AN ANALYSIS OF THE LABOR MARKET, INTERNATIONAL MIGRATION AND REMITTANCES DURING TRANSITION: THE CASE OF ALBANIA

by

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A dissertation submitted to the Graduate Faculty in Economics in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

2013

This manuscript has been read and accepted for the Graduate Faculty in Economics in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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Abstract

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Adviser: Professor Wim P. Vijverberg

This dissertation consists of four chapters exploring the transition dynamics of unemployment and migration of Albanian workers as well as the remittances sent by migrant workers to their households in Albania.

The first chapter analyzes the duration of unemployment for unemployed Albanian workers during the time period 2002-2004. Survival and hazards functions of unemployment duration are generated to understand the relationship between the duration of unemployment and personal characteristics and worker occupation. The study finds that more than a decade since the beginning of the transition to a free market economy, many workers still face long unemployment spells. In an effort to help policy-makers design policies that deal with unemployment, within-sample and out-of-sample predictions are generated. Moreover, the models developed here can be replicated with future data to make predictions about future unemployment spells.

The second chapter analyzes the impact of labor market performance on migration decision. It finds no evidence that labor market performance, as measured by the wage rate and the return to unobservable personal traits, affects the migration decision. Such conclusion may be the result of unrealistic assumptions of perfect labor mobility and perfect information implicitly assumed in the model. Moreover, given large wage differentials between Albania and neighboring countries, wage increases in Albania are not sufficient to entice changes in the decision to migrate. Therefore, the migration decision seem to go far beyond the labor market and included deep psychological and emotional factors associated with the long period of isolation under the communist dictatorship.

The third chapter summarizes the theoretical models and predictions regarding the motives for remittances and provides the basis for the empirical work done in the following chapter.

The final paper analyzes motives for migrants' remittances during transition. Specifically, it analyzes whether remittances indicate repayment of the schooling costs, a desire to inherit assets, and/or whether remitters respond to adverse shocks experienced by recipient households. Unlike studies to date, this study uses a Maximum Likelihood specification that jointly analyzes the migration decision and the decision to remit in a contractual setting, while correcting for migrants' self-selection. The study incorporates cultural elements, such as rights and responsibilities associated with being the youngest of siblings, burden-sharing etc. Our results show that highly educated migrants repay their schooling costs after a certain period of time. The evidence that migrants remit in order to maintain favor toward inheritance is weak at best. There is no evidence of any responses to adverse shocks. However, this does not exclude the possibility of altruism. In fact, the evidence of burden-sharing among migrant siblings points in that direction.

DEDICATION

Dedicated to my grandfather:

Bajram Hysa

The communist regime sentenced him 30 years to prison simply for loving his country.

ACKNOWLEDGEMENTS

Understandably, completing this thesis has required hard work and many sacrifices. However, I could not have done it without some generous support for which I am very grateful.

First, I am greatly indebted to my adviser, Professor Wim P. Vijverberg, who not only advised me to address various issues, but also helped me stay upbeat and productive. I would like to thank him and my committee members, Professor Emerita Cordelia Reimers and Associate Professor Sangeeta Pratap for their guidance and comments.

Second, I would like to thank Professor Michael Grossman, who goes out of his way to help everyone at the Graduate Center. Seemingly, helping others is an important "commodity" in his utility function.

Third, special thanks go to the former Executive Officer, Professor Thom Thurston and the current Executive Officer, Professor Merih Uctum for being very helpful during my time in the program.

Fourth, a very special note of gratefulness goes to my wife Entela for all her love and generosity throughout the years. She has sacrificed a great deal in order to see me realize my dream and therefore words cannot fully express my gratitude for her continued support. Honey, we did it! I love you so much!

Fifth, there have been moments when balancing my duties as a graduate student, a husband, and a father has been challenging. However, nothing has been more rewarding than the pleasure of seeing, now my seven-year old son, Enio do well in school and even offer his help as I

conducted research. Enio, you make me very proud. I thank you for being who you are, for being an outstanding student, and for your hugs, even when you interrupted my work.

This section would be incomplete without thanking my brother, Zabit for his sacrifices and support over the years. I'll never forget his support, that allowed me finish my studies in Tirana. After having walked for five days to Greece looking for work, he managed to find a job, work hard, save and financially support me and the rest of our family.

Finally, I would like to thank my mother Lule Hysa and my father Zyri Hysa for their unconditional love, for teaching me to be the same person, regardless of the circumstances and politics. I thank them for their unprecedented sacrifice, for the faith in me and endless support in my journey. Mom! Dad! I know that moments like this one today matter to you more than anything else. You are happy for me and proud of me and you do not need to say it. I love you both eternally with all my heart. Thank you very much.

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Chapter 1

A Survival Analysis of Unemployment Duration of Albanian Workers during 2002-2004

1.1 Introduction

The effects of transition from a command economy to a free market enterprise exposed many structural problems in Albania during the last decade of the 20th century. The severity of such problems required time to address since the major change that was taking place was the transfer of ownership of the means of production, most of which was based on old technology and had become obsolete. This change brought production to a halt and created many social problems which continued for many years and became part of the everyday life in the Albanian household. For instance, the high unemployment rate continued to impact the Albanian economy even during the second decade of transition. Many were faced with long job search periods while others gave up their search and migrated abroad. It should be noted that despite the slight decline

in unemployment over the years, it still remains a major problem and has continuously been a challenge for the authorities during transition.

This study analyzes the time workers spent searching for employment and discusses some of the factors that explain the duration of unemployment spells. The first hypothesis here is that, more than a decade from the beginning of the transition, the unemployed Albanians were still faced with very long periods of searching for employment. The high unemployment rate, which while trending down[1] was still around 15 percent in 2003[2], and with long unemployment spells, as often discussed in the migration literature, are likely to explain to a large extent the migration flows[3] seen during the first and second decade of the transition. The second hypothesis is that women, and those who lack at least some higher education, experience longer unemployment spells. In general, women are more involved in home activities and have less market experience than men. And, the transition is accompanied by a technological improvement in production and as a result, a higher demand for educated workers.

The analysis of unemployment duration is important for several reasons. First, a better understanding of the unemployment situation in Albania will provide a clearer picture of the widespread migration phenomenon during transition. Second, from a policy-making standpoint, understanding the dynamics of the unemployment situation and identifying the categories of workers more prone to long unemployment spells can help crafting policies to assist those groups through training programs and other assistance during their employment search.

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[1] Specifically, the unemployment rate for 2002, 2003, and 2004 was respectively 15.8 percent, 15.0 percent, and 14.4 percent.
[2] INSTAT Albania and the Ministry of Labor and Social Affairs (see Figure A.1, Appendix A).
[3] The International Monetary Fund (IMF, 1997) reported that "… an estimated 15-20 percent of the labor force fled the country, mostly to neighboring Greece and Italy."

This study is organized as follows. First, I provide a summary of the literature on unemployment duration. Second, I summarize the data. Third, I discuss the modeling choices. Fourth, in order to narrow down the field of potential predictors that explain the variations in unemployment duration, I use univariate analysis. I employ a rule of thumb to determine which predictors to keep based on their potential significance in the model. Fifth, I look into a piece-wise and logarithmic baseline *logistic* discrete duration model and their relationships with their *complementary log-log* counterparts which allow for easier interpretation of the results. Then, the issue of unobserved heterogeneity resulting from omitting predictors that might explain the duration of unemployment is discussed. Sixth, the generated hazard rates are used to derive predictions of hazard and survival functions. Seventh, a short versus long-term analysis is performed. Eighth, the conclusions of the empirical results are summarized.

1.2 Literature Review

There have been many studies on duration of unemployment employing non-parametric, semi-parametric and parametric baseline unemployment duration models. Most of them are based on OECD data. They include Kiefer (1988), Lancaster (1990), Van den Berg (1999), and so forth. However novice, studies about other non-OECD countries are being conducted as well. They include Foley (1997), Dendir (2006), Ciucă and Matei (2011) and so forth. In terms of methodology, the studies conducted in this area form two main groups. The first group consists of studies of a descriptive nature not concerned with the potential underlying problems in their estimates. The second group contains studies that have developed a detailed understanding of the possible pitfalls in their approaches, and if not corrected, have at least recognized the potential problems. While there are many studies in this area, a few are chosen to represent each group.

Below is a summary of a few studies from the first group. Dendir (2006) analyzed unemployment duration in Ethiopia and found positive duration dependence. The author also found that age, gender, marital status, and higher education have a significant impact on duration of unemployment. Older, married, and highly educated workers have shorter unemployment durations.

Ciucă and Matei (2011) analyze the unemployment duration of Romanian unemployed workers using a Kaplan Meier estimation approach of the survival functions in unemployment and estimate probabilities of leaving unemployment for various demographics. Their estimation shows that the survival rates in unemployment are explained by age, education and gender. The study makes no attempt to discuss or correct for unobserved heterogeneity.

Grogan and Van den Berg (2001) analyze the duration of unemployment among Russian workers for the period 1992-1993 employing various definitions for the unemployed and find that regardless of the definition used the effects of the predictors on duration are of a very similar magnitude. For instance, they found that females have significantly shorter unemployment spells than males. The authors found that education can significantly shorten the unemployment spells. Similarly, individuals who lived in large urban areas (Moscow and St. Petersburg) faced better prospects of finding employment.

In the second group, the studies that attempt to correct for potential problems that either relate to unfounded assumptions or omitted factors exhibit different levels of sophistication. Two of the main issues relating to a survival analysis framework and captured here are: time dependence and unobserved heterogeneity.

Foley (1997) employs a competing-risks discrete-time waiting model, augmented to incorporate unobserved heterogeneity to analyze unemployment duration of Russian workers and

finds that married women experience significantly longer unemployment spells before exiting to a job compared to married men. Similarly, older individuals experience longer unemployment spells than comparable younger workers. However, highly educated unemployed workers do not have significantly longer unemployment spells than those with secondary or even primary education.

Murphy (1995) discusses a proportional-hazards specification that allows for unobserved heterogeneity by adding a multiplicative random error term to the hazard. The log of the random error term is assumed to have a gamma distribution with a unit mean. The author shows that simple closed-form expressions exist for probabilities that enter the log likelihood function.

Van den Berg and Van Ours (1999) analyze unemployment dynamics among young job seekers in France. They estimate the duration dependence of the exit probability out of unemployment while controlling for unobserved heterogeneity, without imposing parametric functional forms. The authors find that for young women negative duration dependence is present (i.e. a decline of the individual exit probability over the duration of unemployment).

1.3 Data and Methodology

1.3.1 The Data

The analysis of the duration of unemployment will be based on a three-wave annual longitudinal set of data from the Albanian Panel Survey (APS) for the time period 2002 to 2004. Individuals were initially interviewed in 2002 and were asked, among other things, about their employment status, past unemployment spells and other details. The second and third waves (in 2003 and 2004) were based on a smaller representative sample of the entire country. The sample

reduction due to attrition in early waves was addressed by adding new households in the sample. As per the motives for experiencing attrition, the most important of them is lack of physical presence. In fact, about 9 percent of the workers present in wave 1 had migrated[4] prior to later waves. For migrants whose employment status before migration was known, the unemployment spells up to the point of their migration is included in the sample. Characteristics of individuals included in the sample are summarized in Table 1.1.

According to APS 2002-2004, the search for employment in Albania involves long periods of time, which for some individuals exceed three years. It is appropriate to expect that the durations of unemployment spells are affected by various factors; hence it would be interesting to analyze such dynamics for various unemployment spells.

The dependent variable in the analysis is the duration of unemployment and it is measured in months. It measures the length of time from the moment workers become unemployed to the time they find work or to the time the study ends. In order to analyze the duration of unemployment in a survival analysis setting, we initially explore the nature of the time variable (i.e., duration of unemployment) to determine as to whether a continuous or discrete model would be appropriate. The data suggest that the time variable is not continuous in the set of unemployment durations. In other words, there are several gaps in the duration of unemployment data (in the range from 1 to 36) during which no event (i.e., exiting unemployment) occurred. Thus, we rule out the possibility of employing a continuous type of model to analyze the unemployment duration.

[4] The migration status of absentees who had families in Albania was confirmed by the representative family member who answered the survey questions. The family migration was confirmed by local authorities.

Table 1.1 A Summary of the Unemployed and the Potential Predictors

Variable	Description	Category	Percent*
duration	Duration of unemployment in months (Dependent)	-	-
found_job	The worker found a job	Yes	46.92
registered_labor_office	Registered with Employment Office Dummy	Yes	34.99
assistance	Public Assistance Dummy	Yes	36.41
female	Female Dummy	Yes	37.23
married	Marital Status Dummy	Yes	65.13
higher_education	Higher Education Dummy	Yes	22.70
Tirana	Capital City Dummy	Yes	39.48
urban	Urban Areas Dummy	Yes	91.61
region	Region		
		Central	23.76
		Coastal	48.82
		Mountainous	27.42
number_adults	Number of Adults in the Household		
		1	28.37
		2	15.96
		3	22.1
		4	16.67
		5	13.48
		6	2.48
		7	0.95
worked_abroad	Work Experience Abroad	Yes	15.72
age_categ	Age Categories		
		age15to25	29.91
		age26to35	22.34
		age36to45	29.79
		age46to65	17.97
worker_occupation			
		Managers & Professionals	5.79
		Technicians & Clerical Support	8.87
		Services & Skilled Agricultural	30.73
		Craft, Plant & Machinery	37.59
		Elementary Occupations	17.02

* The overall number of observations is 846.

The study covers a period of 36 months (2002-2004) and since there are a few gaps in the duration of unemployment from 1 to 36 (e.g., there were no workers whose search period lasted for a given length), the variable is considered discrete. The measurement of unemployment duration is in integer number of months. Conceptually, duration is a continuous variable but, given the discrete fashion in which it is reported, for estimation purposes, it is more realistic to adopt a discrete model of estimation.

It is important to distinguish between the unemployment duration corresponding to an event (e.g., finding a job) and one corresponding to no event (e.g., the time period under study is exhausted but the worker does not find a job). The latter cases are known as right-censored observations. All unemployment spells beginning prior to the 2002-2004 time period are known as left-censored[5] observations and are excluded from the analysis. The unemployment duration data are comprised of 846 unemployment spells, 449 of which end with an event (e.g., finding a job) and 397 others are right-censored (e.g. the study ends while workers remain unemployed). The overall unemployment duration mean was about 19 months, while the mean unemployment duration for those who landed a job was 15 months. The unemployment duration distribution is summarized in Figure 1.1.

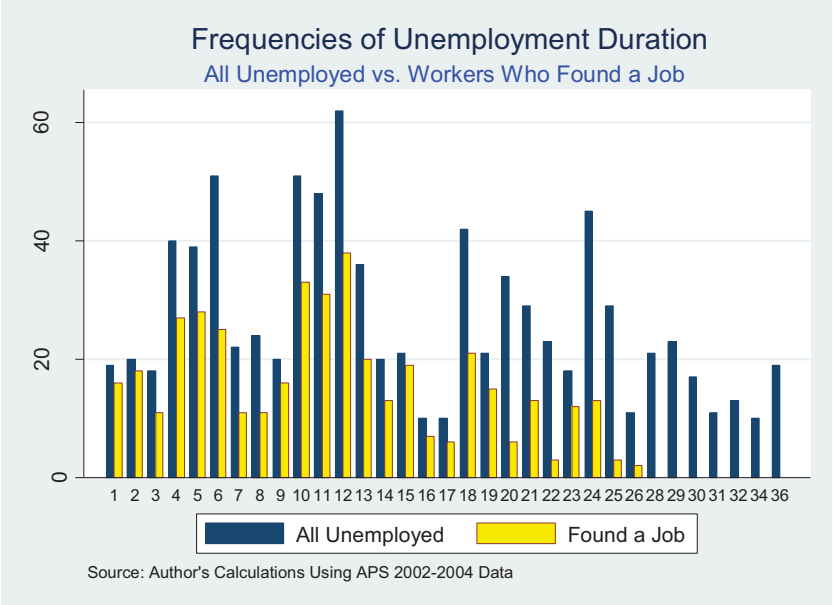
The data set is comprised of 575 individuals who were tracked for at least two waves, during which we either notice a change in their employment status or update the length of unemployment spell accordingly. The total number of valid spells (observations) amounts to 846. The event of interest for a typical individual is the end of an unemployment spell (e.g., finding a job) and in a given time period it is captured by a dummy variable that takes the value of one when an unemployed worker finds a job and zero if the individual continues to remain

[5] We drop the left-censored observations from our analysis due to missing information.

unemployed. Moreover, the observations representing individuals among the latter group, who remained unemployed beyond the point the study ended (known as right-censored observations), have their event of interest value set to zero.

Figure 1.1 Frequencies of Unemployment Duration

All Unemployed vs. Workers Who Found a Job



Explanatory variables employed in the analysis include a gender dummy, a marital status dummy, a higher education dummy, occupation, a capital city dummy, an abroad work experience dummy, the number of adults in the household, various age segments dummies, duration dependence dummies and an unobserved heterogeneity term.

Given that Albania experienced many structural problems during the prolonged transition period, some sectors were impacted more than others. Therefore, I use workers' occupations as one of the predictors of the unemployment duration. Occupations are reported in nine categories (excluding Armed Forces occupations) from top to bottom of the compensation pyramid. The classification follows the International Standard Classification of Occupations (ISCO) which is an International Labour Organization (ILO) classification structure. The occupations are: 1)

Managers, 2) Professionals, 3) Technicians, 4) Clerical Support, 5) Services, 6) Skilled Agricultural, 7) Craft and Plant, 8) Machinery and 9) Elementary Occupations. Including the nine-category occupation variable in our analysis, though desirable, is impractical because in some categories the number of cases in which we observe the occurrence of our event of interest (exiting unemployment) is too small. For example, there were only 7 workers whose occupation was a managerial position, and only 5 of them found work during the period of our analysis.

Table 1.2 Initial and Redefined Occupation Categories[6]

	Occupation	Observations
Initial Categories	Managers	7
	Professionals	42
	Technicians and Associate Professionals	37
	Clerical Support Workers	38
	Services and Sales Workers	147
	Skilled Agricultural, Forestry and Fish	113
	Craft and Related Trade Workers	237
	Plant and Machinery Operators and Assembly	81
	Elementary Occupations	144
Redefined Categories	Managers & Professionals	49
	Technicians & Clerical Support	75
	Services & Skilled Agricultural	260
	Craft, Plant & Machinery	318
	Elementary Occupations	144

[6] The initial classification of occupations is based on the International Standard Classification of Occupations (ISCO) of the International Labour Organization (ILO), which has also been adopted by the Institute of Statistics of Albania (INSTAT). We redefine the occupations categories, the way we do in this analysis, based on the skills needed in each occupation and on the pyramid of wages. In the redefined categories of occupations, the first four are self-explanatory. Elementary occupations are comprised of street vendors and related workers; shoe cleaning and other street-related occupations; domestic and related helpers, cleaners, and launderers; building caretakers, window and related cleaners; messengers, doorkeepers, and related workers; garbage collectors and related laborers.

In order to correct for this potential problem, I have created a five-category occupation variable by merging occupations and creating new categories. The new categories employed in the analysis are: 1) Managers and Professionals, 2) Technicians and Clerical Support, and Services Workers 3) Skilled Agricultural Workers, 4) Craft, Plant and Machinery Workers and 5) Elementary Occupations Workers (see Table 1.2). Occupations as presented in the dataset are labeled *Initial Categories* and the new occupation variable is labeled *Redefined Categories*. While the former provides more information about the occupational structure of the unemployed workers, the latter allows for statistically reliable results.

1.3.2 Methodology

In choosing a model of the unemployment duration several considerations are in order. First, let us recall that the unemployment duration is not a continuous variable[7] and as a result, a discrete model will be employed. Second, there might be many candidate predictors that explain the length of unemployment spells. However, the decision as to what should be included depends on the actual study (e.g., relevant worker personal characteristics, variables describing the economic climate, and other measures of the environment in which the job search takes place). One of the most practical approaches that allow sorting through the potential explanatory categorical variables is the *logrank test* and for continuous variables the *chi-squared test*. They are both employed below.

Once a decision is made regarding the potential viable predictor, the next decision to make is choose a model that best characterizes the nature of duration dependence of exits from

[7] The unemployment durations distribution becomes discrete due to the fact that there are no observations for certain unemployment durations. For instance, there are no observations for 33 and 35 months but there are observations for shorter and longer durations.

unemployment and account for unobserved heterogeneity, given the data limitations[8]. Such a model is a *logistic* model with two different baseline choices: 1) a *piece-wise constant* baseline odds ratio, and 2) a *logarithmic* baseline odds ratio. The first choice is made to allow the data "speak for itself" since non-parametric and semi-parametric baseline models offer more flexibility in that sense. The second choice has to do with the convenience that a parametric baseline model offers in making out-of-sample predictions. In addition, I explore the limiting case of a *logistic* model when the hazard rate becomes very small. This is the case of the *complementary log-log* model which offers the convenience of easy interpretation of its exponentiated coefficients. Once the hazard rates for given characteristics are generated, the hazard and survival functions are derived for both within-sample and out-of-sample cases.

1.4 A *Logistic* Discrete Regression Model of Unemployment Duration

As mentioned above, we estimate both a *logistic* and a *complementary log-log* model. In both the *logistic* and *complementary log-log* models the dependent variable is the variable that keeps track of the event of interest, namely whether a worker finds a job at a given point during the unemployment spell. It takes the value of one when he/she finds employment and zero when he/she remains unemployed. The independent variables in each model include five unemployment duration dummies or the logarithm of the unemployment duration (depending on the specification) to account for duration dependence, which is the dependence of the job search's success on how long one has been out of work. Other predictors of the unemployment

[8] Merging occupation categories, as mentioned above, is dictated by the small sample sizes in some initial occupation categories. Moreover, 846 observations constitute a relatively small data set for this type of analysis.

duration (or whether someone finds a job) are: an age variable (4 categories); an occupation variable; a gender dummy; a marital status dummy; a capital city dummy; an education dummy and an unobserved heterogeneity term that accounts for other potential predictors not included in the model. The *logit* and *complementary log-log* models are detailed in section 1.4.2 and respectively summarized in the equations (1.4) and (1.6) to be estimated. The exponentiated coefficients of the *logit* and *complementary log-log* models measure the odds and the hazard rates respectively of exiting unemployment. The relationship between the odds and the hazard rates is addressed a bit later.

The main purpose here is to find out whether certain unemployed workers (while varying by age, gender, occupation, education achievement, etc.,) are more prone to exiting unemployment than others. Identifying the groups that result more vulnerable during transition and more likely to face prolonged unemployment spells can help policy-makers in establishing training programs in the areas of greater need.

The main hypothesis in this study is that, even during the second decade from the beginning of the transition to a free market economy, unemployment spells remain very long among most unemployed Albanian workers. Other hypotheses are that women and less educated workers experience longer unemployment spells. These hypotheses will be tested by analyzing the exit rates from unemployment and making within-sample and out-of-sample predictions of the exit rates from unemployment. Often, the only unemployment related figure that the Albanian Institute of Statistics (INSTAT) reports is the unemployment rate and the fact that there is a tendency for a slight decline in the unemployment rate overtime is blindsiding authorities and the public about the grave unemployment situation.

In general terms, the model of unemployment duration is stated as follows. Let T be a discrete random variable that takes on the values $t = t_1, t_2 \ldots \infty$ with $t_{j-1} < t_j$. The probability of T taking on a given outcome $T = t_j$ equals

$$f(t_j) = f_j = \Pr\{T = t_j\}.$$

We define the survivor function at time t_j as the probability that the survival time T is at least t_j

$$S(t_j) = S_j = \Pr\{T \geq t_j\} = \sum_{k=j}^{\infty} f_j.$$

Now, let us define the hazard λ at time t_j as the conditional probability of exiting unemployment at that time given that one has survived (e.g. remained unemployed) to that point, so that

$$\lambda(t_j) = \lambda_j = \Pr\{T = t_j | T \geq t_j\} = \frac{f_j}{S_j}. \qquad (1.1)$$

Thus, the survival function at time t_j can be written in terms of the hazard[9] at all prior times $t_1, \ldots . t_{j-1}$, as

$$S_j = (1 - \lambda_1)(1 - \lambda_2) \ldots (1 - \lambda_{j-1}). \qquad (1.2)$$

The expression above means that in order to survive to time t_j one must first survive t_1, then one must survive t_2 given that one survived t_1, and so on, finally surviving t_{j-1} given survival up to that point. We are going to refer to this expression for the survival function as we detail the model below.

The logistic regression model is also known as the *proportional odds model*. The proportional hazards model to discrete time is an extension of the continuous time case proposed

[9] It should be noted that in a continuous time model the hazard is the ratio of the density function to the survival function. However, this is just a conceptual distinction.

by Cox (1972) by working with the conditional odds of exiting unemployment at each time t_j given survival up to that point. The model proposed by Cox was

$$\frac{\lambda(t_j|x_i)}{1-\lambda(t_j|x_i)} = \frac{\lambda_0(t_j)}{1-\lambda_0(t_j)}\exp\{x_i'\beta\},$$

where $\lambda(t_j|x_i)$ is the hazard at time t_j for an individual with covariate values x_i, $\lambda_0(t_j)$ is the baseline hazard at time t_j, and $\exp\{x_i'\beta\}$ is the relative risk associated with covariate values x_i. Taking logs, we obtain a model on the *logit* of the hazard or conditional probability of exiting unemployment at t_j for an individual[10] with a set of characteristics x_i given survival (remaining unemployed) up to that time,

$$\text{logit}\lambda(t_j|x_i) = \alpha_j + x_i'\beta \qquad (1.3)$$

where $\text{logit}\lambda = ln\lambda - \ln(1-\lambda)$ measures the log-odds at a given value λ; $\alpha_j = \text{logit}\lambda_0(t_j)$ is the *logit* of the baseline hazard; and $x_i'\beta$ is the effect of the covariates on the *logit* of the hazard. Note that the model essentially treats time as a discrete factor by introducing one parameter α_j for each possible time of exiting unemployment t_j. Interpretation of the parameters β associated with the other covariates follows along the same lines as in *logistic* regression.

This result is derived along the lines of expressing the probability of surviving to time t_j as a product of the conditional hazards at all previous times. It is important to note that we do not assume that the pseudo-observations are independent and have a Bernoulli or binomial

[10] Getting the data ready for estimating these models requires some work. Prior to estimation, I re-organize the data so that, for each person, there are as many data rows as there are time intervals at risk of the event[10] occurring for each person. So, in the new data set each person contributes T_j rows, where T_j is the number of time periods (e.g. months) *j* was at risk of the event (e.g. ending unemployment). We also assign a unique identifier variable for each subject, plus a spell month identifier variable for each subject. The binary dependent variable (e.g. finding or not finding a job) also needs to be created. If subject *i*'s survival time is censored, the binary dependent variable is equal to zero for all of *i*'s spell months; if subject *i*'s survival time is not censored, the binary dependent variable is equal to zero for all but the last of *i*'s spell months (month 1,..., $T_j - 1$) and equal to one for the last month (month T_j).

distribution. Instead, we simply note that the likelihood function for the discrete-time survival model under non-informative censoring coincides with the binomial likelihood that would be obtained by treating the job-finding events indicators as independent Bernoulli or binomial.

1.4.1 Unobserved Heterogeneity

In a proportional hazard model that ignores unobserved heterogeneity, the proportionate effect for predictor x_i is the fixed amount β_i. The proportionate effect of a given predictor on the hazard rate is no longer constant and independent of survival time. More specifically, the estimate of a positive (negative) β_i derived from the (wrong) model will underestimate (overestimate) the 'true' estimate.[11] A model that ignores unobserved heterogeneity is likely to over-estimate the degree of negative duration dependence in the (true) baseline hazard, and under-estimate the degree of positive duration dependence.

The empirical literature has generally confirmed these results[12]. There has also been discussion[13] of the magnitude of the effects and how 'serious' the biases are in practice. Conclusions have been contingent on the choice of shape of the hazard function that does not account for unobserved heterogeneity and the choice of the distribution for the unobserved heterogeneity itself. The results from several recent papers[14] suggest that if a fully flexible specification for the baseline hazard function is used, then the magnitude of the biases in the non-frailty[15] model (relative to the 'true' model) are diminished.

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[11] Lancaster (1990, chapter 4) proves this in the case of a gamma distribution.
[12] Murphy (1995), Grogan and Van den Berg (2001), Kalwij (2010), and others.
[13] Van den Berg and Van Ours (1999), Grogan and Van den Berg (2001), and others.
[14] Grogan and Van den Berg (2001), Abbring and Van den Berg (2003), and others.
[15] The model in which there is no correction for unobserved heterogeneity included. The terminology is sometimes used in survival analysis in biological sciences.

In the discrete time proportional hazards model, the model specification follows directly from above. The logistic hazard regression model is typically generalized as

$$\text{logit}[\lambda(t)|x, v) = \alpha(t) + \beta' x + v, \qquad (1.4)$$

where the possibility of unobserved factors affecting our estimates is not ruled out. In fact, v represents the unobserved heterogeneity and captures the impact of omitted variables on the hazard rate (the rate at which workers leave unemployment). It is normalized to a mean of 0 and has a variance of σ^2. Mathematically, the unobserved heterogeneity[16] can be incorporated in a *logit* equation.

The models considered here are random intercept models where randomness is characterized using some parametric distribution. A very important assumption in this model is that v is distributed independently of x and t. Estimation of these models requires expressions for survival and density functions that do not condition on the unobserved effects since each v is unobserved. The way to accomplish this is to specify a distribution for v, that is characterized[17] in terms of parameters that can be estimated, and then to derive an unconditional survivor function from this. This is known as 'integrating out' the unobserved effect. Referring to the example above, we therefore denote the survivor function as $S(t, x|\beta, \sigma^2)$ rather than as $S(t, x|\beta, v)$.

Prediction of survivor functions here is more complicated than for the continuous time case, as the survivor function is a product of the complements of the period-specific hazard rates. And,

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[16] In general, for $Y^* = \alpha(t) + x'\beta + v + e$ the *logit* value is equal to one for $Y^* \geq 0$ or $\alpha_j + x'\beta + v + e \geq 0$. By rearranging, we have $e \geq -\alpha_j - x'\beta - v$. The probability that Y is equal to one is: $\Pr[Y = 1|x, t, v] = \Pr[\, e \geq -\alpha(t) - x'\beta - v\,] = \frac{1}{1+e^{-\alpha(t)-x'\beta-v}} = \frac{e^{\alpha(t)+x'\beta+v}}{1+e^{\alpha(t)+x'\beta+v}}$.

[17] The Gamma distribution has been the most popular distribution for the discrete time case since we are dealing with exponentiated coefficients here. In fact, the Gamma distribution can be obtained by summing exponential random variables and it makes sense to assume that what is left out (not accounted for in the analysis) to follow such a distribution.

with unobserved heterogeneity, these hazard rates also depend on an unobserved individual error term. The most common empirical practice has been to calculate survivor functions conditioning on a particular error term value. More specifically, it consists of using the estimates of covariate coefficients from the model that accounts for unobserved heterogeneity but setting the error term equal to its mean.

1.4.2 A Limiting Case: The Complementary *Log-Log Proportional* Hazards Model

Under certain conditions, which we will discuss a bit later, the *logistic* model we just summarized converges to another useful model known as *complimentary log-log (cloglog)* proportional hazards model. The counterpart of equation (1.3) for the *cloglog* model is

$$S(t_j|x_i) = S_0(t_j)^{\exp\{x_i'\beta\}}$$

Replacing in the equation above the expression from equation (1.2), we get

$$1 - \lambda(t_j|x_i) = [1 - \lambda_0(t_j)]^{\exp\{x_i'\beta\}},$$

which allows us to solve for the hazard for individual *i* surviving (e.g. remaining unemployed) up to time point t_j

$$\lambda(t_j|x_i) = 1 - [1 - \lambda_0(t_j)]^{\exp\{x_i'\beta\}}$$

$$\log\left[-\log\left(1 - \lambda(t_j|x_i)\right)\right] = \alpha_j + x_i'\beta \qquad (1.5)$$

where

$$\alpha_j = \log(-\log[1 - \lambda_0(t_j)])$$

Similarly, the *cloglog* model that allows for an unobserved heterogeneity[18] is written as

$$\text{cloglog}[\lambda(t)|x, v) = \alpha(t) + x'\beta + v. \qquad (1.6)$$

[18] Similarly to footnote 12, we express the *cloglog* value for $Y = 1$. The error term u here replaces e in equation (1.4).

The *cloglog* model produces coefficients that are easier to interpret than their counterparts in a *logistic* model. In particular, the *cloglog* model can be interpreted as the discrete time model corresponding to an underlying continuous time proportional hazards model. In contrast, the *logistic* model is not a proportional hazard model, although it approximates one quite closely. More generally, the logistic model can be interpreted as a proportional odds model however.

1.5 Preliminaries - Univariate Analysis

Prior to working on modeling, I conduct some univariate analyses. A convenient and revealing way to do this in a survival analysis setting is to explore the Kaplan-Meier curves for all the categorical predictors. Such predictors in this study are: the worker's occupation, the gender dummy, the dummy for married individuals, the higher education dummy, a dummy capturing whether the unemployed collect public assistance, a dummy indicating whether an unemployed worker is registered with the labor office, a capital city dummy, three regional dummies, and an urban area dummy. Such preliminary work will allow us to understand the shape of the survival function for each group. Specifically, we wish to find out whether the survival functions of various groups are approximately parallel, which is a condition needed for later modeling.

Another important task here is to conduct tests of equality across strata to explore whether or not to include the predictor in the final model. Depending on the nature of the potential predictor at hand, there will be two types of tests needed. For the categorical variables mentioned above we will use the log-rank test of equality across strata. This is a non-parametric test. For the

continuous variables we will use a semi-parametric model based on a univariate Cox proportional hazard regression.

The decision as to whether we will consider including a predictor in the model is based on a simple rule of thumb. If the test has a p-value of 0.2 or less, the predictor is kept for further consideration. Otherwise, the variable is dropped from the analysis, indicating that it is highly unlikely that it will contribute to the model. This process of elimination is important in order to narrow down the field of potential predictors since all the predictors in the data set are variables that could be relevant to the model.

1.5.1 The Log Rank Tests

A log-rank test is based on comparing estimates of the hazard functions of two or more groups (categories) of a categorical variable at each observed event time (e.g. duration of unemployment until one finds a job). In this case the hazard functions would reflect the exit rates from unemployment for the unemployed workers. The test is constructed by computing the observed and expected number of events in one of the groups (categories), let's say gender categories (male and female), at each observed event time and then adding these to obtain an overall summary across all time points (in this case 1 to 36 months) where there is an event (one finds work). In deciding whether two or more categories vary significantly with respect to the occurrence of an event, a rule of thumb for the p-value resulting from the test is established. In some cases, prior theoretical and empirical insight might be sufficient reasons to decide and keep a variable in the analysis, despite the fact that the log-rank test may suggest otherwise. However,

other considerations related to the size and the quality of the dataset might play a role in making such decisions.

In order to better understand the relationships among various categories for the following categorical variables, I begin this section with an overall survival function for the unemployment duration data (see Figure 1.2). The graph indicates that the survival function does not trend downward very quickly, implying long overall unemployment spells.

The log-rank test indicates that the ***age_categ*** variable has a p-value of 0.05 and it will be included in the analysis (Figure A.2, Appendix A). An alternative approach discussed below yields the same result.

The occupation data collected during the survey consists of nine occupations. As previously mentioned, since the number of workers falling into some of these categories is very small, we reconstruct the occupation variable (***worker_occupation***) into five occupational categories. The log-rank test of equality across strata for the occupation variable has a p-value of 0.05, thus it will be included in the model. From the graph (Figure A.3, Appendix A) we see that the Kaplan-Meyer survival functions for various occupations are very similar to one another. The *logrank test* results for occupation and other predictors are summarized in Table 1.3. Recall that the rule of thumb used to determine whether a predictor is included in the analysis is a p-value less than 0.2. Depending on the number of candidate predictors this criterion can be adjusted accordingly to reflect how selective we want to be on choosing our unemployment duration potential predictors.

