.

## 2. The structure of household income in Albania

In this section, using data from the 2002 *ALSMS*, we look at the structure of household income and participation in labor activities to document the principal economic activities utilized by Albanian households. As can be seen in Table 1, while only 29 percent of total household income comes from on-farm activities, 62 percent of all households, urban and rural, had some on-farm income. Approximately 50 percent of income among rural households derives from agriculture, and over 90 percent of all rural households, reaching virtually 100 percent in the Mountain region, are involved in some form of on-farm activity.

Agricultural income and activities are more important for poor households than for wealthier ones (Figures 1 and 2). On average, 38 percent of income among households in the bottom consumption quintile derives from on-farm activities, while agriculture accounts for only 19 percent of income in the top quintile. Similarly, it is indicative that 3 out of 4 households in the poorest quintile carried out on-farm activities. Surprisingly, and although the percentage is significantly lower, more than half of the top 20 percent of wealthiest households also had agricultural activities.

However, very few households depend on agricultural income only. Approximately 1 in 2 households in the bottom quintile also had some off farm income. Particularly prominent among the poor were public transfers; 63 percent received some kind of public transfer (primarily pensions and ndihma ekonomike[2]), comprising 22 percent of total income, while only 38 percent had off-farm wage income, and 25 percent remittances.

Private transfers are also relatively widespread. More than a quarter (28 percent) of all households reported receiving remittances in 2002, comprising 10 percent of total income[3], the bulk of these households residing in the Coastal and Central regions. This does not include

[2] It is a cash assistance program, known as *Economic Assistance,* which is the largest component of public social assistance programmes in Albania.

[3] Given the relatively high level of migration assets in Albania, these figures may seem to underestimate the incidence of remittances among families with international migrants.

income brought back from current temporary migration, which is considered part of wage income. The share of households receiving remittances increases somewhat across quintiles, ranging from 25 percent in the first quintile to 34 percent in the fifth. Greater heterogeneity is found among regions, with over 30 percent of the households in the Coastal and Central regions receiving remittances, compared to around 12-16 percent in the Mountain region and Tirana.

A high share of private transfers comes from remittances from abroad. These figures are thought to be underestimated, and the real magnitude of this phenomenon is probably much higher than what both official foreign exchange statistics as well as survey figures suggest. Access to migration assets is very important, and varies by income level and region.[4] Households in the upper quintile have two to three times the number of former household members (permanent migrants) living in Greece (9 to 20 percent) and Italy and further a field (11 to 27 percent) compared to households in the bottom quintile, as seen in Table 2.

The opposite is true for temporary migrants to Greece. Twice as many households in the first quintile had at least one current household member with experience in migrating to Greece (17 to 9 percent). Instead, both permanent and temporary migrants to Italy and beyond show increasing percentages as higher the quintile is, witnessing higher migration returns in farther countries. In terms of regions, permanent migrants to Greece are found in the Central region and the rural Coast, while permanent migrants to Italy are found predominantly among households in Tirana, the Coastal and urban Central regions. Temporary migrants to Greece are located principally in the Central and Mountain rural areas, while temporary migrants to Italy and further a field are evenly distributed.

## 3. Focus on key assets: Education, land, and migration

The objective of this section is to analyze the individual labor activity decision, focusing in

[4] We characterize two types of migration assets: temporary (adults who spent at least one month outside the household during the last 12 months) and permanent (all children of the women in a household who are still alive but are not living in the household). Elsewhere we have discussed the importance of these networks for the decision to migrate (Carletto et al., 2005).

particular on the role of assets across different options. Our interest lies on which factors pull individuals off the farm, or conversely encourage intensification of farm activity. We focus on the three key assets available to rural Albanian households: agricultural land, human capital (i.e. education) and migration networks.

**Migration -** There are a number of potential avenues through which migration may have an impact on labor participation and occupational choice. First, access to migration assets can be expected to ease the constraints in access to capital and lead to more investment and more labor being allocated to self-employment activities, including agriculture. Similarly, migration could cover other transaction costs or help hedge against risks which limit participation in wage or other riskier activities. The evidence on the effect of migration on productive investment is mixed, with some studies finding a positive impact of migration on investment in the place of origin and others finding no significant impact on productive investment.

