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## The consumption-enhancing effect of remittances: Evidence from Kosovo

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The wiiw Balkan Observatory

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*Laetitia Duval and François-Charles Wolff*

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# The wiiw Balkan Observatory

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# The consumption-enhancing effect of remittances: Evidence from Kosovo<sup>#</sup>

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**Abstract:** In this paper, we study the effect of remittances on the living standard of families living in Kosovo using detailed data conducted in 2010 on a sample of 4,000 households. Specifically, we focus on the impact of these transfers on welfare proxied by per capita consumption expenditure at various locations of the consumption distribution. Drawing on quantile regressions, we find that remittances significantly improve the living standard of the recipient households. The benefit of remittances is much higher among households characterized by low levels of consumption, especially when the possible endogeneity of remittances is taken into account in the estimation. Finally, we show that the positive impact of remittances on consumption has remained constant between 2000 and 2010.

**JEL classification:** I32, D12, O15

**Keywords:** Remittances, consumption, poverty, inequality, Kosovo

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## 1/ Introduction

International migrations have many implications for developing countries, one of the largest being remittances. Transfers that migrants send back to their country of origin are rapidly increasing, from \$81 billion in 2000 to \$325 billion in 2010 (World Bank, 2011). At the macro level, remittances are for developing countries an important source of external financing. They outpace private capital flows, international official aids and for a few countries, the volume of foreign direct investments (Ratha, 2005). At the micro level, they provide crucial resources for recipient households. For instance, with the use of household data from El Salvador, Edwards and Ureta (2003) find that 15% of households receive remittances and these transfers amount to roughly 43% of their incomes.

Given their magnitude and their potential effects on development, understanding the welfare implications of diaspora contributions is a relevant question. The aim of this empirical paper is to present evidence on the impact of remittances on welfare proxied by per capita consumption expenditure in Kosovo using two household surveys conducted over the 2000s. Unlike countries in Latin America for instance, studies on remittances in the Balkan countries remain scarce<sup>1</sup>. Specifically, we provide recent evidence on the role of these transfers from abroad using an unusually rich data set collected in 2010 by the United Nations Development Programme (UNDP hereafter) among 4,000 Kosovan households.

Since Kosovo has experienced deep political and economic transformations over the last decade, we also study changes in the pattern of consumption and remittances since 2000 using the Living Standard Measurement Study (LSMS hereafter) provided by the World Bank with unique timing, namely the year after the end of the 1999 war. We combine both surveys to study whether the impact of remittances on welfare has changed over the period. While the previous literature has provided an extensive analysis of the determinants of remittances and their motives (Rapoport and Docquier, 2006), less attention has been devoted to their welfare implications.

Understanding the impact of remittances on the living standard of households requires very detailed micro level data that are not often available for empirical research. As a consequence, on the key issue on how remittances are spent by households, the results are mixed and strongly vary across countries. For instance, Adams and Cuecuecha (2010a) find that recipient households tend to spend more at the margin on food and less on education and housing than the non-recipients in Indonesia, while these results are reversed in the context of Guatemala (Adams and Cuecuecha, 2010b). It is hence of interest to explore further the impact of remittances on welfare for households

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<sup>1</sup> Using household data from the Riinvest Institute in 2006, Havolli (2009) examines the motives to remit in Kosovo. The main results are that investment and perceptions about the business environment affect positively remittances.

living in different developing countries in order to refine the debate. From a public policy viewpoint, this issue is crucial for countries in a challenging process of economic development.

The case of Kosovo provides an interesting setting to study the relationship between the receipt of transfers from abroad and welfare. Since the 1990s, Kosovo is in a process of transition from communist system to market economy and from ethnic violence to peace, which has led to severe vulnerability of the population. Despite progress during the post-conflict reconstruction, Kosovo is still characterized by a combination of extreme poverty and lack of job opportunities with high rate of emigration. Although reliable data is scarce, the current number of international migrants is around 20% of total population (UNDP, 2010). The total value of remittances received in 2010 is estimated at around €500 million, which constitute 17% of the GDP<sup>2</sup>. In that context, one expects remittances to be a crucial element of livelihood strategies for households living in Kosovo.

We proceed in the following way in our empirical analysis. First, we describe the pattern of remittances in Kosovo. We show that remittances strongly contribute to the welfare of households. We then measure the impact of remittances on consumption using conditional quantile regressions. We shed light on the influence of remittances respectively at the bottom, median and top of the distribution of consumption. Under the exogeneity assumption of remittances receipt, we find that poor households benefit more than rich households from remittances in terms of additional consumption. We reach very similar conclusions when remittances are treated as endogenous. Finally, we study changes in the pattern of consumption and remittances between 2000 and 2010. We conclude that the positive impact of remittances on consumption has remained constant over that period.

The remainder of our paper is organized as follows. In Section 2, we briefly review the literature on the impact of remittances on household expenditure patterns. In Section 3, we provide background on Kosovo. We present the UNDP data and some descriptive statistics on remittances and consumption in Section 4. In Section 5, we present our economic strategy and report estimates of the impact of remittances on consumption using conditional quantile regressions. In Section 6, we compare the impact of remittances on consumption over time. Finally, Section 7 concludes.