The log-rank test of equality for the ***female*** dummy has a p-value of 0.08, thus it will be included in the model. From the graph (Figure A.4, Appendix A) we see that the survival

function for males is parallel to the one for females and they form a considerable gap for the most part.

Figure 1.2 Kaplan-Meier Survival Estimates of Unemployment Duration

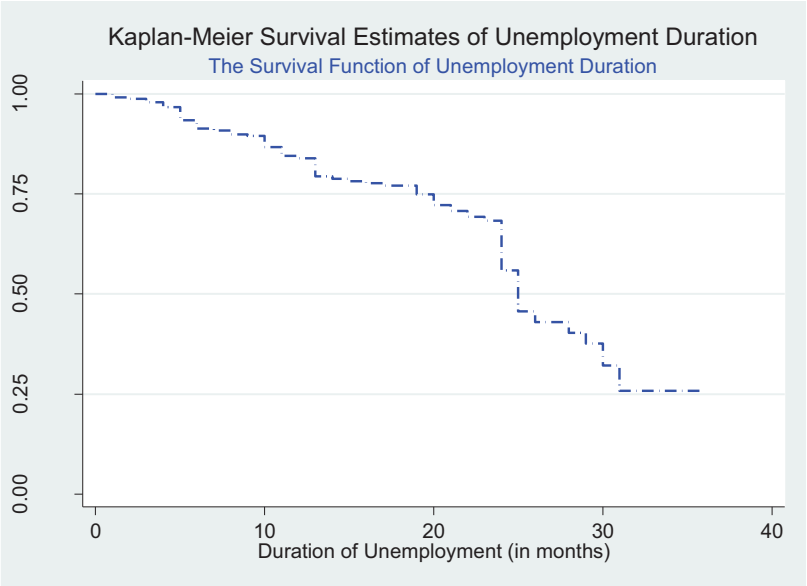


Table 1.3 Log-Rank Tests for Equality of Survival Functions

Nr.	Variable	Description	p-Value	Will it be included in the model?
1	***assistance***	Public Assistance Dummy	0.70	No
2	***urban***	Urban Area Dummy	0.29	No
3	***female***	Gender Dummy	0.08	Yes
4	***Tirana***	Capital City Dummy	0.11	Yes
5	***married***	Married Individuals Dummy	0.11	Yes
6	***higher_education***	Higher Education Dummy	0.00	Yes
7	***registered_labor_office***	Registered with the Labor Office	0.43	No
8	***region***	Central, Coastal, Mountainous	0.52	No
9	***worker_occupation***	Worker's Occupation	0.05	Yes
10	***age_categ***	Age Category (4 categories)	0.05	Yes
11	***number_adults***	Number of Adults	0.07	Yes
12	***worked_abroad***	Work Experience Abroad	0.18	Yes

The log-rank test of equality across strata for the public assistance dummy has a p-value of 0.70, thus it will be excluded from the final model. From the graph (Figure A.5, Appendix A) we see that the survival function for recipients and non-recipients overlap for the most part. The log-rank test of equality across strata for the unemployment office registration status dummy has a p-value of 0.43, thus it will be excluded from the final model. From the graph (Figure A.6, Appendix A) we see that the survival function for the registered and non-registered unemployed move together for the most part but maintaining a gap. It should be noted here that the majority of the unemployed in Albania during 2002-2004 indicated that they found work through friends or relatives. However, given the importance of the employment office as an institution, one would think that workers registered with the employment office would have better chances at finding a job. The test shows that the registered unemployed did not have significant better chances in finding work than those who were not registered with the labor office.

The log-rank test of equality for the ***urban*** dummy has a p-value of 0.29, thus it will also be excluded from the final model. From the graph (Figure A.7, Appendix A) we see that the survival function for urban and rural areas overlap for the most part. The log-rank test of equality for the ***region*** dummy has a p-value of 0.52 thus it will also be excluded (Figure A.8, Appendix A). The log-rank test of equality for the capital city ***Tirana*** dummy has a p-value of 0.11, thus it will be included in the model. From the graph (Figure A.9, Appendix A) we see that the survival function for the capital city and other areas move very closely together in the middle portion of the graph (in between 12 to 24 months of unemployment) but maintain a gap in others. The log-rank test of equality across strata for this predictor has a p-value less than our chosen rule of thumb of 0.2.

The log-rank test of equality for the ***married*** workers dummy has a p-value of 0.11, thus it will be included in the model. From the graph (Figure A.10, Appendix A) we see that the survival function for married and other workers maintain a gap along the unemployment spell.

The log-rank test of equality for the ***higher_education*** dummy has a p-value of 0.00, thus it will be included in the model. From the graph (Figure A.11, Appendix A) we see that the survival function for higher education achievers and others move together by maintaining a large gap.

The log-rank test of equality for the ***number_adults*** dummy has a p-value of 0.07. From the graph (Figure A.12, Appendix A) we see that the survival functions for unemployed in households in which the number of adults varies from 1 to 7 vary as well. Since, if used, this variable will be treated as continuous, I perform a chi-squared test below prior to deciding whether to include it in the analysis.

The log-rank test of equality for the ***worked_abroad*** dummy has a p-value of 0.18, thus it will be included in the model. From the graph (Figure A.13, Appendix A) we see that the survival functions for the two groups form a gap in some portions of the unemployment duration.

1.5.2 A Chi-Squared Test

The Chi-Square test is employed to test the difference between an actual sample and another hypothetical or previously established distribution which may be expected due to chance or probability. The Chi-Square test can also be used to test differences between two or more actual samples. It is an alternative to the log-rank test mentioned above when the variable is not categorical but continuous. I test two predictors using this test: the age variable and the variable tracking the number of adults in the household.

The first predictor to be considered in this exploratory analysis is the worker's age as a continuous variable. This variable takes values from 15 to 61. To analyze the age variable, we consider the Cox proportional hazard model. Unfortunately, it is not possible to produce a plot as we did above. Instead, in Table 1.4, I report the Chi-squared test for ***age*** which has a p-value of 0.66. Thus, ***age*** (as a continuous variable) is not a potential candidate for the final model since the p-value is greater than our cut-off value of 0.2. This is surprising since the ***age_categ*** variable did pass the log rank test and as mentioned in the previous section. This categorical age variable, unlike the continuous age variable, offers the potential advantage of capturing nonlinear age effects in explaining the duration of unemployment.

The second predictor tested is the number of adults in the household. The p-value resulting from the chi-squared test is 0.11 and it will be included in the model.

Table 1.4 Chi-Squared Tests

Nr.	Variable	Description	p-Value	Will it be included in the model?
1	***age***	Worker's age	0.66	No
2	***number_adults***	Number of adults in the household	0.11	Yes

1.5.3 Selected Predictors

Based on the above univariate analysis, the preliminary model of the survival analysis of unemployment duration will initially include worker's age (in age segments), occupation, capital city dummy, the higher education dummy, the dummy for married workers, the gender dummy, a

dummy for work experience abroad and the variable that captures the number of adults in the household.

1.6 Estimation of the Determinants of Unemployment Duration

I initially estimate two models based on two different specifications of the duration dependence, a *piece-wise odds baseline* model and a *logarithmic odds baseline* model[19]. The non-parametric *piece-wise baseline* model allows for within-the-sample predictions of the hazard and survival[20] functions. However, in order to make out-of-sample predictions a parametric baseline model is needed. For a non-parametric baseline, we need to create duration-interval-specific dummy variables, one for each spell month at risk. The maximum survival time in our data set is 36, so we need 36 dummy variables. However, instead of using 36 dummies to make the analysis less tedious, I generate five dummies reflecting the five constant baseline odds (hazards), four of them quarterly dummies for the first year and the last one capturing durations beyond twelve months. They are captured by α_j in equation (1.4) and (1.6) and are denoted as follows: $\alpha_j = \alpha_{1-3}$ for t = 1, 2, and 3, $\alpha_j = \alpha_{4-6}$ for t = 4, 5, and 6, $\alpha_j = \alpha_{7-9}$ for t = 7, 8, and 9, $\alpha_j = \alpha_{10-12}$ for t = 10, 11, and 12, and $\alpha_j = \alpha_{13-36}$ for t = 13, …, 36.

I also estimate a *logarithmic odds baseline* model and compare the estimates with the *piece-wise baseline* model. Based on the preliminary analysis of the data, a *logarithmic odds* model is

[19] The decisions to employ these models and select the meaningful and potentially viable explanatory variables (predictors) are based on preliminary analysis of the data. Specifically, the preliminary profiles of the survival functions are revealed in the Kaplan-Meyer Survival Estimates. The viability of predictors is decided by conducting *logrank* tests for each predictor. All this preliminary work is exhibited in Appendix A.

[20] "Hazard and survival" refer here to likelihood of finding a job and remaining unemployed, respectively.

the closest parametric baseline fit to the piece-wise baseline model. If the predictors in both regressions are reasonably close to each other, I use the parametric baseline model estimates to make out-of-sample predictions about the hazard and survival functions. If the estimated coefficients are far apart, I limit the predictions to the within-the-sample predictions.

The survival estimates (Figure A.2 to A.13) indicate that the changes from one duration length to the next are relatively smooth. The only exceptions to this are the 12, 24 and the 36 months points of unemployment spells. There is a disproportionally higher frequency of unemployment spells at 12, 24, and 36 months than the rest of the spells. A possible explanation for this distribution is the fact that respondents might have reported rounded and approximate numbers. For instance, for someone who has been unemployed for 23 months, it is possible that, though not accurate, a possible response to the unemployment spell question might have been 2 years. This argument becomes more plausible when considering the actual unemployment statistics issued by the Albanian Institute of Statistics (INSTAT) for the period under study here. According to INSTAT, about 90 percent of the unemployed during 2002-2004 were long-term unemployed and it is logical to think that longer spells might be associated with less accuracy in reporting those spells.

1.6.1 Piece-Wise Baseline vs. Logarithmic Baseline Logistic Model Estimation

The piece-wise baseline regression results for the *logistic* model are presented in Table 1.5. Unemployed workers with at least some higher education were more likely to find a job in a given month than unemployed workers without any higher education by an odds ratio of 2.551. This ratio suggests that the odds of finding a job are about two and a half times higher for

workers who have at least some higher education than everyone else. Married unemployed workers were more likely to land a job that their unmarried counterparts by an odds ratio of 1.568.

Unemployed workers from the capital city Tirana were more likely to find a job than their counterparts outside Tirana by an odds ratio of 1.331. The Female dummy has an odds ratio of 0.514 indicating that women are less likely to find jobs than men. Services and Skilled Agricultural unemployed workers were more likely to exit unemployment than Managers and Professionals (the reference category) by an odds ratio of 2.248 while Craft, Plant and Machinery workers had an odds ratio of 1.941. Workers of all age groups (as compared to 15 to 25 year old workers) were less likely to find a job, although not all odd ratios were significant. The effect of the variables that reflect the work experience abroad and the number of adults in the household is also not significant. Finally, the dummies for all time pieces (duration segments) are all significant, supporting a duration dependence of the exits from unemployment. Overall, the results for piece-wise baseline dummies indicate a tendency for increasing odds ratio with longer durations. However, for whatever reasons, the segment 6-9 months, and beyond 12 months do not follow this rule but overall there is a mild upward trend of the odds ratios. The estimated coefficient of the heterogeneity variance is insignificant.

The logarithmic baseline regression results for the *logistic* model[21] are also presented in Table 1.4. Unemployed workers with at least some higher education were more likely find a job in a given month than the unemployed workers without any higher education by an odds ratio of 2.577. Married unemployed workers were more likely to land a job that their unmarried counterparts by an odds ratio of 1.544. Unemployed workers from the capital city Tirana were

[21] The odds ratio is $[\lambda_1/(1-\lambda_1)]/[\lambda_0/(1-\lambda_0)]$ and its interpretation is explored in the next page.

more likely to find a job than their counterparts outside Tirana by an odds ratio of 1.327. The Female dummy has an odds ratio of 0.501 indicating that women are less likely to find jobs than men. Services and Skilled Agricultural unemployed workers were more likely to exit unemployment than Managers and Professionals (the reference category) by an odds ratio of 2.212 while the odds ratio for Craft, Plant and Machinery workers was 1.880. As in the piece-wise case, the effect of the variables that reflect the work experience abroad and the number of adults in the household is also not significant. Workers of all age groups (as compared to 15 to 25 year old workers) were less likely to find a job, although not all odds ratios were significant. The odds ratio for the logarithm of duration is 1.194, indicating a slight upward-sloping trend of the hazard over time and confirming a duration dependence of exits from unemployment. The estimated coefficient of the heterogeneity variance, as in the piece-wise baseline case is again insignificant.

It is easy to notice that, despite the variation in time specifications, the piece-wise and the logarithmic baseline models provide very close estimates for age, the higher education dummy, marital status dummy, capital city dummy, female dummy and occupations. Moreover, based on log likelihood tests both specifications indicate negligible unobserved heterogeneity since the hypothesis that *rho* is zero cannot be rejected in both cases.

I mentioned earlier that, under certain conditions, the *logistic* regression model of unemployment duration yields the same results as the *complementary log-log* model. This happens when the hazards take very small values. In the *logistic* case, the ratios of the hazard rates refer to the ratios of form $[\lambda_1/(1-\lambda_1)]/[\lambda_0/(1-\lambda_0)]$ for the one unit change in an explanatory variable from zero to one but they represent odds ratios and not hazard ratios. Again, unlike the *complementary log-log* model where the exponentiated coefficients represent hazard ratios, here

the exponentiated coefficients represent odds ratios of hazard rates. The odds ratios are a bit more difficult to interpret. However, the task at hand is simplified a great deal when on the limit, as the hazard goes toward zero, the odds ratio tends to the hazard ratio λ_1/λ_0, which is the hazard ratio in the *complementary log-log* specification. I report the results for both the *logistic* and the *complementary log-log* regression model and should at least be able to draw a few conclusions about how the results from the two models compare. The results for the *cloglog* model are presented in Table 1.6.

There are two sets of results to compare here. First, remaining in the category of logistic estimation, we compared above the results of the *piece-wise* and *logarithmic* baseline models (Table 1.4). Second, we compare the results between the *logit* and complementary *cloglog* approaches, keeping the baseline unchanged (compare Tables 1.5 and 1.6).

I begin here with the first comparison. Such comparison provides more information on the validity of out-of-sample predictions for the hazards and survival functions. The estimated odds ratios for all predictors are very similar for both approaches. According to the results, having at least some higher education, being married, residing in the capital city Tirana, being a services, skilled agricultural, or a craft, plant and machinery worker (as compared to managers and professionals) increase the odds of finding employment and end the unemployment spell. On the contrary, being a female, being 26 to 36 or 46 to 65 year old (as compared to 15 to 25 year old workers) lowers the odds of finding employment. The same things can be said about the coefficients estimated using the *cloglog* approach (see Table 1.6), except for the different interpretation of the coefficients, which in this case represent hazard ratios.

Table 1.5 Logistic Regression Estimates

(Piece-Wise Constant[22] vs. Logarithmic[23] Odds Baseline)

Variables	Piece-Wise Baseline		Logarithmic Baseline	
	Odds Ratio	s. e.	Odds Ratio	s. e.
Higher education dummy	2.551*	(0.376)	2.577*	(0.379)
Marital status dummy	1.568*	(0.260)	1.544*	(0.255)
Capital city Tirana dummy	1.331*	(0.133)	1.327*	(0.132)
Female dummy	0.514*	(0.061)	0.501*	(0.059)
Occupation (Managers & Professionals used as reference category)				
Technicians & Clerical Support	0.837	(0.223)	0.814	(0.217)
Services & Skilled Agricultural	2.248*	(0.563)	2.212*	(0.552)
Craft, Plant & Machinery	1.941*	(0.452)	1.880*	(0.436)
Elementary Occupations	1.261	(0.338)	1.223	(0.327)
Aged 26 to 35 *(15 to 25 is used as reference)*	0.721*	(0.128)	0.692*	(0.122)
Aged 36 to 45	0.793	(0.153)	0.761	(0.146)
Aged 46 to 65	0.691*	(0.139)	0.666*	(0.134)
Number of adults in the household	0.952	(0.038)	0.950	(0.038)
Abroad work experience dummy	1.073	(0.147)	1.074	(0.147)
Duration Dependence Segments				
One to three months	0.008*	(0.003)	n.a.	n.a.
Three to six months	0.016*	(0.007)	n.a.	n.a.
Six to nine months	0.008*	(0.004)	n.a.	n.a.
Nine to twelve months	0.020*	(0.012)	n.a.	n.a.
Beyond twelve months	0.012*	(0.005)	n.a.	n.a.
Log of duration	n.a.	n.a.	1.194*	(0.065)
Unobserved Heterogeneity St. Dev.	0.002	(0.013)	0.026	(0.135)
rho	1.85E-06	(0.000)	2.E-04	(0.002)
Log likelihood	-1960.199		-1989.996	
Number of observations	846		846	

* significant at 5%; s.e. are robust standard errors.

[22] No intercept term is included in this model.

[23] The logarithmic baseline model includes an intercept term which is suppressed when the regression is run with exponentiated coefficients.

Table 1.6 Proportional Hazards *(cloglog)* Regression Estimates

(Piece-Wise Constant[24] vs. Logarithmic[25] Hazards Baseline)

Variables	Piece-Wise Baseline		Logarithmic Baseline	
	Hazard Ratio	s. e.	Hazard Ratio	s. e.
Higher education dummy	2.501*	(0.357)	2.537*	(0.466)
Marital status dummy	1.558*	(0.255)	1.534*	(0.261)
Capital city Tirana dummy	1.321*	(0.129)	1.322*	(0.136)
Female dummy	0.517*	(0.060)	0.506*	(0.068)
Occupation (Managers & Professionals used as reference category)				
Technicians & Clerical Support	0.835	(0.218)	0.814	(0.216)
Services & Skilled Agricultural	2.210*	(0.539)	2.180*	(0.617)
Craft, Plant & Machinery	1.900*	(0.430)	1.854*	(0.491)
Elementary Occupations	1.249	(0.327)	1.212	(0.333)
Aged 26 to 35 *(15 to 25 is used as reference)*	0.722*	(0.126)	0.695*	(0.123)
Aged 36 to 45	0.796	(0.151)	0.764	(0.144)
Aged 46 to 65	0.696*	(0.138)	0.670*	(0.135)
Number of adults in the household	0.953	(0.037)	0.951	(0.038)
Abroad work experience dummy	1.068	(0.143)	1.071	(0.147)
Duration Dependence Segments				
One to three months	0.008*	(0.003)	n.a.	n.a.
Three to six months	0.016*	(0.007)	n.a.	n.a.
Six to nine months	0.009*	(0.004)	n.a.	n.a.
Nine to twelve months	0.020*	(0.012)	n.a.	n.a.
Beyond twelve months	0.012*	(0.005)	n.a.	n.a.
Log of duration	n.a.	n.a.	1.195*	(0.109)
Unobserved Heterogeneity St. Dev.	0.002	(0.015)	0.106	(0.946)
rho	4.29E-06	(0.000)	7.E-03	(1.E-01)
Log likelihood	-1959.680		-1989.9824	
Number of observations	846		846	

* significant at 5% ; s.e. are robust standard errors.

The results for the piece-wise baseline regression for the *cloglog* model are very similar (see Table 1.6). The logarithmic baseline regression results for the *clog-log* model are also very

[24] No intercept term is included in this model.

[25] The logarithmic baseline model includes an intercept term which is suppressed when the regression is run with exponentiated coefficients.

similar to the *logistic* case (Table 1.5). However, now the coefficients represent hazard ratios rather than odds ratios. The former is a measure of instantaneous risk and the latter is a measure of a relative cumulative risk.

In the *cloglog* estimates, unemployed workers with at least some higher education were more likely to exit unemployment than the unemployed workers without any higher education by a hazard ratio of 2.501. The direction of the impact of education on job search is the same and the magnitude of the effect is very similar to the *logit* case. Married unemployed workers were more likely to land a job than their unmarried counterparts by a hazard ratio of 1.588 or about 59%. Unemployed workers from the capital city Tirana were more likely to find a job than their counterparts outside Tirana by a hazard ratio of 1.321 or 32%. The female dummy has a hazard ratio of 0.517 or a probability of exiting unemployment about 48% lower than male workers, indicating again that women are less likely to find jobs than men[26]. Services and Skilled Agricultural unemployed workers were more likely to exit unemployment than Managers and Professionals (the reference category) by a hazard ratio of 2.210 while the hazard ratio for Craft, Plant and Machinery workers was 1.900. Workers of all age groups (as compared to 15 to 25 year old workers) were less likely to find a job, although not all hazard ratios were significant. As in the *logistic* model specification, the effect of the variables that reflect the work experience abroad and the number of adults in the household on the unemployment duration is again not significant. The hazard ratio for the logarithm of duration is 1.195, indicating a slight upward-sloping trend of the hazard over time. It means that there is positive duration dependence but it declines with longer unemployment durations.

[26] In some studies, the gender and the marital status are combined. Marcassa (2011) finds that married women experience longer spells of unemployment than married men.

Note again that, despite the variation of the baseline specification, the piece-wise and the logarithmic baseline models provide very close estimates for age, the higher education dummy, marital status dummy, capital city dummy, female dummy and occupations. This is sufficient for linking the within-sample and out-of-sample predictions. More specifically, since individual predictions are done on individual basis and we have seen in our estimates that the duration dependence impacts one's probability of leaving unemployment way less than his/her personal traits, the link between the piece-wise baseline and logarithmic baseline yields reasonable predictions. Thus, the hazard rates generated from the within-sample predictions would yield great out-of-sample predictions.

Second, as indicated above, we compare the results between the *logit* and complementary *cloglog* approaches, keeping the baseline unchanged (compare Table 1.5 and Table 1.6). In other words, we compare the *logit* and *complementary cloglog* results for the *piece-wise* baseline and then compare the *logit* and *complementary cloglog* results for the *logarithmic* baseline. Surprisingly, again the results are very similar for both the *piece-wise* and *logarithmic* comparisons. The results suggest that the non-parametric *piece-wise* baseline hazard and the parametric *logarithmic* baseline hazard models can serve as substitutes in fitting the data set under analysis.

1.6.2 Unobserved Heterogeneity

Based on log likelihood tests both specifications indicate negligible unobserved heterogeneity. The unobserved heterogeneity is measured by the correlation coefficient *rho*, which estimates the importance of unobserved factors in the occurrence of the event of interest.

[27] The hypothesis that *rho* is zero cannot be rejected in both cases. Following the inclusion of the unobserved heterogeneity term into our specifications, another indication of whether the unobserved heterogeneity is present, in addition to the standard deviation of the heterogeneity variance term, is a robustness check. The reported *rho* in each regression is the ratio of the heterogeneity variance to one plus the heterogeneity variance. So, if the hypothesis that *rho* is zero cannot be rejected, the unobserved heterogeneity is unimportant. Our results indicate that the likelihood ratio test suggests statistically insignificant unobserved heterogeneity in each model and specification.

1.7 Predictions of the hazards and survival functions

We generate in this section within-sample and out-of-sample predictions for the hazard and survival functions. The within-sample predictions are based on the actual sample of data, whereas the out-of sample predictions contemplate a larger universe of individuals beyond our sample.

1.7.1 Within-Sample Predictions of Hazard and Survival Functions

I turn now to the derivation of the hazard and survivor functions for persons with particular covariate combinations. Initially, I generate the within-sample predictions. Let us recall that the data are already in person-month format, so we have covariate combinations and survival times in the data

[27] Generally, in a logistic regression the effect of an unobserved variable depends on the values of the observed variables (e.g., education, gender, etc.) even if the unobserved and observed variables themselves are uncorrelated. Consequently, the proportion of successes and failures (e.g., remaining unemployment or not) at different values of education, gender, etc., are wrong. More specifically, there are too many successes (e.g., remaining unemployed) when the observed variables predict a low probability of success, and there are too few successes when the observed variables predict a high probability of success. As a result, the effects of the observed variables are underestimated if unobserved factors are ignored.

set. If the predicted hazard is denoted by h, the formula used to calculate the predicted *cloglog hazard* for each person i and spell month t is

$$h_i(t) = 1 - \exp(-\exp[z_i(t)])$$

where, $z(t) = \mathrm{c}(t) + \beta' x_i$ and $c(t) = (q-1)ln(t)$ have been replaced by their estimated values. The constant q is included to give the baseline a more general form. The value of $(q-1)$ is estimated in the regression and $z_i(t)$ is the value of predicted quasi (unexponentiated) hazard for given characteristics. In our case, the value of $(q-1)$ is equal to one and the baseline is expressed as $c(t) = ln(t)$. The predictions by education level of the hazard and survival functions, assuming 45 year-old individuals and other predictors set equal to their mean, are respectively found in Figures 1.4 to 1.7. In these figures, the predictions for workers with at least some higher education phase out and after twelve months only predictions for workers without any higher education are generated. This is because the predictions reflect the characteristics of the unemployed workers in our sample. Moreover, given their other characteristics, the prediction is that highly educated workers are likely to find employment by that time. Similar prediction exercises can be performed by marital status, gender and capital city dummy and so forth.

The main difference between the within-sample and out-of-sample predictions is the information used in making the predictions. The within-sample predictions are made only based on the traits of the individuals in the sample whereas the out-of-sample predictions for a larger set of individuals and traits. For instance, if there is no 23 year-old married male with some higher education in our sample that remains unemployed for 15 months, there is no within-sample prediction made for this set of characteristics. However, these characteristics are used to generate an out-of-sample prediction assuming that such an individual is likely to be found in a larger sample or the entire population.

Figure 1.3 Within-Sample Predictions of the Survival Functions

Logarithmic Baseline *cloglog* Model

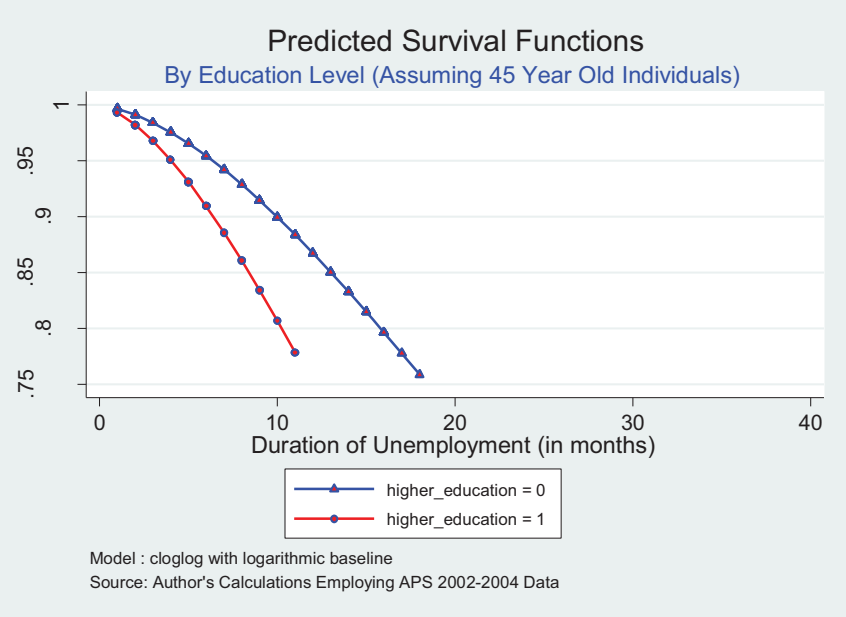


Figure 1.4 Within-Sample Predictions of the Hazard Functions

Logarithmic Baseline *cloglog* Model

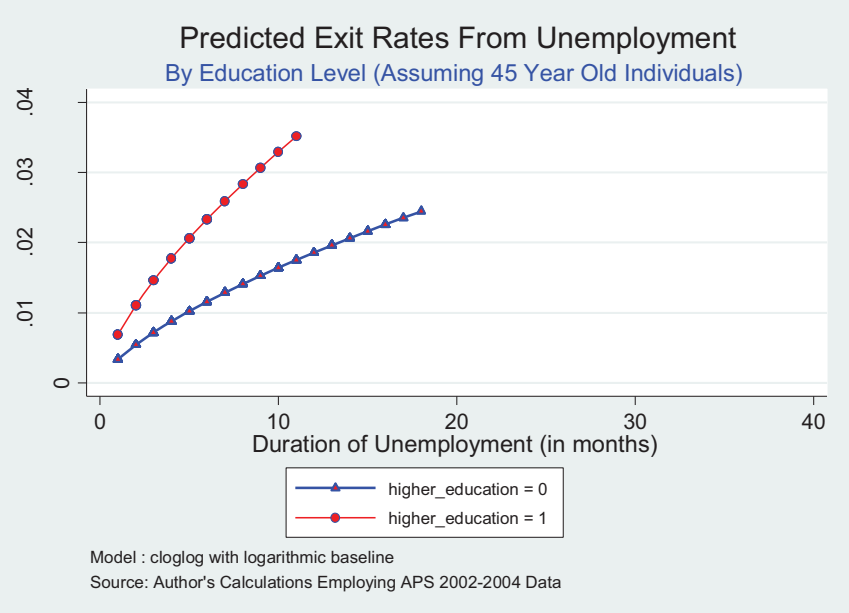


Figure 1.5 Within-Sample Predictions of the Survival Functions

Piecewise Baseline *cloglog* Model

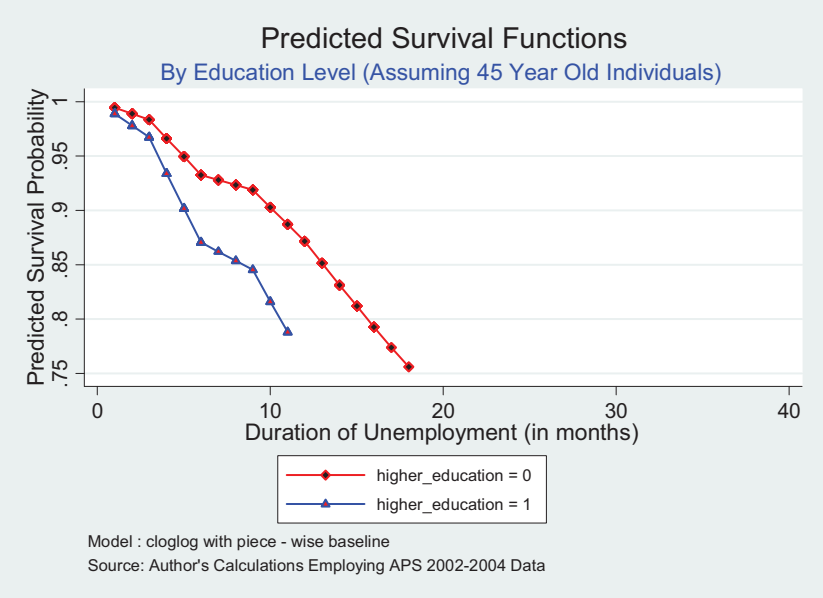
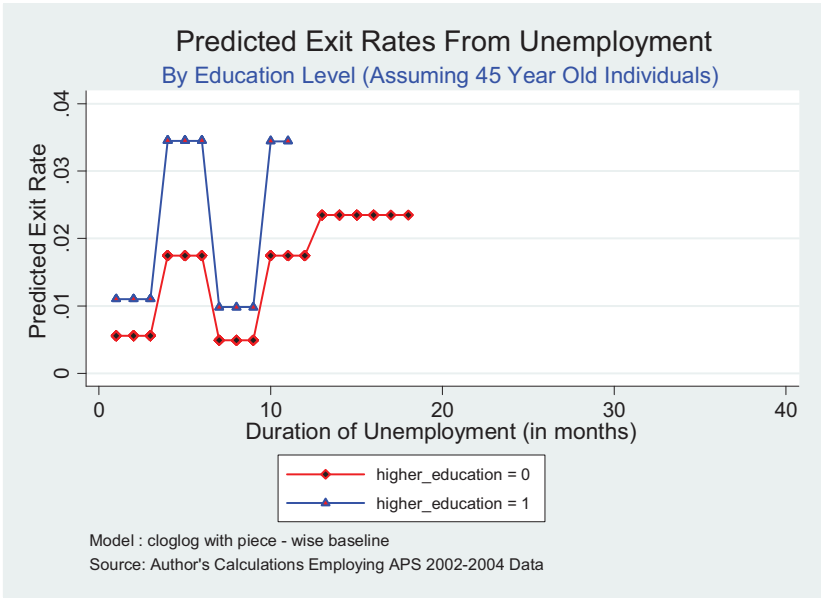


Figure 1.6 Within-Sample Predictions of the Hazard Functions

Piece-Wise Baseline *cloglog* Model



1.7.2 Out -of-Sample Predictions of Hazard and Survival Functions

Out-of-sample predictions are generated very similarly. The only difference with the within-sample case is a discussion about the unobserved heterogeneity term which in this case is set equal to its mean value. To simplify things, this mean value is set equal to zero. The predictions are done based on age, gender, education attainment, and marital status. In order to compare the predictions with a benchmark function, I include a prediction based on the mean values of all covariates. In addition, I make predictions for two rather extreme cases and as a result most predictions fall in between. I generate the hazard and survivor predicted functions for a male who has at least some higher education. I also generate the predictions for a female who never received any higher education. The results are shown graphically in Figures 1.7 and 1.8. The figures indicate the gap between the hazard functions in Figure 1.7 and survival functions in Figure 1.8 created by having at least some higher education and being male, while setting all other predictor values to their means.

Figure 1.7 Out-of-Sample Predictions of the Hazard Functions

Logarithmic Baseline *cloglog* Model

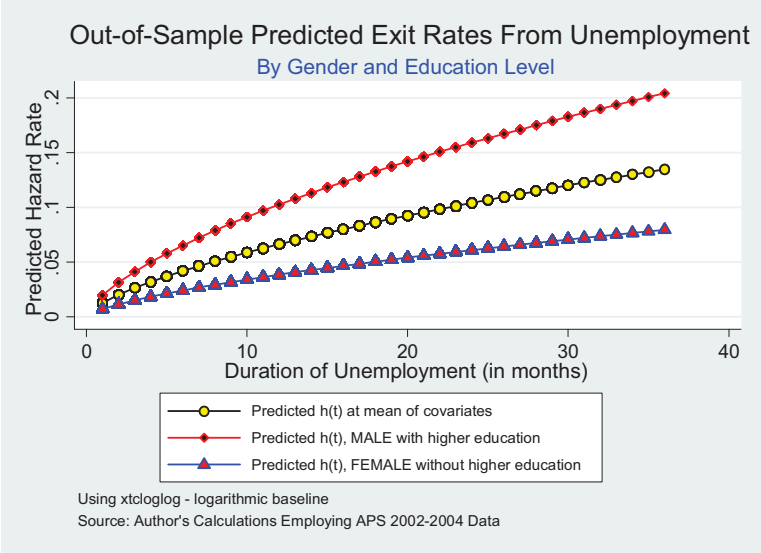
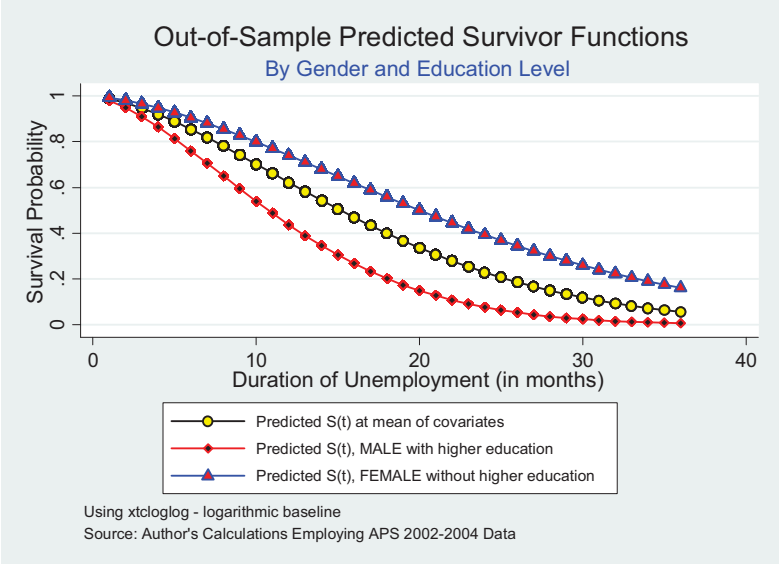


Figure 1.8 Out-of-Sample Predictions of the Survival Functions

Logarithmic Baseline *cloglog* Model



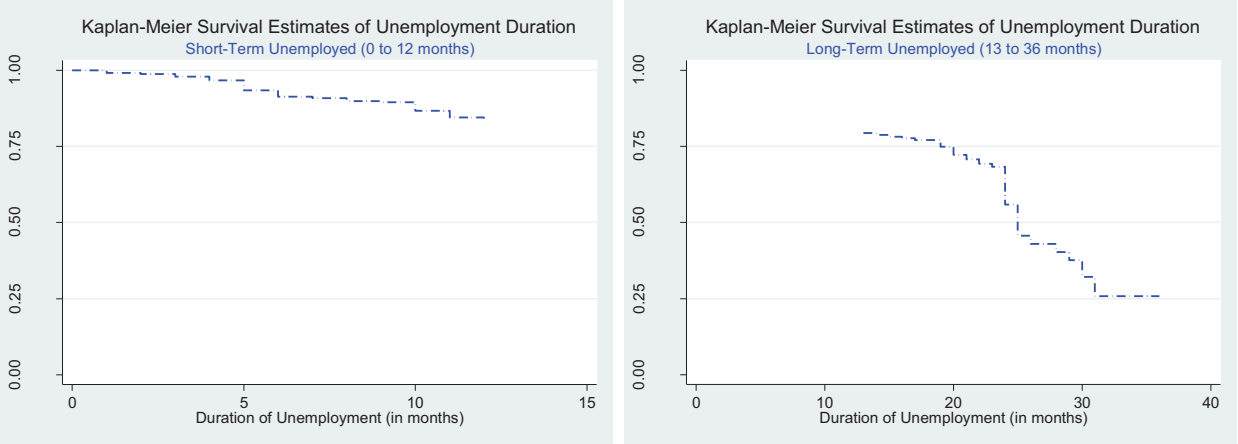
1.7.3 Short vs. Long Term Unemployment

In order to distinguish between the short-term and long-term unemployed, we split the data into two subsets and generate the Kaplan-Meier survival estimates of unemployment duration for each subset. The subset of the short-term unemployed is comprised of individuals who remained unemployed for a spell in between 0 and 12 months. The long-term unemployed subset is comprised of individuals who remained unemployed for a spell in between 12 and 36 months.