It is difficult to predict the net effect of migration on household productive activities.[5] The migration of some household members may affect the time endowment of the household, leading for instance to a reallocation of family labor towards specific activities, such as working on the family farm. On the other hand, the extra-income earned by the migrant members, may also induce other members of the household to work less as the marginal value of the additional income diminishes and they may decide to substitute work for leisure. Also, seasonal or potential migrants may reduce their participation in the labor force while at home (or display a preference for casual as opposed to long term jobs) as they are waiting for their first or next migration experience. Anecdotal suggest this may be the case in Albania (Carletto *et al.* (2004)).

**Education -** The effects of education on labor market participation and occupational choice are in principle more straightforward to predict. Regarding labor market participation the evidence

[5] See discussion in Lucas (2006) and McKenzie (2005).

is univocal in pointing to educational attainment (and human capital in general) as perhaps the single major determinant of labor market participation (Pencavel, 1986).

When it comes to occupational choice, the bulk of the evidence unsurprisingly points to more education being associated to white collar as opposed to blue collar jobs, and to off farm as opposed to on-farm jobs.

**Land -** Ownership of land assets is, on the contrary, expected to lead to more on-farm labor participation. At a certain level of farm size, land ownership could also be associated with more off farm activity, due to a technology effect. The latter effect is however unlikely in Albania, given the uniformly small land sizes resulting from land privatization.

## 4. Modeling labor participation and activity choice

In order to test these hypotheses, we first model participation in the labor force and then, for employed working-age individuals, we predict their choice of occupation. Over the past 30 years, an increasing body of literature has been focusing on estimating behavioral models in labor economics. Moffitt (1999) provides a good review of the econometric practices in this field. In line with this literature, we use a probit model to investigate the probability of having performed any work in the twelve months prior to the survey. The model is specified as follows:

$$W_i = \alpha + \beta_1 X + \beta_2 Z + \beta_3 HC + \beta_4 LA + \beta_5 A + \beta_6 RD + \beta_7 H + \beta_8 SA + \beta_9 M + \beta_{10} LM + \beta_{11} G + \varepsilon$$

where $W_i$ is the labor participation binary dependent variable, equal to 1 if the individual has performed any work in the 12 month prior to the survey, and 0 otherwise. *X, Z, HC,* and *LA* are vectors of individual-level demographic characteristics, household-level demographic characteristics, human capital assets, and land assets, respectively. *A* is a vector of household non-agriculture endowments, which includes a non-agricultural household asset index. *RD* refers to relative deprivation, that is, a household's wealth position relative to other households, calculated following Stark and Taylor (1989). *H* refers to the headcount poverty index at the

district level, $M$ to migration assets, $LM$ to local labor market conditions, $G$ to location variables, and $\varepsilon$ is the error term. We estimate the model separately for men and women in our sample, as Wald tests have shown that parameters statistically differ by gender.

Our second equation aims at investigating workers' occupational choice. Since Boskin's (1974) seminal paper, conditional or multinomial logit (MNL) models have been standard practice for this type of analysis. A recent application to a transition economy is Verme (2004).

The occupational choice model estimated is specified as follows:

$$L_i = \alpha + \beta_1 X + \beta_2 Z + \beta_3 HC + \beta_4 LA + \beta_5 A + \beta_6 RD + \beta_7 H + \beta_8 SA + \beta_9 M + \beta_{10} LM + \beta_{11} G + \varepsilon$$

where $L_i$ is the employment choice dependent variable, which assumes 1 if she is a wage worker and 2 if self-employed, working on farm being the reference category. All other notations are as in the probit model above, with the only addition of age interaction terms in vectors $LA$ and $M$. We introduce age interaction terms in the model in order to gauge how the impact of migration and agricultural assets vary with age. In all regressions we account for autocorrelation among observations in the same household by correcting the calculation of the standard errors[6].

## 5. Regression results

### *5.1 Labor market participation: probit model*

The results of our model for the labor participation probit are reported in Table 3. We focus our comments on the key assets identified in Section 3 above.

It is interesting to note how the squared term on the education variable is negative for men (as expected) but positive for women, suggesting that further years of schooling have an increasingly positive effect on female labor participation. Agricultural land displays the expected positive effect on labor participation for both sexes, and in both cases with diminishing marginal 'returns', as shown by the negative sign on the quadratic term.

[6] The Hausman test could not reject the null hypothesis that the Independence of Irrelevant Alternatives (IIA) assumption holds; that is, that the odds of outcomes in the model do not depend on other available choices.

