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Do Remittances Alter Labor Market Participation?

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Abstract

The following study focuses on the impact of remittances on the labor market participation using propensity score matching.

Using household survey data for Albania, this paper relies on the matching approach for the identification. The nearest neighbor and kernel estimators are used to obtain the matching results.

The vector of covariates includes information related to individual and households characteristics such as; age, gender, schooling, area of residence etc. In the model, household incomes are considered separately from remittances in order to identify whether income from remittances have the same effect as other types of household non-labor income in the decision of participating in the labor market.

Empirical results show that remittances have a statistically negative impact in the labor market participation for female both in terms of the probability of working and the hours of work. No evidence is found in the impact of these capital flows in the behavior of male in the labor market activities

Key words: remittances, labor market participation, propensity score matching

JEL classification; F24, J22, C31

1. Introduction

Migration out of Albania during the transition to the market economy has been massive, relative to the population. According to the World Bank (2010) one out of every three households in Albania, 34 percent, has at least one member currently living abroad, and 50 percent of these households have more than one. People from urban coastal part of the country are those with the highest propensity to migrate, while people from the poorer, rural mountain part are the least likely. Total remittances reported in the balance of payments increased from around 889 million in 2003 to 1317 million in 2009 which is 10.9 percent of the GDP. These transfers from migrants can have long-run beneficial impact on the economy if they are used in productive activities (Woodruff and Zenteno, 2001). However, remittances may have undesirable effects on the behaviour of those left behind. In particular there is a concern about whether remittances could cause Dutch disease effects (Acosta et. al. 2009).

On one hand remittances may increase the reservation wage of members living in the receiving-remittance households, but on the other these transfers may be used to relax budget constraints and as a mean of capital import, facilitating the climate for self-employment. Remittances may lead to a better participation in the business investments (Kilic et. al., 2009) through self employment or asset accumulation (Adams, 1998). Woodruff and Zenteno (2001) show that 27 percent of micro-enterprises in the urban areas in Mexico rely on remittances from abroad.

2. Literature review

Remittances have been examined from both micro and macro perspectives. Treating remittances as a household issue the microeconomic literature examines the patterns of remittances, the motivations for making them and the impact they have on the labour market and on family consumption. While the macroeconomic studies on the other hand concentrate on macro effects in recipient countries including economic growth, financial development, and poverty reduction.

2.1. The study of remittances in relation to the labour market participation

Remittances can increase consumption or stimulate investments in economies with liquidity constraints (Reilly and Castaldo, 2007; Woodruff and Zenteno, 2001). One of the first studies that examined the consequences of remittances on home countries¹ is Funkhouser (1992), who finds that in Nicaragua that remittances increase self-employment for men and reduce the labor supply of women. However, from a development perspective, a decline in the labor supply in the recipient families should not necessarily be viewed as a negative effect. For instance, women in remittance-receiving households may carry out both parenting and home production activities (Acosta, 2006). Unemployment could increase if remittances are seen as providing a kind of welfare payment. However remittances by reducing the credit constraints in developing economies can encourage firms to increase their investment level. The overall effect on the unemployment will depend on which of these effects dominates.

Since remittance inflows are simple income transfers, recipient households may rationally substitute unearned remittance income for labor income. Regardless of their intended use, remittance transfers may be subject to moral hazard problems (Chami et al., 2003). These problems may induce recipients to divert resources to the consumption of leisure, thereby reducing their labor market effort. There are cases in which members of remittance-receiving families reduce their labor market participation in Pakistan (Kozelt and Alderman, 1990) and in Caribbean Basin cities (Itzigsohn, 1995)

The impact of remittances on the decision to work has been examined by Rodriguez and Tiongson (2001) in Manila. Without accounting for the endogeneity of remittances with respect to labor supply, they conclude that remittances reduce employment. Using 2002 data from Mexico, Amuendo-Dorantes and Pozo (2006) show that remittances appear to negatively affect female work effort only in rural areas and in the informal sector. Additionally, their results indicate that remittance-receiving men do not reduce their participation in labor market, but tend to shift into

¹ Home countries are the countries of origin of the migrants.

informal employment. Their study accounts for the endogeneity of remittance income and examines differences in the hours worked in various types of employment by men and women in urban and rural areas.

Using household survey data from Moldova, Görlich et al. (2007) examine labour market inactivity by considering three potential explanations: a “disincentive effect” in which leisure is considered a normal good and non-labour income raises the reservation wage of a potential worker; a labour substitution effect, in which people in remittance-receiving households allocate more time to household production than their counterparts in the non-remittance-receiving households; an education effect, in which migration provides incentives for additional education² and remittances are used to invest in the education of those remaining at home.