A Kaplan-Meier analysis of survival rates (e.g., the rate at which workers remained unemployed) for both subsets reveals that for the former the rate at which workers remain unemployed is relatively high and the graph is almost flat, whereas for the latter the rate of leaving unemployment increases dramatically for the most part (Figure 1.9).

Figure 1.9 Kaplan-Meier Survival Estimates of Unemployment Duration

Short versus Long-Term Unemployed



This result is unusual since it goes against the conventional knowledge and textbook instruction that the rate of exiting unemployment declines (and thus that the survival rate increases) with longer duration as workers get discouraged. Why do we get this unconventional result in the case of Albania? Several factors can explain such result. First, the high unemployment rate during transition is reflective of the structural changes in the Albanian economy and the replacement of the rather obsolete technology with better technology during transition. This new technology shifted labor demand, in some cases reducing the demand for existing skills and in other cases eliminating the demand entirely. Given such changes, finding a job for the affected workers implied a long job search. Second, the most common way of finding a job, according to the survey, was through networking and relatives. There has been a lack of institutionalizing the job search process, which is reflected on the long durations of unemployment. Third, it is possible that the survey question about unemployment status may have elicited responses that were slightly off-target. In particular, some of the surveyed

individuals may have been involved in unreported seasonal migration to the bordering countries of Italy and Greece, while claiming that they were looking for work. Their reported unemployment spells may include periods of unemployment but also periods of employment abroad while, indeed, looking for a job in Albania. Fourth, research by Gedeshi (1999), Elliot (2004) and others has shown that Albania experienced a brain drain phenomenon during transition, according to which the best and the brightest left the country to pursue better opportunities abroad. As a result, the quality of the remaining highly educated and experienced workers has deteriorated and affected the job search dynamics. Fifth and last, it would be unrealistic to claim that the Albanian labor market is fully competitive and efficient. Anecdotal evidence suggests that many hiring decisions, especially in the public sector, are based on nepotism and not merit. Such practice is counterproductive and discourages job search efforts. The Kaplan-Meier survival rate patterns in Figure 1.9 could certainly be affected by such disruptions of the job search process.

1.8 Conclusions

The analysis of the unemployment duration of unemployed Albanian workers reveals some interesting insights. The average unemployment duration of unemployed Albanian workers is about 19 months. Moreover, without underestimating the social and psychological motives for the widespread migration, unemployment has undoubtedly been a major factor in changing the landscape of economic and social life in Albania. Having 9 percent of a randomly chosen sample

migrate in a very short period of time can clearly be a good indicator of the unemployment and migration dynamics during transition. We summarize below the findings of this study.

Married unemployed workers were more likely to land a job than their unmarried counterparts[28]. One can claim that being married means having more responsibilities and that as a result married people are more driven in their search for employment. However, one's drive is a very subjective measure and hard to quantify. Unemployed workers from the capital city Tirana were more likely to find jobs than their counterparts outside Tirana[29]. The explanation for this is straightforward. The economic boom that Tirana has experienced during transition cannot be matched by any other city in the country. The better employment prospects have attracted many to migrate internally, mostly from the northern mountainous part of the country.

We found that female workers face significantly longer unemployment durations than male workers. It might, at least partially, have to do with the fact that the growing sectors during transition (with the exception of services) are not viewed traditionally as suited for women[30]. A good example would be the construction sector[31]. Services and Skilled Agricultural unemployed workers were more likely to exit unemployment than Managers and Professionals (the reference category). This is not surprising given that Albania still remains largely an agricultural country. Craft, Plant and Machinery workers were also more likely to find jobs than Managers and Professionals. In addition, tourism has grown rapidly in the recent years.

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[28] Marcassa (2011) also found that French married men have a significantly higher probability of leaving unemployment than singles in all of the years included in the study. This result is, at least in part, in contrast with those of Arulampalam and Stewart (1995) who found no significant marital status effect in the younger cohort of their study.

[29] Grogan and Van den Berg (2001) also found that the Russian unemployed in Moscow and St. Petersburg have significantly higher exit rates from unemployment.

[30] Grogan and Van den Berg (2001) found just the opposite effect. Women in Russia were significantly more successful in finding a job and leaving unemployment than men.

[31] INSTAT Albania (2010)

The remittances by Albanian migrants and foreign direct investments facilitated the creation of many jobs in construction and other mostly men-oriented occupations. That also explains why on average women are less likely to find jobs than men. Unemployed workers with at least some higher education were more likely to find a job than unemployed workers without any higher education. Given the job creation in the occupations mentioned above, it seems as a contradiction to see that workers who have at least some higher education are more likely to find a job and yet the industries in which they are most likely to work in are among the least growing in the country. In other words, one would expect highly educated workers to be in managerial and professional positions and not Craft, Plants and Machinery. There is at least one explanation for this contradiction. An industry can have a growing demand for workers, while not growing, under a scenario where some of the existing workers are leaving the industry. If the worker mobility argument was the main reason for the unemployment dynamics, it would reinforce the claim made in several other studies[32] that Albania has experienced a brain drain during transition. It is possible, however, that if most of the highly educated workers go into managerial and professional positions, holding education constant, it might be relatively harder to find a job as a manager or professional, the worker mobility argument above may not necessarily hold.

Our analysis of short versus long-term unemployment reveals that, unlike the commonly found result, in the case of Albania during the period 2002-2004 short-term unemployed workers were less successful in finding jobs than their long-term counterparts. There may be many transition-related factors responsible for this short-term rigidity in the labor market. Some of them were mentioned above.

[32] Dakli *et al.* (2005), Elliot (2004), Gedeshi (1999)

Finally, the results for the predicted hazard and survivor functions confirm the validity of approximating the *cloglog* to the *logit* model since the hazard was relatively small. Very clear indications of the small hazard are the relatively flat profiles of the predicted hazard functions.

Appendix A

Figure A.1 Unemployment Rate among Albanian Workers, 2000-2004

By Gender

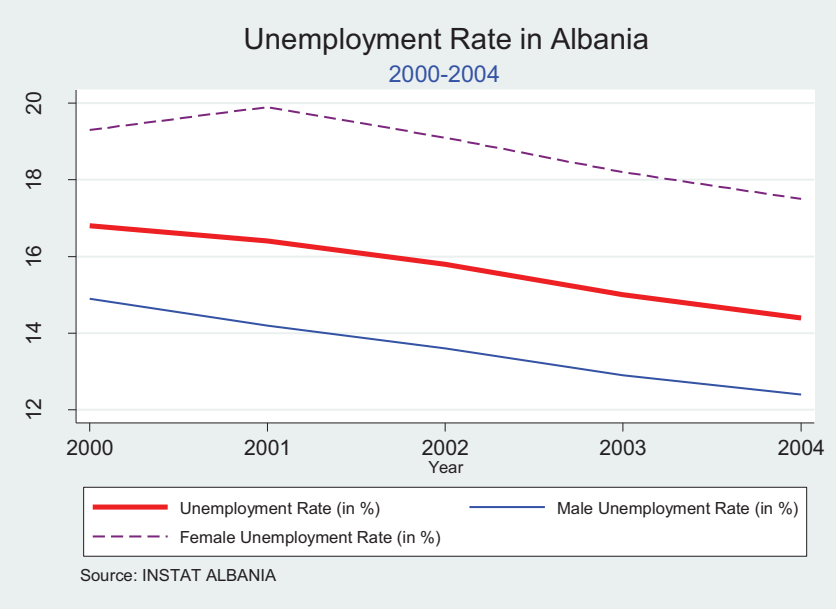


Figure A.2 Kaplan-Meier Survival Estimates of Unemployment Duration

By Age Category

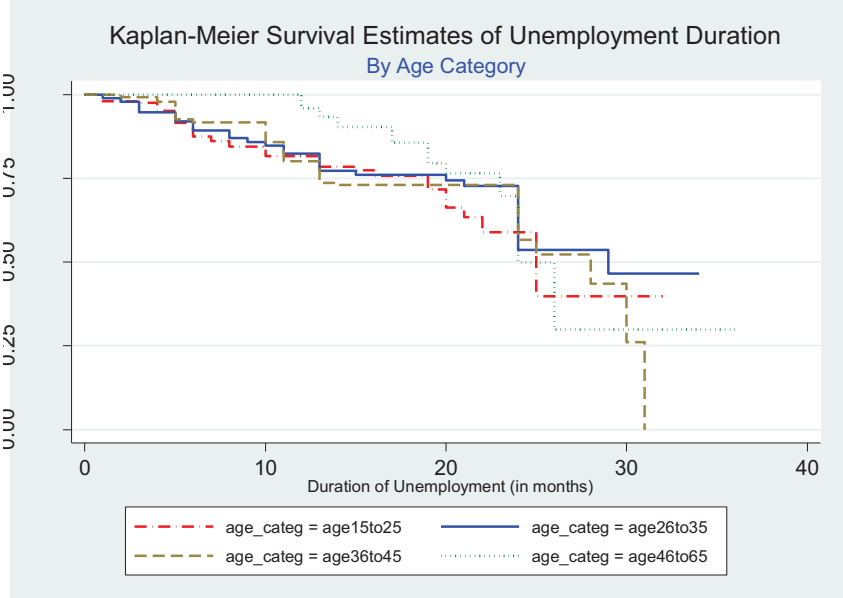


Figure A.3 Kaplan-Meier Survival Estimates of Unemployment Duration

By Occupation

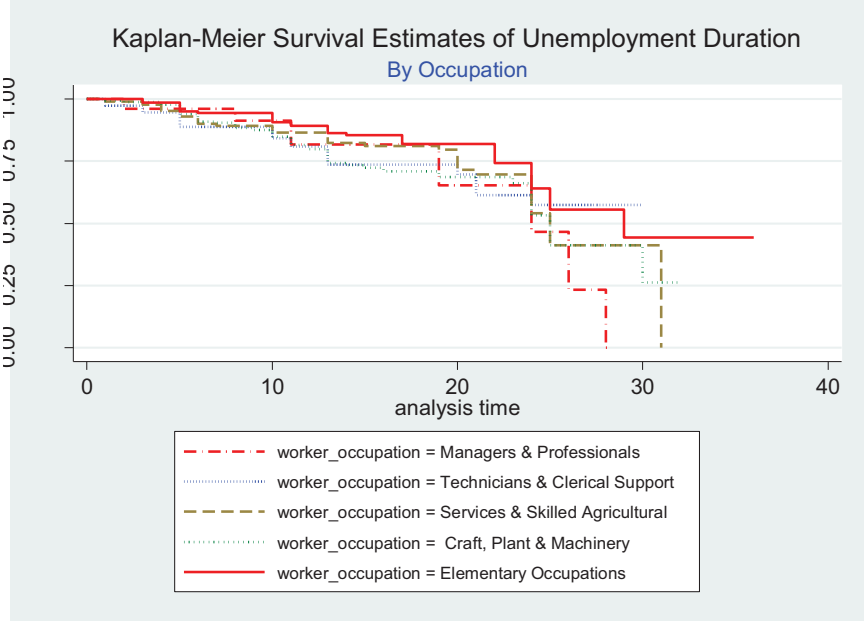


Figure A.4 Kaplan-Meier Survival Estimates of Unemployment Duration

Male vs. Female

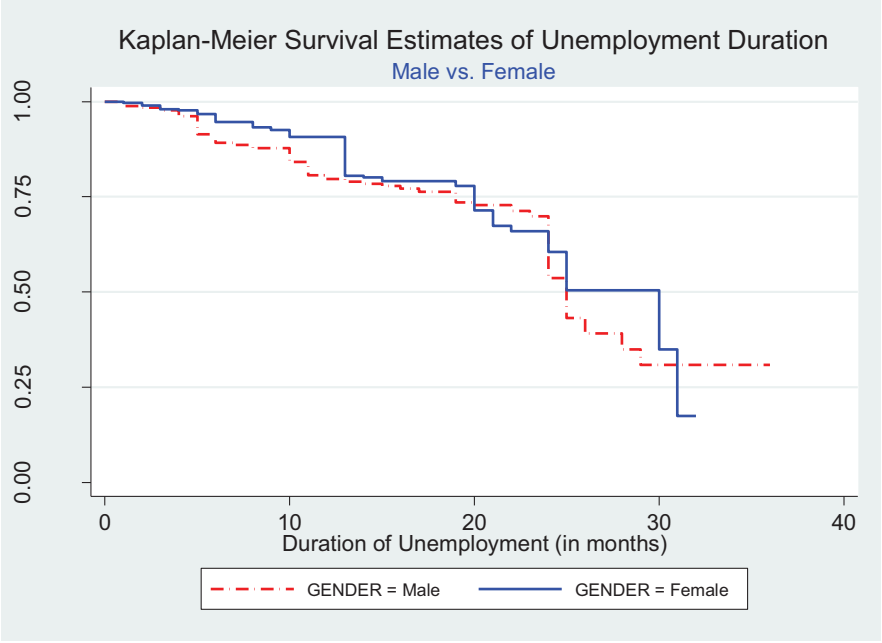


Figure A.5 Kaplan-Meier Survival Estimates of Unemployment Duration

Public Assistance

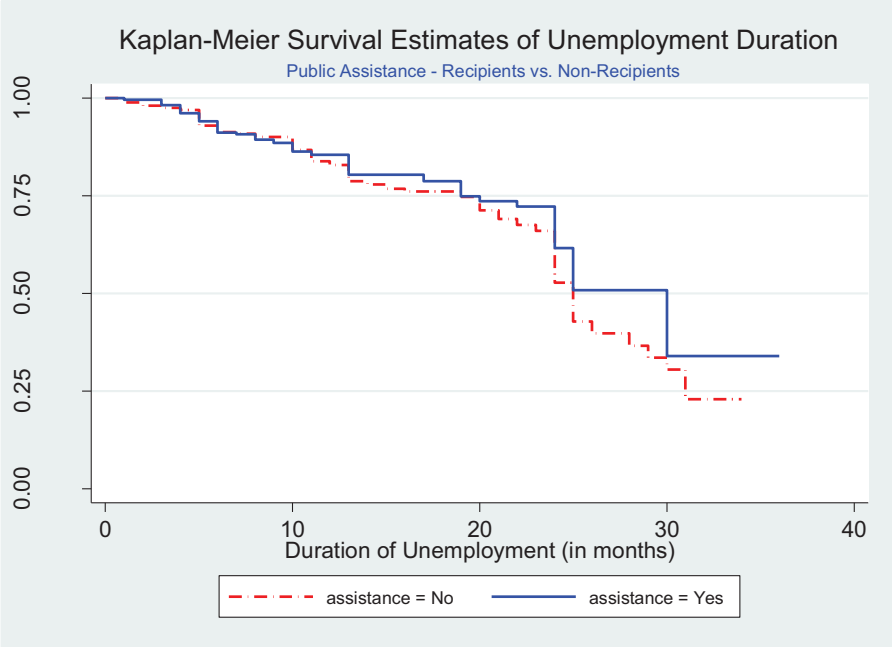


Figure A.6 Kaplan-Meier Survival Estimates of Unemployment Duration

Registered With the Labor Office vs. Non-Registered

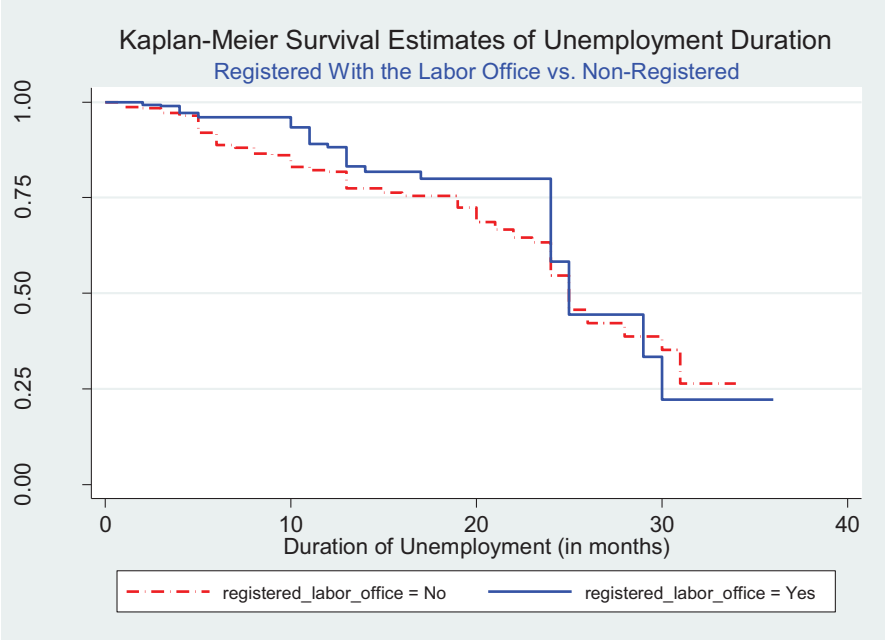


Figure A.7 Kaplan-Meier Survival Estimates of Unemployment Duration

Urban vs. Rural

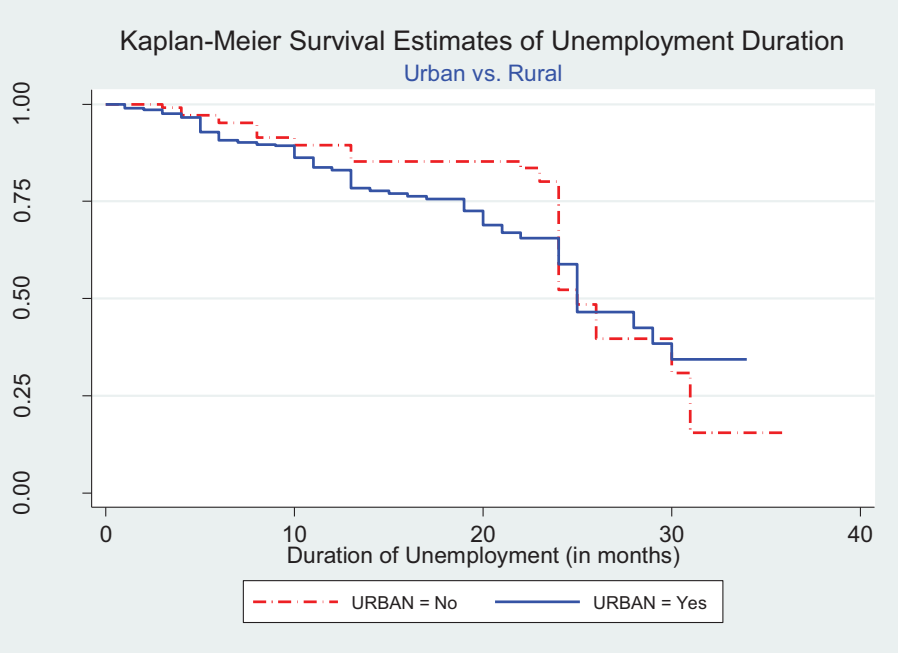


Figure A.8 Kaplan-Meier Survival Estimates of Unemployment Duration

By Region

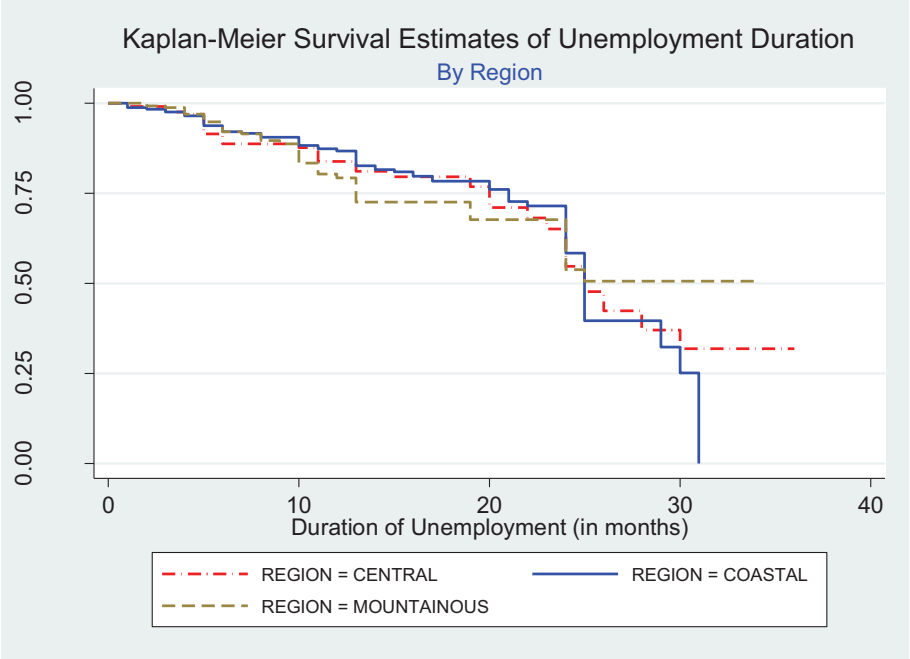


Figure A.9 Kaplan-Meier Survival Estimates of Unemployment Duration

Capital City TIRANA vs. Other Areas

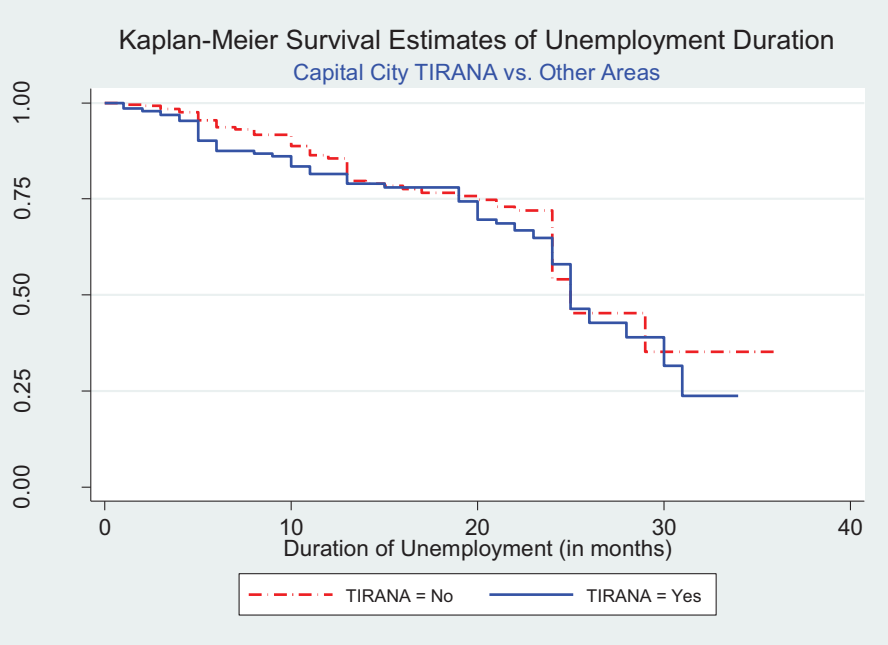


Figure A.10 Kaplan-Meier Survival Estimates of Unemployment Duration

Married vs. Others

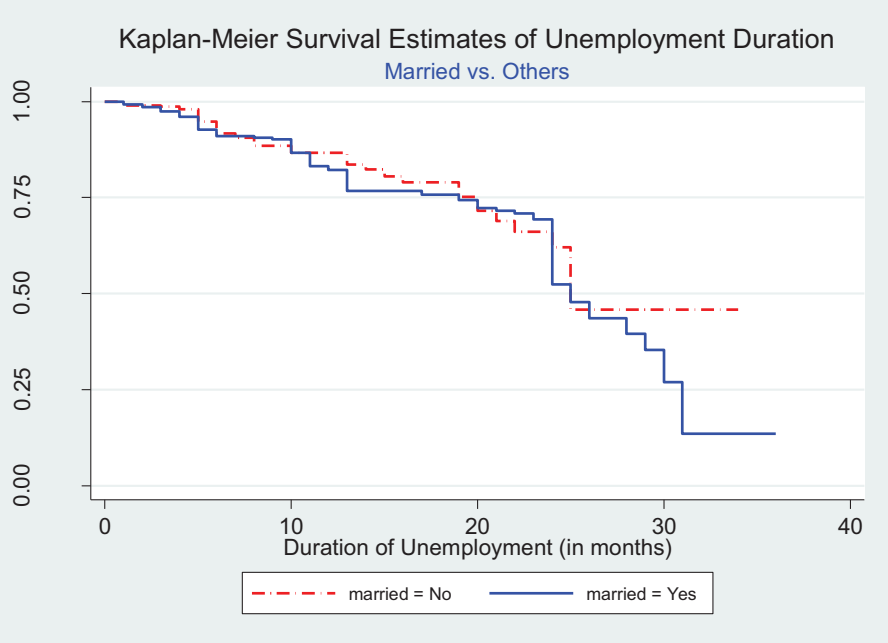


Figure A.11 Kaplan-Meier Survival Estimates of Unemployment Duration

Higher Education Unemployed vs. Other Unemployed

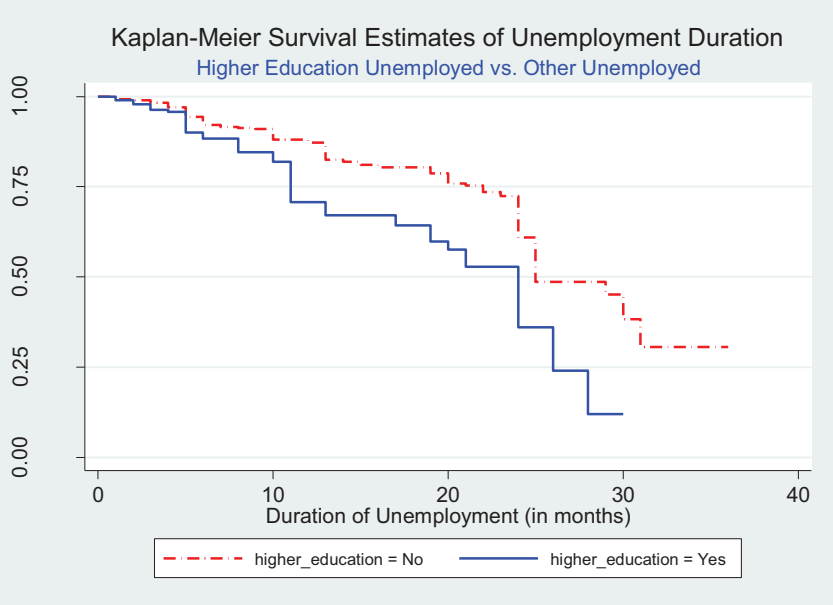


Figure A.12 Kaplan-Meier Survival Estimates of Unemployment Duration

By the Number of Adults in the Household

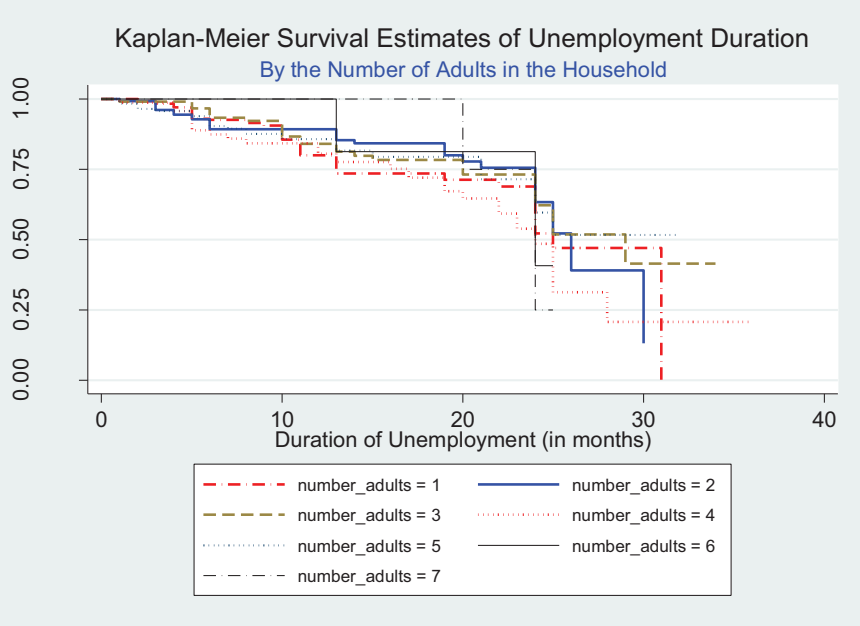
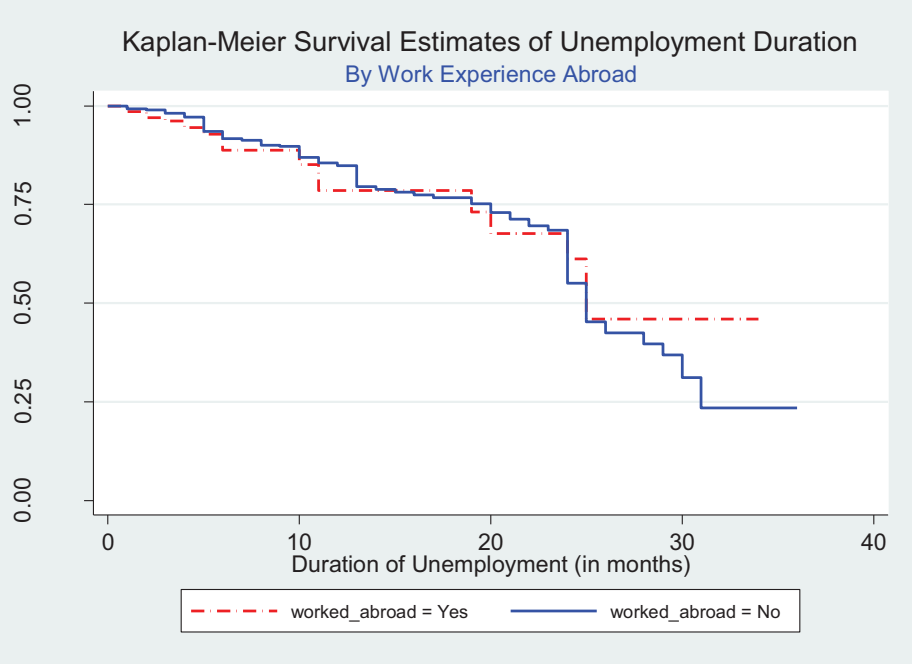


Figure A.13 Kaplan-Meier Survival Estimates of Unemployment Duration

By Work Experience Abroad



Chapter 2

What Does the Average Individual's Labor Market Performance Suggest About Likely Migration?

2.1 Introduction

The fall of the Berlin Wall in 1989 was followed by deep structural political and economic transformations throughout Eastern Europe. Countries condemned to long periods of isolation under the Stalinist centrally planned regimes suddenly began the long road of transition toward a free market economy. While the obsolete means of production and the centralized ownership over assets required a fundamental replacement by private ownership and more efficient production technologies, the beginning of the transition left a large part of the population in these countries unemployed. The unemployment rate reached 26.5 percent[33] in 1992.

The out-of-control unemployment, while the private sector was still non-existent, made it impossible for the Eastern European governments to accommodate the needs of their citizens for

[33] See Çuka *et al*. (2003).

employment, and therefore many left their homeland in search for better opportunities. Migration to neighboring and other richer countries became a new reality for many families. While this phenomenon was a common theme for all former-communist countries, Albania presents a special case because of the magnitude and the intensity of the migration experienced during the first decade of the transition. In fact, in addition to the unemployment created due to structural changes in the production sector, a bloated public sector employing more than 850,000 individuals shrank to less than a quarter of its original size between 1991 and 2001 (Hatziprokopiou and Labrianidis, 2005).

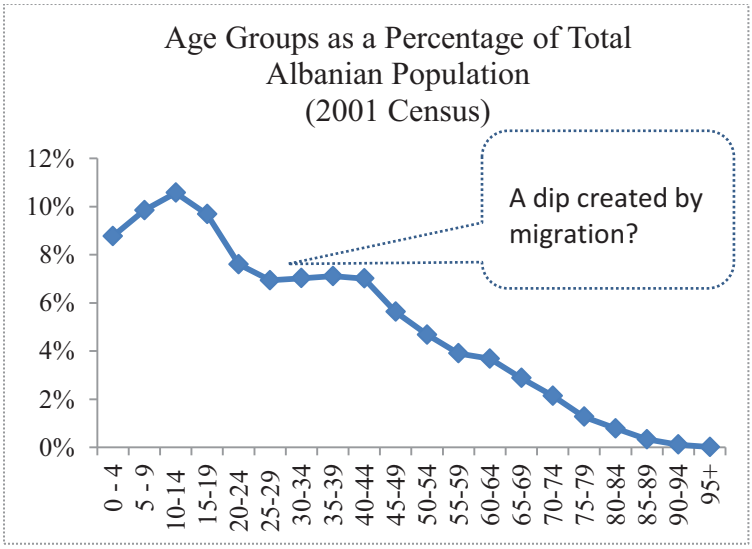
Albanians have been the most inclined to leave their country among all citizens of transition countries. This fact has been emphasized in several studies focusing on the migration dynamics during transition. For instance, according to a study conducted by the International Organization for Migration (Stacher and Dobernig, 1997), over half of Albanians in 1993 were willing to move abroad, and even more striking is the fact that a fifth of them were willing to migrate permanently.

Albania began the transition with a relatively young population. And, despite the migration of mostly young age groups and a tendency to alter fertility decisions, imposed by transition-related hardships, the population figures reported by INSTAT suggest that Albania's population remains still very young. According to the 2001 Census, about 51 percent of the population is 15 to 49 years old (Figures 2.1 and 2.2), which is the age range of the high-migration groups[34]. Moreover, Albania has a larger share of its population in the 0 -14 years range than the main

[34] Moreover, about 29 percent of the population is younger than 15, which means that, provided the existence of better employment opportunities abroad and/or unemployment rate differentials between Albania and neighboring countries, there will still be potential for new migration in later years. And indeed, the post-2001 migration figures support such a proposition.