The composition of labor demand also has an impact, with lower labor participation in communes with lower share of non-agricultural jobs. This may reflect the buffer role agricultural employment can play and the large phenomenon of underemployment, a well known fact of Albanian agriculture. Labor force participation is also higher in poorer districts.

The effects of the migration variables are extremely interesting. In the case of previous individual temporary migration, we observe a substantial negative effect on labor participation for men. This is consistent with the wait-for-the-next-migration effect we hypothesized earlier. Elsewhere has been shown that previous migration experience is a very important determinant of temporary international migration from Albania (Carletto *et al*., 2005), supporting the view of a cyclical/seasonal process. It is therefore more than plausible that many temporary migrants are either waiting for the next episode of seasonal migration, or are planning a more permanent migration, therefore not working while in Albania. This effect does not seem to hold for women.

On the contrary, previous temporary migration to Italy by other household members as well as permanent migration to Italy are associated with a disincentive effect on female labor participation. This may be explained by a number of reasons outlined earlier: an income effect which reduces the marginal value for women of entering the labor market, or a general reallocation of time and tasks at the household level as the time endowment of the household is altered by migration. The fact that only migration to Italy appears significant may suggest the presence of an income effect via migrant remittances, as migrants to Italy tend to remit significantly larger amounts.

*5.2 Occupational choice: multinomial logit (MNL) model*

The results of the occupational choice model are reported in Table 4. Labor activity choice depends on a mix of individual, household and community level characteristics. In our sample, women are much less likely than men to participate in any labor activity. Among activities,

women are least likely to participate in self employment activities, followed by wage employment, then on-farm labor. That is, of all labor activities, women are most likely to be found working on the family farm.

The impact of assets varies across labor activities. Human capital assets are proxied through individual level of education. As expected, for women education has a strong and increasingly positive impact on the probability of being in wage employment as opposed to farming. This reinforces the positive and increasing effect observed in the participation model. The negative relationship between education and on-farm activity for men kicks in at levels of education higher than primary.

Agricultural assets -measured by the size of agricultural landholding- is associated, as expected, with a higher probability of participation in on-farm labor activities, though this decreases with land size. Some evidence of a reverse effect is found for land and age in the female model: for a given amount of land, the older the individual the lower the relative odds she will work in wage activities. Non-agricultural assets, on the other hand, increase the probability of being self-employed compared to working on-farm.

Migration assets, which appear to be largely substitutes, not complements, for labor activities, also affect occupational choice. For both men and women, individual temporary migration leads towards more self-employment, particularly for younger individuals, and for women, this previous migration experience leads to a higher likelihood of working in wage labor as well. In both cases, the relative odds for female participation given previous migration experience are significantly greater then for male participation. This differential effect may not be due only to the individual history of migration per se, but to some unobservable characteristic of the household or individual which is linked to both migration and labor force participation. In the model of female occupational choice, however, we also find evidence that permanent migration to Italy reduces the relative probability of being self-employed, and that this effect increases

with age.

**6. Conclusions**

Farming is still key to the livelihoods of many Albanian households which remain heavily dependent on low-productivity agriculture. An important share of household income – as well as home-produced food consumption – comes from the small farm sector. A majority of Albania's economically active population continues to work in agriculture, despite the decreasing importance of agricultural in the national economy over time. Very few farmer households—less than a third—market production, implying that for the majority of farming households cash income derives from public and private transfers, or from diversified income strategies.

Migration is used as a mechanism to diversify economic activities in the face of risk and obtain liquidity and capital in the presence of credit and insurance market failures. While we are unable to detangle the direction of causality between migration and poverty, access to migration assets appear to play a particularly important role for households with lower levels of human capital.

While low levels of assets limit successful livelihood strategies, the multivariate analysis shows that access to household and individual level assets condition individual labor participation and labor activity choices. We find that agricultural, migration and human capital assets have a differential impact across livelihood choices, and that this impact varies by gender and age. We also find some migration assets to reduce the relative odds of choosing any labor activity. For men the disincentive to labor participation is due to returned migrants likely to be in Albania planning a future migration episode; for women it is linked to an income effect -via remittances- and/or a reallocation of time and occupations at the household level.

Migration assets also appear to have an impact on occupational choice. For both males and females (and more so for the younger ones), previous individual migration experiences make

people more likely to work off-farm, particularly as self-employed. This is consistent with the story of return of temporary migrants being able to start up their own business thanks to the saving accumulated when working abroad. However, labor choice is not the same as investment, and thus further research is warranted to shed light on this issue.