There are few empirical studies of the relationship between remittances and labor market issues in Albania. Konica and Filer (2009), using Albanian Living Standards Measurement Survey (LSMS) for 1996, suggest that remittances have a negative effect on female labor market participation due to higher income from abroad. This finding is consistent with studies conducted in other countries. In the Albanian case however, Konica and Filer (2009) find that neither the existence of emigrants in the household nor the amount of remittances received has an effect on labor force participation of Albanian males.

Using data from the 2005 Albanian LSMS Kilic et al. (2007) measure the impact of past migration experience of Albanian households on non-farm business ownership through instrumental variables regression techniques. These results indicate that households’ past migration experience exerts a positive impact on the probability of owning a non-farm business. Using the same dataset, Dermendzhieva (2009) investigates the effect of migration and remittances on labor supply in Albania. A linear probability model is estimated for the probability of a household member to be working on the subsamples of male and female household members separately. Only after using the

² A phenomenon stressed by the “brain gain” literature

instrumental variable, Dermendzhieva (2009) obtains large and negative coefficients for receiving remittances for females and older males.

The same question will be addressed using an alternative method, the propensity score matching. I will use propensity score matching to pair individuals that receive remittances with other individuals that are like them, expect from remittances. The question is whether remittances are acting as a disincentive for the participation in the labor market through a substitution effect or it may be an income effect of considering that remittances may affect decisions to accept more hours of work.

To date the studies on Albania have focused mainly on the decision to work and have not considered that remittances may change the hours worked or the type of work performed in the receiving economy, without altering employment rates. Hence, by focusing on work performance a clearer picture of the allocation of labor supply across different types of employment can be established.

2.2. Theoretical framework of labor market participation

In the neoclassical model of labor-leisure choice (Killingsworth, 1983), individuals allocate time to market activities and non-market activities maximizing utility subject to the budget constraint. The model isolates the factors that determine whether an individual works, and if so, how many hours she chooses to work. This theory lets us predict how changes in economic conditions or government policies will affect work incentives (Borjas, 2005). Individuals seek to maximize their well-being by consuming goods and leisure. The economic trade-off is clear. If individuals don't work, they can consume a lot of leisure, but they have to do without the goods and commodities that make their life more enjoyable, on the other hand if individuals work, they will be able to afford many of these goods, but they must give up some of their leisure time. In this framework wage rate and other income are the key economic variables that determine the allocation of time between the labor market and leisure activities.

According to Becker (1981) there are various division of labor among family members. The different divisions of labor are determined partly by biological differences and partly by different experiences and different investments in human capital. The theory of comparative advantages implies that the resources of members of a household should be allocated to different activities according to their comparative or relative efficiencies. These differences can be distinguished by the assumption that an hour of household or market activity of one member of the household is not a perfect substitute for an hour of time of another member of the household when they make the same investments in human capital. Specialization of tasks, such as the division of labor between members of the household, implies a dependence on others for certain tasks.

An important factor determining the labor market participation decision is the level of the reservation wage or the lowest wage rate at which a household member would be willing to accept a particular job. Non-labor income is a determinant of the reservation wage. For an individual the non-labor income depends on her own assets and the amount of income of the other household members. The higher is the income of the other members of the household, the higher is the reservation wage of the individual (Cox-Edwards and Rodriguez-Reggie, 2007). This reservation wage will influence the probability of the individual to participate in the labor market. In this context remittances may be considered as a disincentive for the market activities, because remittances increase the level of the non-labor income, increasing the reservation wage.

Assuming that remittances are not randomly assigned, various factors may confound their impact in the labor market participation by direct comparison of remittance-receiving to non remittance-receiving households. Matching techniques helps avoiding these problems.

3. Methodology

3.1. The estimation framework

The relationship between remittances and labor market participation has been examined before for Albania, but the methodology in this paper differs from previous ones. The comparison between remittance-receiving household and those who don't leads to an identification problem because the presence of remittances may be correlated with unobserved determinants of participation among these household members. To overcome the potential bias, I will use the propensity score matching to find a comparison group for individuals in remittance-receiving households. The question arises because I'd like to capture the difference between the household member's participation in the labor market with and without remittances. It is obvious that we cannot observe both outcomes for the same member at the same time. Taking the mean outcome of non-participants as an approximation is not advisable, since participants and non-participants usually differ even in the absence of treatment (Caliendo and Kopeining, 2005). This problem is known as selection bias. The matching approach is one possible solution to this problem.