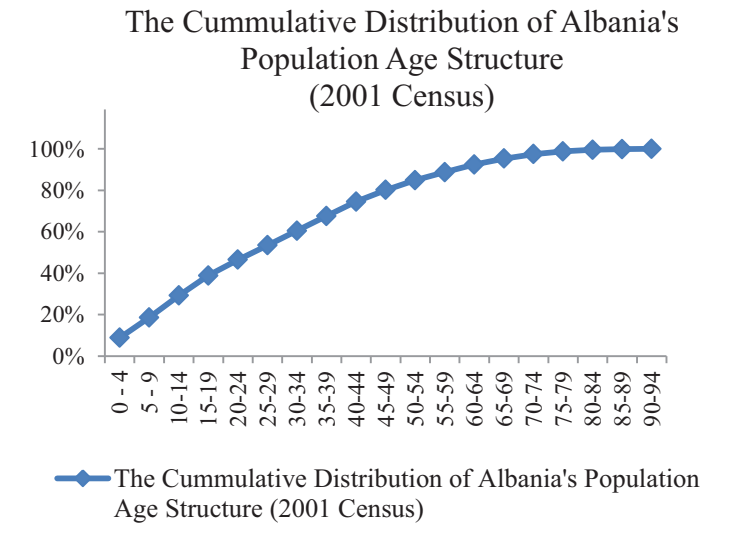
migration destinations, Italy and Greece (Figure 2.3).

Figure 2.1 The Age Profile of the Albanian Population



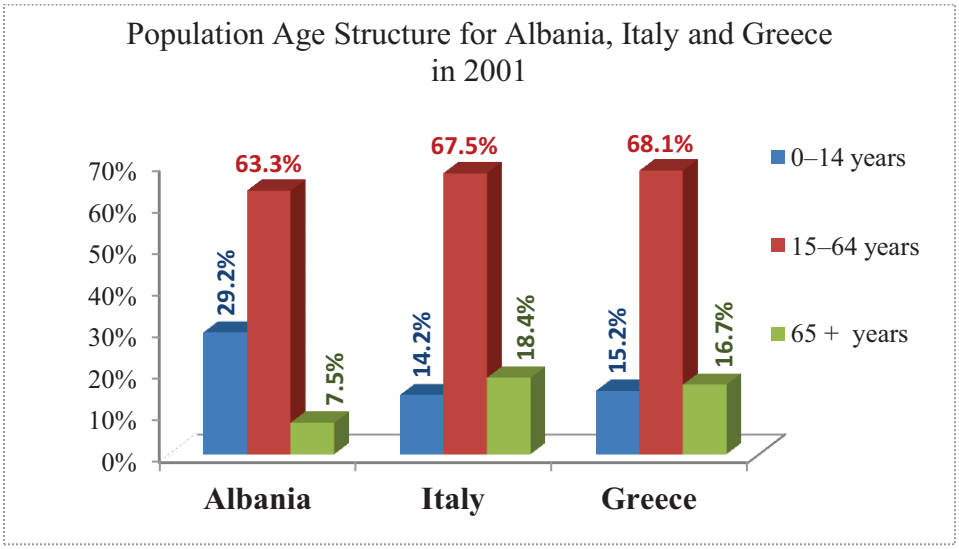
Source: Data from the INSTAT Web Site (www.instat.gov.al).
The graph is by the author.

Figure 2.2 The Cumulative Distribution of Albania's Population Age Structure



Source: Data from the INSTAT Web Site (www.instat.gov.al).
The graph is by the author.

Figure 2.3 The Population Age Structure for Albania, Italy, and Greece

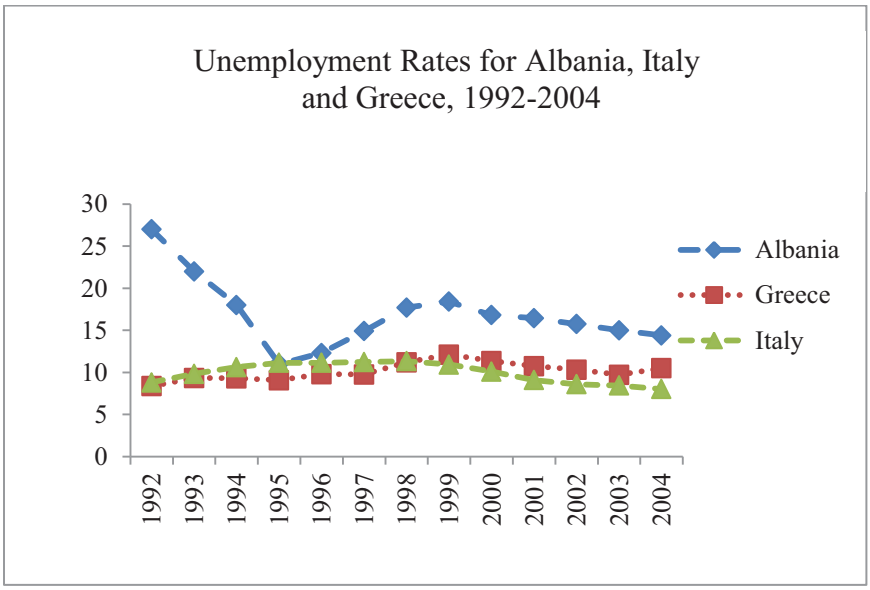


Source: Data from the CIA Factbook (2011)
The graph is by the author.

Despite the continued sizable migration during transition, the unemployment rate among Albanian workers remains relatively high. It has been empirically established that the unemployment rate differential between origin and destination countries is one of the most important factors determining migration flows. In the case of Albanian migration, the existence of the unemployment rate differential is confirmed in Figure 2.4, showing unemployment rates in Albania and its neighboring countries of Italy and Greece.[35] It is little wonder that Italy and Greece became the main destination countries of Albanian migrants.

[35] The beginning of transition and the structural changes intended to undo the damage caused by the centrally planned socialist organization and government ownership over the means of production found Albania in a very difficult position. Despite the victory of a newly established opposition party, the Democratic Party of Albania in 1992, the sense of insecurity coupled with a 27 percent unemployment rate left many Albanians with a very few options. Thus, many left the country to mainly find work in Greece and Italy.

Figure 2.4 Unemployment Rates for Albania, Italy and Greece, 1992-2004

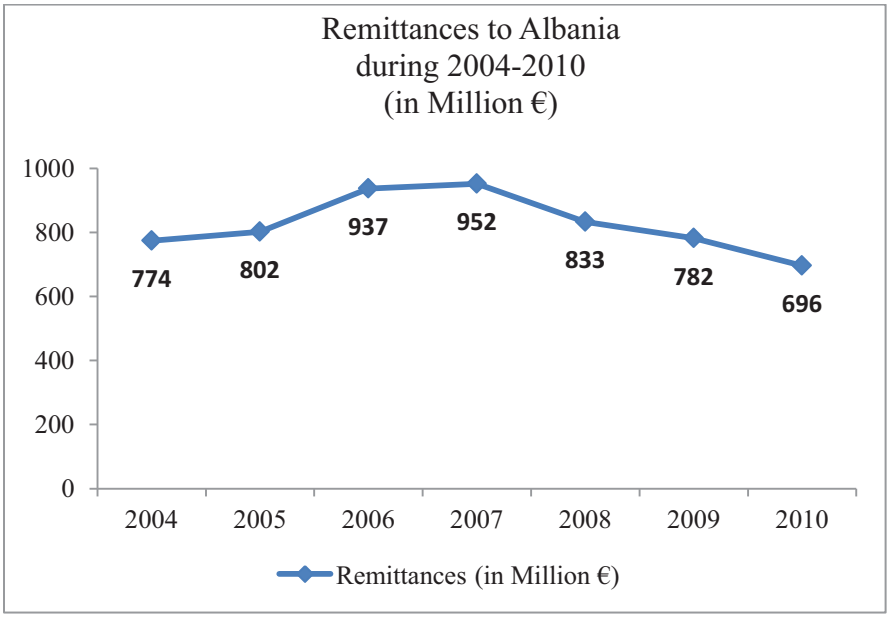


Sources: Data from INSTAT's Web Site (www.instat.gov.al) & International Monetary Fund – 2010 World Economic Outlook
The graph is by the author.

The World Bank reports[36] that Albania ranked 9th in the world in 2010 among the top migration countries (when migrants are expressed as percentage of the population) and 19th among top countries receiving remittances (expressed as percentage of the GDP). Remittances have been the main source of income for many households and a major source of foreign currency for the country. However, there has been a tendency in the recent years for remittances to decline. The Bank of Albania reports[37] that, as compared to 2007, remittances in 2008 declined by about 12.5 percent; they continued their decline by another 6 percent in 2009 and 11 percent in 2010. These reductions in remittance income are economically very important: the decline in 2010 amounted to 86 million Euros (Figure 2.5).

[36] World Bank (2011)
[37] Bank of Albania (2011)

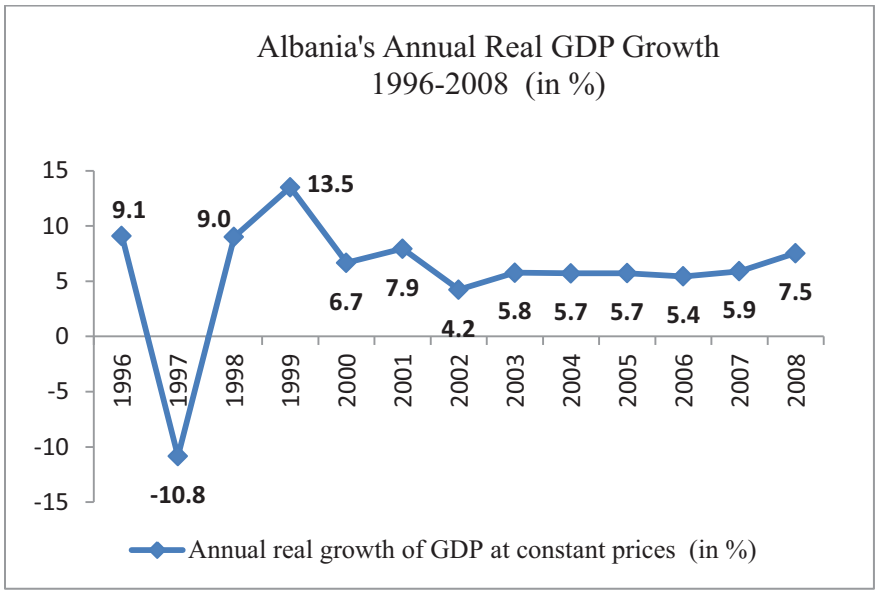
Figure 2.5 Remittances to Albania 2004-2010



Source: INSTAT Web Site (www.instat.gov.al)

The drop in remittances sent to Albania might have resulted in part due to the worsening economic conditions throughout Europe and beyond following the global recession that began in 2008. However, there are other possible reasons that might have contributed to that decline. Among such reasons are the changing nature of migration (i.e., shift from temporary to permanent), the permanent return of migrants to Albania regardless of the economic conditions abroad, the declining number of divided families between Albania and abroad, the improving conditions within Albania (Figure 2.6), and so forth.

Figure 2.6 Albania's Annual Real Gross Domestic Growth 1996-2008



Source: Data by INSTAT's Web Site (www.instat.gov.al)
The graph is by the author.

Among other potential factors leading to such decline one needs to look into whether there is a change in the nature of migration (e.g., a possible shift from the individual-based to family-based migration), which would in turn lead to fewer remitters. It should also be focused on whether the average remitter is remitting less over time. Above all, it is important for policy-makers to have a better understanding of the world of migrants, namely the motives that ignite their desire to remit. Given the heavy reliance on such transfers, it would be helpful for policy-makers to know whether remitters are: simply altruistic agents, repaying old debts, insuring themselves against unexpected future financial ruin, preparing the environment for a possible inheritance, and so forth. A thorough understanding of such motives would allow for devising comprehensive policies that take into account not only the general public interest but the mutual

interest of remitters and recipients as well. At the end, whatever the reason for the decline in remittances, there is potential for closing the gap created by the decline in these transfers. For instance, such a gap can be closed by providing more investment incentives to the migrants and their families. It can also be done by reducing bureaucratic requirements for new enterprises in areas that migrants are interested in.

2.2 Literature Review

The literature on migration is vast. An attempt to survey it in its totality would be a daunting task. Therefore, I review here literature that fit the following criteria: (i) The topic is related to domestic and/or international migration in Albania. (ii) The topic is about migration, both domestic and international, in other countries but their context offers insight for a study of migration in Albania with regards to the methodology and/or similarities of the problems involved.

Most studies conducted in the last two decades analyze data from the host (destination) country's perspective; a smaller number of studies focus on the home (origin) country viewpoint. The analysis of the selection issue in many studies has resulted in finding positive selection of migrants. That is, highly skilled workers migrate. However, some studies conclude that migrants are selected negatively. Most studies base these conclusions on an empirical analysis that is grounded in the Roy (1951) model that describes self-selection behavior in labor markets. This model allows for inferences about the impact of self-selection (such as related to migration) on labor market outcomes, it does not allow for a direct estimate of the correlation between the

unobservable factors that determine productivity at home and abroad. Thus, whether migrants are generally the most productive workers is still a wide-open question.

According to human capital models of migration, those who choose to leave their country of origin might on average be at least marginally more able and/or more motivated than the ones who choose to remain in their own country. Such a conclusion is reached by several studies analyzing micro data from different countries (see Chiswick 1999). This would be the case of the positive selection of immigrants as seen from a host country standpoint. If a host country, for whatever reasons, attracts less able/motivated immigrants then they are negatively selected.

However, there are studies that conclude that immigrants are negatively selected, i.e., that migrants are less productive workers than those who stayed behind. Several reasons exist for this type of selection. For instance, Borjas (1987, 1991) show that immigrants originating from a country with more unequal wage distribution than the one prevailing in the host country may be negatively selected. In a later study, Borjas and Bratsberg (1996) analyze the return migration of foreign born individuals in the United States and show how return migration may impact the nature of the migration flows and sign of the self-selection. DiNardo *et al.* (1996) employed a semi-parametric approach and rejected previous results which by analyzing the observable skills of immigrants compared to stayers concluded that Mexican immigrants in the US tend to be negatively selected.

Vijverberg (1993) analyzes this question with longitudinal data from Côte d'Ivoire and concludes that the more productive workers do migrate. Unlike many prior and later studies, this study focuses on the unobservable factors affecting the migration decisions, recognizing that such factors may not necessarily be positively correlated. In fact, the correlation between

unobservable origin and destination factors don't have to be of a particular sign; it may be either positive or negative.

Bauer *et al.* (2002), studying Portuguese immigrants in Germany, conclude that the German guest worker system succeeded in attracting positively self-selected immigrants when unobservable characteristics are incorporated and immigrants are compared to the native German workers. This study offers an analysis of self-selection as seen from the host country's viewpoint.

Kule *et al.* (2002) analyze the causes and consequences of Albanian emigration during the first decade following the fall of communism. The study is based on a 1998 survey of 1,500 individuals and 200 Albanian firms. The analysis is entirely descriptive and its conclusions are straightforward. The authors conclude that emigration in Albania has to a large extent facilitated the transition toward the market economy. Despite the fact that emigrants had to sometimes accept lower wages and low-skill jobs while abroad, the analysis shows, they overall characterized their experiences abroad as positive.

Carletto *et al.* (2004) analyze the internal and the international migration in Albania by using data from the 2001 Population Census and the 2002 Living Standard Measurement Survey. Their multinomial *logit* analysis yields the following results: the determinants of migration to different countries are different; permanent migrants to both Greece and Italy come from larger households; with the exception of the temporary Greek migration, education attainment is not an important factor in determining the migration decisions; the current employment activity status is a determinant of not only migration in general but also of the country of destination; previous migration episodes and networks are very important factors in determining migration; the "relative deprivation of a household relative to other households at the village level is positively

associated with the decision to migrate, though this is only significant for temporary migration to Italy" (p. 17); regional factors are also important to the migration decision.

In their analysis of Albanian return migrants De Coulon and Piracha (2005) find that they are less productive than their counterpart stayers, assuming that the latter had migrated and returned. Using data from interviews of 1,500 individuals in Albania during 1998-1999, employing the framework of Roy (1951), as formalized by Maddala (1983), De Coulon and Piracha (2005) analyze these individuals' earnings based on their decisions to migrate and return. The authors ask whether migrants who returned home to Albania were selected from the upper or lower tail of the ability distribution in their country of origin. To achieve their goal, they investigate the stayers and returnees' performance once they return to Albania. The study finds that return migrants are less productive than their counterpart stayers. The authors also find an increased hourly wage of return migrants due to their spell abroad, despite being negatively selected.

Chiquiar and Hanson (2005) use the 1990 and 2000 Population Censuses for the United States and Mexico in order to test the negative selection hypothesis[38] according to which those originating from a country with more unequal wage distribution than that prevailing in the host country may be negatively selected. Differently put, under certain conditions, low-skilled workers may be more prone to migration than their high-skilled counterparts. Chiquiar and Hanson (2005) find that in comparing the education attainment, Mexican immigrants in the US are on average more educated than non-migrants who remained in Mexico. The study also finds that had these migrants remained in Mexico and had they been compensated based on their set of skills, they would fall in the middle of the country's wage distribution. Obviously, this conclusion goes against the negative selection hypothesis and the authors maintain that the

[38] Borjas (1987, 1991)

existence of intermediate selection might be reason for it. It should be noted here that this study has an advantage over many previous studies as it uses data from both the country of origin and destination. Such resources allow for an evaluation of the labor markets in both countries.

Lyberaki and Maroukis (2005) employ data on 500 interviewees to investigate the evidence on employment and integration of Albanian immigrants in Athens, Greece. Through simple tabulations, the study concludes that the Albanians in Athens represent a vibrant community and family success is a noticeable feature. However, the authors claim that the community lacks collective organization. The study distinguishes between *Vorioepirotes* (ethnic Greeks from southern Albania) and Albanians to claim[39] that it "would be a mistake to view immigrants from Albania as a homogeneous whole" (p. 38). However, the authors fail to report any statistical significance regarding these results, which casts doubts on their relevance since the sample sizes are often extremely small[40].

Carletto *et al.* (2006) employ the 1989 and 2001 population censuses as well as the 2002 LSMS and analyze the migration trends in Albania during the post-communist period. The authors find that one-fifth of the population live abroad, that one-half of the Albanian households are affected either by temporary or permanent migration of family members, and that 35 percent of the Albanian household adult children who left their parents' home live currently abroad. The study also finds that Greece is the main migration destination, especially for temporary employment, and that policy-makers need to channel remittances, currently at 14 percent of the GDP as they report, into investment to ensure economic growth even after remittances decay.

[39] The claim seems to resemble the nationalistic agenda of certain segments in Greece that the southern part of Albania, which they call *Vorioepir*, belongs to Greece.

[40] See Table 9, p. 39 (the *Vorioepirotes* column). The conclusions drawn here by the authors are more out of convenience than based on this table.

Castaldo *et al*. (2007) use the 2002 Albania Living Standard Measurement Survey to investigate which types of individuals are more prone to leave Albania. The authors employ *probit* estimation to analyze the determinants of migration. Such determinants are age, employment status, education attainment and community conditions. As in many other studies, there has been no attempt here to take into account personality traits and other unobservable factors affecting the migration decision. Among the observable factors affecting the migration decision in their study are age, gender, employment status and education. The authors also find that local labor market conditions and community indicators (e.g., the prevalence of crime) are also important factors.

Cattaneo (2006) uses the 2002 Living Standard Measurement Survey for Albania to analyze the determinants of internal migration and investigate the role of wages and unemployment in the migration decision. The author incorporates the estimation of a *probit* migration equation with a log wage equation as well as a *probit* unemployment equation and finds a positive effect of migration on wages, supporting in this way the human capital theory that views the migration decision as an investment (internal migrants move to locations where the return to their personal traits is maximized). It should be noted that, while the contribution of this study is important, the estimation of the migration equation, the log wage equation and the unemployment equation account for observable (reported) personal characteristics such as age, education, marital status etc., but not for the unobservable personal traits, such as the degree of risk-aversion (as part of a broader set of preferences), which can be equally (if not more) important to the migration decision.

Stampini *et al.* (2008) employ a multinomial *logit* model to incorporate the role of previous experiences and family networks in the migration decision and distinguish between temporary

and permanent migration. The authors analyze the Albania Living Measurement Panel Survey of 2002 and 2003 and find that temporary migrants are likely those who originate from poorer and agricultural families and have medium levels of education attainment. The study also finds that previous migration experiences matter in deciding to migrate again: the greater the number of previous migration experiences, the higher the probability of temporary migration. This probability is likely to decline dramatically, the study finds, if the initial migration experience dated way back at the beginning of the transition[41]. Their analysis of the family networks shows that the probability of both temporary and permanent migration increases when such networks are in place and effective. The authors also find that the pull and push factors affecting the migration decision during transition have significantly changed. While at the beginning of the transition the political and economic factors were driving the migration waves, at a later phase, the family networks and personal experiences determined to a large extent the occurrence of migration.

[41] The dramatic decline in temporary migration could partially be an age effect since the propensity to migrate declines with age. It could also occur due to the fact that temporary migration has been seen by many Albanian migrants as a short-term solution or the easiest achievable option given the permanent migration constraints. European governments instituted all kinds of barriers and visa requirements to discourage Albanian migration and prevent them from reaching their countries. The barriers that prevent worker mobility are often assumed as non-existent by many researchers and this assumption does not reflect the reality.

Under such circumstances, the easiest migration path that provided good opportunities for seasonal employment, mainly in agriculture and construction, turned out to be crossing the border with Greece. This kind of solution worked for a large share of the Albanian population for many years, despite the abuse and inhumane treatment that Greek authorities often provided. Over time, many of the permanent migration restrictions have been eased or become irrelevant. In addition, permanent migration policies have been instituted and have allowed many temporary migrants to Greece to either remain there permanently or migrate permanently elsewhere. For instance, the initial permanent migration restrictions became irrelevant for many who legally joined their family members in Greece, Italy, Germany, France etc. Many Albanian migrants benefited from the Diversity Visa Program and migrated permanently to the United States. Others were qualified for the Canadian Visa Lottery and permanently migrated to Canada.

In conclusion, there might be various reasons for declining Albanian temporary migration. Some migrants might have aged or decided to invest their savings home and decided after several temporary migration spells to remain in Albania. Others might have adjusted their status from temporary to permanent within the same country while another group might have ended temporary migration in one country and permanently migrated elsewhere.

Gërmenji and Milo (2009) analyze return migration in Albania, focusing specifically on (i) whether returnees transfer human and financial capital back home upon their return, (ii) the determinants of their position in the labor market, and (iii) the developmental impact of return migration. The authors use data from a European Training Foundation (ETF) survey of 1,000 Albanian returnees. The analysis is based[42] on a life cycle utility maximization problem and the estimation employs a multinomial *logit* approach. The study finds that returnees transfer financial and human capital but human capital transfer takes place at a lesser extent. The study does not find a link between return migration and economic development in Albania.

Azzarri and Carletto (2009) analyze migration dynamics in Albania by using the 2005 Albanian Living Standard Measurement Survey (LSMS). The study, which is largely descriptive, employs a hazard function approach and finds that international migration appears to follow a downward trend and is tapering off. Such a conclusion may be not very well justified only on the basis of a cross-section of individuals. A panel of individuals surveyed over time or a cohort analysis of several surveys over time might be more convincing in drawing such a conclusion.

Ambrosini *et al.* (2011) also exploit the advantage of employing data for workers at home and abroad. The study employs both census and survey data to explore the wage earning ability and the selection of recent Romanian migrants and returnees. The authors construct measures of selection among skill groups and estimate the average and skill-specific premium for migration and return for the main destinations of Romanian migrants since the beginning of transition. The study finds evidence of migrants sorting themselves according to skill compensation in the destinations they have chosen. The study also finds that the premium to return is positively related to the migrant's skills and is the source of the positive selection of returnees. In addition

[42]The procedure is developed by Dustmann and Kirchkamp (2002).

to accounting for a set of observable characteristics in computing the measures mentioned above, the authors discuss the implications when the unobservables are incorporated.

2.3 The Data

In order to investigate the impact of labor market performance on the migration decision, we employ data from the Albanian Living Standard Measurement Survey (LSMS) gathered from 2002 to 2004. The initial survey of 2002 consisted of 3,600 households, among which only 1,782 were interviewed in 2003 and 2004. We focus on individuals between the ages of 15 and 65, of whom there are 3,454 in our data. Moreover, there were only 2,316 observations with positive wages during the 2002-2004 period representing 1,639 individuals.

A total of 351 individuals migrated during this period, among which 186 by 2003 and 165 by 2004. Unfortunately, only part of this migrant pool is subject of our analysis since some of the individuals in our data did not earn positive wages prior to migrating. There were 991 individuals who earned positive wages in 2002, among which 49 migrated and 942 remained in Albania by 2003. Similarly, there were 1,325 individuals who earned positive wages in 2003, among which 69 migrated and 1,256 remained in Albania by 2004. Thus, our analysis of whether labor market performance affects the migration decision is based on a total of 2,316 observations representing 1,639 individuals who had earned positive wages in 2002 and/or 2003, among which 118 migrated by 2003 or 2004. It should be noted that the migration numbers above do not coincide with the peak of the migration wave that followed the fall of communism in the early 1990's in Albania.[43]

[43] More importantly, the migration restrictions imposed by neighboring countries were still in place, thus the assumption of perfect labor mobility is often unrealistic. Had such restrictions not been in place, the number of Albanian migrants would have likely been greater.

Table 2.1 describes this sample, distinguishing migrants from stayers. As the table shows, the migrants and the stayers have on average about the same education level. On average, the migrants are younger than the stayers and most migrants are males. Fewer heads of households migrate than their counterpart stayers and both migrants and stayers come from households of about same size. On average, the migrants in our sample earn higher wages than the stayers. More public assistance recipients migrate than stay, relative to their respective categories of migrants and stayers.

Table 2.1 Variable Definitions and Descriptive Statistics

Variable	Definition	Mean (Standard Deviation)[a] **Migrants** (N=118)		**Stayers** (N=2,198)	
EDUCATION	Years of Schooling	11.69	(4.09)	11.77	(4.09)
AGE	Age in Years	36.67	(12.93)	40.38	(10.46)
FEMALE	Index: 1 = female	0.28	(0.45)	0.38	(0.48)
HEAD	Index: 1 = head	0.40	(0.49)	0.50	(0.50)
HHSIZE	Household Size	3.19	(1.11)	3.15	(1.17)
WAGE	Hourly Wage[b]	1.39	(2.05)	1.22	(1.66)
PREDICTED_WAGE	Predicted Wage[b]	1.41	(0.41)	1.40	(0.44)
RESIDUAL_LN_WAGE	Residual of the Log-Wage Equation[c]	-0.25	(1.13)	-0.29	(0.99)
PUBL_ASSISTANCE	Index: 1 = Public Assistance Recipient	0.14	(0.34)	0.09	(0.28)

[a] The reported descriptive statistics for the wage variables include both the hourly wage employees and self-reported hourly income of self-employed individuals. Due to small sample size, the employees and the self-employed are analyzed together.
[b] In 100's of *Leks,* the Albanian currency.
[c] Standardized in the complete 2002 sample to mean 0 and variance 1.

2.4 Model Selection

In this section, I will start off reviewing some models that explain the selection of migrants or return migrants and then choose the best suitable model for the research question posed in this chapter and the data available.

There have been a few studies on self-selection of migrants and return migrants in Albania, which employ the Roy (1951) model and other models. Some of these studies have not recognized the importance of the unobservable factors to the labor market outcomes and migration decisions. Even the ones that do recognize the importance of such factors have not made an attempt to identify the correlation coefficient between the unobservable factors at origin and destination. However, I review some of these studies that address the role of unobservables and provide very important insight.

2.4.1 Studies based on the Roy Model

Borjas (1987) and Borjas *et al.* (1992) build on Roy (1951) and argue that each location is characterized by its own wage-generating process. The location-specific wage is characterized by a mean wage rate and a return to individual skills. Highly skilled individuals, conditional on mean wages, will wish to migrate to regions with high skills premiums (i.e., regions with relatively large variances in wages), whereas low-skilled individuals will wish to migrate to regions with relatively low-skills premiums (i.e., regions with relatively small variances in wages). The log-wage equation is:

$$\ln(wage_{ij}) = \mu_j + \varphi_j\,(v_i - v) \qquad (2.1)$$

where μ_j denotes the mean log wage in area *j*, φ_j denotes the returns to skills, v_i is the individual's skill level, and v is the average skill level. Note that the parameters of the log-wage equation vary by area (i.e., by *j*): each location is characterized by its own wage-generating process.

The study that employs a Roy (1951) model framework and provides the most complete analysis of Albanian return migrants to date is the one by De Coulon and Piracha (2005). Its findings are presented in the literature review section portion of this chapter. It should be emphasized that their study focuses on return migrants rather than migrants, which is beyond the purpose of my study. However, given the similarities in dealing with random component(s) in determining wages and in order to fully appreciate the approach I adopt, I briefly summarize below the model employed by De Coulon and Piracha (2005). The authors use a selection model as initially proposed by Lee (1978, 1982) and applied by Nakosteen and Zimmer (1980). More specifically, it is an endogenous switching model

$$w_i^r = \beta^{r'} x_i + \epsilon_{r_i} \qquad (2.2)$$

$$w_i^s = \beta^{s'} x_i + \epsilon_{s_i} \qquad (2.3)$$

$$m_i^* = \gamma' z_i + u_i \qquad (2.4)$$

where w_i^r and w_i^s are respectively the returnees log hourly wage and the stayers log hourly wage. The regressors are a vector of socio-economic covariates and the latent variable m_i^* is a migration cost-benefit differential which, while not observed, is known to be positive or negative based on whether people left or stayed. The migration decision variable for migrants and non-migrants is given as:

$$m_i = 1 \quad iff \quad m_i^* > 0 \qquad (2.5)$$

$$m_i = 0 \quad iff \quad m_i^* \leq 0 \qquad (2.6)$$

Then the authors estimate a set of log wage regressions conditioned on the conditional probabilities for migrants, had they not migrated, and the conditional probabilities for stayers, had they chosen to migrate:

$$E(w_i^s | m_i = 1) = \beta^{r'} x_i + E\left(\epsilon_{r_i} \middle| u_i \geq -\gamma' z_i\right) = \beta^{r'} x_i + \sigma_{e_r} \rho_{r_u} \frac{\phi(\gamma' z_i)}{\Phi(\gamma' z_i)} \qquad (2.7)$$

$$E(w_i^r | m_i = 0) = \beta^{s'} x_i + E\left(\epsilon_{s_i} \middle| u_i < -\gamma' z_i\right) = \beta^{s'} x_i + \sigma_{e_s} \rho_{s_u} \left[-\frac{\phi(\gamma' z_i)}{1 - \Phi(\gamma' z_i)}\right] \qquad (2.8)$$

where $\Phi(.)$ and $\phi(.)$ represent the cumulative distribution and the probability density function of the standard normal distribution function, $\sigma_{e_s}^2$ and $\sigma_{e_r}^2$ denote the variances of the disturbance terms e_r and e_s of the migrants and stayers wage equations and ρ_{r_u} and ρ_{s_u} are the correlation coefficients of e_r and e_s with u. Equations (2.7) and (2.8) represent respectively the conditional wage of stayers, had they migrated and returned, and the conditional wage of return migrants, had they decided to stay.

The fact that the Roy model does not allow for a direct estimate of the correlation between the unobservable factors that determine productivity at home and abroad (i.e., $corr(e_r, e_s)$) in terms of wage equations (2.2) and (2.3), does not diminish its usefulness and the validity of such conclusions. De Coulon and Piracha (2005) find an increased hourly wage of return migrants due to their spell abroad, despite being negatively selected.

Chiquiar and Hanson (2005) also employ a Roy model specification to test Borjas' negative selection hypothesis. Among other caveats, the model ignores the unobservable set of skills in explaining the selection of Mexican migrants.

2.4.2 A Discrete Choice Model

The unobservables have been successfully accounted for in some cases. Dostie and Léger (2009) analyze the interprovincial migration patterns of Canadian physicians and find that "physicians who earn more (less) based on unobservables are more likely to migrate to provinces where there exists a larger (smaller) premium to such unobservables." This conclusion is consistent with the idea that "individuals migrate, in part, to increase their total earnings" (p. 1023). Dostie and Léger (2009) employ an adjusted version of Borjas' model. In addition to accounting for location-specific wages and a time component, the authors employ a deterministic function to reflect the fee-for-service nature of the Canadian physician's pay and a specialty variable, which allows for distinguishing physicians' performances based on the number of services delivered. The log-wage equation is:

$$\ln(wage_{ijt}) = f(specialty_i, province_j, year_t) \tag{2.9}$$

The earnings take into account the number of services performed by physicians:

$$earnings_{ijt} = number\ of\ services_{it} * wage_{ijt} \tag{2.10}$$

The earnings can also be expressed as a function of the observable and unobservable factors. Indeed, the number of services performed by a physician reflects the observable and unobservable personal traits:

$$earnings_{ijt} = g\left[\varphi_{1j}(observables_{it}),\ \varphi_{2j}(unobservables_i)\right]$$
$$* f(specialty_i, province_j, year_t) \tag{2.11}$$

The variables above are self-explanatory. The three indices i, j and t in the last three equations denote respectively the individual physician, the province and the year. The approach here is straightforward and leads to interesting insight. However, the challenging task of my study is to analyze migration decisions without information about those who migrate internationally. Thus,

despite the merits of Dostie and Léger (2009) approach, it cannot be implemented in the case of the Albanian LSMS data.

2.4.3 Other Models

DiNardo *et al.* (1996) employed a semi-parametric approach and rejected previous results which by analyzing the observable skills of immigrants compared to stayers concluded that Mexican immigrants in the US tend to be negatively selected. A second approach discussed by De Coulon and Piracha (2005) is based on the idea of analyzing the observed densities of wages for stayers and return migrants. The authors report semi-parametric estimates calculated using a Gaussian kernel function. De Coulon and Piracha (2005) find that return migrants are less productive than their counterpart stayers.

Carletto *et al.* (2004) employ a *multinomial logit* analysis which yields the following results: the determinants of migration to different countries are different. Stampini *et al.* (2008) employ a *multinomial logit* model to incorporate the role of previous experiences and family networks in the migration decision and distinguish between temporary and permanent migration. Gërmenji and Milo (2009) employ a *multinomial logit* approach to analyze return migration in Albania. They examine whether returnees transfer human and financial capital back home upon their return. They investigate what determines their position in the labor market and what is the role of return migration on development, as measured by investment and job creation. Castaldo *et al*. (2007) employ *probit* estimation to analyze the determinants of migration. Cattaneo (2008) also incorporates the estimation of a *probit* migration equation with a log wage equation as well as a *probit* unemployment equation and finds a positive effect of migration on wages.

The studies mentioned above provide various valuable contributions and address various important research questions. However, since the Roy model makes inference based on measured consequences of unobservable personal traits (i.e., in the selectivity correction terms), I follow an approach in which the unobservable personal traits are also correlated between the origin and destination.

2.4.4 A *Bivariate Probit* Model

Studies that employ longitudinal data, unlike similar studies employing cross-sectional data, provide more reliable results since they allow for following individuals over time. Therefore, in addition to Dostie and Léger (2009) reviewed above, I also consider Vijverberg (1993). The study employs longitudinal data and accounts for unobservables in an elegant fashion. While both Vijverberg (1993) and Dostie and Léger (2009) take into account the unobservables in their analysis of self-selection and migration, the former study is representative of the entire population[44] while the later focuses on just a segment of the population (i.e. physicians).

Furthermore, while Dostie and Léger (2009) have the advantage of tracking Canadian physicians' wages at two locations, Vijverberg (1993) does not have the luxury of working with data that provide information on migrant's wages at origin and destination. Given that the data I intend to employ resemble the data used in Vijverberg (1993) more than the data used in Dostie and Léger (2009) and other studies mentioned above in that information about migrants at destination is not available, I adopt the approach used in Vijverberg (1993) to analyze the migration decision of Albanian workers based on their labor market performance.