Two areas of policy concern derive from this analysis of household and individual economic strategies in Albania. First, migration is clearly crucial for the economic future of Albania, both in terms of financing economic development, serving as an informal safety net, and in reducing excess labor supply and poverty. The suggestion of a potential disincentive effect on labor effort and participation is however worrying, as it would have implications in terms of missed opportunities for development. More research is needed to shed light on this issue.

Second, agriculture appears to be more of a survival strategy than part of a poverty exit strategy. Agricultural activities are too atomized, and largely subsistence oriented, with the possible exception of the more fertile coastal plains where a greater commercial orientation emerges. Education may play a role in encouraging diversification out of agriculture, and in Albania this means promoting a relatively higher level of education, beyond the high school level.

One implication is that agriculture and migration are not necessarily substitutes. They may be complements, if engaging in some kinds of business at home requires dealing with risk or liquidity constraints in a way that migration can cater for. As the economy grows and modernizes, it is easy to forecast a substantial reduction in the share of agricultural employment in the future. It is also likely that the patterns and roles of migration will keep evolving as the push and pull factors driving migration change -wage differentials with neighboring economies; employment opportunities at home. A better understanding of what this means for household livelihood strategies is crucial for designing policies that are more effective in stimulating growth and reducing poverty and social exclusion.

**Acknowledgements**

We would like to thank Azeta Cungu and Paul Winters for comments on an earlier draft.

**References**

BOSKIN, M.J. (1974): "A Conditional Logit Model of Occupational Choice", The Journal of Political Economy, 82(2): 389-398.

CARLETTO, C., DAVIS, B., STAMPINI, M., TRENTO, S. AND ZEZZA, A. (2004): "Internal mobility and external migration in Albania", ESA Working Paper No. 04-13, Rome, FAO.

CARLETTO, C., DAVIS B. AND M STAMPINI. (2005): "Familiar Faces, Familiar Places: the Role of Family Networks and Previous Experience for Albanian Migrants", ESA Working Paper No. 05-03, Rome, FAO.

LUCAS, R.E.B. (2006): "Migration and Rural Development", Paper prepared for the Conference Beyond Agriculture, January 15-17, FAO, Rome.

MCKENZIE, D. (2005): "Beyond Remittances: The Effects of Migration on Mexican Households", in C. Odzen and M. Schiff (eds.), International Migration, Remittances and the Brain Drain, World Bank, Washington, DC.

MOFFITT, R.A. (1999): "New Developments in Econometric Methods for Labor Market Analysis", in O. Ashenfelter and D. Card (eds.) Handbook of Labor Economics, Volume 3, Elsevier Science.

PENCAVEL, J. (1986): "Labor Supply of Men: A Survey", in O. Ashenfelter and R. Layard (eds.) Handbook of Labor Economics, Volume 1, Elsevier Science.

STARK, O. AND J.E. TAYLOR (1989): "Relative Deprivation and International Migration", Demography, 26(1): 1-14.

VERME, P. (2000): " The choice of the working sector in transition. Income and non-income determinants of participation in Kazakhstan", Economics of Transition, 8(3): 691-673.

WDI (2005): World development indicators online, consulted on 20 July 2005.

WORLD BANK . (2003): "Albania Poverty Assessment". Report No. 26213-AL, Washington, DC.