Heckmans's (1974, 1978, 1979) sample selection model was developed using an econometric framework for handling limited dependent variables. Heckman's original model focused on the incidental truncation of a dependent variable. Maddala (1983) extended the sample selection perspective to the evaluation of treatment effectiveness. The treatment effect model differs from the sample selection model in two aspects: first, a dummy variable indicating the treatment condition w_i ($w_i = 1$ if the participant i live in the remittance-receiving household, and $w_i = 0$ otherwise) is directly entered into the regression equation and second the outcome variable y_i of the regression equation is observed for both $w_i = 1$, and $w_i = 0$. Specifically, the treatment effect model is expressed in two equations:

Regression equation: $y_i = x_i\beta + w_i\delta + \varepsilon_i$

Selection equation: $w_i^* = z_i\gamma + u_i$, $w_i = 1$ if $w_i^* > 0$, and $w_i = 0$ otherwise

$$P(w_i = 1|z_i) = \Phi(z_i\gamma) \text{ and } P(w_i = 0|z_i) = 1 - \Phi(z_i\gamma)$$

where ε_j and u_j are bivariate normal with mean zero and covariance matrix $\begin{bmatrix} \sigma_\varepsilon & \rho \\ \rho & 1 \end{bmatrix}$

The paper estimates the probability of receiving remittances as a function of individual and household characteristics, rank remittance-receiving and non-receiving individuals by their propensity score, pair those individuals with similar propensity scores, and calculate the average difference in labor force participation across them.

The focus will be in the comparison of the labor market participation of individuals exposed to no treatment (non-remittance receiving households) and labor market participation of individuals exposed to treatment (remittance receiving households). Since only one of these two outcomes is observed for each individual, I will estimate the difference in labor market participation between those treated and those with the same probability of being treated (Ichino and Mealli, 2005).

Propensity score enables using one-dimensional nonparametric regression techniques to estimate average treatment effect. Rosenbaum and Rubin (1983) showed that, if treatment assignment and potential outcomes are independent conditional to covariates X , then they are independent conditional on a one-dimensional propensity score, which is the probability of treatment given X . Hence instead of regressing on all covariates X it is sufficient to regress on this propensity score to avoid selection bias.

The propensity score is;

$$p(x) \equiv P(D=1 | X=x) = E(D | X=x)$$

where;

$$p(X) = F(h(X_i))$$

$F(\cdot)$ can be the normal or the logistic cumulative distribution,

$D = 1$ if the subject is treated (receive remittances) and 0 otherwise,

X_i is the vector of pre-treatment characteristics.

3.2. The matching methods

The estimate of the propensity score is not enough to estimate ATT of interest. The reason is that the probability of observing two individuals with exactly the same value of propensity score is in principle zero since $p(X)$ is a continuous variable (Becker and Ichino, 2002). To overcome the problem the most widely used are nearest neighbor matching, radius matching, kernel matching and stratification matching.

The nearest neighbor method consists of matching each treated (remittance-receiving) individual with the control (non remittance-receiving) individual that has the closest propensity score. The method is usually applied with replacement in the control units. The nearest neighbor matching estimator sorts all records by the estimated propensity score, and then searches forward and backward for the closest control units. Treated i is matched to that non-treated j such that:

$$|p_i - p_j| = \min_{k \in \{D=0\}} \{|p_i - p_k|\}.$$

If for a treated unit forward and backward matches happen to equally well, then it will be drawn either the forward or backward matches. The nearest neighbor matching with replacement will be used, where an individual can be used more than once as a match. Matching with replacement involves a trade-off between bias and variance (Caliendo and Kopeinig, 2005). With replacement the average quality of matching will increase and the bias will decrease. On the other hand it increases the variance of the estimator (Smith and Todd, 2005). With the nearest neighbor method each treated unit has a match, but this is not necessarily the best match since we are looking for the closest.

A solution to the problem is to define a neighborhood within which a match can be considered. This method is called radius matching. The selection of the radius should be appropriate since a very small radius can reject treated observation.

Kernel estimator compares the outcome of each treated unit to the average outcome of a group of non-treated individuals where the weight of each individual in the comparison group is proportional to the individual's closeness to that in the comparison group. Kernel and Local Linear

Matching are non-parametric matching estimators that use weighted average of all individuals to construct a counterfactual outcome.