[44]The key to the analysis of Vijverberg (1993) is a wage offer made to a randomly chosen individual from the entire population, instead of a surveyed sample.

Vijverberg (1993) focuses on two measures of labor market performance: the norm, which is defined here as a predicted value determined by regression analysis using the data on hourly wage and income from non-farm self-employed workers; and the deviation from the norm, which is the regression residual and aims at capturing some of the unobservables in the analysis.

After generating these two measures, I focus on various *bivariate probit* specifications to examine the effect of the norm and the deviation on the chance of migration. It should be noted that while remittances are not reflective of the labor market performance of workers in Albania, but instead of their relatives abroad, they do affect attitudes and effort and provide a new set of incentives, which in turn might affect labor market performance.

An analysis of the migration decision that uncovers information about the correlation of unobservable factors at origin (i.e., Albania) and destination, in the context of a transition country, has not been done so far. Since the notation and the terminology in the model detailed below follow Vijverberg (1993), my contribution to the current literature is purely empirical, both with respect to Albania itself and transition countries in general.

(a) The Structure of the Model

We consider two locations, $l = a$ and $l = b$. At time $(t = 0)$ the individual resides in location $l = a$. Also, let $U_t(l)$ be the maximum utility derived in period t at location l, $W_t(l)$ the wage rate and $X_t(l)$ a set of exogenous circumstances.

If $t = T$ is the planning horizon at location l, the life-cycle utility from the present to the end of the horizon can be expressed as:

$$LCU(l) = U_0(a) + \left[\sum_{t=1}^{T} \frac{1}{(1+\rho)^t} U_t(l)\right], \qquad (2.12)$$

where $U_t(l) = U(W(l), X(l))$and ρ is the rate of time preference. Assuming that the individual maximizes the expected life-cycle utility function, (2.12) can be written as

$$ELCU(l) = U_0(a) + V_0(W(l), X(l)) \quad (2.13)$$

where

$$V_0(W(l), X(l) = E_0 \ [\sum_{t=1}^{T} \frac{1}{(1+\rho)^t} U_t(l)] \quad (2.14)$$

and the E_0 represents the expectations formed based on the information available at time $t = 0$. The future path of wages and circumstances at location t is given by the generic terms $W(l)$ and $X(l)$. It's important to note here that V_0 captures optimal behavior in the future including migration and return migration and the costs of migration, not explicitly seen in the model, can be included in the set of circumstances $X(b)$. This is addressed below.

In order to decide whether to migrate, individuals compare the expected life-cycle utilities at locations a and b.

$$I^* = ELCU(b) - ELCU(a) = V_0\big(W(b), X(b)\big) - V_0(W(a), X(a)), \quad (2.15)$$

where I is dichotomously expressed as:

$$I = \begin{cases} 1 \ \ if \quad I^* > 0 \quad (migrate) \\ 0 \ \ if \quad I^* \leq 0 \quad\quad (stay). \end{cases} \quad (2.16)$$

Now, we focus on how the migration variable I^* is impacted by the set of circumstantial variable X, in particular the wage W[45].

The model incorporates the traditional determinants of migration. So, amenities at destination generate a positive marginal utility and increase the maximum utility level $\left(\frac{\partial V_0}{\partial X(b)} > 0\right)$, and assuming rational behavior, this encourages migration. Just the opposite is true for locations with

[45] The model is a variant of the Roy model as analyzed by Heckman and Sedlacek (1985, 1990) and Heckman and Honoré (1990), who base their analysis on an individual aiming to maximize income.

urban pollution, bad weather, and high cost of living. These factors lower the maximum utility level $\left(\frac{\partial V_0}{\partial X(b)} < 0\right)$ by increasing the cost of migration (monetary and non-monetary) and therefore deter migration[46]. It's worth noting that the values of X can be unpredictable due to the uncertainty associated with missing information, and unstable political and economic situations, etc.

Now, we address the uncertainty in the wages. The wage rate $W_t(l)$ can be thought as a sum of certain and uncertain components:

$$W_t(l) = \mu_t(l) + \eta_t(l) + \varepsilon_t(l), \qquad (2.17)$$

where $\mu_t(l)$ is a certain component and one can think of it as a market-determined average productivity; $\mu_t(l)$ is called the wage norm and is determined by observable characteristics (i.e., education and experience); $\varepsilon_t(l)$ is an uncertain component and it reflects unpredictable random variations in productivity[47] (i.e., sickness of self or relative), seasonal fluctuations in demand for the employer's output, etc. Peculiar aptitudes and personality traits, as captured by the person-specific productivity variable $\eta_t(l)$, are obscured by $\varepsilon_t(l)$. Furthermore, $\eta_t(l)$ varies by location and depending on labor market conditions, as impacted by shifts on the demand for the aforementioned traits, may drift over time.

The value of $\eta_t(l)$ at locations $l = a$ and $l = b$ can be predicted in the following manner. The typical wage of workers with the same set of personal characteristics residing at location $l = a$ is $\mu_0(a)$. Given this prediction, the worker knows how his wage, $w_t(a)$ compares to the wage norm and provided the knowledge of past observations of this term he can produce an

[46] The cost of migration also includes the job search expenditures the migrant faces at the destination (e.g. Fields 1975).
[47] It can also reflect fluctuation in demand for employer's output and seasonal changes.

estimate of $\eta_0(a)$, which would be the mean of $\eta_t(a) + \varepsilon_t(a)$ for $t \leq 0$ if $\eta_t(a) = \eta(a)$ and it is independent of t. Otherwise, it would be disturbed over time by the past economic conditions or demand shifts for aptitudes and traits. Getting back to the point made above about $\varepsilon_t(l)$ obscuring $\eta_t(l)$, it is easy to see that when the variance of $\varepsilon_t(a)$ is larger, the estimate of $\eta_0(a)$ gets less precise. It is exactly this information that would serve as the basis for forecasts of future values of $\eta_t(a)$, regardless of how far down the road they are[48].

Now, we develop a conditional prediction about the migration decision. Denote the individual's prediction of $\eta_t(a)$ by $\hat{\eta}_t(a)$. At the new location $l = b$, the individual lacks information about $\eta_0(b) + \varepsilon_0(b)$ and therefore cannot predict the value $\hat{\eta}_t(b)$ of $\eta_t(b)$. Instead, this prediction is assumed here to be made on the basis of a known or presumed correlation with the wage norm $\eta_t(a)$.

If $\eta_t(a)$ and $\eta_t(b)$ happen to be jointly normally distributed, with mean zero, variance $\sigma_l^2 (i = a, b)$, and correlation coefficient ρ_{ab}, then the prediction of $\eta_t(b)$ conditional on the prediction of $\eta_t(a)$ will be

$$\hat{\eta}_t(b) = \frac{\rho_{ab}\sigma_b}{\sigma_a}\hat{\eta}_t(a). \qquad (2.18)$$

It is understandable that since $\hat{\eta}_t(b)$ is predicted on the basis of $\hat{\eta}_t(a)$, the prediction of $\eta_t(b)$ is likely to be subject to a greater degree of uncertainty, which would mean that

$Var[\eta_t(b)|\hat{\eta}_t(b)] > Var[\eta_t(a)|\hat{\eta}_t(a)]$.

[48] Reconciling the theoretical knowledge with the exercise at hand is necessary here. There may be a subjective element in the knowledge about the correlation, but it also stems on the information about migrants' performances that goes back to the location of origin through social networks (Banerjee, 1983). Assuming that the subjective ideas about the correlation are far from its true value may be misleading. In fact, the whole idea of building expectations is based on employing past information. Any conclusions that such expectations do not resemble the true value must be seen with caution. So, in the case of return migration, the individual under analysis has a past history of the person-specific productivity variable $\eta_t(b)$ with $t < 0$. The predictions $\hat{\eta}_t(b)$ for $t \geq 1$ are formed based on such information. According to the reasoning above, when $\eta_t(b)$ gets older, the new predictions would be based on the correlation with $\eta_t(a)$.

(b) The impact of the person-specific component on migration behavior

After providing a background for $\eta_t(a)$ and $\eta_t(b)$, we turn now to the correlation between them recognizing its importance in the analysis of the migration behavior. The amount of utility gain from migration as expressed by[49]

$$\frac{\partial I^*}{\partial \hat{\eta}_t(a)} = \frac{\partial V_0(W(b),X(b))}{\partial \mu_t(b)} \frac{\partial \hat{\eta}_t(b)}{\partial \hat{\eta}_t(a)} - \frac{\partial V_0(W(a),X(a))}{\partial \mu_t(a)} \qquad (2.19)$$

is triggered by a change in $\hat{\eta}_t(a)$, which in turn induces a change in $\hat{\eta}_t(b)$.

Either one of following scenarios can be the case:

i) If $\rho_{ab} = 0$, then $\frac{\partial \hat{\eta}_t(b)}{\partial \hat{\eta}_t(a)} = 0$ and $\frac{\partial I^*}{\partial \hat{\eta}_t(a)} = -\frac{\partial V_0}{\partial \mu_t(a)}$ is negative (assuming normal preferences) because an increase in the local wages generates positive utility valued by any individual with such preferences.

ii) If $\rho_{ab} < 0$, the first term of (2.19) is also negative and migration is even more unlikely. It follows that an increase in $\hat{\eta}_t(a)$ will result in migration only if a positive correlation exist. If this is the case, the last term of (2.19), $\frac{\partial V_0(W(a),X(a))}{\partial \mu_t(a)}$ refers to the marginal utility of the local wage, while the first term $\frac{\partial V_0(W(b),X(b))}{\partial \mu_t(b)} \frac{\partial \hat{\eta}_t(b)}{\partial \hat{\eta}_t(a)}$ represents the marginal utility of the wage abroad multiplied by the expected rise in wage following migration. If the marginal utility values are equal[50], a greater than one-to-one increase in the expected value of $\eta_t(b)$ will result into a greater chance of migration[51].

[49] As previously indicated, the subscript t is dropped to indicate the generic path of the variable.

[50] While this case presents convenience with regard to the simple implications it generates, there is no requirement or reason for the equality to be prevailing. Obviously, dealing with straightforward cases simplifies the analysis, but it does not imply that such cases are more likely as outcomes. At location $l = b$ wages may be higher to start with,

Thus, unless ρ_{ab} is positive, an increase in $\hat{\eta}_t(a)$ does not motivate migration. So, migration is more likely when ρ_{ab} is more positive and when the degree of uncertainty in $\eta_t(b)$ is greater than the one in $\eta_t(a)$ (see equation (2.18)). Note that the relative degree of uncertainty described above provides incentives for migration but does not characterize the nature of one's preferences and therefore should not be confused with lack of risk aversion: in fact, all it says is that a worker with good local opportunities ($\hat{\eta}_t(a) > 0$), facing more variable abroad opportunities, is more likely to find even better wages abroad. The individual therefore migrates since he outcompetes those with poor local opportunities, as measured by their respective expected payoffs (see also Pessimo 1991). Now, getting back to the issue of preferences, it can be shown that the model does exhibit risk aversion[52].

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thus assuming $ceteris\ paribus$, marginal utility would be lower. The marginal utility of wages is likely to be affected even further if $X(a)$ and $X(b)$ do not equal each other. This however, implies that relaxing the equal marginal utility leads perhaps only to a quantitative but not qualitative change to the implications.

[51] The condition $\frac{\partial\hat{\eta}_t(b)}{\partial\hat{\eta}_t(a)} > 1$ implies a form of 'pull' – migration: the opportunities elsewhere improve more than those locally draw the $better$ workers away. 'Push' migration is characterized by $0 < \frac{\partial\hat{\eta}_t(b)}{\partial\hat{\eta}_t(a)} < 1$, which means that workers with the $poorest$ local prospects decide to migrate. De Coulon and Piracha (2005) find such a result analyzing the return migration to Albania. The 'push' – migration characterization here goes along the lines of Heckman and Sedlacek (1985, p. 1085).

[52] Let's assume that there is a change in wages at time t and the density function of $W_t(l)$ at location l, with mean $\mu_t(l)$ an variance τ_l is $g_l(W_t(l))$. We suppress for simplicity the argument $X_l(l)$ and in the expression for I^* ignore any terms other than the one pertaining to a single period t. The simplified I^* expression can be rewritten by employing a Taylor expansion of $U(W_t(l))$ around a value W^*:

$$U\big(W_t(l)\big) = U(W^*) + U'(W^*)\,(W_t(l) - W^*) + \frac{1}{2}\,U''(W^*)(W_t(l) - W^*)^2$$

Which in the case of I^* would be:

$$I^* = E_0\big[U\big(W_t(b)\big) - U\big(W_t(a)\big)\big] =$$

$$= \int U\big(W_t(b)\big) g_b\,(W_t(b))\,dW_t(b) - \int U\big(W_t(a)\big) g_a\,(W_t(a))\,dW_t(a)$$

$$= U'(W^*)(\,\mu_t(b) - \mu_t(a)) + \frac{1}{2}\,U''(W^*)\,[(\tau_b - \tau_a) + (\mu_t(b) - W^*)^2 - (\mu_t(a) - W^*)^2\,].$$

Differentiating I^* with respect to an equal incremental change in the wage norm at home and abroad $\mu_t(a)$ and $\mu_t(b)$ results into:

$$\frac{\partial I^*}{\partial \mu} = U''(W^*)(\mu_t(b) - \mu_t(a)) < 0.$$

This expression suggests that this effect is stronger for people that are subject to a higher degree of risk aversion (U''/U'), for a given value of U'. It can also be noted that $\partial I^*/\partial\tau_b$<0. It means that elevated uncertainty abroad deters migration. It is also possible that the increase in τ_b might be due to increased variability in $\eta_t(b)$. In that case the expected return to migration, as measured by $\hat{\eta}_t(b)$, might increase for workers with a positive expected return

Results from earlier studies show that migrants can be positively or negatively selected. Positive selection is consistent with the migration model described above which consists of the following: $ceteris\ paribus$, an increase in $\hat{\eta}_t(b)$ makes migration more attractive. This is not to say that the more productive workers are going to leave the place of origin. For it to be the case, an $assumption$ about the positive correlation between origin and destination productivities is needed. The positive selection of stayers is also possible: evaluating origin productivities, stayers would be more productive than migrants. Although the relative productivity of migrants and stayers seems to be sensitive to whether it is measured from the origin or the destination, the actual correlation coefficient, which would determine the sign of this relative productivity, has not yet been measured. However, employing other theoretical arguments, various studies have suggested that the correlation between $\eta_t(a)$ and $\eta_t(b)$ can be of either sign.

(c) The impact of the wage norm on migration behavior

After examining the two uncertain components $\eta_t(l)$ and $\varepsilon_t(l)$ of equation (2.17), we turn now to the wage norm $\mu_t(l)$, which is the typical wage given a set of personal characteristics. Three effects are worth noting here: First, if any of the personal characteristics raises a migrant's wages $\mu_t(b)$ more than wages at origin $\mu_t(a)$, then migration becomes attractive. Second, if a diminishing marginal utility of income holds (which implies risk aversion), an $equal$ increase in

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to personality traits at home (i.e. $\hat{\eta}_t(a)$) if the correlation coefficient ρ_{ab} between $\eta_t(a)$ and $\eta_t(b)$ is positive (see (2.18) and (2.19)). What do such workers decide? They are aware of both greater risk and greater potential payoff upon migration and as a result the likelihood of migration might be altered either way. Some workers will be migrating due to the higher wage prospects (one side of the story associated with greater wage volatility), despite the fact that they might end up with lower wages. Others will find it hard to swallow the prospect of potential lower wages abroad and decide not to migrate. The reasoning is similar in the case of changes in τ_a.

the wage norm $\mu_t(l)$ in both locations, with the spread of the distribution of wages unchanged, discourages migration. That is, the potential utility payoff associated with a favorable wage outcome declines following a higher mean value of wages resulting in a declining utility of them. Since a change in the relative uncertainty home and abroad affects the migration decision, it follows that greater certainty at home or greater uncertainty abroad undermines the chance of migration.

Third, there is a family ties and remittances effect (Stark and Katz 1985) as well. Following migration, there may be an adjustment period requiring family support. After this transitional period, migrants remit money to their families back home for motives of altruism and/or future inheritance, but also as an $ex\ post$ insurance fee, which would insure them against potential future shocks. Assuming rational decision-making and holding other things constant, a family would choose to send abroad the member earning locally the highest wage rate or the highest value of the predicted wage abroad. The latter case would lessen the need for support from the family for the initial phase and the increase the potential for remittances sent home. A higher value of $\mu_t(a)$, provided its correlation with $\mu_t(b)$ (and higher value than the latter), would provide a higher likelihood of migration. However, such prediction is weak at best. In addition, to capture the full scope of familial interactions with regard to migration, one needs to also model the simultaneous decisions of all members (Stark 1991).[53]

In conclusion, according to the theoretical discussion above, a higher wage norm at home seemingly leads to a lower chance of migration. The chance of migration increases, for a given

[53] A potential family arrangement is the likelihood of diversification (Stark and Levhari 1982) which consists of the variance of the family income becoming smaller if some of the earners migrate. This is even more pronounced when there is a $negative$ correlation between the wages at home and abroad. Equal increases in $\mu_t(a)$ and $\mu_t(b)$ discourage migration since the marginal utility of the increase at home is greater than the marginal utility of the wage increase abroad.

positive deviation from the norm, $only\ if$ the random wage component depending on personal characteristics at destination is large enough[54] and positively correlated with its counterpart at origin.

Recall that the labor market performance consists of two factors: the norm and the deviation from the norm. The former refers to the predicted value determined by the regression analysis; the latter refers to the regression residual found from the regression analysis. However, the nature and the implications of each decision deserve some attention here. One needs to take into account the fact that the sample under analysis is self-selected in that deciding to hold a wage job or be self-employed represent individuals' decisions and are not random by whatever measure used. This lack of randomness would prevent this sample from being representative of the entire population if adjustments are not made to account for its nature.[55] It follows that the wage norm should be viewed as the wage offer made to a randomly chosen individual from the population. In order to correct for the lacking data and to satisfy the definition of the wage norm, I estimate a selectivity-corrected log-wage regression along the lines of Vijverberg (1993) which is similarly specified according to Van der Gaag and Vijverberg (1989).

The model is based on a *bivariate* estimation of the migration decision and activity choice made by individuals and which reflect the joint nature of such decisions. The model requires estimating the predicted and residual equations of the earnings measures for wage workers and the self-employed which are subsequently used as regressors in the migration-activity choice set up. This is the technical part of the model: We want to compute the expected log wage, given

[54] This requirement is to ensure that the predicted wage at destination is greater than the one at origin. In addition, there is an intermediate impact of the total wage (expressed as sum of the norm and deviation) on the migration decision.

[55]The idea of a sample representing the entire population is even more interesting given that there are no wages reported for individuals working in farm or household production. The missing information implies that one cannot estimate a deviation from the norm and a migration equation cannot be estimated with a population representative sample.

that a wage has been observed. The log wage equation for the population is given as $lnW = X_w\delta + \varepsilon_w$. The expected log wage, provided that a wage is observed is then expressed as $E[lnW|a\ wage\ is\ observed] = X_w\delta + \delta_\lambda\lambda$. Since λ is unknown, we insert in this equation its estimated value[56] and adjust the notation by denoting such estimated value by $\hat{\lambda}$. Now, the estimated model that takes into consideration the approach mentioned above is $lnW = X_w\delta + \delta_\lambda\hat{\lambda} + \mathcal{E}_w + \delta_\lambda(\lambda - \hat{\lambda}) = X_w\delta + \delta_\lambda\hat{\lambda} + \varepsilon_w^*$. The mean of ε_w^*, conditional on the wage being observed, is asymptotically zero. More specifically, as the number of observations goes to infinity, in a properly specified first-stage regression model, the estimated value $\hat{\lambda}$ goes to λ.

Now that δ and δ_λ have the respective estimated values $\hat{\delta}$ and $\hat{\delta}_\lambda$, the log-wage equation can be written as $lnW = X_w\hat{\delta} + \hat{\delta}_\lambda\hat{\lambda} + \mathcal{E}_w$, where $\hat{\sigma}^2$ is the derived variance of the regression disturbance. The wage norm is then[57]

$$\widehat{W} = \exp(X_w\hat{\delta} + \hat{\sigma}^2/2) \qquad (2.20)$$

(e.g. Mood $et\ al.$ 1974, p. 117). The wage residual resulting from the wage regression is

$$\hat{\mathcal{E}} = (\mathrm{lnW} - X_w\hat{\delta})/\,\hat{\sigma} = (\hat{\delta}_\lambda\hat{\lambda} + \mathcal{E}_w)/\,\hat{\sigma} \qquad (2.21)$$

and it is standardized to allow for comparison if different groups of workers were treated separately (e.g., employees vs. self-employed). An alternative measure of the residual can be used but it does not offer the advantages of the one employed here.[58]

We turn now to the non-farm enterprises. The labor market performance for individuals engaged in such entities is derived from their profits. Despite the different nature of employment of the self-employed in the non-farm enterprises and the inputs used in production, generating a

[56] It is estimated from a *probit* equation of the employment status.
[57] The notation of the wage norm here is different from the notation used in Vijverberg (1993).
[58] The residual can also be computed as difference between the wage and the predicted wage and it represents a reflection of the theoretical model. However, the log-wage equation is preferred for its better fit.

wage type of measure which would be used in the analysis of migration is not only possible but relatively easy to generate. The determinants of enterprise income, in addition to the inputs and location, include the personal characteristics of the entrepreneur. Such characteristics are also a determinant of the wages of those not working on their own account.

The estimation based on a selectivity-corrected regression as in Vijverberg (1991) generates a population norm for (sector-specific) enterprise profits and a residual. The market-averaged productivity of labor in self-employment ($\widehat{W} = HRPROF - P$) is derived by dividing the norm by the total family hours of work in the enterprise.

Now we turn to the migration equation, which for consistency with the labor market performance measures derived above is also subject to a selectivity model approach. The migration decision can be expressed through the index variable $I^* = X_m\beta + \varepsilon_1$, where if $I^* \geq 0$ the individual migrates and if $I^* < 0$ the individual stays. Individuals also make decisions whether to be in or out of the labor market. The activity choice index $J^* = X_a\gamma + \varepsilon_2$ captures such decisions. It is $J^* \geq 0$ if the individual is in the labour force and $J^* < 0$ if the individual is out of it. We assume that ε_1 and ε_2 are jointly normally distributed with mean 0, variance 1 and correlation θ_{12}. We have a bivariate *probit* model.

2.5 Estimation[59]

Prior to estimating the determinants of the migration decision, we analyze the determinants[60] of the wage. The estimates are reported in Table B2 of the Appendix B. Similar to other studies,

[59] It is important to note that prior to jointly estimating the migration equation and the activity choice equation, we estimate a simple *probit* equation of employment choice in order to generate a sample selection correction measure to be used in the joint estimation of the equations mentioned above. The *probit* equation includes individual, household, and community characteristics. The R-Squared resulting from the wage equation is 0.13 (Appendix B, Table B2).

we find that better educated workers earn higher wages, the age-profile of wages is inverse-U shaped, female workers earn on average less than their male counterparts, and workers in the capital city Tirana earn more than workers elsewhere. The selection correction term is statistically significant as well and indicates a negative correlation between the unobservables of the wage employment equation and the wage equation: those who, ceteris paribus, are more likely to be employed tend to receive a lower wage.

2.5.1 Estimates of the Determinants of Migration

What do we learn about the impact of labor performance on the migration decision of Albanian workers? Our results show that the estimates[61] for the wage variable, predicted wage variable and the residual of the log-wage equation have no effect on the migration decision. Moreover, the correlation coefficient θ_{12} takes values very close to zero in all specifications. These estimates suggest that labor market performance, as measured by workers' wages, has nothing to do with the migration decision.

Why does labor market performance not explain the migration decision among Albanian workers? An initial interpretation of this result can be related to the nature of Albanian migration during transition. It has been widespread and intense. However, such interpretation is shallow, at best. While not exhaustive of all potential factors, the following possibilities can explain our results for the 2002-2004 data.

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[60] In addition to the basic worker characteristics, we add a correction term, an Inverse Mill's Ratio, which is previously generated in an employment status *probit* equation and allows us to correct for lack of randomness.

[61] We should note that due to small sample sizes, we have treated the hourly earnings of the self-employed as hourly wages and combined them with the employees.

Table 2.2 Estimates of Migration Determinants[a]

	Coefficients (Asymptotic t-statistics)					
	(1)		(2)		(3)	
Intercept	4.72	(1.51)	-1.68	(29.71)	-0.71	(2.45)
EDUCATION	-0.01	(0.45)			0.06	(1.31)
AGE	-0.01	(1.09)			-0.00	(1.25)
FEMALE	-0.48	(3.42)			-0.71	(3.56)
HEAD	-0.39	(2.66)			-0.37	(2.71)
HHSIZE	-0.01	(0.34)				
WAGE			0.02	(0.72)		
PREDICTED_WAGE					-0.70	(1.55)
RESIDUAL_LN_WAGE					0.02	(0.44)
$\boldsymbol{\theta_{12}}$	0.05	(0.01)	-0.12	(0.05)	0.05	(0.01)
Log-likelihood	-411.55		-424.92		-410.12	

[a] The dependent variable takes the value of 1 if an individual is migrant and 0 if he/she is a stayer. This equation is estimated jointly with the activity choice equation. The determinants of activity choice are reported in Appendix B. The number of observations representing workers in the labor force (as defined here: individuals earning positive hourly wages or hourly income) for which the migration outcome is observed is 2, 316.

First, the implicit assumption made in the theoretical model is the existence of competitive markets for workers' traits at origin and destination. While this is the case in the destinations where the Albanian workers migrated during transition (e.g., Greece, Italy, Germany, U.S.A., Canada, etc.), including the period under analysis, it remains unclear whether the Albanian labor market is characterized by competition in pricing out workers' traits. Workers may very well be aware of their traits and the premiums they should commend in a competitive market. However, if such market is far from being competitive, a potential premium driven by unobserved person-specific traits becomes almost irrelevant. Pricing workers' traits may take place abroad where labor markets are well established but this information is irrelevant to the task at hand. However,

it is possible that wages are characterized by a non-competition-driven wage scale, and that the wage scale is simply codified in the estimated wage equation.

Second, the aforementioned theoretical discussion is based on the idea that wages at origin and destination, while different, are comparable or that the marginal increases in the wage norm alter the ratio between wages at origin and destination. This is the case in Vijverberg (1993), since workers migrate domestically within Côte d'Ivoire. An increase in wage norm at origin provides sufficient incentives for some workers, to at least, rethink the migration decision if they had ever been contemplating it. Our data suggest that the hourly wages of 139 and 122 *Leks* (i.e., respectively about $1.39 and $1.22) for migrants and stayers are several times lower than in the destination countries. In fact, even the minimum wages required by law in many western countries are several times higher than the average wages reported above. The dramatic wage gap suggests that, even following large increases of the wage norm at origin, wages still remain very low and the gap remains still large. As a result, in the case of Albania, workers are more likely to be driven by high wages abroad than by how their current wages (i.e., the norm) compare to their old wages. Therefore, the only relevant information to the workers considering migration is how domestic wages compare to wages abroad. This is the case even when adjusting for the cost of living. In pursuit of its European Union membership aspirations, Albania has continually eased any existing trade and capital restrictions while interacting with EU and non-EU members. As a result, the prices of goods and services in Albania have been getting closer and closer to those in the EU market area. Thus, despite the fact that the real wage gap may be slightly smaller than nominal wage gap, low nominal wages remain the main reason why incremental changes in them do not alter migration incentives. Therefore, potential high wages

abroad combined with psychological factors[62] are more relevant in enticing workers to reconsider their migration decision than incremental changes in domestic wages.

The theory of labor mobility suggests that wage differentials among various labor markets tend to decrease overtime and disappear at some point when wages converge. The existing gap between wages in Albania and the most common destination countries (e.g., Greece, Italy, Germany, etc.) for the Albanian workers suggest that the convergence is nowhere near. In addition to other social and psychological factors determining migration during transition, the large wage gap between the domestic and foreign labor markets has been one of the driving forces of international migration of Albanian workers. When compared to international wage rates, which during transition have been many times higher than wages in Albania, increases of the wage norm domestically may have had negligible effect and did not alter a worker's behavior with respect to the migration decision.

One could claim that the Albanian economy has been in the same relative position for a long time. People who wanted to migrate for economic reasons have long (e.g., more than ten years) had the incentives to leave. Thus, those who are still left behind and are now contemplating migration are less likely to do so for economic reasons. Noneconomic reasons may be relatively more important for members of this group who so far have stayed in Albania. This argument may have some merit but does not take into account the fact that the environment during transition in Albania has not been characterized by perfect labor mobility. In particular, the governments of neighboring countries, under internal pressures by labor unions and other groups of interests, have designed policies that discourage massive migration from Albania. It implies

[62] The sense of isolation under communism provided sufficient incentives for many t leave the country, regardless of labor market performance.

that it may not necessarily be the case that everyone who wanted to migrate for economic reasons managed to do so.

As a robustness check, we estimate the determinants of the migration decision only for individuals who migrated for work-related reasons and find very similar results with the ones reported above (Appendix B, Table B3).

2.5.2 Implications for non-participants

It is important to recognize that the estimated migration equation, which applies to individuals for whom a positive wage was observed in year 2002, is based on a selectivity model that aims to account for the non-random sample under the analysis. The correction implies that the results found here apply to the non-participants as well. A better resemblance of the basic characteristics between participants and non-participants makes the applicability of our conclusions to non-participants more realistic and acceptable. The conclusions we draw for participants can also be inferred for non-participants with similar characteristics because both groups belong to the same population and are subject to the same policies and regulations.

Table 2.3 describes the data, which consist of individuals between 15 and 65 years of age, by migration and participation status. Migrants and non-migrants have very similar education levels. Non-participants have generally lower education levels than participants. This is due to the fact that some non-participants were younger and migrated to pursue their education. On average migrants are younger than non-migrants. However, participants are older than non-participants. Among the reasons of migration work and joining one's family make up large shares among participants. Migration for studying purposes is an important category among non-participants, who pursue better educational options internationally.

Table 2.3 Characteristics of the Panel Members, Aged 15-65, by Participation and Migration Status

	Participants			Non-participants		
	Tirana	**Other Urban**	**Rural**	**Tirana**	**Other Urban**	**Rural**
*Education (Mean in Years)**						
Migrants	12.56	11.29	11.46	12.16	9.53	9.00
	(0.69)	(0.68)	(0.58)	(0.66)	(0.40)	(0.30)
Non-migrants	12.43	11.70	11.49	10.61	9.61	9.26
	(0.58)	(0.44)	(0.22)	(0.21)	(0.10)	(0.07)
*Age (Mean in Years)**						
Migrants	37.63	39.21	33.82	34.16	30.97	32.19
	(2.53)	(2.12)	(1.65)	(2.34)	(1.63)	(1.49)
Non-migrants	40.81	40.06	40.41	37.11	36.89	36.20
	(2.47)	(2.38)	(2.33)	(2.64)	(2.37)	(2.29)
Reason for Migration (%)						
Work	32.12	39.03	33.14	42.12	47.03	31.11
Better Opportunities/More Land	0.00	0.10	0.15	0.00	0.10	0.18
Study	0.00	0.00	0.00	10.02	9.00	7.31
Health Problems	0.00	0.00	0.00	4.01	2.00	0.80
Join Family/Marry	13.88	9.42	23.11	19.79	9.42	23.10
Other/Unknown	54.00	51.45	43.60	23.90	33.45	37.50
*Household Size**						
Migrants	3.46	3.19	3.00	4.25	4.26	4.10
	(0.19)	(0.17)	(0.15)	(0.24)	(0.20)	(0.13)
Non-migrants	3.02	3.19	3.18	3.34	3.55	3.61
	(0.04)	(0.04)	(0.03)	(0.07)	(0.04)	(0.03)
Number of Observations						
Migrants	30	41	47	31	83	119
Male	19	28	38	21	54	83
Female	11	13	9	10	29	36
Non-migrants	481	751	966	331	1,172	1,857
Male	281	471	618	194	559	916
Female	200	280	348	137	631	941
Number of Public Assistance Recipients						
Migrants	0	7	9	3	12	15
Non-migrants	16	70	102	28	71	104

*The numbers in parentheses represent the standard deviations.

Despite the differences mentioned above, overall, non-participants have very similar characteristics with participants. Therefore the results found above about the role of labor performance on migration decision should hold for the larger group of Albanian workers that includes the non-participants in this study.

2.6. Conclusions

We analyzed the impact of labor market performance, as measured by the nominal wage, on the decision to migrate. The analysis incorporates worker's unobservable traits and correlates the premiums for such traits at origin and destination. Our analysis of the impact of labor market performance on migration decision, unlike what is suggested by the theory discussed here and the findings of Vijverberg (1993), reveals different results. Labor market performance, as measured here, has no effect on the migration decision in the case of Albanian workers who migrated during the period 2002-2004. While it makes sense to think that higher wages at origin may discourage workers from migrating internationally, our results show that the wage differentials between the country of origin and destination are so large that pay raises at home may not dramatically alter a worker's budget and migration still remains a priority for many.

A similar reasoning applies to the correlation between unobservable traits at home and abroad. In a competitive market workers would expect their traits to be paid a premium, and whenever a certain market values a certain trait more than another market, the incentive would be to migrate to reap the best return for that trait. Three issues undermine this logic in the Albanian case. First, the market for workers' traits is far from competitive since there are no well-established labor markets in countries in transition, including Albania. Even if such markets where workers' traits were accurately priced existed, the price of a given trait may be perceived by workers as less important than the base hourly pay (i.e., the norm), which is also very low. Second, the model assumes perfect information, which may not necessarily be the case. Third, we assume perfect labor mobility and in the case of Albania, there have been many types of restrictions in place during transition, including the 2002-2004 period, to prevent Albanian workers from migrating internationally. The visa restrictions were lifted for Albania by European

Union member states in 2010. It made possible visits to family, friends, and relatives but again without the right of employment. This is another illustration of some of the barriers that Albanian workers have had to overcome in order to migrate. The isolation imposed by the regime during communism, followed by another isolation imposed by neighboring countries has made the migration decision of Albanian workers, despite their economic needs, less and less about the principles of the labor market and more about "let us get out of this prison" attitude.

From a host country's point of view, it is important to account for the domestic pressure in response to the enormous influx of foreign workers. The open-border policy made it possible for nationals in EU member countries to migrate "freely". However, EU member countries have been reluctant to be equally welcoming to workers from non-EU countries.

Therefore, the migration decision seems to have gone far beyond the labor market performance and has included deep psychological and emotional factors associated with the long period of isolation under the communist dictatorship. However, this is not to say that labor market conditions had no impact on the migration decision. The results suggest that the reasons for the migration decision of an average individual worker may go well beyond their labor market performance. Potential factors may include the existence of underdeveloped and corrupt institutions, the absence of the rule of law, lack of an enforcement mechanism for property rights, high degree of uncertainty and so forth.

Appendix B

Table B1. Estimates of Determinants of Wage Employment

	Coefficients (Asymptotic t-statistics)					
	(1)		(2)		(3)	
Intercept	4.72	(1.51)	4.77	(2.71)	3.26	(0.79)
FEMALE	-0.26	(1.48)	-0.26	(2.48)	0.77	(4.31)
AGE	0.08	(0.36)	0.07	(0.70)	0.01	(0.36)
AGE_SQUARED	0.00	(0.25)	0.00	(0.51)	0.00	(0.59)
EDUCATION	-0.01	(0.06)	-0.01	(0.10)	0.05	(0.80)
EDUCATION_SQUARED	0.00	(0.20)	0.00	(0.41)	0.00	(0.73)
TIRANA	0.32	(3.23)	0.32	(4.91)	0.43	(3.47)
NUMBER_OF_ROOMS	0.01	(0.62)	0.01	(0.72)	0.24	(3.20)
NR_KIDS_0TO4	-0.06	(0.51)	-0.06	(0.96)	-0.46	(2.46)
NR_KIDS_5TO11	-0.11	(1.72)	-0.11	(1.81)	-0.28	(3.04)
NR_OTHER_FEMALES12TO50	-0.01	(0.22)	-0.02	(0.70)	-0.38	(4.69)
NR_OTHER_MALES12TO50	-0.08	(1.29)	-0.08	(2.46)	0.36	(2.47)
NR_ELDERLY_OVER51	-0.06	(0.42)	-0.06	(1.17)	-0.30	(2.36)
Log-likelihood	-411.55		-424.92		410.12	

Table B2. Estimates of Wage Determinants

	Coefficients (t-statistics)	
Intercept	-1.07	(2.99)
EDUCATION	0.07	(16.13)
AGE	0.01	(1.47)
AGE SQUARED	-.00	(1.78)
FEMALE	-0.26	(4.90)
TIRANA	0.09	(2.14)
INVERSE MILL'S RATIO[a]	-0.10	(2.49)
R-Squared	0.1339	

Log of wage is the dependent variable.