## Tables and figures

### Table 1. Sources of income and participation rates, by regions

| | | *Sources of income, percentages* | | | | | *Participation in economic activities, shares* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| in percentages | **obs.** | **Farm** | **Wages** | **Self-emp.** | **Remit.** | **Public Transf.** | **Farm** | **Wages** | **Self-emp.** | **Remit.** | **Public Transf.** | **Poverty rate** |
| All | 3,599 | 0.29 | 0.31 | 0.10 | 0.10 | 0.20 | 0.62 | 0.45 | 0.15 | 0.28 | 0.57 | 0.25 |
| **REGION** | *(unw)* | | | | | | | | | | | |
| tirana | 600 | 0.01 | 0.58 | 0.12 | 0.07 | 0.23 | 0.09 | 0.70 | 0.15 | 0.16 | 0.54 | 0.18 |
| coast urban | 480 | 0.06 | 0.45 | 0.14 | 0.12 | 0.23 | 0.36 | 0.62 | 0.20 | 0.35 | 0.53 | 0.20 |
| coast rural | 520 | 0.49 | 0.20 | 0.05 | 0.12 | 0.14 | 0.91 | 0.31 | 0.10 | 0.30 | 0.49 | 0.21 |
| central urban | 479 | 0.04 | 0.39 | 0.16 | 0.10 | 0.31 | 0.16 | 0.58 | 0.23 | 0.32 | 0.64 | 0.19 |
| central rural | 520 | 0.48 | 0.18 | 0.08 | 0.11 | 0.15 | 0.98 | 0.30 | 0.13 | 0.31 | 0.57 | 0.29 |
| mountain urban | 400 | 0.04 | 0.51 | 0.10 | 0.06 | 0.29 | 0.21 | 0.64 | 0.13 | 0.12 | 0.55 | 0.25 |
| mountain rural | 600 | 0.56 | 0.16 | 0.02 | 0.06 | 0.20 | 0.99 | 0.28 | 0.03 | 0.15 | 0.74 | 0.50 |

*Source* : own calculations, 2002 ALSMS

### Table 2. Access to international migration assets, by quintiles and regions.

| | | | **Permanent** | | **Temporary** | |
|---|---|---|---|---|---|---|
| in percentages | | **obs.** *(unw.)* | Greece | Italy & beyond | Greece | Italy & beyond |
| **ALL** | | 3,599 | 13 | 20 | 13 | 5 |
| **QUINTILES** | 1 | 720 | 9 | 11 | 16 | 4 |
| | 2 | 720 | 11 | 16 | 17 | 4 |
| | 3 | 720 | 13 | 19 | 13 | 4 |
| | 4 | 720 | 15 | 26 | 10 | 6 |
| | 5 | 719 | 19 | 27 | 9 | 7 |
| **REGIONS** | tirana | 600 | 6 | 23 | 5 | 3 |
| | coast urban | 480 | 10 | 25 | 8 | 7 |
| | coast rural | 520 | 17 | 25 | 13 | 7 |
| | central urban | 479 | 15 | 20 | 10 | 6 |
| | central rural | 520 | 17 | 17 | 20 | 3 |
| | mountain urban | 400 | 6 | 14 | 11 | 5 |
| | mountain rural | 600 | 12 | 8 | 19 | 6 |

*Source* : own calculations, 2002 ALSMS

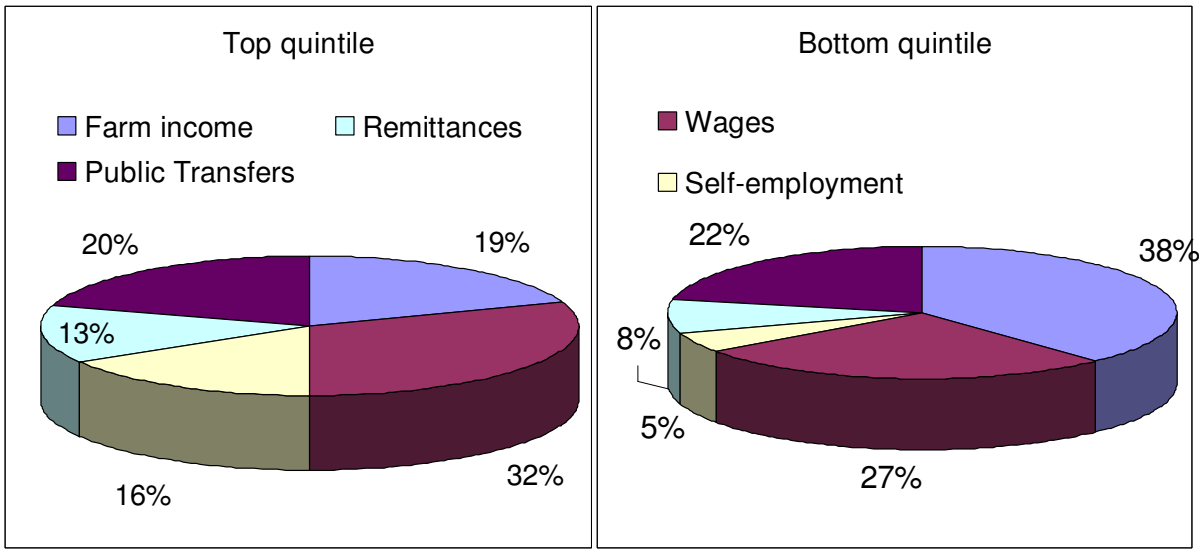
**Table 3. Selected regression results. Clustered probit**