Kernel matching associate to the outcome y_i of treated i a matched outcome given by a kernel-weighted average of the outcome of all non-treated, where the weight given to non-treated j is in proportion to the closeness between i and j :

$$\hat{Y}_j = \frac{\sum_{j \in D=0} K\left(\frac{p_i - p_j}{h}\right) Y_j}{\sum_{j \in D=0} K\left(\frac{p_i - p_j}{h}\right)}$$

Control j 's outcome Y_i is weighted by;

$$w_{ij} = \frac{K\left(\frac{p_i - p_j}{h}\right)}{\sum_{j \in D=0} K\left(\frac{p_i - p_j}{h}\right)} \quad \text{Where } h \text{ is the closeness of matches}$$

Weights depend on the distance between each individual from the control group for which the counterfactual is estimated. The application of Kernel matching needs to choose the kernel function and the bandwidth parameter. The second appears to be more important, high bandwidth values lead to a better fit and a decreasing variance between the estimated and true density function. The difference between kernel and local linear matching is that the second includes in addition to the intercept a linear term in the propensity score of a treated individual. This seems an advantage when the comparison group is distributed asymmetrically around the treated individuals, e.g. when there are gaps in the propensity score distribution (Calinedo and Kopeinig, 2005).

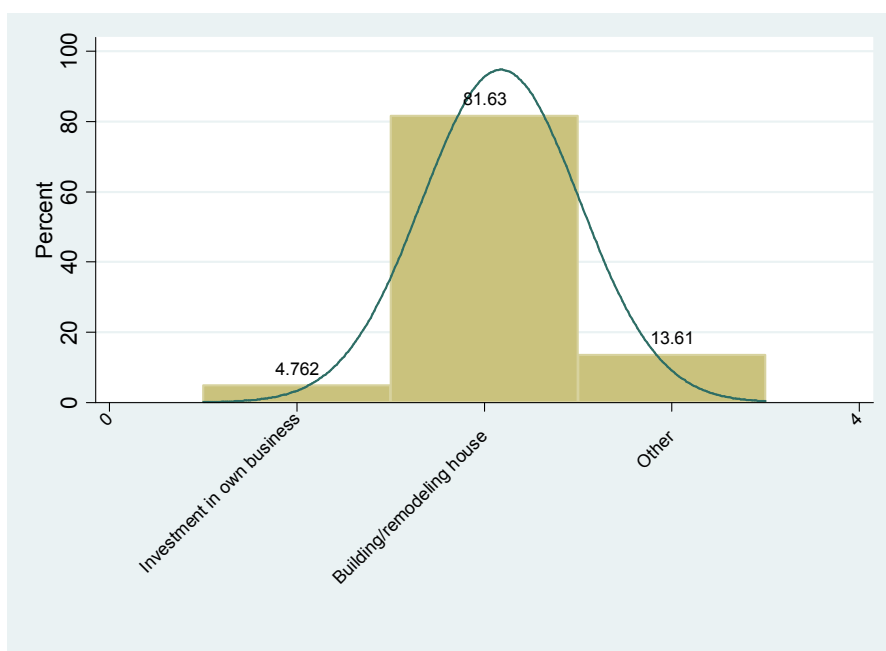
Another method consisting in the division in intervals of the range of variation of the propensity score is the stratification matching. Within each interval treated and control individuals have on average the same propensity score.

The set of covariates will include the following individual and household characteristics: age, age squared, gender, schooling, marital status, and number of children less than six in the household, area of residence, region and income net from remittances.

4. Results

In the study are included 9,177 individuals between the ages of 19 and 65 from the four areas; Coastal, Central, Mountain and the capital Tirana. In Figure 1 we can notice the distribution of the remittances and their use. The majority, about 82 percent of the remittances goes to the building or remodeling of the houses, while only about 5 percent serves as investment to the households own business.

Figure 1: Remittances in relation to their use



It is important to know who receives remittances how much different is the household from the one not receiving anything if significant differences exist. Table 1 presents statistical tests of the differences in the two groups of households those receiving remittances and those not receiving.