[a] The inverse Mills Ratio is previously generated from a *probit* employment status equation that is the same as the specification in Table B1.

Table B3. Estimates of Migration Determinants[a] for Work-Related Migration Only - Robustness Test

	Coefficients (Asymptotic t-statistics)	
Intercept	-0.29	(2.13)
EDUCATION	0.04	(1.49)
AGE	-0.01	(1.53)
FEMALE	-0.62	(4.21)
HEAD	-0.28	(2.89)
HHSIZE		
WAGE		
PREDICTED_WAGE	-0.53	(1.61)
RESIDUAL_LN_WAGE	0.03	(0.73)
$\boldsymbol{\theta_{12}}$	0.05	(0.01)
Log-likelihood	-205.09	

[a] The dependent variable takes the value of 1 if an individual is migrant and 0 if he/she is a stayer. This equation is estimated jointly with the activity choice equation and this estimation refers to migrants who migrated for work-related reasons only.

Chapter 3

Theoretical Background on the Microeconomics of Migrants' Remittances

3.1 Introduction

Migrants' remittances are an important part of the budget for many households around the world. They help individual households to afford everyday life expenses but also help governments in addressing some of the most pressing needs of their citizens, especially those in poverty. Until recently, researchers have treated remittances as aggregated flows of money and a component of a country's national accounts, while governments have reported such aggregate figures through their statistical offices. As a result, the focus of research has been on the impact of remittances on the development of the migrant's country of origin such as alleviating poverty, improving the quality of education, etc.

Recently, a new trend in remittances research is emerging. Researchers have begun to study the microeconomic side of remittances, focusing on the money sent by the individual migrant abroad and its impact on the individual household in the country of migrant's origin. And, with this shift in focus, new questions arise: Who remits? Why do migrants remit? Do household characteristics and other circumstances affect the remitter's behavior? And so forth.

In answering such questions, it is important to recognize the link between remittances and migration. They cannot be seen as two separate topics for a very simple reason: Migrants are self-selected and variations in their personal characteristics affect the remitting behavior as well as the amount of remittances sent back home. For example, Funkhouser (1995) analyzes remittances to San Salvador and Managua (capital cities of El Salvador and Nicaragua) and finds that remittances to San Salvador were twice as large as to Managua. The study finds that the variations in remittances between the two cities cannot be explained by migrants' characteristics. This is a good example of the potential self-selection issues arising as individuals decide to migrate or not, and/or from a self-selection of migrants as they decide to remit or not. However, the remittance function indicates that there are large variations in remitting behavior of the migrants originating from these two cities.[63]

Since behavior may be an important determinant of remittances, investigating and understanding the motives that determine remittance behavior is an important juncture prior to any empirical analysis. Researchers may be limited in what can be tested empirically. However, regardless of their data limitations, when the theoretical foundations and individual incentives are well understood, each study will be able to tell a story about the data under analysis. Therefore, given the importance of the theory behind a migrant's behavior, we focus now on

[63] The study also reveals that the migrants from these two cities were negatively selected from the larger pool of migrants and more so for Nicaragua.

various potential motives for remittances, in anticipation of an empirical analysis for some of the motives for remittances in Chapter 4.

3.2 Models of Motives for Remittances

The literature offers six models of migrant's motives for remittances. These will be discussed in the following sections: altruism (section 3.2.1), exchange for services (section 3.2.2), a strategic motive (section 3.2.3), insurance and moral hazard (section 3.2.4), family loan arrangements, resulting from a family-level investment (section 3.2.5), remittances as an investment towards receiving an inheritance (section 3.2.6), and reading the migrant's mind: the case of mixed motives (section 3.2.7).

3.2.1 Altruism

The analysis of the altruism motive initially introduced by Lucas and Stark (1988) led the way for more research in this area. The model discussed here draws from Rapoport and Docquier (2006) and is based on two agents: migrant (m) and the recipient household[64] (h), which can be represented by one or more individuals. The notation employed is as follows: U represents utility, I represents the pre-transfer income, C denotes consumption and T denotes the remittances sent by m to h. More variables will be introduced as the analysis progresses.

The altruism motive analysis is based on an analysis in which one accounts for both one-sided (unilateral) and two-sided (mutual) altruism. Such an analysis borrows from Stark (1995,

[64]*Recipient household* and *household* will be used interchangeably and refer to the same concept, namely the migrant' household at the origin. The use of household does not refer to the migrant's household away from home (the split-off household), unless explicitly stated. Similarly, *home* refers to the country of migrant's origin and not the country of residence.

Chapter 1) and stems from the idea that each individual i, where $i = m, h$ derives satisfaction from his or her own consumption, as measured by $V(C)^i$, (where V exhibits the "more is better" ($V'(C) > 0$) and diminishing marginal utility ($V''(C) < 0$)) as well as the satisfaction of others. Such assumptions allow for expressing the utility as a weighted average of the components mentioned above (and where the degree of the individual's degree of altruism is captured by the following expression ($0 \leq \beta^i \leq 1/2$):

$$U^m(C^m, C^h) = (1 - \beta^m)V^m(C^m) + \beta^m U^h(C^h, C^m) \quad (3.1)$$

$$U^h(C^h, C^m) = (1 - \beta^h)V^h(C^h) + \beta^h U^m(C^m, C^h) \quad (3.2)$$

The solution with respect to $V^i(C)$ of these two equations yields:

$$U^m(C^m, C^h) = (1 - \gamma^m) V^m(C^m) + \gamma^m V^h(C^h) \quad (3.3)$$

$$U^h(C^h, C^m) = (1 - \gamma^h) V^h(C^h) + \gamma^h V^m(C^m) \quad (3.4)$$

where the values of γ^i are constrained:

$$0 < \gamma^m = \frac{\beta^m(1-\beta^h)}{1-\beta^m\beta^h} \leq 1/2 \text{ and } 0 < \gamma^h = \frac{\beta^h(1-\beta^m)}{1-\beta^m\beta^h} \leq 1/2.$$

The migrant's and the household's budget constraints are:

$$C^m = I^m - T$$

$$C^h = I^h + T$$

Rewriting the migrant's utility function we have:

$$U^m(C^m, C^h) = (1 - \gamma^m) V^m(I^m - T) + \gamma^m V^h(I^h + T). \quad (3.5)$$

Now we employ an optimization technique. Namely, the migrant maximizes (3.5) with respect to T and the first order condition for such maximization is

$$-(1 - \gamma^m)\frac{\partial V^m}{\partial C^m} + \gamma^m \frac{\partial V^h}{\partial C^h} \leq 0,$$

resulting in equality for $T > 0$.

Since the transfers to the household are of interest here, we rule out the possibility of negative transfers. It means that negative transfers from m to h be not part of the analysis. Assuming $V(.) = \ln(.)$, it can be shown that the optimal remittance sent to the household is given as follows:

$$T^* = Max\{\gamma^m I^m - (1-\gamma^m) I^h, 0\}, \qquad (3.6)$$

$$\text{with } \partial T^*/\partial I^m > 0,\ \partial T^*/\partial I^h < 0, \partial T^*/\partial \beta^m > 0 \text{ and } \partial T^*/\partial \beta^h < 0.$$

The partial derivatives indicated above mean the following: Altruism-motivated remittances[65] increase with migrant's income and degree of altruism and decrease with the recipient household income and degree of altruism.[66]

For reasons[67] that will become clearer as we continue, exploring all the dynamics of such implication may be difficult to test empirically. Thus the main testable implication of a model that is based on altruism in order to explain remittances is that remittances cannot increase with recipient household's income. Furthermore, the altruism motive model predicts that the simultaneous occurrence of a dollar increase in the migrant's income and a dollar decrease in the recipient's income leads to a dollar increase in the amount of the transfer:

$$\frac{\partial T}{\partial I^m} - \frac{\partial T}{\partial I^h} = 1$$

This condition brings us to a very important implication, which is that, conditional on total income ($I^m + I^h$), the distributions of consumption and income by household unit (migrant vs.

[65] *Transfers* and *remittances* will be used interchangeably for consistency with the terminology employed in the surveyed literature and mean the same thing.

[66] This is an interesting result. It says that the more altruistic is the recipient household towards the remitter, the less he receives in transfers. Despite the fact that the degree of altruism, as defined here, may be a very subjective measure, it simply suggests that more altruistic households receive less transfers from their relatives away from home.

[67] We need to point out that β^m and β^h cannot be observed. Moreover, in addition to the altruism motive, other motives should be considered as well in any empirical investigation, and an analysis of such motives will indicate that remittances do increase with the migrant's income.

recipient) should be independent of each other. This is an important testable implication of the altruism motive-based model not fully explored in empirical research. For the most part, empirical studies have assumed that the altruism motive is the motive behind transfers but rarely have they contrasted it to other possible motives.[68]

Funkhouser (1995) suggested a behavioral model of altruistic-driven remittances with these testable implications: (A) Migrants with higher potential earnings remit more money to their households. (B) Low income households receive more. (C) The migrant's intention to return and the closer degree of proximity between the migrant and the recipients are likely to increase remittances. (D) The amount of remittances should decline with the existence of more migrants from the same household. (E) The migrant's time-discount factor and their earnings profile while abroad should determine the time profile of remittances to households. As Rapoport and Docquier (2006) show, while predictions A and B are "compatible" with other motives, predictions C and E are too general. Moreover, prediction D is "consistent" with the investment, altruistic and inheritance hypotheses.

I discuss now another view of the migration-remittances link, which contradicts one of the predictions mentioned above. Funkhouser (1995) and later studies have dealt with the issue of self-selectivity of migrants from a purely statistical viewpoint and have adjusted accordingly. They conclude that, as reflected in prediction B, lower income households receive more in remittances, assuming that low income households sent some of their members in migration. If the implicit and explicit migration costs are too high, low income families may not be able to afford the migration costs. Such costs become a barrier and lower income households may not

[68] Lucas and Stark (1985) pioneered the analysis of the insurance and inheritance motives.

receive any remittances at all. This implication goes against prediction B and it is a source of confusion in remittances research.

Often, opportunity-driven migration and incentive-driven migration are assumed to represent the same thing. For instance, very low income households have higher incentives to migrate but, given the barriers discussed above, they never migrate. As a result, very low income households, in contrary to what prediction B states, do not receive any remittances because they do not have members abroad. The migration participation constraint is detailed in the section on the Family Loan Arrangements motive but not here.

In short, poor households are often assumed to satisfy a participation constraint (e.g., afford the migration costs) when in fact they do not. Hence, despite their incentives and positive attitude toward migration, studies[69] show that they do not migrate. Then, an unanswered question to be considered in future research is: Had the poor migrated, how would their remitting behavior compare to other migrants?

3.2.2 Exchange for Services

Regardless of the exact motive for the remittances, the fact that each transfer leads to redistribution of disposable income suggests that an analysis of the efficiency (inefficiency) associated with remittances is important. Here are a few potential cases in which remittances result as a Pareto-improving exchange. The most basic scenario would be one in which migrants pay for services provided to them by household members in their country of origin. Such

[69] Meyer *et al*. (2008) use micro data gathered from farm households in the Northern Albania (districts of Kukës and Shkodër) and employ a binary logistic regression to analyze international migration patterns. The study finds that while international migration is a broad-based phenomenon, the poorest are not participating in international migration. It may have to do, they claim, with the barriers presented by the increasing costs of migration.

services[70] include taking care of property (land, real estate, cattle etc.) or family members left behind (children, ill family members, elderly parents etc.). Depending on the precise nature of such arrangements, such exchanges may well indicate that migration is of a temporary nature and may well confirm the migrant's intent to return to the home country.

Another example of an exchange which, unlike the ones mentioned above, consists of payments occurring after the investment (e.g., the investment in the act of migration) is completed is the case of compensating the family for schooling and/or migration support. A migrant's education or migration expenses may have been financed by his family. Given market imperfections, such an exchange through remittances can then be thought of as a cost-lowering exchange which prevents the occurrence of transaction costs (under a perfect market situation). More generally, remittances can be thought as repayment of investments[71] expenses made in human capital.

The exchange motive model detailed here is based on Cox (1987) and was adapted by Rapoport and Docquier (2006) by assuming a non-altruistic individual and fixed amount of service. Let us assume that the monetary value of services purchased by a migrant (from his family at origin) with remittances[72] is $\bar{X}$. The utility functions of the migrant and the recipient household are given by $V^i(C^i, \bar{X}), i = m, h$, where $V_{\bar{X}}^{m'} > 0$, $V_{\bar{X}}^{h'} < 0$ and $V_{\bar{X}}^{m''} < 0$, $V_{\bar{X}}^{h''} > 0$ implying disutility of effort. Under the assumption that the migrant would want to purchase the

[70] In order for such services to be delivered the transfer must be in the vicinity of the market price for such services.
[71] Repayment of loans on prior human capital investments must be subject to and in the vicinity of the prevailing market interest rate for borrowing and lending funds.
[72] The term transfer and remittance will be used interchangeably and mean the same thing.

fixed services for the lowest amount possible, it follows that he appropriates the entire surplus in the exchange.[73] Under such scenario the services would be delivered if the compensation yields:

$$V^h(I^h + T, \bar{X}) \geq V^h(I^h, 0) \qquad (3.7)$$

Assuming equality and solving this participation constraint, allows us to express T in the following way: $T = T(\bar{X}, I^h)$. Applying the implicit function theorem we get:

$$\frac{\partial T}{\partial I^h} = -\frac{\frac{\partial V^h(I^h + T, \bar{X})}{\partial C^h} - \frac{\partial V^h(I^h, 0)}{\partial C^h}}{\frac{\partial V^h(I^h + T, \bar{X})}{\partial C^h}} \lesseqgtr 0$$

$$\frac{\partial T}{\partial \bar{X}} = -\frac{\frac{\partial V^h(I^h + T, \bar{X})}{\partial \bar{X}}}{\frac{\partial V^h(I^h + T, \bar{X})}{\partial C^h}} > 0.$$

These expressions show that transfers increase with the quantity of services offered to the migrant. However, the effect of the recipient household income (prior to any transfers) on migrant's remittances remains ambiguous. The sign of $\frac{\partial T}{\partial I^h}$ should be positive if $\bar{X}$ has no effect on the marginal utility of income (if the utility function exhibits additive and separable properties). If $\bar{X}$ and I are to some extent complements[74], the sign of the derivative is negative and the conclusion is consistent with the exchange hypothesis discussed above.

It should be pointed out that such a view of remittances focuses on the exchange at a certain period (or point) in time and does not capture any intertemporal aspects of such decisions. Furthermore, participation of the migrant in this exchange is subject to the following constraint: $V^m(I^m - T^{max}, \bar{X}) \geq V^m(I^m, 0)$. Applying the implicit function theorem again, it can be shown that the maximal transfer increases with migrant's income. Thus, the main prediction of the

[73] More general models that incorporate egoistic behavior would account for various divisions of the surplus (e.g., Cox and Jimenez, 1998).
[74] Note that $\bar{X}$ represents services purchased by the migrant expressed in monetary terms.

exchange model, which, contrasted with the altruistic motive model, says that an increase in the recipient's income I^h may lead to a rise in the amount transferred.[75] Recall that, in contrast, the altruism motive model suggested that recipient households at the bottom of the income distribution receive more remittances.

Until now, we have presented some of the theoretical possibilities in pursuit of explaining the exchange motive of remittances. We need such an arrangement (exchange) to be operational. The condition for which the exchange takes place requires that recipient's minimal compensation be lower than the maximal amount the migrant is willing to pay: $T < T^{max}$. This is another important distinction between the altruism and exchange motives. It has to do with the likelihood of remittances. Under altruism, the probability of remittances decreases with recipient's income. So, the likelihood of remittances and their size move in the same direction as the recipient's income changes. This differs from the exchange motive model. Thus the altruism and exchange motives models depart here in the sense that "while in the altruistic case, the probability for a given household to receive a transfer should be positively correlated to the average amount received, inverse correlations between these two variables could be the sign that an exchange motivation is at work" (Rapoport and Docquier, 2006, p. 1147).

If the exchange motive model is relaxed to a more general setting in which the parties' bargaining powers are incorporated, we notice other ways to contrast the two models. Such a proposition nicely ties the remitting decisions to the labor market outlook at home. For instance, higher unemployment at home negatively affects the remittances received because of the

[75] Rapoport and Docquier (2006) show this with a logarithmic function: $V^h(C^h, \bar{X}) = lnC^h + \ln(a - \bar{X})$. The household participation constraint then becomes $ln(I^h + T) + \ln(a - \bar{X}) = lnI^h + lna$ and the minimal compensating transfer to entice the household to accept the exchange is: $T = \frac{\bar{X},}{a-\bar{X},} I^h$, indicating the proportionality of transfer with the household income mentioned above.

declining bargaining power of the recipient household. On the other hand, the unemployment rate should not have an effect on the remittances received by the household if altruism is assumed. In fact, under altruism all factors determining labor market outcomes and other family circumstances are irrelevant.[76] A policy implication of the exchange model that incorporates the bargaining feature is that public transfers, contrary to what was previously believed, might induce an increase in private transfers since it boosts recipients' bargaining power.[77]

So far, information imperfections have been ruled out. Both the migrant and the household members back home make decisions without feeling that, had they known more, their decision would have probably been different. However, in the real world, migration in general and remittances in particular are subject to informational asymmetries. Whether a migrant's potential income can ensure a flow of transfers depends to a large extent on the perception formed by the migrant's employer about the migrant's productivity. This is because the migrants who are perceived by their employers as productive have higher income and can afford to remit more. Since personal traits often are not visible to others, employers may base their compensation on some average productivity measure not fully reflecting the actual productivity. The extent to which migrants manage to affect such compensation, coupled with the amount of remittances sent home, would indicate whether the migrants are positively selected. Another obvious informational asymmetry arises the moment the migrant is abroad. Those left behind have more information on the economic conditions (e.g., labor market) and other relevant indicators at

[76] In the real world, it is more likely that a mixture of motives is operative rather than a pure altruistic motive. In that case, such factors are taken into account in the remitting decision.
[77] Such a proposition is analyzed in Cox and Jimenez (1992) and Cox, Eser and Jimenez (1998).

home. Finally, the fact that migrants do not have much of the information available to them can lead to moral hazard[78].

3.2.3 A Strategic Motive

The strategic motive was initially introduced by Stark (1995, Chapter 4). Migration and remittances should be seen as interdependent decisions since remittances can be treated as both cause and consequence of migration. Furthermore, given the heterogeneous nature of migrants' skills and the difficulty in measuring their productivity, migration may become subject to statistical discrimination.[79] This opens the door for various arrangements between skilled and unskilled migrants. It is obvious that both sides would want to improve their current situation through the enforcement of an agreed arrangement. Skilled workers would benefit if unskilled workers would stay home and not join them in migrating. Given that the wages of unskilled workers, had they migrated, would have been lower than the wages of their skilled counterparts, the latter could prevent more competition abroad by paying the former a sum of money (i.e., a "bribe") large enough to entice them not to migrate. Unskilled workers would have a total income equal to the sum of the local wages and the "bribe" they receive from the skilled workers. To make such arrangement even more productive, those at home would try to block any free riders (low skilled in this case) given that they would try to migrate once the positive selection has been exhausted.

[78] For instance, remittances may be used for unintended purposes instead of essential ones. For example, remittances may be used to support consumption habits such as cigarettes and alcohol that migrants would rather not fund, instead of other needs that migrants would consider more urgent. Moreover, the migrant cannot monitor the effort put forth by household members into finding a job. They can continue claiming hardship while requesting transfers but may not have the intention of finding a job.

[79] Instead of being paid based on productivity, migrants are paid the average productivity of the minority group they are associated with.

To make this analysis more concrete, as in Rapoport and Docquier (2006) we consider two potential migrants named m and h such that h is less skilled than his counterpart. Such assumption can be formalized by means of a parameter π that denotes the ratio of h's productivity over m's productivity, such that $0 < \pi < 1$. Obviously, there is no information problem[80] if both remained at home. Their respective earning would be I^h (for h) and $\frac{1}{\pi} I^h$ (for m). Upon migrating, m earns his marginal product at destination I^m (assuming h did not migrate). However, if both migrate, given that the employers abroad face difficulty in identifying individual productivity and personal traits, they will be paid their average productivity which is $\frac{(1+\pi)}{2} I^m$.

The complete payoff matrix capturing all possibilities (e.g., migrate/not migrate for both persons *m* and *h*) serves as the guide in the migration decision and can be found in Table 3.1 below. In order for the strategic motive to be effective, two conditions must hold:

1. The outcome without transfers (when both migrate) must be a Nash equilibrium. It requires: $\frac{(1+\pi)}{2} I^m > \frac{1}{\pi} I^h$. (3.13)
2. If condition (3.13) holds, the decision on strategic remittances must improve both players welfare. That requires:

$$I^m - T \geq \frac{(1+\pi)}{2} I^m \qquad (3.14)$$

and

$$I^h + T \geq \frac{(1+\pi)}{2} I^m , \qquad (3.15)$$

with a minimum that inequality need apply to at least one of the two persons.

[80] It can be shown that even within the same country these two people can be subject to asymmetric information problems. However, such an issue is not the focus here and it is left out.

Table 3.1 The Payoff Matrix of Migration Decision

		Person h	
	A migration game	Migrate	Not Migrate
Person m	Migrate	$[\frac{(1+\pi)}{2} I^m, \frac{(1+\pi)}{2} I^m]$	$[I^m, I^h]$
	Not Migrate	$[\frac{1}{\pi} I^h, \pi I^m]$	$[\frac{1}{\pi} I^h, I^h]$

The minimal order transfer derived from (3.15) is:

$$T^* = \frac{(1+\pi)}{2} I^m - I^h \qquad (3.16)$$

By substituting (3.14) into (3.16) we get:

$$I^h > \pi I^m \,, \qquad (3.17)$$

suggesting that side-payments are a way of achieving efficiency if and only if, except for the case when pooled with skilled workers, unskilled workers express no interest in emigration. Assuming the condition is met, remittances can serve as a sufficient mechanism to achieve positive selection. In this case, remittances should be seen as side-payments being processed while migrants and non-migrants are involved in their strategic interaction regarding the decision to emigrate. As mentioned earlier, there is a potential for free riders who can benefit on others' effort to distinguish themselves for the positive selection to take place. This is obviously a weakness of the model.

Despite such pitfall, the strategic motive hypothesis model, as shown in Stark (1995: 97-99), can lead to great predictions:

1. Migration will be selective from the very beginning.

2. Selectivity and remittances are related in a positive fashion.
3. The main destination of remittances would be those with high earning potential since there is no point in paying those who are not threatening to engage in labor migration. Given that those with high earning potential are most likely to migrate, according to this prediction, remittances are addressed to the best of the low skilled workers remaining in the home country.
4. Remittances tend to diminish over time as evolving information erodes the need for statistical discrimination, and remittances end upon the identification of the high-skilled workers.
5. The competing groups described in the strategic interaction above are more likely to form when the wage differential between the home and host country is substantial. It can be seen from (3.16) that, similarly to the altruistic motive model, in the strategic motive model remittances should rise with migrant's income and fall with household's income ($\partial T^*/\partial I^m = \frac{1+\pi}{2} > 0, \quad \partial T^*/\partial I^h = -1 < 0$). The two models part ways, however, since in contrast with the altruism motive model the strategic motive model predicts a more robust transfer response since:

$$\frac{\partial T^*}{\partial I^m} - \frac{\partial T^*}{\partial I^h} = \frac{3+\pi}{2} > 1.$$

Not taking into account the strategic motive for remittances, according to Stark (1995), might be one of the reasons why in various empirical studies the estimates for the altruistic motive are biased upward. However, due to lack of suitable data, the strategic motive has not been empirically explored, despite its potential validity.

Now, we turn our attention to another way of viewing migration and remittances. Let us think of them as decisions affected by our social and familial considerations.

3.2.4 Insurance and Moral Hazard

Studies such as Rosenzweig (1988a, p. 1150) suggest that a reasonable analysis of household behavior must incorporate important environmental and technological factors. Such factors play a role in rural employment, production and labor markets. This allows migrants to serve as insurers for their households left behind in case of rural income drop due to bad weather and other impediments. Similarly, the household would serve as an insurer in case of migrant's unemployment and other hardships. The terms of such insurance contract would depend on the relative bargaining power of the household and migrant. This is without a doubt a Pareto-improving contract. However, since monitoring and the involvement of third parties could be costly, it must be self-enforcing. The household can strengthen the form of such contract through the use of measures that relate to migrant's loss of prestige, loss of family solidarity, diminished chances of inheritance from the household, and so forth. Such weapons in household's hands provide the sufficient enforcement mechanism for such a contract. *Ceteris paribus*, Hoddinott (1994) confirms the power of the inheritance factor on remitting behavior and maintains that rich families would rely more than poor families on migration since the former can better monitor the migrant's side enforcement of the insurance contract through inheritance prospects.

It should be noted that there is a lemons' problem to be recognized here, which is not mentioned in the detailed analysis provided in Rapoport and Docquier (2006). It is normal to think that not only the household can experience economic hardship or a bankruptcy-type of situation. The migrant can go bankrupt too and in some cases not exactly because of the labor

market's failings. It is for example, some migrants might be prone to bad habits like gambling or other risky types of activities, which can lead to total loss of income in some cases. Obviously, this is not part of the insurance contract but such information is not available to households back home. Family members might even brag about the great son or daughter they have, while their son is spending most of the week gambling.

We model now the insurance motive model of remittances behavior. The model described here follows Rapoport and Docquier (2006). Let us consider a two-member rural family living for two periods. The first-period wage for each member is I^0. The second-period wage varies randomly and takes two different values at two different states[81] of nature. The wages for each state are denoted by $\underline{I}^h$ and $\overline{I}^h$ and occur with respective probabilities p and $1-p$, and such that $\underline{I}^h < \overline{I}^h$. The level of uncertainty is the same for all agents in the model. The utility function is assumed identical for everyone and exhibits the well-known additive and separable properties. The expected utility then is expressed as:

$$E(V^0) = v(I^0) + pv(\underline{I}^h) + (1-p)v(\overline{I}^h) \qquad (3.18)$$

where $v' > 0$ and $v'' < 0$ (accounting for risk-aversion).

Now, we recognize the possibility of migration to a location where individuals face no uncertainty[82] and where the second-period wage is I^m. The cost of migration to be financed at the beginning of the second period is denoted by c and individuals cannot cover such cost alone, which, given that there is no credit available in this setting, requires a family arrangement to finance migration:

$$I^0 < c < 2\,I^0 \qquad (3.19)$$

[81]The model could get more complicated if more than two states of the nature were assumed.
[82] In real world individual face uncertainty as migrants as well. This assumption is made here for simplicity.

Arrangements about how the migration cost will be shared may be made in the first period during which the amount of remittances in good and bad state of nature are specified as well. The Pareto-efficient contract that resembles such arrangements then can be written as:

$$Max_{\xi,T_p,T_{1-p}} = E(V^m) + \lambda[E(V^h) - \overline{V}^h], \tag{3.20}$$

where T_p and T_{1-p} are the agreed amounts to be remitted in each state of the nature, ξ represents the migration cost's share covered by the migrant himself, λ represents the staying individual's relative weight in the bargaining, $\overline{V}^h$ is the utility level for h, and $E(V^m)$ and $E(V^h)$ are the expected utility levels for the migrant and the stayer and are expressed:

$$\begin{aligned} E(V^m) &= v(\ I^0 - \xi c) + pv\big(\ I^m - T_p\big) + (1-p)v(\ I^m - T_{1-p}) \\ E(V^h) &= v(\ I^0 - (1-\xi)c) + pv\big(\underline{I}^h + T_p\big) + (1-p)v(\overline{I}^h + T_{1-p}) \end{aligned} \tag{3.21}$$

It should be noted here that T_p is positive, while T_{1-p} can take any value. Equations (3.21) can be solved in general without specifying a particular utility function.[83]

The first-order conditions for equations (3.21) are shown below:

$$-v'(\ I^0 - \xi c) + \lambda c v'(\ I^0 - (1-\xi)c) = 0$$

$$-pv'\big(\ I^m - T_p\big) + \lambda p v'\big(\ I^h + T_p\big) = 0$$

$$-(1-p)v'\big(\ I^m - T_{1-p}\big) + \lambda(1-p)v'\left(\overline{I}^h + T_{1-p}\right) = 0$$

The solutions for ξ^*, ${T_p}^*$ and ${T_{1-p}}^*$ are substituted back into (3.21) and gives us the expected utility levels for the migrant and the stayer under the insurance contract. In order to simplify things further, let's assume that $\lambda = 1$ and $I^m = E(\ I^h)$. It would imply that $\xi^* = 1/2$, which means that the decision to migrate reduces uncertainty to one half and that the expected utility

[83]Rapoport and Docquier (2006) show the solution by assuming a logarithmic utility function $v(.) = \ln(.)$.

levels for the migrant and the stayer under the insurance contract are equalized. The migration decision should be based on the cost associated with it. If the cost is below some value c^*, which depends on how risk-averse the individual is, migration is worthy. Under the assumptions made above, the reduction in uncertainty by one half derives a large enough utility to compensate for the cost of migration.[84]

There is similarity in the predictions generated by the altruistic motive and the insurance motive models regarding the sign of the effect of income I^m on the actual amount remitted. These two models differ, though, with respect to the predictions generated on the timing of remittances. The insurance model ties remittances to income volatility at home and sees irregularity in the way they occur, while the altruistic model predicts a decline in remittances over time. The two models differ in another aspect. *Ceteris paribus*, while the altruistic model predicts higher remittances to households at the bottom of the income distribution, the insurance model predicts just the opposite. Why? Two reasons can explain this prediction: (1) Migration is a better investment for richer families. (2) The model also suggests that richer families are likely to possess more bargaining power, which means that, according to the model, both the likelihood and the size of remittances received by households depend on the extent to which they hold sizeable assets.

Questioning the exogeneity of the number of migrants from a given household and the exogeneity of recipients' income, Rapoport and Docquier (2006) detail a model that incorporates such concerns. The authors derive a rule for what should serve as a threshold cost of the migration decision and conclude that if the cost exceeds such threshold, tendencies of opportunistic behavior and effort reduction surface.

[84]Rapoport and Docquier (2006) illustrate it graphically in Figure 1, page 1153.

3.2.5 Family Loan Arrangements: An Investment Motive

The notion of remittances as a loan repayment was initially modeled theoretically and tested empirically by Lucas and Stark (1985). The difference between this model and the insurance model is that here uncertainty is not an issue. Here, familial arrangement made in this setting focus on increasing family income. In this sense, families support (make loans to) their members at some initial period to invest in education, migration and so forth, and expect to be repaid when such investments produce results. According to the model, families will send members abroad for as long as this increases family income. However, this desire is undermined by the fact that migration is costly. The implication then is that higher-income families will see the cost of migration as less of an impediment than low-income families and thus will pursue such investment opportunities.

We discuss now the model provided by Rapoport and Docquier (2006). Let a typical agricultural family's production function be quadratic, i.e., $\alpha\left(\ell - \frac{\beta}{2}\ell^2\right)$, where ℓ denotes the number (proportion) of members employed in this domestic enterprise, and α is a measure of the quality and quantity of a family's agricultural land and of other technological factors, including the farm capital. The decreasing marginal productivity of labor is captured by β.

The model is concerned with inter-household inequality and not the intra-familial distribution of income, which simplifies matters because we can assume that income is equally shared among all family members. We also assume that individuals live for two periods.[85] Without migration of household members, individual income[86] at each period will be:

[85] This is convenient because it allows for actions to take place in the first period and view their implications in the second period.
[86] The household income come from selling agricultural products and everyone works in the agriculture since there is no first period migration (e.g., $\ell = 1$).

$$I_1^h = I_2^h = \alpha - \frac{\alpha\beta}{2} \qquad (3.35)$$

However, there is a migration possibility which household members can consider (to a high-wage) location and the migration cost per individual potential migrant is denoted by c. This cost can also include any educational expenditure incurred by the migrant household. In this world where credit markets are not available, every outlay at one point in time must be financed by savings at some other point in time.

Given this, it has to be that c is financed by savings in the first period. Since migration takes place only at the beginning of the second period, the proportion of household members working in the family enterprise in the first period is $\ell = 1$. Now, let us denote by m the number (proportion) of migrants in a given household who migrate in the second period and the wage at the high-wage location by I^m. So, I^m substantially exceeds the home country wage and provide the incentives for migration. Following the migration of m of its members, the family's enterprise is left with a labour force equal to $\ell = 1 - m$. (An extreme case of this would result when $\ell = 0$, which means all members migrate.) If we rule risk-aversion out and assume that inter-temporal discounting of income does not exist, the utility generated by agents should be linear in income. It implies that not only does "more is better" hold true in the entire range of income, but also that the amount of satisfaction for every additional dollar of income remains the same, regardless of where along the income range one is. To continue the analysis, we assume that the minimal level of income to just survive is I^{min}, which should be considered put aside to finance consumption at each period. In a sense, the inclusion of I^{min} states the obvious: families do recognize the need for setting priorities. However, this I^{min} can be set to zero without altering the implications of the model.

The effect of the technological parameter reflecting a family's wealth α (e.g., the quantity and quality of family's land) on the number of the family's migrants is ambiguous. There are forces in play that would provide more incentives for poor than rich families to send off more migrants, since the opportunity cost of their migration (their forgone earnings) is lower for them. But, the liquidity constraint might present a greater migration barrier for the poor than the rich families.[87]

We derive here a rule for determining the maximal number of migrants for a family. In turn, such number would allow us to find out the extent to which the liquidity constraint is binding.

We initially write the constraint as follows:

$$\alpha\left(1-\frac{\beta}{2}\right)-mc \geq I^{min} \Leftrightarrow m \leq \frac{\alpha}{c}\left(1-\frac{\beta}{2}\right)-\frac{I^{min}}{c} \equiv m^{c}(c,\alpha) \qquad (3.36)$$

The constraint restates what was mentioned above: the number of migrants (expressed as proportion here) for the typical family increases with α since a higher α is associated with richer families. It also suggests that the number of migrants decreases with higher migration cost c and the minimum income of subsistence.

The pursuit of the family's goal of income maximization allows the derivation of the optimal unconstrained number (proportion) of migrants sent off by a family:

$$Max_{m} = \alpha\left(1-\frac{\beta}{2}\right)-mc+\alpha(1-m)-\frac{\alpha\beta}{2}(1-m)^{2}+mI^{m} \qquad (3.37)$$

The optimization results into:

$$m^{*}=\begin{cases} 0 & if \quad -\alpha+\alpha\beta+I^{m}-c<0 \\ 1 & if \quad -\alpha+I^{m}-c>0 \\ \dfrac{I^{m}-c}{\alpha\beta}-\dfrac{1-\beta}{\beta} & otherwise \end{cases} \qquad (3.38)$$

[87] It also prevents low-productivity households from sending out migrants.

Now, it is logical to think that the effective (actual) proportion of migrants is the minimum between the optimal and the constrained proportions: $m^{eff} = Min\{m^*, m^c\}$. Here, a brief discussion about the nature of the likely outcomes is in order. Earlier, we had a discussion about how the participation constraint is affected by the family wealth and cost of migration. With that in mind, we turn now to the most interesting case, the interior solution. In order to have interior solutions, the constrained rate of migration and the optimal rate must move in different directions for variations in α. More specifically, while the optimal rate decreases with α, the constrained migration rate increases with α.