| | | PROBIT on labor market participation | | | |
|---|---|---|---|---|---|
| | | **MALE** | | **FEMALE** | |
| | | Coef. | Rob. *z* | Coef. | Rob. *z* |
| Individual | Age | 0.20 | 13.86 | 0.15 | 13.60 |
| | Age squared | 0.00 | -13.29 | 0.00 | -11.57 |
| | Years of education | 0.13 | 4.53 | 0.02 | 0.94 |
| | Years of education squared | 0.00 | -2.42 | 0.00 | 3.03 |
| | Dummy: Married | 0.68 | 6.72 | 0.08 | 1.19 |
| Household | # of children <6 yrs | -0.05 | -1.00 | -0.07 | -1.97 |
| | Household size | 0.01 | 0.13 | -0.01 | -0.13 |
| | Household size squared | 0.00 | -0.66 | 0.00 | -0.83 |
| | Age of household head | -0.01 | -0.59 | 0.00 | -0.14 |
| | Age of household head squared | 0.00 | 0.48 | 0.00 | 0.33 |
| | Dummy: female headed hh | -0.43 | -2.29 | 0.30 | 2.92 |
| | Dummy: widow/er headed hh | 0.35 | 1.88 | -0.15 | -1.30 |
| | Hh: non-agriculture asset score index | -0.07 | -2.50 | 0.03 | 1.65 |
| | Hh: dummy, hh has a fixed phone line | 0.10 | 1.42 | 0.13 | 2.31 |
| | Hh: size (ha.) of agr land owned | 0.63 | 4.29 | 0.67 | 5.80 |
| | Hh: size (ha.) of agr land owned squared | -0.14 | -2.97 | -0.16 | -4.31 |
| | Household: relative deprivation | -0.03 | -0.48 | 0.23 | 5.46 |
| Area | Community: share of jobs in industry (excluded agr.) | -1.10 | -1.99 | -1.32 | -2.95 |
| | Community: share of jobs in constructions (excluded agr.) | 0.56 | 0.83 | -1.51 | -2.96 |
| | Community: share of jobs in services (excluded agr.) | -0.87 | -2.69 | -1.86 | -6.98 |
| | District: unemployment rate | -0.03 | -6.15 | -0.01 | -3.50 |
| | District: headcount ratio | 0.01 | 1.92 | 0.02 | 4.57 |
| External mig | Individual temp mig to Greece 1997-2001 | -0.54 | -5.37 | 0.00 | -0.03 |
| | Individual temp mig to Italy and other countries 97-01 | -0.79 | -5.86 | -0.23 | -0.96 |
| | Other members temp mig to Greece 1997-2001 | -0.08 | -0.77 | -0.08 | -1.20 |
| | Other members temp mig to Italy and other countries 97-01 | -0.18 | -1.07 | -0.20 | -2.00 |
| | Hh: permanent migration. Number of children in Greece | 0.05 | 1.27 | 0.03 | 0.93 |
| | Hh: permanent migration. Number of children in Italy and other | -0.06 | -1.53 | -0.10 | -3.10 |
| Region | Dummy: costal urban region | 0.11 | 1.03 | 0.02 | 0.23 |
| | Dummy: costal rural region | -0.04 | -0.19 | -0.79 | -4.13 |
| | Dummy: central urban region | 0.23 | 2.16 | 0.29 | 3.20 |
| | Dummy: central rural region | 0.34 | 1.45 | -0.57 | -2.93 |
| | Dummy: mountain urban region | -0.55 | -3.90 | -0.59 | -5.16 |
| | Dummy: mountain rural region | -0.08 | -0.36 | -0.78 | -3.99 |
| | Constant | -2.90 | -5.27 | -2.38 | -5.38 |
| | N. observations | 4,477 | | 4,995 | |
| | Log pseudo-likelihood | -1,499 | | -2,576 | |
| | Chi2 | 1,001 | | 1,048 | |
| | Pseudo-R2 | 0.34 | | 0.21 | |
| | McFadden's Adj R2 | 0.33 | | 0.20 | |
| | McKelvey and Zavoina's R2 | 0.50 | | 0.38 | |