Table1. Comparative descriptive statistics conditional on receiving remittances

	<i>Non Remittance</i>		<i>Remittance</i>		<i>Differences</i>	
	<i>receiving HH</i>	<i>Standard deviation</i>	<i>receiving HH</i>	<i>Standard deviation</i>	<i>Differences</i>	<i>Standard errors</i>
	<i>Mean</i>	<i>Standard deviation</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Differences</i>	<i>Standard errors</i>
HH size	4.902	1.799	4.279	1.865	.623***	.054
Urban	.543	.498	.395	.489	.148***	.015
Age	38.653	12.748	39.334	14.544	-.681*	.393
Female	.503	.500	.453	.498	.050***	.015
Education	9.055	3.672	8.724	3.230	.331***	.125
Not working	.348	.476	.274	.446	.073***	.014
Central (Area)	.255	.436	.286	.452	-.030**	.013
Mountain (Area)	.275	.446	.236	.425	.038***	.013
Hours work (per week)	44.081	13.102	41.817	14.067	2.263***	.400
Head	.319	.466	.256	.436	.063***	.013
Number of observations	7,909		1,268			

Note: ***, **, and * indicate the statistic significance respectively at 1, 5 and 10 percent level or better.

Table 1 is designed to compare the means of the two groups and test the statistic significance of the difference of the means. As we can notice from the results the differences are all statistically significant at different significance level. Remittance-receiving households have a smaller household size (4.27) in respect to the non remittance-receiving households (4.90). This difference may be related to the fact that members or part of the household has migrated. Remittance receiving are more likely to be older and living in rural areas far from the central part of the country. The members of the household receiving remittances are less likely to be the head of the family and less likely to be female. Remittance-receiving individuals have completed less years of schooling (8.72) in comparison to individuals (9.05) that don't receive remittances. Not all the differences are statistically significant at 1 percent level. However it is import to put emphasis in the higher probability of not working for those individuals that live in remittance-receiving households. There is a statistically significant difference in the hours of work during a week around 2.26 more for those living in non remittance-receiving households.

A rigorous propensity score modeling begins with estimation of the conditional probability of receiving treatment, in our case of receiving remittances. In this study I used the logistic regression for estimating the conditional probability of receiving remittances using a vector of observed covariates shown in Table 2.

Table 2: Estimation of the probability of receiving remittances

<i>Receive Remittances</i>	<i>Logistic regression (1)</i>
HH size	-.221 (.023)***
Urban	-.587 (.087)***
Education	.499 (.140)***
Education Squared	-.099 (.025)***
Age	-.049 (.021)**
Age Squared	.008 (.003)**
Female	-.519 (.095)***
Married	.083 (.031)*
Coastal	.302 (.121)
Central	.128 (.123)
Mountain	-.005 (.129)
Head of HH	-.814 (.117)***
Cons	-.439 (.524)

From the logistic estimation the probability of receiving remittances is the household lives in the urban area and the size of the household is smaller. Being married and not the head of the family increases the probability of receiving remittances; maybe this is related to the fact that male head members of the family mostly migrate living behind the rest of the household. It is interesting and in contrast with Table 1 the positive relation between the years of education and the probability of receiving remittances. However, as expected the square of the years of education is negatively

related with the conditional probability. Younger members of the household are more likely to receive remittances. The area of residence of the household is not statistically significant.

By definition a propensity score is a conditional probability of a study participant receiving treatment given observed covariates; hence not only treated participants but also control participants have non zero propensity scores. Having obtained propensities I used nearest neighbor matching within a caliper of $.25\sigma_p$. For each treated observation I find the non-treated observations that are closest to the treated observation to serve as the corresponding control observation.