Continuing to assume equal sharing among household members, we can express the amount received by each remaining resident as the difference between the average familial income and the domestic income per remaining member:

$$\left[I^m m^{eff} + \alpha(1 - m^{eff}) - \frac{\alpha\beta}{2}(1 - m^{eff})^2\right] - \left[\alpha - \frac{\alpha\beta}{2}(1 - m^{eff})\right] = m^{eff}\left[I^m - \alpha + \frac{\alpha\beta}{2}(1 - m^{eff})\right] = T \tag{3.39}$$

This function is concave of the migration rate for reasons mentioned above. The sign of the total derivative of remittances with respect to α may be positive or negative based on the extent of the migration volume and the nature of the migration regime (constrained or unconstrained). In fact, $\frac{dT}{d\alpha} = \frac{\partial T}{\partial m^{eff}}\frac{dm^{eff}}{d\alpha} + \frac{\partial T}{\partial \alpha}$ is indeed a function of α and m^{eff}.

For interior solutions, the model's prediction on the relationship between the amount of remittances sent to each remaining household member and the level of pre-remittance income suggests a U-shaped type of relationship. By letting α vary and choosing the values for parameters β, I^{min}, I^m and c we can get a solution that supports the prediction. There is

empirical evidence that supports such prediction as discussed in Rapoport and Docquier (2006, p. 1160-61).

3.2.6 Remittances As Investment Towards Receiving An Inheritance

Households and migrants are likely to participate in an informal contract, which consists of a mutual agreement based on the idea that the migrant sends money to the household and in return they are reserved the right to inherit household assets. Before this agreement takes effect, the migrant and the household have to determine the right amount of remittances that both sides would agree on. The agreement has to be binding and enforceable. On one hand, the migrant has to deliver on the promise to remit a certain amount of money or risk losing the right to right to inherit some of the assets of the household. On the other hand, the household has to offer the promised compensation to the migrant if remittances are delivered. This is relatively easy to implement when the remittances and the compensation in the form of inheritance occurs within a short period of time. However, when there is a large time gap between the delivery of remittances and the compensation, migrants might begin to deviate from the contractual agreement. For instance, assuming that the household covers the migrant's migration costs and the migrant remits to the household following migration, how can the agreement remain intact?

In order for the agreement to be enforceable, there must be two elements that make the agreement compatible to both sides. They are punishment if agreement is breached and the existence of an environment driven by certain social norms (e.g., the punishment imposed by society on those who breach the contractual agreement). This is based on the theory of strategic bequest introduced by Bernheim, Shleifer and Summers (1985). According to the theory, parents use bequests to monitor the behavior of their children in a way that is reflective of what the

parents perceive to be the relative level of attention they get from their children. The migrant is expected to remit a certain amount but households can entice them to remit more by offering inheritance of additional assets.

If migrants do remit more to inherit more, this can be considered a case of a strategic investment in inheritance through remittances, as seen from the migrant's standpoint. The household would view this as an enforcement device to continually secure remittances. In order to investigate the dynamics of the competition for inheritance through remittances, it would be useful to consider the analysis of migrants' remittances sent to the same household. I explore this extension in Chapter 4, where I analyze the remittances sent by multiple siblings abroad to the same household.

3.2.7 Reading the Migrant's Mind: The Case of Mixed Motives

Since it would be unrealistic to think that remittances are driven by a single motive, we leave open the possibility that mixed motives are more plausible in explaining remittances. The challenge we face is twofold: First, migrants might be heterogeneous in their motives for remittances. Second, multiple motives might be residing simultaneously within the same individual. There is a consensus among studies[88] analyzing theoretically or empirically the mixed motives for remittances. Despite the approach used in each study, they all agree about the nature of altruistic motive relative to other motives. They maintain that altruism might obscure the importance of other motives, but it does not mean that such motives do not exist. A summary of the motives provided by Rapoport and Docquier (2006) is provided in Table 3.2.

[88] Rapoport and Docquier (2006), Stark and Lucas (1988), and Funkhouser (1995).

Table 3.2 Remittances' Sensitivity to Various Explanatory Variables

	Individual motives				Familial arrangements	
Explanatory Variables	*Altruism*	*Exchange*	*Inheritance*	*Strategic motive*	*Insurance*	*Investment*
Migrant's income	>0	>0	>0	>0	nde (*)	>0
Migrant's education	nde	<0(*)	nde	>0	nde	>0 (*)
Time since arrival	≤0	nde	nde	≤0	nde	nde
Distance from family	≤0	nde	<0	nde	nde	>0
Number of migrants/heirs	<0	nde	Inverse U-shape effect	nde	nde	nde
Recipient's long run income	<0	$\gtrless 0(*)$	nde (*)	<0	nde (*)	$\gtrless 0$
Adverse short run shocks in recipients' income	>0	$\gtrless 0(*)$	nde	>0	>0	>0
Recipient's assets (land, cattle, etc.)	nde	nde	>0 (*)	nde	nde	nde
Specific predictions	$\frac{\partial T}{\partial I^m} - \frac{\partial T}{\partial I^h} = 1$	It is possible that $\frac{\partial T}{\partial I^h} > 0$	Role of parental assets and number of heirs	(i) $\frac{\partial T}{\partial I^m} - \frac{\partial T}{\partial I^h} > 1$ (ii) $\frac{\partial T}{\partial I^h} = -1$	(i) Irregular basis (ii) No effect of I^h in the long run	Inverse U-shaped effect of I^h

Note: nde = no direct effect (after controlling for migrants' and/or recipients' incomes)
(*)Remarkable prediction
Source: Rapoport and Docquier (2006, p. 116)

As the table shows, the sign of the marginal effect of each explanatory variable on the amount of remittances can either be unambiguously predicted or suggests "no direct effect" (nde). The latter means that, *ceteris paribus*, the coefficient associated with an explanatory variable is non-significant. For example, if migrants' incomes are taken into account, their education level should be irrelevant (i.e., not have a significant effect) to the amount of remittances under the altruistic motive. However, the education level is expected to have a negative impact on the amount of remittances under the exchange hypothesis. This is mainly due to the fact that highly educated migrants are less likely to return.

3.3 Conclusions

A detailed micro-economic analysis of remittances shows that there is no single motive driving migrant remittances. In fact, the motives for remittances are often intertwined and simultaneously impact the remitting behavior. Progress has been made to better understand the motives that fuel remittances; empirically, the quality of the insights from remittances research depends on the quality of data. Moreover, the inclusion of country-specific or cultural elements must be seen as a necessity in research of this type. However, this does not exhaust the space of all elements relevant to remittances.

Even the most comprehensive studies[89] in the area of motives for remittances have not fully captured the migration-remittances link. For instance, they show that poorer families have stronger incentives to migrate, while the rich are less constrained. The question then is: Do incentives really matter if barriers, such as the migration costs, prevent the poor from migrating

[89] E.g., Rapoport and Docquier (2006), Stark and Lucas (1988), and Funkhouser (1995).

and therefore from remitting in the first place? From a social policy standpoint, figuring out how to increase remittances may require more than just providing incentives toward the use of remittances. It may also require addressing the migration barriers for the poor, especially when countries experience high unemployment.

Chapter 4

Do Albanians Abroad Remit Out of Love, to Insure Themselves or Simply Pay Their Old Debt?

4.1Introduction

The first international migration wave of Albanian workers, following the beginning of reforms in Eastern Europe, began in 1990. This marked the end of about five decades of isolation and misery under the communist regime. Migration and remittances from migrants abroad have remained an important part of country's socio-economic fiber more than two decades from the beginning of the transition to a free market economy.

Remittances make up a large share of the Albania's GDP, and understanding the motives and the trends of the remittances sent from abroad is very important to decision-makers. A report

prepared by the Bank of Albania (2006) showed that remittances were a critical source of income for households, reaching 33 percent of disposable income of an average family recipient and almost 40 percent in rural areas. In fact, the remittances share of the GDP in 1998 reached 16 percent, equivalent to 56 percent of country's exports.

The World Bank (2011) reports that Albania ranked 9th in the world in 2010 among the top migration countries (when migrants are expressed as percentage of the population) and 19th among top countries receiving remittances (expressed as percentage of the GDP). Remittances have been the main source of income for many households and a major source of foreign currency for the country.

Some of the most important issues about migrants' remittances relate to the uses of such remittances by the receiving households and the motives that entice the migrants to remit. While the former set of questions has been largely explored in the literature, the latter have been viewed in many cases as trivial and difficult. The pioneering work of Stark and Lucas (1988) addresses some questions about the motives for migrants' remittances. Other interesting empirical research includes Brown and Poirine (2005), which analyzes the remittances of Pacific Island migrants to Sidney and Amuedo-Dorantes and Pozo (2006) which analyzes the remittances sent by Mexican migrants with work experience in the United States. Like Stark and Lucas (1988), this study also analyzes some of the potential motives for the remittances sent by Albanian workers abroad and investigates whether such remittances are driven by certain motives.

This study is organized as follows: First, I summarize some hypotheses regarding remittances. Second, I provide a summary of the data and methodology. Third, I analyze the relationship between schooling and remittances. Fourth, I analyze the relationship between remittances and inheritance. Fifth, I analyze the role of adverse shocks on remitting behavior and

generate remittances – duration of absence profiles. Sixth, I estimate a full model of all explanatory variables from previous exercises. Seventh, I summarize the conclusions of the empirical results.

4.2 Hypotheses Regarding Remittances

The literature on remittances can be classified in two main groups. One group analyzes the impact of remittances in the receiving countries, whereas the other focuses on the motives behind migrants' decision to remit.

A study belonging to the first group, Kalaj (2010) employs the 2005 Living Standard Measurement Survey for Albania and analyzes the impact of remittances on human capital as measured by education attainment. The study is based on a proportional hazard model and finds that "receiving remittances from household members working abroad increases the hazard of leaving school after the end of secondary education" (p. 16-17). The author details the findings for subgroups by gender, location and so forth, but does not address another potential reason for the decision to drop out of school. It might very well be that those finishing their secondary education leave school because they intend to migrate, and a question on the intent to migrate is included in the dataset and could be investigated.

Gërmenji and Milo (2009) analyze return migration to Albania, focusing specifically on whether returnees transfer human and financial capital back home upon their return, on their position in the labor market, and on the developmental impact of return migration. The authors use data from a European Training Foundation (ETF) survey of 1,000 Albanian returnees. The

analysis is based[90] on a life cycle utility maximization problem and the estimation employs a multinomial *logit* approach. The study finds that returnees transfer financial and human capital but human capital transfer takes place at a lesser extent. The study does not find a link between return migration and economic development in Albania.

In the second group, several motives have been suggested to explain migrants' remittances, which are explored in detail in Chapter 3. The theoretical models are summarized in Rapoport and Docquier (2006). A first motive has to do with altruism, and there is no denying of the fact that most people care about their loved ones and therefore want to help them out. According to a second motivation for remittances, an implicit exchange takes place when the migrants remit for services provided by the recipients (Stark and Lucas, 1988). Such services might vary from family's help in maintaining the migrant's social status to emotional satisfaction and tangible assets. Another motive originates from familial interactions. This may take the form of a written, or most likely unwritten, insurance contract that protects its members against shocks (Rosenzweig, 1988), but remittances may also be a loan repayment for the costs of migrant's education and emigration (Poirine, 1997).

Amuedo-Dorantes and Pozo (2006) analyze the remittances sent by Mexican immigrants with work experience in the United States and focus on the motives for such remittances. By employing micro data[91] the authors specifically investigate the insurance motive for the remittances sent to Mexico. Employing a *tobit* model and a two-part selection model, they conclude that, in addition to the altruistic motive, "immigrants are also likely to behave as risk-averse economic agents who purchase insurance in the face of economic uncertainty" (p. 248).

[90]The procedure developed by Dustmann and Kirchkamp (2002).
[91]The data for this study were from *Encuestra sobre Migracióon en la Frontera Norte de México* (EMIF) and collected by the Colegio de la Frontera Norte on Labour Migration.

Nikas and Baklavas (2009) analyze the saving and remitting attitudes of Albanian emigrants by employing data gathered by a survey of 1,006 households with at least one member working abroad. The study employs an exploratory data analysis diagrammatic approach and reaches an inconclusive explanation about saving and remittance attitudes. It maintains that since the Albanian emigrants are very heterogeneous with respect to the education attainment, marital status, age and national origin, the theory would suggest that with heterogeneous emigrants come heterogeneous saving and remitting decisions. However, this claim is not supported by the facts[92] presented later in this chapter and it is not supported by Albanian official statistics such as the censuses and other facts.[93] Hence, the motives for such conclusion remain unclear.

Before we get to the next section, a comment is in order. The comprehensive theoretical background of Rapoport and Docquier (2006) is a blueprint for anyone who wants to analyze motives behind remittances. However, testing empirically the motives for remittances, summarized in chapter 3, is subject to data availability.

4.3 Methodology and Data

In this study, I analyze the migration decision and motives for remittances by treating the migration and remitting decision as simultaneously determined. This simultaneous equation model is estimated under a maximum likelihood approach. I focus particularly on the loan repayment and inheritance motives for remittances. Exploring other motives requires information

[92] It is puzzling to see how the authors characterize the Albanian emigrants are "very heterogeneous" (p. 482) group ethnicity-wise, when according to the CIA Factbook (2011) the population of Albania is rather homogeneous (95 percent of the population is comprised of ethnic Albanians, 3 percent Greeks and 2 percent others). However, the CIA Factbook (2011) also recognizes the existence of some segments in Greece, according to which the ethnic Greek population in Albania reaches 12 percent of the population.

[93] Vullnetari (2007, p. 45, footnote 42) points out that a major source of dispute between Greece and Albania is the size of the ethnic-Greek population in Albania. Another source of dispute is the status and treatment of ethnic-Greek Albanians by the Albanian government and the treatment of Albanian migrant workers by Greek authorities.

on migrant and recipient income that is not available in the data. The maximum likelihood specification employed here is detailed below. But, before detailing the model, we briefly describe the data.

4.3.1 Data

The data used in this study are from the Albania Panel LSMS gathered for the period 2002-2004. The survey was carried out by the Albanian Institute of Statistics (INSTAT) with technical and financial assistance of the World Bank. The LSMS project is an international project supported by the World Bank and aims at facilitating the improvement of household survey data for policy needs.

Since data on migrants' education, duration of absence, age, gender etc., are only available for 2003 (wave 2 of the panel), this study is limited to using year 2003 data only. The information on remittances in wave 2 provides information about the remitters not included in waves 1 and 3 and therefore the analysis will be based on this wave only. Such information consists of a set of detailed questions on all adult children of the head regardless of where they live.

Descriptive statistics of the data are presented in Table 4.1 below. The variables summarized in this table are the migrant's age, the logarithm of annual remittances[94] (in thousands of *Leks*), the migrant's number of years of schooling, the duration (in years) of migrant's absence, the number of siblings abroad, a male dummy, a migrant urban origin dummy, a youngest migrant

[94] Remittances are measured in thousand *Leks*, the Albanian currency. Despite exchange rate variations, in order to provide the reader with a measure of the magnitude of remittances, for simplicity it can be assumed that 100 *Leks* are equivalent to a US Dollar.

sibling dummy, a dummy for migrant living with spouse abroad, a dummy indicating the time interval since the migrant left school, a dummy indicating whether the household in Albania owns a plot of land, and a head of household age variable.

Table 4.1 reveals the following information regarding the characteristics of our data. In general, migrant adult children of the head and spouse are younger than the average age of the pool of adult children (compare columns 1 and 2). Moreover, among migrant adult children, the ones who do not remit anything at all are much younger than the pool of adult children (compare columns 2 and 4), whereas the individuals for whom we have no information regarding remittances are on average older than the average remitter (compare columns 3 and 5).

The individuals who remitted positive amounts of money to their households have, on average, more schooling than the individuals who did not remit at all (compare columns 3 and 4), whereas those for whom we have no information regarding their remittance behavior have, on average, more schooling than both the remitters and non-remitters (compare columns 3 and 5, as well as 4 and 5).

Non-remitters have been in migration for a shorter period of time than remitters (compare columns 3 and 4). There is a larger share of males than females who migrate. Among migrants, an even larger share of males remit to their households back home (compare columns 2 and 3). A larger share of migrants and remitters come from rural areas, whereas the individuals for whom we do not know about their remitting behavior come, for the most part, from urban areas in Albania. More than half of the households own a plot of land. A very large share of non-remitters is comprised of people who have graduated recently (see column 4). Most heads of households are 61 years of age or older.

Table 4.1 Descriptive Statistics

	All Adult Children of the Head and/or Spouse N=2,281 **(1)**		Adult Migrant Children of the Head and/or Spouse N=1,008 **(2)**		Adult Migrant Children of the Head and/or Spouse with Positive Remittances N=514 **(3)**		Adult Migrant Children of the Head and/or Spouse with Zero Remittances N=157 **(4)**		Adult Migrant Children of the Head and/or Spouse with Unknown Remittances N=337 **(5)**	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Age of Adult Child of Head and Spouse (years)	34.14	9.36	31.26	8.81	31.11	8.61	21.62	2.58	35.98	7.11
Log of Annual Remittances	n.a	n.a.	n.a.	n.a.	10.89	1.28	0.00*	0.00*	n.a	n.a
Adult Child's Years of Schooling	10.59	3.43	10.88	3.39	10.56	3.23	9.93	3.13	11.81	3.54
Duration of Absence (years)	n.a	n.a	7.90	7.10	7.69	6.85	2.62	2.16	10.69	7.51
Number of Siblings Abroad	n.a	n.a	1.47	1.47	1.36	1.26	1.18	1.31	1.77	1.76
Number of Adult Children in the Household	4.14	2.18	3.75	2.08	3.58	1.86	2.96	2.02	4.38	2.25
Male (dummy)	0.48	0.49	0.63	0.48	0.75	0.44	0.50	0.50	0.52	0.50
Urban Origin (dummy)	0.46	0.49	0.49	0.50	0.42	0.49	0.49	0.50	0.61	0.49
Youngest Sibling (dummy)	0.35	0.47	0.45	0.50	0.45	0.50	0.69	0.46	0.34	0.48
Left School 0 to 8 years ago (dummy)	0.26	0.44	0.38	0.48	0.37	0.48	0.88	0.31	0.16	0.37
Head's Age 46 to 60 (dummy)	0.29	0.45	0.36	0.48	0.36	0.48	0.67	0.47	0.22	0.41
Head's Age 61 and over (dummy)	0.69	0.46	0.60	0.49	0.60	0.49	0.22	0.41	0.78	0.41
Household owns plot of land (dummy)	0.57	0.49	0.53	0.49	0.60	0.48	0.54	0.49	0.43	0.49
Distance from the nearest bus station (minutes)	15.52	18.77	13.70	15.10	14.07	15.45	13.85	13.65	13.05	15.22
Shocks (dummy)	0.23	0.41	0.20	0.40	0.16	0.36	0.23	0.42	0.25	0.43

*For estimation purposes we assume that instead of zero, the amount of remittances for this group is 1 *Lek*. Since the natural logarithm of zero is undefined, and the natural logarithm of one is zero, remittances equal to 1 *Lek* allow us to keep these observations for our Maximum Likelihood Estimation

About a quarter of all households experienced some kind of shock during 2002. However, there are fewer that experienced shocks among the remitters' households. While these shocks took place in 2002 and we have no information on remitting behavior for that year, it is certainly a possibility that one of the reasons for fewer shocks among the remitters' households might be the flow of earlier remittances by the same individuals in our data. This is not surprising when considering that a large share of Albanian households have been completely or in part relying on remittances during transition.

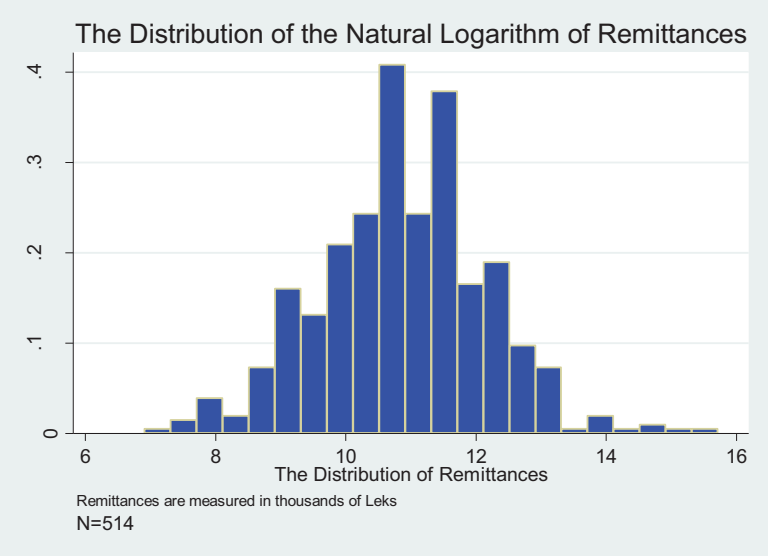
The sample is comprised of 2,281 individuals, 1,273 of which did not migrate and 1,008 did migrate. Of these 1,008 migrants, 514 sent positive remittances to their households; 157 migrants sent no remittances according to their families in Albania; and for 337 migrants there is no information available regarding their remitting behavior. The observations for which the remittances are zero or the information is missing are kept in the analysis are suitably integrated into the econometric model: while such observations do not reveal any information regarding the motives behind remittances, they are useful for estimating the migration decision equation. Remittances are measured in thousands of *Leks*, the Albanian currency and their frequency distribution is shown in Figure 4.1 below.

The average remittance sent by an adult child of the head and spouse, during the period of one year prior to the survey, was 131,996 *Leks* and remittances ranged from 1,000 *Leks* to 6,700,000 *Leks*. To put these figures in context, we should note that, according to the World Bank[95], the GDP per capita in 2003 was about 1, 650 dollars or approximately 165,000 *Leks*. The

[95] World Bank (2011)

income figures reported by INSTAT have been altered several times and for that reason we are not referring to them.

Figure 4.1 The Distribution of the Natural Logarithm of Remittances



*The number of observations for positive remittances is 514.

4.3.2 A Maximum Likelihood Estimation of Migration and Remittance Equations

There are two issues to consider as we analyze the motives for remittances. First, the remittances sent to households should not be viewed separate from the migration decision. Second, the migrants are self-selected and do not represent the entire population. The first issue is addressed by simultaneously estimating the migration and the remittances equation. The second issue is addressed by correcting for self-selection and making the analysis apply to the larger population. Since individuals who migrate are self-selected, the first of the two simultaneous equations included in the maximum likelihood function is a *probit* equation of the migration status; the second equation describes remittance behavior.

As for the *probit* equation, the dependent variable indicates the person's migration status, taking the value of one if the individual is an international migrant and zero if he/she is in Albania. The independent variables include the individual's age, the number of years of schooling, a male dummy, the distance from the nearest bus station and the number of adult children in the household. The last two variables are intended to account for some of the circumstances that might affect the migration decision. The distance from the nearest bus station serves as a proxy for the migration cost: larger distances are expected to serve as an additional obstacle to the migration decision. A larger number of adult children in Albania and abroad, depending on a family's circumstances, can facilitate or make migration more difficult. For an individual considering migration, more siblings may mean relief from family obligations (e.g., caring for an elderly or ill parent) and/or more networking in arranging[96] migration. It should be also noted that migration is a difficult psychological and emotional decision to make. And yet, this has been the least of obstacles[97] that an individual who wished to migrate was likely to encounter.

The second equation is a remittances regression equation. The dependent variable is the natural logarithm of the annual remittances sent to a household by adult children abroad. The independent variables, depending on the motive being investigated, include the number of years of migrant's schooling, a male dummy, a land ownership dummy, the age of the head of household, etc.

[96]Albania has been under very strict visa regulations until recently. Many migration decisions relied on finding someone influential or an insider at some foreign embassy in order to get a visa issued. Other decisions where based on making arrangements at the destination, mostly Greece and Italy, and getting there without a visa.

[97]Legal migration has required working visas and they were very hard to get. As a result, many people were forced to find alternative, and often illegal, ways to migrate in order to support their families. Even visitor visas were not issued very often, since foreign consulates to Albania assumed that Albanian workers would remain in their countries and not honor the visa limitations. This situation continued until December 2010 when Albania became a country in which a liberalized-visas regime was put in place. None of this is represented in the LSMS data that are used for this study.

The migration decision and the remittances sent by migrants abroad are simultaneously evaluated in this model. This allows the migrants to be self-selected both in their migration status and their remittance behavior, making our estimation results representative of the entire population—subject to the assumptions that are needed to formulate the likelihood function that underlies the estimation process. Let us denote by Y_{1i}^* and Y_{2i}^* respectively a latent variable that measures the utility derived from the migration status and the utility derived from remittances sent to the household. The migration equation is expressed as:

$$Y_{1i}^* = x_{1i}'\beta_1 + \varepsilon_{1i} \qquad (4.1)$$

where x_{1i} is an array of variables likely to affect the migration decision and ε_{1i} represent the array of corresponding error terms. The migration latent variable can take two values:

$$Y_{1i} = 1 \text{ if } \varepsilon_{1i} \geq -x_{1i}'\beta_1 \qquad (4.2a)$$

$$Y_{1i} = 0 \text{ if } \varepsilon_{1i} < -x_{1i}\beta_1 \qquad (4.2b)$$

If individual i is a migrant, the remittances equation is expressed as follows:

$$Y_{2i}^* = x_{2i}'\beta_2 + \varepsilon_{2i} \qquad (4.3)$$

where x_{2i} is an array of variables likely to affect remittances and ε_{1i} represent the array of corresponding error terms. Importantly, ε_{1i} and ε_{2i} are jointly normally distributed with mean 0 for both, with variance equals to σ_1^2 and σ_2^2 respectively, and correlation coefficient ρ. As is common with probit equations such as (4.2a-4.2b), σ_1^2 is standardized to 1.

There are four possible scenarios to be considered:

1. Non-migrant: $Y_{1i} = 0$ if $\varepsilon_{1i} < -x_{1i}'\beta_1$
2. Migrant, not remitting: $Y_{1i} = 1, Y_{2i} = 0$ if $\varepsilon_{2i} \leq -x_{2i}'\beta_2$ and $\varepsilon_{1i} \geq -x_{1i}'\beta_1$;
3. Migrant, remitting: $Y_{1i} = 1, Y_{2i} > 0$ if $\varepsilon_{2i} > -x_{2i}\beta_2$ and $\varepsilon_{1i} \geq -x_{1i}'\beta_1$;
4. Migrant, remittance is not observed: $Y_{1i} = 1, Y_{2i}$ is not observed, so $\varepsilon_{1i} \geq -x_{1i}'\beta_1$ only.

The log-likelihood function that would allow us to simultaneously estimate the coefficients of the relevant variables to the migration decision and remittances sent to households back home can be written in various parts (corresponding to the four different scenarios) as:

$$ln\mathcal{L}_i = ln\Phi_1(-x'_{1i}\beta_1) \quad \text{if} \quad Y_{1i} = 0 \tag{4.4a}$$

$$ln\mathcal{L}_i = \ln\left\{Prob\left[\frac{\varepsilon_{2i}}{\sigma_2} \leq -\frac{x'_{2i}\beta_2}{\sigma_2}\right] - Prob\left[\varepsilon_{1i} \leq -x'_{1i}\beta_1,\ \frac{\varepsilon_{2i}}{\sigma_2} \leq -\frac{x'_{2i}\beta_2}{\sigma_2}\right]\right\} \equiv \ln Q_i$$

$$\text{if} \quad Y_{1i} = 1 \ \text{ and } \ Y_{2i} = 0 \tag{4.4b}$$

$$ln\mathcal{L}_i = \ln\left\{\frac{1}{\sigma_2}\phi_{\mathrm{i}}\left(\frac{Y_{2i}-x'_{2i}\beta_2}{\sigma_2}\right) \mathrm{Prob}[\varepsilon_{1i} \geq -x'_{1i}\beta_2|\varepsilon_{2i}]\right\}$$

$$= \frac{1}{2}\ln(2\pi\sigma_2^2) - \frac{1}{2\sigma_2^2}(Y_{2i} - x'_{2i}\beta_2)^2 + lnq_i$$

$$\text{if } Y_{1i} = 1 \text{ and } Y_{2i} > 0 \tag{4.4c}$$

$$ln\mathcal{L}_i = \ln[1 - \Phi_1(-x'_{1i}\beta_1)] \quad \text{if} \quad Y_{1i} = 1 \ \text{ and } \ Y_{2i} = \text{not observed} \tag{4.4d}$$

where $q_i = 1 - \Phi_1\left[(1-\rho^2)^{-\frac{1}{2}}\left(-x'_{1i}\beta_1 - \rho\frac{Y_{2i}-x'_{2i}\beta_2}{\sigma_2}\right)\right]$. In deriving the likelihood function, note that if $\begin{pmatrix}\varepsilon_{1i}\\ \varepsilon_{2i}\end{pmatrix} \sim N\left[\begin{pmatrix}0\\0\end{pmatrix}, \begin{pmatrix}1 & \rho\sigma_2\\ \rho\sigma_2 & \sigma_2^2\end{pmatrix}\right]$, then $\varepsilon_{1i}|\varepsilon_{2i} \sim N\left(\rho\frac{\varepsilon_{2i}}{\sigma_2}; 1-\rho^2\right)$.

We should note that ρ is not estimated directly but rather in a transformed fashion. In fact, $\rho = \frac{e^{\omega}-1}{e^{\omega}+1}$, where ω is directly estimated[98] in each maximum likelihood specification. It takes values from negative infinity to positive infinity and is estimated directly through the Maximum Likelihood Estimation procedure.

The correlation coefficient ρ captures the correlation between the disturbance terms in the migration and the remittances equations. It is a measure of how the unobserved factors jointly

[98]We actually estimate ω, which is a transformed version of ρ, and then retrieve an estimate of ρ from ω and a standard deviation of ρ by means of the delta method (see Greene (2003, p.70)).

affect the decisions mentioned above. It takes values from -1 to +1, with -1 indicating that the individuals extremely likely to migrate (due to unobserved factors) are extremely unlikely to remit, and +1 indicating that the individuals extremely likely to migrate (due to unobserved factors) are also extremely likely to remit. In real world, outcomes for the ρ found from a Maximum Likelihood Estimation are more likely to take values in between and less likely to take values in the extremes. Such proposition stems from the nature of the problem at hand. It would be highly unlikely to see all those who migrate (due to unobserved factors) not remit at all. Similarly, it is highly unlikely to see everyone who migrates (due to unobserved factors) remit to his/her household back home.

4.4 Empirical Analysis

Migration and remitting decisions are viewed as simultaneously determined. I explore various maximum likelihood specifications of such decisions to test several motives for remittances. Since remittances are not observable unless the worker migrates, we must consider effects of sample selection biases when estimating the model we detailed above.

In analyzing remittances, we consider three motives: remittances as repayment of human capital investments, remittances as expression of the intention to inherit assets from one's parents, and remittances as expression of altruism. We also analyze whether migrants respond to shocks reported by their households. The LSMS data are inadequate to address the other motives for remittances that are listed in Chapter 3.

Specifically, we start with an analysis of whether remittances may be a repayment of the schooling costs. Then we analyze whether remittances are driven, at least in part, by the desire to

inherit. We also discuss the implications of the evidence in the various specifications in the light of the altruistic motive and the response to shocks. Finally, we recognize that the motives of the remitters may be mixed and that remitters may remit for more than one reason. Thus, we merge the various specifications into an all-inclusive specification to analyze the overall impact of the aforementioned motives on remittances.

4.4.1 Schooling Costs and Remittances

Research[99] has shown that the country from which a migrant's education and labor market experience is acquired matters. The extent to which education and experience transfer from the country of origin to the host country varies from country to country, and as a result, the impact of schooling on remittances may vary as well. Mane and Waldorf (2010) investigate the issue of human capital transferability among the Albanian immigrants in the United States as compared to their Italian counterparts.

If human capital is non-transferable, as the authors argue, then the wage premium due to education disappears and highly educated workers are not necessarily likely to remit more than their less educated counterparts. Another important issue resulting from the lack of human capital transferability is the need to reacquire more human capital following migration, which would suggest that less of the migrant's time is devoted to the labor market. If this is the case, it would imply that if highly educated migrants were ever inclined to remit more than others, it should happen at a later time, not immediately after they leave school and migrate.

Lucas and Stark (1988), Chiswick and Miller (2009), etc., found that remittances rise with the level of migrant's education. This result is not unexpected since wages also rise with

[99] Friedberg (2000) and Akresh (2006).

education. However, certain factors such as lack of human capital transferability can contribute to making this relationship between remittances and education insignificant. If highly educated workers have hard time transferring their human capital abroad, they are likely to acquire more human capital at their destinations. This takes resources away from the labor market, undermines earnings, and as a result remittances. While we want to be cautious and not conclude that any insignificant or even negative relationship between education and remittances is due to lack of human capital transferability, recognizing the transfer barrier as one of the potential reasons should be deemed appropriate.

We turn now to our results for the analysis of the relationship between remittances and schooling (Table 4.2). In order to leave open the possibility of any human capital transfer obstacles and acquiring of additional human capital following migration, we distinguish between migrants who recently left school (e.g., 0 to 8 years) and those who left school longer ago (e.g., 9 years or more). It would be logical to think that the former are more likely than the latter to go back to school if needed. Our results show that age has a significant negative impact on the decision to migrate. However, if we distinguish between the recent graduates and earlier graduates, we find that age for the former has no impact on the migration decision. Differently stated, this result suggests that migration among recent graduates is a widespread phenomenon.

Given the high unemployment rate and lack of experience in the labor market, many recent graduates migrate soon after their graduation. Highly educated migrants in both urban and rural areas who graduated more than 8 years ago are more likely to migrate than their less educated counterparts. *Ceteris paribus*, there is a significantly higher probability for a male worker to migrate internationally than his female counterpart.

The decision to migrate is also affected by various social and environmental factors. We use the distance from the nearest bus station as a proxy for transportation accommodations and our results show that larger distances from the nearest bus station discourage migration, especially in rural areas. We also include in our analysis a proxy for family arrangements and networking, namely the number of adult children of head and/or spouse in the household. The effect of this variable depends on specific household arrangements. For, instance, while having other siblings may help networking in preparing to migrate, it may undermine the chance of migration if the family income is low and the migration costs are high. The effect of the number of adult children of the head and/or spouse on the decision to migrate is insignificant. This result suggests that the aforementioned factors may work in opposite directions with respect to migration decision.

We turn now to the remittances portion of Table 4.2. Our results show that, while overall more schooling means more remittances, for the recent graduates more schooling does not translate into more remittances across the board. The effect of recent graduates' schooling on remittances is positively significant only if the migrant comes from rural areas in Albania (column 4). According to the analysis regarding the migration decision above, we conclude that highly educated recent rural graduates are less likely to migrate but if they do migrate, they remit more than their counterparts. This is an interesting result. For earlier graduates this effect is positively significant for all migrants (column 5) and urban and rural migrants separately (columns 6 and 7). We find that male migrants remit more than their female counterparts, with the exception of urban earlier graduates (column 6). The migration decision portion of the analysis above revealed that males are also more likely to migrate.

Distinguishing between migrants of urban and rural origin has led us to a very important result. When it comes to urban migrants, the remitting behavior seems to be more reflective of

their circumstances (e.g., time since they left school) whereas in the rural migrants' case, the time since they left school is irrelevant to their remitting behavior. In fact, their remitting behavior has more to do with the community they come from (e.g., rural areas). This interesting conclusion is not very surprising if we think about what this may mean exactly. If we assume for a moment that every motive is irrelevant and the only reason for which migrants remit is to "save face", then close-knit communities are likely to exhibit more "pressure" on migrants to help their families out. This effect would be stronger in rural areas. This would also include the case of repayment of the schooling costs. In rural communities, people are more likely to have information about their neighbors and their hurdles while educating their children. Another possibility[100] might be that migrants originating from rural areas might invest less in acquiring more human capital following migration. As a result, they devote more time and resources to the labor market and manage to remit more to their families.