## Table 4. Selected regression results. Clustered multinomial logit

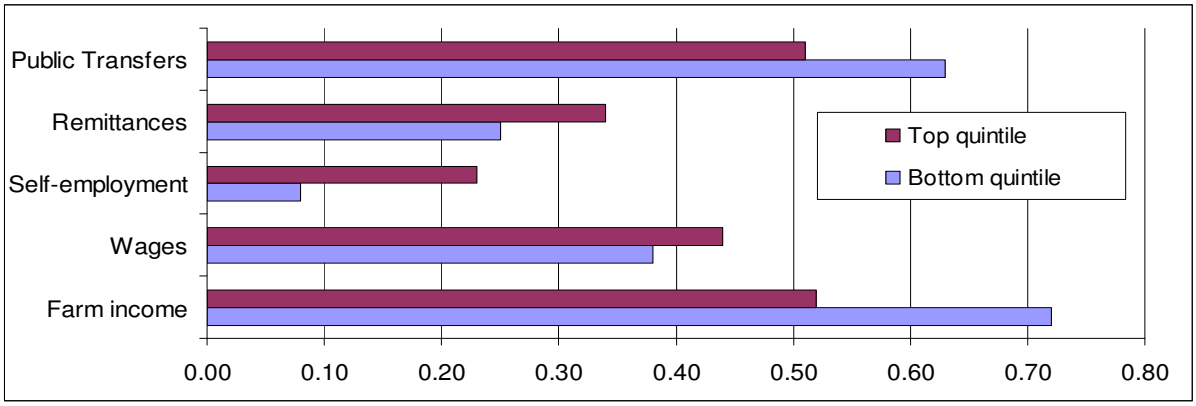
| | | MULTINOMIAL LOGIT | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MALE -AGE INTERACTION- | | | | FEMALE -AGE INTERACTION- | | | |
| | | wage | | self-empl. | | wage | | self-empl. | |
| | | Coef. | Rob. *z* | Coef. | Rob. *z* | Coef. | Rob. *z* | Coef. | Rob. *z* |
| Individual | Age | 0.26 | 5.36 | 0.42 | 6.75 | 0.17 | 2.97 | 0.29 | 2.59 |
| | Age squared | 0.00 | -5.29 | -0.01 | -6.88 | 0.00 | -2.58 | 0.00 | -2.66 |
| | Years of education | -0.12 | -1.33 | 0.01 | 0.06 | -0.35 | -4.16 | -0.18 | -1.32 |
| | Years of education squared | 0.01 | 2.66 | 0.00 | 0.29 | 0.03 | 6.25 | 0.02 | 2.53 |
| | Dummy: Married | 0.57 | 1.84 | 0.08 | 0.23 | -0.87 | -2.85 | -0.35 | -0.88 |
| Household | # of children <6 yrs | -0.26 | -2.63 | -0.07 | -0.54 | 0.09 | 0.57 | 0.01 | 0.02 |
| | Household size | 0.03 | 0.22 | 0.12 | 0.63 | 0.19 | 0.91 | 0.11 | 0.41 |
| | Household size squared | 0.01 | 0.75 | 0.00 | 0.27 | -0.01 | -0.75 | 0.01 | 0.75 |
| | Age of household head | -0.04 | -1.06 | 0.00 | 0.05 | 0.08 | 1.48 | 0.09 | 1.29 |
| | Age of household head squared | 0.00 | 0.70 | 0.00 | -0.31 | 0.00 | -1.26 | 0.00 | -1.40 |
| | Dummy: female headed hh | 0.89 | 1.54 | 0.56 | 0.88 | 0.99 | 2.28 | 0.76 | 1.35 |
| | Dummy: widow/er headed hh | -0.39 | -0.73 | -0.39 | -0.68 | -1.09 | -2.05 | -0.03 | -0.05 |
| | Hh: non-agriculture asset score index | -0.03 | -0.49 | 0.34 | 4.18 | 0.07 | 0.80 | 0.35 | 2.91 |
| | Hh: dummy, hh has a fixed phone line | 0.02 | 0.05 | 0.35 | 0.85 | 0.63 | 1.72 | 0.83 | 2.04 |
| | Hh: size (ha.) of agr land owned | -1.53 | -3.69 | -1.08 | -1.83 | -3.48 | -5.80 | -0.89 | -1.36 |
| | Hh: size (ha.) of agr land owned squared | 0.35 | 4.07 | 0.26 | 2.94 | 0.41 | 3.36 | 0.37 | 3.58 |
| | Hh: size (ha.) of agr land owned*age | -0.01 | -0.79 | 0.00 | -0.38 | 0.03 | 2.78 | -0.01 | -0.88 |
| | Household: relative deprivation | -3.09 | -10.88 | -3.71 | -10.63 | -1.92 | -7.48 | -2.86 | -6.72 |
| Area | Community: share of jobs in industry (excluded agriculture) | 14.78 | 5.33 | 13.43 | 4.54 | 5.14 | 2.30 | 3.55 | 1.26 |
| | Community: share of jobs in constructions (excluded agriculture) | 5.37 | 2.29 | 4.26 | 1.66 | -0.53 | -0.23 | 3.21 | 0.94 |