Figure 2: Propensity score histogram by treatment status

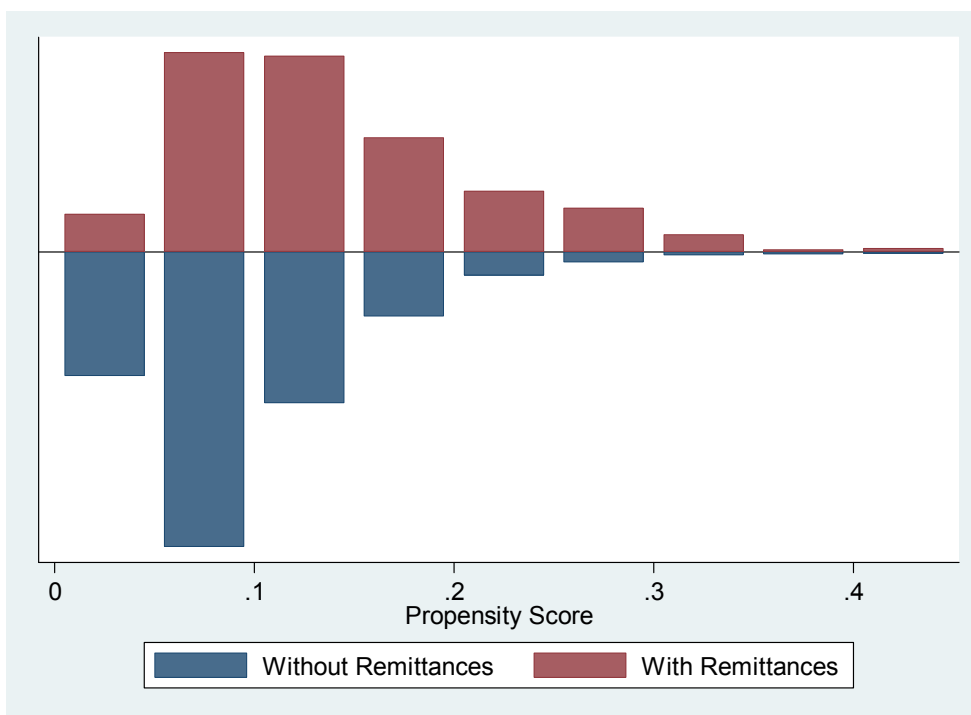


Figure 2 represents the differences in terms of participation in the labor market of the two groups of remittance-receiving and non remittance-receiving conditional to the covariates. In order to answer the question posed in the beginning of the paper I have to examine the difference in the probability of not working and the hours of work per week. I group data in three categories; treated individuals, non-treated individuals, and matched control individuals. There are a total of 1,268 treated or remittance-receiving household members. However the common support is made of 953 household members.

In Table 3 are given the differences between treated and matched controls and tested their significance. We can notice the expected difference between treated and non-treated either in the probability of not working or in quantity of hours worked per week. However the most important difference for us is the one between treated and the matched control. The comparison between a remittance-receiving individual and a non remittance-receiving individual does not give us the insight to understand completely the labor market participation. This is why we need an individual that is in every dimension exactly alike the individual who receives remittances except for the receipt of remittances. This is the matched control. As we can notice, the difference between the matched and the treated males is not statistically significant. In the case of female the probability of not participating in the labor market is greater for those receiving remittances; this difference is not large enough in relation to its standard error to conclude that there is a significant difference in this probability. However receiving remittances affect the hours worked for females, who are found to work around 3 hours fewer per week if they receive remittances. This difference is statistically significant.

Propensity score matching method accounts for endogeneity because it captures unobservable characteristics distinguishing remittance-receiving households from non remittance-receiving households.

Table 3: Descriptive statistics for the treated, non-treated and matched groups

	<i>Treated</i>	<i>Not Treated</i>	<i>Test of the differences</i>	<i>Matched</i>	<i>Test of the differences</i>
Male					
Not in the labor force	.214	.165	.048 (.019)**	0.213	.011 (.044)
Hours per week	42.623	45.307	-2.684 (.616)***	44.793	-2.171 (2.023)
Female					
Not in the labor force	.486	.428	.058 (.025)**	.483	.003 (.011)
Hours per week	41.486	43.011	-1.524 (.666)**	44.357	-2.871 (1.192)**

Note: ***, **, and * indicate the statistic significance respectively at 1, 5 and 10 percent level or better.

Empirical results show that receiving remittances for males does not have any impact in the probability of working or hours worked per week. Receipt of remittances seems to impact the labor market behavior of females, because they reduce their hours worked in presence of remittances.

4. Conclusions and comments

The paper analysis whether the receipt of remittances have any effect in the labor market participation. I used propensity score matching procedure to assess the relationship between remittances and the probability of being in the labor market. Results show that remittances do not alter the behavior of men on their labor force participation or hours worked. However there is a statistically significant change in the labor market participation of women. Women who work appear to reduce their hours worked by 2.8 per week. A possible explanation is that remittances increase the reservation wage for women. Another explanation maybe related with the fact that the departure of a family member may increase the need for more presence in the house environment. It is important to highlight the fact that remittances are received by households with significant differences in characteristics. According to the statistical test in mean differences remittances are more likely to be received from older persons living in the rural area of the country. Remittance-receiving household members result to have less years of schooling. Being older and less educated puts persons in a bad position in the labor market even without the presence of remittances. Micro aspects of the distortion in the labor market participation due to the presence of remittances maybe an explanation for the macro dynamics of the labor market. During the last two decades of open economy era for Albania there has been a paradox in the relationship between growth rate and unemployment rate. Increasing trends of economic growth were not accompanied with the decrease in the labor market. This can be considered a consequence of remittances. These capital flows discourage the participation in the labor market without decreasing the unemployment rate bur in the other side encourages consumption of goods and services.

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