Moreover, probably the most revealing conclusion of the analysis in Table 4.2 is the distinction between recent graduates (column 2) and earlier graduates (column 5). Highly educated migrants do remit more if they left school more than 8 years ago (column 5). This finding is consistent with the finding of Mane and Waldorf (2010) regarding the lack of human capital transferability of Albanian migrants. But since those who have acquired more human capital seek more human capital, in the presence of such lack of human capital transferability migrants have an additional reason to acquire more capital following migration.

[100] There is no information in the data to suggest that migrants originating from rural areas invest less than their counterparts from urban areas in acquiring human capital following migration. But, it may well be true that urban graduates have acquired even more education after graduation than rural graduates. Since we do not have that information, this argument is presented only on theoretical grounds.

Table 4.2 Remittances and Schooling

Migration Status		All	Recent Graduates			Earlier Graduates		
		(1)	All Recent (2)	Urban (3)	Rural (4)	All Earlier (5)	Urban (6)	Rural (7)
	Intercept	0.952*	0 .742	1.493*	0.586	0.602*	0.373	1.011*
		(0.140)	(0 .591)	(0.603)	(0.603)	(0.168)	(0.303)	(0.237)
	Age	-0.054*	-0.052	-0.079*	-0.055	-0.041*	-0.043*	-0.051*
		(0.003)	(0.037)	(0.017)	(0.039)	(0.005)*	(0.007)	(0.008)
	Years of Schooling	0.045*	0.039	0.051*	0.021	0.047*	0.053*	0.041*
		(0.008)	(0.036)	(0.023)	(0.045)	(0.012)	(0.016)	(0.018)
	Male Dummy	0.813*	1.336*	1.047*	1.684*	0.643*	0.536*	0.773*
		(0.056)	(0 .157)	(0.180)	(0.162)	(0.067)	(0.099)	(0.121)
	Distance from Nearest Bus Station	-0.006*	-0.002	-0.000	-0.003	-0.007	0.007	-0.008*
		(0.001)	(0.006)	(0.009)	(0.004)	(0.004)	(0.005)	(0.001)
	Number of Adult Children in the Household	-0.012	-0.028	-0.062	0.052	-0.017	0.044	-0.048
Log of remittances		(0.014)	(0.037)	(0.036)	(0.045)	(0.018)	(0.022)	(0.025)
	Intercept	-2.442*	-6.946*	-9.517*	-8.420*	6.590*	6.081*	4.353*
		(1.175)	(3.237)	(3.813)	(2.510)	(0.543)	(1.374)	(0.952)
	Years of Schooling	0.267*	0.239	0.192	0.555*	0.167*	0.210*	0.231*
		(0.084)	(0.193)	(0.308)	(0.162)	(0.047)	(0.069)	(0.087)
	Male Dummy	6.133*	10.122*	9.243*	10.695*	1.803*	1.231	3.019*
		(0.531)	(1.394)	(1.753)	(1.462)	(0.280)	(0.712)	(0.514)
	ρ	0.741	0.379	0.712	0.259	0.257	0.392	0.366
	Standard Deviation of ρ	(0.035)*	(0.160)*	(0.103)*	(0.087)*	(0.063)*	(0.086)*	(0.054)*
	The log likelihood	-3116.68	-1109.703	-470.932	-643.806	-1785.880	-820.681	-958.299
	Number of Observations	2,281	620	283	336	1,661	754	907

*Significant at 5 percent level

Note: The numbers in parentheses represent robust standard errors

In turn, this takes resources away from the labor market and undermines their earnings, which in turn undermines remittances to households in Albania. This conclusion is important for another reason. Although the main purpose here is to study the motives for remittances, we can infer something about the nature of human capital transferability. The Albanian authorities have recognized the 'brain drain' phenomenon during transition, but there has been no effort in the form of research regarding the extent to which this capital gets transferred and its return abroad.

4.4.2 Remittances and Inheritance

In this section, we investigate whether the remittance behavior is indicative of the migrant's aspiration to inherit property that his/her parents own. We again employ a Maximum Likelihood approach to simultaneously investigate the dual nature of the migration-remittances relationship. It is important to keep track of the fact that migration depends on many factors and remittances might be one of them. At the same time, remittances depend, among other things, on who migrated in the first place. So, we employ a Maximum Likelihood specification to simultaneously estimate a migration equation and a remittances equation (Table 4.3). The former equation is specified as in the previous section. The latter equation captures the impact of various indicators on migrants' remittances. The dependent variable is the natural logarithm of annual remittances sent by migrants to their households in Albania. The explanatory variables include an age variable for the head of household, a dummy variable which indicates whether households own land, and a dummy variable indicating whether the migrant is the youngest among the siblings in his/her household. This last variable incorporates into the analysis a very important cultural element. In Albania, and probably elsewhere, there exist a tradition according to which

the youngest adult child of the head is the primary care-taker of his parents and any minor siblings. When this duty is fulfilled, usually he/she gets to be the first beneficiary to inherit any assets[101] that the parents own. However, such proposition of inheritance is not automatic. Parents reserve the right to ignore this unwritten rule when unhappy with their youngest. The effect of household ownership of certain assets on the remittances sent by the youngest can be positive (e.g., the youngest continues to remit to keep his/her parents satisfied) or negative (e.g., the youngest takes the inheritance for granted and remits less and less). Finally, the dependent variable is the logarithm of total annual remittances.

As in the previous section, our analysis shows that older individuals are less likely to migrate (Table 4.3, column 1). Highly educated migrants are more likely to migrate than their less educated counterparts. There is a significantly higher probability for a male worker to migrate internationally than a female counterpart. The decision to migrate is also affected by various social and environmental factors. We use the distance from the nearest bus station as a proxy for transportation accommodations: our results show that larger distances from the nearest bus station discourage migration, especially in the rural areas. As in the previous section, we again include in our analysis the number of adult children of head and/or spouse in the household as a proxy for family arrangements and networking. The effect of the number of adult children in the household on the decision to migrate is insignificant, except for the rural migrants for which the effect is negative.

[101] Another important asset to almost every Albanian household is their house. About 95 percent of the households in the sample own their homes. Renting is a relatively new concept in Albania. Even amidst poverty and misery during communism almost every household had a modest home as their property. Therefore, the inclusion of a home ownership dummy in our analysis would have been useless.

Table 4.3 Remittances and Inheritance

Urban vs. Rural

Migration Status		All (1)	Urban (2)	Rural (3)
	Intercept	0.870*	0.795*	1.082*
		(0.158)	(0.207)	(0.194)
	Age	-0.051*	-0.049*	-0.057*
		(0.003)	(0.003)	(0.004)
	Years of Schooling	0.044*	0.044*	0.037*
		(0.009)	(0.012)	(0.013)
	Male Dummy	0.797*	0.662*	0.939*
		(0.062)	(0.080)	(0.080)
	Distance from Nearest Bus Station	-0.007*	0.001	-0.006*
		(0.002)	(0.004)	(0.001)
	Number of Adult Children in the Household	-0.007	0.015	-0.041*
Log of remittances		(0.017)	(0.023)	(0.020)
	Intercept	-2.613	4.316	-2.205
		(1.946)	(2.273)	(2.023)
	Land Ownership Dummy	0.674	1.125	-0.624
		(0.499)	(1.256)	(0.665)
	Head's Age 46 to 60	1.160	1.154	1.725
		(1.330)	(1.906)	(1.579)
	Head's Age 61 and over	3.167*	6.055*	1.925
		(1.297)	(1.936)	(1.556)
	Youngest Sibling Dummy	-1.373*	-0.785	-1.069
		(0.524)	(0.702)	(0.608)
	Number of Siblings Abroad	-0.383**	-0.473*	-0.492**
		(0.196)	(0.233)	(0.250)
	ρ	0.715	0.856	0.605
	Standard Deviation of ρ	(0.061)*	(0.020)*	(0.034)*
	The log likelihood	-3084.918	-1398.179	-1678.807
	Number of Observations	2,281	1,038	1,242

*Significant at 5 percent level
**Significant at 10 percent level
Note: The numbers in parentheses represent robust standard errors.

In general, land ownership has no significant effect on remittances. *Ceteris paribus*, households in which the head is older than heads in other households are more likely to receive more remittances. This can be consistent with an inheritance motive but it can also be consistent with altruism. Given that seniors receive relatively small retirement payments in Albania and that, as discussed above, land ownership is not associated with higher remittances, our results suggest that remittances may be consistent with altruism. When distinguishing between urban and rural migrants, the head's age has no impact on remittances to rural households. The coefficients on the youngest sibling dummy reveal an interesting remittance behavior. The fact that the youngest remit significantly less than others suggests at least two possible explanations. On average, either the youngest are not driven by an inheritance motive, or they are taking the inheritance for granted (e.g., falsely assume that they will inherit their parents' assets regardless of their remittances). The result does not hold when distinguishing between urban and rural migrants.

One can claim that the youngest sibling tradition is fading away since the youngest are not remitting more than their other siblings. But, the findings here can suggest something more than just the fading of a tradition. The negative coefficients may imply that new reality is helping shape a new tradition according to which all siblings remit based on their circumstances and not on tradition. And, given that the youngest are more likely to be among the more recent graduates, recovering from lack of human capital transferability may hinder their remittances more than the other siblings.

Two comments are in order here: First, on average, older heads of households receive more remittances than their younger counterparts. If they own land (or other assets not included in the analysis), higher remittances can be interpreted as driven by an inheritance motive. However,

this is not the only potential motive in this case. Remittances can also be driven by an altruistic motive. For the most part, heads above 65 years of age are retirees and the retirement compensation[102] is insufficient to afford everyday expenses for most seniors. So, higher remittances toward them might also be altruistically driven. Second, given that none of the coefficients on the land ownership dummy are significantly positive, we cannot conclude that the inheritance motive drives remittances sent from abroad.

Inheritance-driven remittances can have a competitive nature. Siblings can compete among themselves by remitting more to the household. Altruistic-driven remittances can have just the opposite effect. The siblings of a given household might view their remittances as a shared burden among themselves. Any perception that other siblings' remittances are not sufficient might entice a sibling to remit less. We test whether the number of siblings abroad affects a migrant's remitting behavior. Our results show that migrants with more siblings abroad remit less than others.

In conclusion, while the land ownership seems not to affect remittances, having other siblings abroad negatively affects the amount remitted. The only scenario under which this behavior can be consistent with the inheritance motive is the existence of other assets, not included in this analysis. The results support the view that migrants remit to support their households by sharing the burden among them. According to the results discussed above, migrants with more migrant siblings are subject to a lower burden in supporting their families. Given the low retirement income for older parents, this can also be viewed as evidence of altruistic-driven remittances.

[102] The variable tracking the earnings from retirement is included in the data but there are only a few valid cases in the data and forced us to not include it in our analysis. However, the few valid cases provide us with a basic idea about the very low income from retirement, as mentioned above.

4.4.3. Shocks and Remittances

Adverse events affecting various households are important to the analysis of remittances. In some cases, such events might consist of damages to the dwelling, death of the head of household, and so forth. We also consider as shock the situation of a household that reported a fast deterioration of the financial situation (e.g., due to medical bills, etc.) during the last 12 months. In this section we analyze the data to check whether the reported shocks affect the remittances sent to the households in Albania (Table 4.4).

The explanatory variables include the years of schooling, the duration of absence, the duration of absence squared, and a shock dummy. In addition to the entire sample, we also test separately the subsamples for urban and rural areas. In the overall sample and the rural subsample (columns 1 and 3) the coefficients of the shock dummy are insignificant. The coefficient is significantly negative for the urban subsample of migrants. This is an unusual result in the migration literature. Migrants negatively respond to household shocks by remitting less. It may be the case that since shocks have been a part of life during transition in Albania, migrants do not make remitting decisions based on such shocks. Moreover, Albania has a very sad recent history with handling migrants' remittances. Large sums of money sent by migrants during the first seven years of transition were invested by households in *Ponzi* schemes and disappeared when the Ponzi scheme managers went bankrupt and the country experienced riots and turmoil in early 1997.[103] Following those losses, migrants dramatically curtailed their remittances during the subsequent years. Despite the fact that later shocks have had a much smaller magnitude for the

[103] Albanian migrants did exactly that when they punished their households by cutting their remittances following the collapse of pyramid schemes in 1997. The *Ponzi* schemes were a widespread phenomenon and many families lost their life savings in them. See Jarvis (1999).

typical household, migrants appear to have grown weary of household claims of shocks to their finances.

So, while migrants' negative response to adverse shocks experienced by their families is difficult to justify in the context of the contractual agreement, assuming that both sides are honoring it, remitters have sufficient reasons to be justified. As discussed above, one can imagine a scenario under which migrants perceive the adverse shocks as non-accidental and avoidable and hold their family members responsible by remitting less or not remitting at all. Finally, it can be that the migrant's remitting behavior is more consistent with a longer term plan to remit a certain amount of money semi-annually or annually, instead of responding to every event by remitting in each case. This does not suggest, in any way, that remittances may not be altruistically driven. Assuming that migrants are rational individuals, in addition to being inclined to support their families back home, they are also likely to value their own convenience and remit when they find it reasonable.

The coefficients of the duration of absence and the duration of absence squared are significant in all three columns of Table 4.4, suggesting a quadratic relationship between remittances and the duration of absence (Figures 4.2 and 4.3). In fact, after solving for the maximum value of the log of remittances, the peak of the remittances-duration of absence profile, we find that the maximum amount is remitted by migrants who have been away for about 11 years. In the context of Tonga and Western Samoa, a study by Brown (1998) shows that the peak is reached after a much longer period of time. The shorter period here can be explained by the larger intensity of remittances, as reported by the World Bank (2011).

Table 4.4 Shocks and Remittances

Urban vs. Rural

Migration Status		All	Urban	Rural
		(1)	(2)	(3)
	Intercept	0.144	0.718*	0.423*
		(0.097)	(0.315)	(0.164)
	Age	-0.020*	-0.046*	-0.026*
		(0.002)	(0.006)	(0.003)
	Years of Schooling	0.031*	0.040*	0.012
		(0.007)	(0.013)	(0.020)
	Male Dummy	0.460*	0.539*	0.615*
		(0.045)	(0.134)	(0.077)
	Distance from Nearest Bus Station	-0.002*	0.006	-0.003*
		(0.000)	(0.004)	(0.001)
	Number of Adult Children in the Household	-0.024*	0.029	-0.035*
		(0.006)	(0.022)	(0.016)
Log of remittances				
	Intercept	12.170*	0.010	10.957*
		(0.617)	(2.228)	(1.293)
	Years of Schooling	-0.106	0.136	0.064
		0.062	(0.116)	(0.169)
	Duration of Absence	0.448*	0.782*	0.363*
		(0.076)	(0.128)	(0.084)
	Duration of Absence Squared	-0.007*	-0.020*	-0.004*
		(0.001)	(0.003)	(0.001)
	Shock Dummy	-0.566	-1.875*	-0.546
		(0.323)	(0.903)	(0.922)
	ρ	-0.790	0.567	-0.788
	Standard Deviation of ρ	(0.002)*	(0.250)	(0.004)*
	The log likelihood	-3008.3	-1399.1	-1629.2
	Number of Observations	2,281	1,038	1,242

*Significant at 5 percent level
**Significant at 10 percent level
Note: The numbers in parentheses represent robust standard errors.

Figure 4.2 Annual Remittances' Profile over the Duration of Absence
Urban vs. Rural

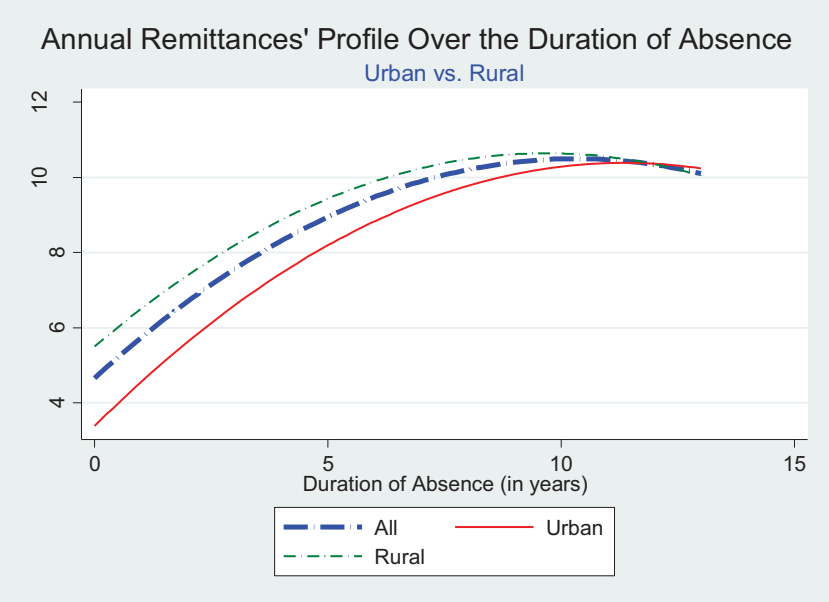
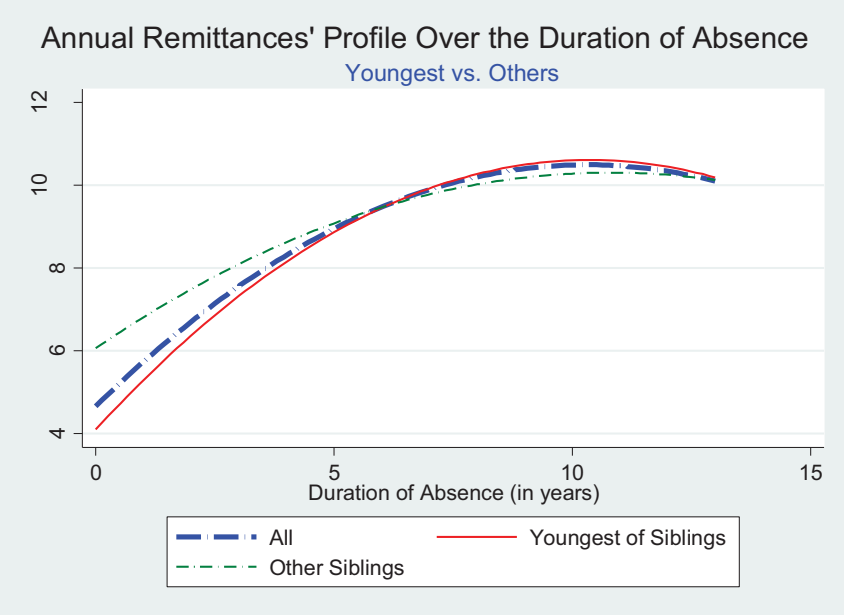


Figure 4.3 Annual Remittances' Profile over the Duration of Absence
Youngest vs. Other Siblings



4.4.4 An All-Inclusive Model

In this section, we bring together all the explanatory variables employed so far and recognize that remittances may not be driven by a single motive after all. Instead, remitting behavior may reflect a combination of several motives. An all-inclusive analysis that incorporates all the factors discussed in earlier sections is shown in Tables 4.5 and 4.6. In addition to an overall analysis, we also analyze remitting behavior by first focusing on the distinction between migrants from urban and rural areas (Table 4.5, columns 2 and 3) and then by distinguishing between recent and earlier graduates (Table 4.6, columns 2 and 3). We summarize the findings on such distinctions a bit later.

In column 1 of each table we show an analysis of the entire sample of data and find the following: Overall, the effect of schooling on remittances remains insignificant. However, when we distinguish between urban and rural migrants it is positively significant. Highly educated earlier graduates also remit more than their recent graduate counterparts. The effect of the land ownership dummy on remittances is also insignificant. Again, the coefficients of the duration of absence remain significant, confirming the quadratic nature of the relationship between the migration time in migration and remittances. According to this specification, remittances are not affected by the age of the head of household or the adverse shocks that households have experienced. It is important to note here that the definition of shocks in this analysis is quite different from the definition used by Stark and Lucas (1985), where the shock is of the same nature for every household (e.g., drought). In our analysis, households have experienced one or more shocks which, as mentioned earlier, are not necessarily of the same nature. The coefficients of the youngest sibling dummy and the number of siblings abroad are insignificant.

Table 4.5 Remittances – All Inclusive (Urban vs. Rural)

Migration Status		**All**	**Urban**	**Rural**
		(1)	**(2)**	**(3)**
	Intercept	0.851*	0.720*	0.910*
		(0.164)	(0.191)	(0.198)
	Age	-0.049*	-0.046*	-0.055*
		(0.004)	(0.004)	(0.005)
	Years of Schooling	0.040*	0.043*	0.043*
		(0.009)	(0.009)	(0.014)
	Male Dummy	0.816*	0.731*	1.004*
		(0.057)	(0.077)	(0.086)
	Distance from Nearest Bus Station	-0.006*	0.022	-0.006*
		(0.001)	(0.004)	(0.001)
	Number of Adult Children in the Household	-0.015	0.011	-0.044*
		(0.014)	(0.018)	(0.020)
Log of remittances				
	Intercept	-3.097	-6.542*	-3.060
		(2.110)	(3.018)	(2.415)
	Years of Schooling	0.109	0.207*	0.292*
		(0.087)	(0.101)	(0.098)
	Male Dummy	6.321*	5.184*	7.369*
		(0.628)	(0.822)	(0.971)
	Land Ownership Dummy	0.904	1.355	-0.051
		(0.516)	(0.879)	(0.786)
	Head's Age 46 to 60	0.155	-0.191	0.278
		(1.197)	(2.352)	(1.531)
	Head's Age 61 and over	1.519	3.207	-0.110
		(1.188)	(2.307)	(1.534)
	Youngest Sibling Dummy	-0.332	-0.270	-0.477
		(0.516)	(0.742)	(0.637)
	Number of Siblings Abroad	-0.395	-0.299	-0.406
		(0.239)	(0.259)	(0.312)
	Duration of Absence	0.656*	-0.608*	0.557*
		(0.104)	(0.132)	(0.114)
	Duration of Absence Squared	-0.016*	-0.016*	-0.117*
		(0.003)	(0.003)	(0.003)
	Shock Dummy	-1.168	-0.562	-0.944
		0.601	(0.848)	(0.797)
	ρ	0.642	0.779	0.471
	Standard Deviation of ρ	(0.088)*	(0.023)*	(0.062)*
	The log likelihood	-3063.6	-1367.3	-1662.7
	Number of Observations	2,281	1,038	1,242

*Significant at 5 percent level

Note: The numbers in parentheses represent robust standard errors.

Table 4.6 Remittances – All Inclusive (Recent vs. Earlier Graduates)

Migration Status		**All** (1)	**Recent Graduates** (2)	**Earlier Graduates** (3)
	Intercept	0.851*	0.213	0.555*
		(0.164)	(0.388)	(0.440)
	Age	-0.049*	-0.014	-0.038*
		(0.004)	(0.021)	(0.010)
	Years of Schooling	0.040*	0.007	0.042*
		(0.009)	(0.028)	(0.014)
	Male Dummy	0.816*	1.136*	0.626*
		(0.057)	(0.385)	(0.156)
	Distance from Nearest Bus Station	-0.006*	-0.001	-0.007*
		(0.001)	(0.002)	(0.002)
	Number of Adult Children in the Household	-0.015	-0.031	-0.017
		(0.014)	(0.025)	(0.020)
Log of remittances				
	Intercept	-3.097	4.233	7.208
		(2.110)	(5.302)	(5.037)
	Years of Schooling	0.109	0.014	0.115*
		(0.087)	(0.176)	(0.008)
	Male Dummy	6.321*	0.711*	2.080*
		(0.628)	(0.385)	(0.507)
	Land Ownership Dummy	0.904	2.321	-0.309
		(0.516)	(1.257)	(0.336)
	Head's Age 46 to 60	0.155	-0.056	0.145
		(1.197)	(1.467)	(3.328)
	Head's Age 61 and over	1.519	1.554	0.148
		(1.188)	(1.957)	(3.121)
	Youngest Sibling Dummy	-0.332	-1.131	-0.174
		(0.516)	(1.016)	(0.441)
	Number of Siblings Abroad	-0.395	-0.663	-0.355*
		(0.239)	(0.545)	(0.176)
	Duration of Absence	0.656*	2.008*	0.122
		(0.104)	(0.497)	(0.108)
	Duration of Absence Squared	-0.016*	-0.095*	-0.002
		(0.003)	(0.027)	(0.004)
	Shock Dummy	-1.168	-2.914*	-0.366
		(0.601)	(1.099)	(0.446)
	ρ	0.642	-0.905	0.266
	Standard Deviation of ρ	(0.088)*	(0.133)*	(0.535)*
	The log likelihood	-3063.6	-1058.4	-1801.8
	Number of Observations	2,281	613	1,668

*Significant at 5 percent level

Note: The numbers in parentheses represent robust standard errors.

As we distinguish between migrants with households in urban and rural areas in Albania, we learn about the following changes to the results mentioned above from the overall sample. Highly educated migrants from both urban and rural areas remit more than their less educated counterparts (Table 4.5, columns 2 and 3). Similarly, in comparing the results for recent and earlier graduates, we notice that recent graduates send less money to their households when they experience shocks compared to others (Table 4.6, columns 2). The correlation coefficient among the disturbances in the migration and remittances equations *rho* has a value of -0.905. It indicates that those likely to migrate (for unobserved reasons) among the recent graduates are least likely to remit. A *rho* equal to 0.266 in the case of the earlier graduates indicates that there is a considerable fraction of earlier graduates who are more likely to migrate for unobservable reasons, which are also more likely to remit. The evidence found here goes in the same direction with the findings of Mane and Waldorf (2010) regarding the lack of human capital transferability of Albanian migrants.

These results can be summarized as it follows. If schooling expenses are considered a loan from the parents to their children and the latter migrate internationally, if not already paid off, the loan is repaid down the road in the form of remittances, but not soon following graduation. However, given that we do not have information on prior arrangements and exchanges between the households and the migrants, we cannot conclude that the sole reason for which highly educated earlier graduates remit more than highly educated recent graduates is the repayment of the loan. It can very well be that highly educated migrant sent altruistic-driven remittances because, after a successful transition period abroad and while earning high wages, now they can afford to remit more. Both urban and rural highly educated migrants remit more than their less educated counterparts. This is not surprising since highly educated workers earn higher wages.

Thus, the conclusion should not be viewed as exclusively reflective of any contractual agreements (e.g., a loan repayment plan) but also as a reflection of migrants' circumstances (e.g., the more successful migrant remit more).

Our all-inclusive analysis shows weak evidence of inheritance driven remittances. According to our results, land owners do not receive more remittances than others. Unlike the inheritance-related part of our analysis, the all-inclusive specifications do not suggest that older heads of households receive more remittances than others. Our results also show that there is no competition among siblings (e.g., to acquire inheritance by making a case through remittances).

Migrants do not respond to shocks reported by their households. However, this is not sufficient evidence to claim that remittances are not driven by altruistic motives. Often, the interviewer and the interviewee may have different views on what constitutes a shock. As a result, the reported shocks may be subjective and sometimes misleading.

4.5 Conclusions

Our analysis shows that while remittances have been an important part of the Albanian economy, the motives for them are time sensitive. Highly educated migrants remit more than others only when they have been abroad for at least nine years. As indicated by some studies, this may have to do with the lack of human capital transferability and the need to acquire more human capital following migration. Stark and Lucas (1988) show that the more educated migrants remit more. The authors argue that their finding is not surprising since more educated

workers earn higher wages. In a simplified world that is true, but wage is not the only factor determining remittances. The migrants' adjustments during the transition period following migration also matters in this context.

When distinguishing between migrants originating from urban and rural areas, the results show that highly educated recent graduate rural migrants remit more than their urban counterparts. This is not surprising if lack of human capital transferability is an issue. Indeed, urban migrants in our data have more human capital (e.g., years of education) than their rural counterparts. This implies that the assumption made often about perfect capital mobility (including human capital) is unrealistic and misleading at best. However, we need to be cautious and not attribute the entire gap in remittances between the highly educated rural migrants and their urban counterparts to the lack of human capital transferability since there is no way to distinguish between varying degrees of altruism, remitting to "save face," or remittances in exchange for services.

The analysis of the inheritance motive reveals that, overall, there is no difference in between remittances sent to households who own and do not own land. This is short of what is required for the inheritance motive to hold. Distinguishing between the youngest and other children of the household, we find that the latter remit more to their older parents than the youngest child. The customary rule, that the youngest among siblings is responsible for supporting his parents, is not satisfied by these results. This may be because those who are the "youngest" might take the inheritance for granted. But it may also be because the youngest are more likely to fall into the recent graduates category discussed earlier.

Our analysis shows that migrants who have more siblings abroad tend to remit less to their households. The hypothesis of an inheritance motive implies that multiple siblings in a

household compete for inheritance by remitting more. Just the opposite is suggested by our findings: Migrants who have more siblings abroad do not remit more. Instead, this evidence is consistent with the notion that siblings tend to share the burden of supporting their family. This result supports the hypothesis that remittances are driven by an altruistic motive.

The analysis of the shocks affecting households indicates that remittances are not sensitive to such shocks. It does not necessarily mean that this is proof of a lack of altruism. It may be in part because migrants might have certain remitting plans that go beyond short-term shocks. Moreover, certain shocks experienced by households may not be perceived by the migrants as accidental shocks but rather as reflective of reckless behavior of households. Remittances follow a quadratic profile over the migrants' duration of absence. The profile shows that remittances increase at the beginning, peak around the eleventh year of absence, and then begin to decline.

Some of the results found in earlier sections, when motives are analyzed separately, change when an all-inclusive model is employed. For instance, the finding that larger remittances are sent to older heads of household does not hold in an all-inclusive setting. This may owe to the small size of the migrant and, especially, remitter samples.

While progress has been made in explaining the migration-remittances link, exploring the transition from migration to remittances requires more research. In particular, the analysis in this chapter provides only a snapshot of the Albanian population after an already lengthy period of time with high levels of migration in a turbulent economic environment. The timing of the survey used in this analysis matters as well. As indicated in World Bank (2011) the intensity of remittances is very important in explaining transition dynamics and remittances. This survey is conducted 13 years after the beginning of the transition and the dynamics of the transition have changed dramatically. More importantly, Albania experienced many problems even prior to this

transition period. The command economy consisted of centralizing power to the central government and the lessons of a free market economy are useless in explaining such arrangements. With the beginning of the transition, the economy was not in any equilibrium and people were searching for optimal outcomes. Shocks were more extensive than in similar economies that emerged from communist dictatorships. This is reflected in the high rate of emigration and the high rate of remittances relative to household income. In a way, all households who had one or more of their members emigrate experienced a shock.

Future research should be aimed at better understanding the dynamics of migrants' adjustment at their destinations and the return to the transferred human capital as well as the policy changes that would facilitate the transfer of human capital. In particular, this requires information that is not available in the LSMS database that is used for this study.

Appendix C

Our Maximum Likelihood Estimation (MLE) method is superior to the more traditional methods of estimation mainly because it addresses the joint nature of the migration-remittances decision. It recognizes the fact that remittances behavior depends, to a large extent, on who migrates in the first place. Moreover, if remittances constitute a large share of a country's income, as it is the case of Albania, their flow can be a factor in determining who migrates.

In order to distinguish between our MLE method and other estimation techniques, we show here alternative methods of estimation for the migration and remittances equation. In addition to the MLE, the migration decision is also estimated by employing a simple *probit* model. The remittances equation is estimated using an Ordinary Least Squares (OLS) method and a *tobit* estimation. We exhibit the results of the aforementioned methods in two different settings. First, we show the results for the remittances and schooling exercise (Table C.1) and then for the all-inclusive estimation discussed earlier (Table C.2).

Comparing the *probit* and the MLE results for the migration equation, we notice that, although the magnitude of the coefficients varies, the signs and the significance do not (Tables C.1 and C.2). However, the remittances equation results reveal very large variations among the two methods. For instance, the effect of schooling on remittances is significantly positive in our MLE results (Table C.1, column 3) but insignificant in both the OLS and *tobit* results.

The remittances equation results in the all-inclusive specification reveal more interesting discrepancies among the estimation methods. The schooling coefficient is insignificant in the MLE case but significantly negative in the *tobit* estimation. Similarly, the land ownership dummy coefficient is insignificant in the MLE estimation but significantly negative in both OLS and *tobit* estimations. The same result is found for the coefficient of the variable that tracks the

number of siblings abroad. Another interesting discrepancy among the models is the one that results from comparing the coefficients of the duration of absence and the duration of absence squared. The MLE shows that remittances follow a quadratic relationship with respect to the duration of absence. Both the OLS and the *tobit* estimations do not support that relationship. And finally, the MLE shows an insignificant coefficient of the shock dummy, whereas both OLS and *tobit* estimations show a negative relationship.

Table C.1 Remittances and Schooling

Migration Status		**Probit/OLS (1)**	**Tobit (2)**	**MLE (3)**
	Intercept	0.702*	-	0.952*
		(0.140)	-	(0.140)
	Age	-0.045*	-	-0.054*
		(0.003)	-	(0.003)
	Years of Schooling	0.044*	-	0.045*
		(0.008)	-	(0.008)
	Male Dummy	0.792*	-	0.813*
		(0.056)	-	(0.056)
	Distance from Nearest Bus Station	-0.006*	-	-0.006*
		(0.001)	-	(0.001)
	Number of Adult Children in the Household	-0.018	-	-0.012
		(0.014)	-	(0.014)
	The log likelihood	-1348.627	-	-
Log of remittances				
	Intercept	1.181*	-16.38*	-2.442*
		(0.309)	(1.589)	(1.175)
	Years of Schooling	-0.007	-0.007	0.267*
		(0.026)	(0.117)	(0.084)
	Male Dummy	2.816*	11.84*	6.133*
		(0.183)	(0.896)	(0.531)
	ρ	-	-	0.741
	Standard Deviation of ρ	-	-	0.035
	The log likelihood	-	-2772.046	-3116.68
	F	118.29	-	-
	Number of Observations	1,008	1,008	2,281

*Significant at 5 percent level

Note: The numbers in parentheses represent robust standard errors.

Table C.2 Migration and Remittances – All Inclusive

Migration Status		Probit/OLS (1)	Tobit (2)	MLE (3)
	Intercept	0.702*	-	0.851*
		(0.140)	-	(0.164)
	Age	-0.045*	-	-0.049*
		(0.003)	-	(0.004)
	Years of Schooling	0.044*	-	0.040*
		(0.008)	-	(0.009)
	Male Dummy	0.792*	-	0.816*
		(0.056)	-	(0.057)
	Distance from Nearest Bus Station	-0.006*	-	-0.006*
		(0.001)	-	(0.001)
	Number of Adult Children in the Household	-0.018	-	-0.015
		(0.014)	-	(0.014)
	The log likelihood	-1348.627	-	-
Log of remittances				
	Intercept	6.997*	4.745*	-3.097
		(1.150)	(2.238)	(2.110)
	Years of Schooling	-0.096	-0.205*	0.109
		(0.052)	(0.102)	(0.087)
	Male Dummy	2.918*	5.598*	6.321*
		(0.356)	(0.723)	(0.628)
	Land Ownership Dummy	-0.868*	-1.674*	0.904
		(0.357)	(0.694)	(0.516)
	Head's Age 46 to 60	0.125	0.280	0.155
		(0.888)	(1.708)	(1.197)
	Head's Age 61 and over	-0.104	0.096	1.519
		(0.902)	(1.736)	(1.188)
	Youngest Sibling Dummy	-0.305	-0.638	-0.332
		(0.379)	(0.735)	(0.516)
	Number of Siblings Abroad	-0.385*	-0.788*	-0.395
		(0.123)	(0.251)	(0.239)
	Duration of Absence	0.070	0.182	0.656*
		(0.066)	(0.130)	(0.104)
	Duration of Absence Squared	-0.001	-0.003	-0.016*
		(0.002)	(0.004)	(0.003)
	Shock Dummy	-1.323*	-2.644*	-1.168
		(0.418)	(0.838)	0.601
	ρ	-	-	0.642
	Standard Deviation of ρ	-	-	(0.088)*
	The log likelihood	-	-2236.898	-3063.666
	F	11.83	-	-
	Number of Observations	1,008	1,008	2,281

*Significant at 5 percent level

Note: The numbers in parentheses represent robust standard errors.

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