| | Community: share of jobs in services (excluded agriculture) | 8.12 | 7.57 | 8.61 | 7.14 | 6.07 | 5.84 | 4.72 | 3.16 |
| | District: unemployment rate | 0.01 | 0.79 | -0.02 | -1.19 | 0.03 | 2.35 | -0.01 | -0.29 |
| | District: headcount ratio | 0.02 | 1.42 | 0.02 | 1.04 | -0.04 | -2.47 | -0.07 | -2.94 |
| External mig | Individual temp mig in 1997-2001 | 0.75 | 0.73 | 1.86 | 1.76 | 3.60 | 2.22 | 4.23 | 2.38 |
| | Individual temp mig in 1997-2001*age | -0.04 | -1.36 | -0.07 | -2.21 | -0.09 | -2.83 | -0.09 | -2.28 |
| | Other members temp mig to Greece 1997-2001 | -0.07 | -0.21 | 0.38 | 0.98 | 0.45 | 1.58 | -0.27 | -0.70 |
| | Other members temp mig to Italy and other countries 1997-2001 | 0.20 | 0.48 | 0.26 | 0.53 | -0.14 | -0.33 | -0.28 | -0.54 |
| | Hh: permanent migration. Number of children in Greece | 0.04 | 0.11 | 0.59 | 1.19 | -0.05 | -0.14 | -0.29 | -0.48 |
| | Hh: permanent migration. Number of children in Greece*age | 0.00 | 0.04 | -0.01 | -0.91 | 0.00 | 0.43 | 0.01 | 0.53 |
| | Hh: permanent migration. Number of children in Italy/other | 0.35 | 1.13 | -0.04 | -0.08 | -0.30 | -0.76 | -2.08 | -2.66 |
| | Hh: permanent migration. Number of children in Italy/other*age | 0.00 | -0.61 | 0.01 | 0.55 | 0.01 | 1.51 | 0.04 | 2.58 |
| Region | Dummy: costal urban region | 1.66 | 1.62 | 2.34 | 2.26 | -0.47 | -0.39 | 0.77 | 0.62 |
| | Dummy: costal rural region | 0.97 | 1.02 | 1.30 | 1.27 | -1.86 | -1.48 | -1.31 | -0.89 |
| | Dummy: central urban region | 1.54 | 1.18 | 2.51 | 1.90 | 0.26 | 0.21 | 1.05 | 0.80 |
| | Dummy: central rural region | 0.49 | 0.52 | 1.21 | 1.18 | -2.29 | -1.83 | -1.32 | -0.90 |
| | Dummy: mountain urban region | -1.08 | -0.98 | -0.89 | -0.79 | -0.96 | -0.76 | -0.45 | -0.33 |
| | Dummy: mountain rural region | -0.16 | -0.17 | 0.02 | 0.02 | -2.49 | -1.97 | -1.84 | -1.28 |
| | Constant | -5.51 | -3.46 | -12.19 | -5.35 | -4.13 | -2.13 | -8.02 | -2.73 |
| | N. observations | 3,557 | | | | 3,204 | | | |
| | Log pseudo-likelihood | -1,790 | | | | -935 | | | |
| | Chi2 | 606 | | | | 771 | | | |
| | Pseudo-R2 | 0.48 | | | | 0.66 | | | |
| | McFadden's Adj R2 | 0.46 | | | | 0.63 | | | |

**Figure 1. Income composition, top and bottom quintiles**




*Source*: 2002 ALSMS

**Figure 2. Share of households receiving income from source, top and bottom quintiles**




*Source*: 2002 ALSMS