## **2/ Literature review**

According to the literature, there is conclusive evidence that remittances reduce poverty in developing countries. Using a cross-sectional household survey in Guatemala, Adams (2004) finds that the squared poverty gap decreases by 19.8% when remittances are included in income. Using a panel household survey in Indonesia, Adams and Cuecuecha (2010a) compare recipient households

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<sup>2</sup> These data on remittance inflows are extracted from the Central Bank of Kosovo.

with a counterfactual situation in which they do not receive remittances and find that the squared poverty gap decreases by 69.9%. The results are similar in Sub-Saharan Africa, where the level of poverty is very high. Using data from Ghana, Adams et al. (2008) show that the level of poverty decreases by 88.1% for recipient households<sup>3</sup>. Similarly, remittances insure the recipient households against income shocks. In the Philippines, Choi and Yang (2007) find a replacement rate of household income by remittances of 60% during the rainfall shocks.

Nevertheless, the impact of remittances on household expenditures is subject of much debate in the literature. It should be noted that a common measure of welfare in developing countries is household expenditures and not incomes. An explanation is that households are likely to smooth their consumption over time while incomes vary seasonally (World Bank, 2001). Furthermore, it is more accurate to measure household expenditures than incomes because of data constraints. For instance, Adams and Cuecuecha (2010a) explain that in Indonesia monetary measures of income are difficult to collect because a lot of people are self-employed in agriculture. For these reasons, the measure of household welfare is based on a measure of consumption that includes consumption of food and expenditures such as housing, health or education.

On the issue of how remittances are spent by households, previous studies claim that remittances are fungible with other sources of income. This means that it is not possible to associate remittances with specific expenditures. Remittances are mainly used for daily expenses rather than for investments according to Glytsos (1993) and Chami et al. (2005), so that diaspora contributions would not be beneficial for development. However, recent studies suggest that remittances go into specific uses compared to other sources of income. For instance, Edwards and Ureta (2003) find that remittances are associated with increased investments in education<sup>4</sup>. Remittances also facilitate investments in housing as shown in Osili (2004) in Nigeria. Finally, remittances generate investment among small enterprises in Mexico (Woodruff and Zenteno, 2007).

These opposed views may be attributable in part to a lack of household surveys that contain detailed information on the amount of remittances, which are expected to influence household expenditures in developing countries. Another explanation is the scarcity of interpretations that do not consider the indirect ways in which remittances are used by households (Taylor and Mora, 2006). For instance, the purchase of farm machinery could constitute a productive use of remittances, while expenditures for education are not considered as investments. Clearly, a challenging aspect of understanding the impact of remittances on household expenditures is related to data collection and

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<sup>3</sup> At the aggregate level, remittances also reduce poverty. Using a sample of 74 developing countries, Adams and Page (2005) find that a rise in 10% of remittances decreases by 1.6% the percentage of people living below the poverty line.

<sup>4</sup> Remittances decrease by 54% the hazard that a child drops out of primary school in El Salvador.



analysis. In spite of these limitations, there is a lot to learn from existing studies on how remittances are spent by households.

Several findings have to be noticed. First, Maitra and Ray (2003) show that in South Africa private and public transfers have to be treated differently since they are not spent in the same way. Both of them reduce poverty, but private transfers have a larger impact on household expenditures (they increase the budget shares of food). Secondly, there is a lot of heterogeneity depending on the country of origin. In the context of Indonesia, Adams and Cuecuecha (2010a) find that recipient households tend to spend more at the margin on food and less on education and housing than the non-recipients. Similarly, in rural Mexico, recipient households have a higher budget shares for investments and a smaller budget shares for food than non-recipient households (Taylor and Mora, 2006). Conversely, in Guatemala, recipient households tend to spend more at the margin on investments than food (Adams and Cuecuecha, 2010b). Finally, when recipient households are poorest than other households, they tend to spend their remittances at the margin on consumption rather than investment (Adams and Cuecuecha, 2010a).

Brown and Jimenez (2008) have recently attempted to explain why the findings of the literature are rather mixed. According to these authors, this would be essentially due to the migration histories. In the early stages of migration experience, migrants are not randomly distributed across all income groups. This selection-bias favors the well-off households. In that case, remittances tend to reinforce existing inequalities. However, with the development of networks in host countries, migrations concern after a while all income groups so that remittances have a significant impact on the income distribution and measures of poverty. In the context of Fiji and Tonga, Brown and Jimenez (2008) find that remittances alleviate poverty but their impact on income distribution is ambiguous. In Tonga, the effect of remittances on inequality is stronger because this country has a longer migration history than Fiji.

### **3/ Context in Kosovo**

Let us describe the context of Kosovo. From the Second World War, Kosovo was an autonomous province within Serbia. In 1989, Serbia removed this autonomy and took repressive measures against the Albanians<sup>5</sup>. At the same time, the Albanian “Kosovo Liberation Army” (KLA) sought the independence in the 1990s .

In 1998, the Serbian army conducted an offensive against the KLA in Kosovo that resulted in attacks on civilians and massive population displacements. Due to the successive wars in the Balkans

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<sup>5</sup> According to the preliminary results of the Kosovo 2011 population and housing census, Kosovo is estimated to have a population of around 1.7 million people, of which approximately 92% are Albanians and 6% are Serbs.

and the violent ethnic tensions, the North Atlantic Treaty Organization (NATO) decided a three months military operation against Serbian army. In June 1999, the UN Security Council Resolution 1244 decided to place Kosovo under a protectorate - the UN Interim Administration Mission in Kosovo (UNMIK). The Assembly of Kosovo declared unilaterally independence on February 17, 2008. Over 80 countries recognized the independence of Kosovo, except especially Serbia and Russia. The independence of Kosovo also divided the member states of the European Union. For instance, Spain considers that there are threats to security giving the independence of Kosovo according to ethnic criteria. Still, the political status of Kosovo remains today undetermined and is subject of territorial dispute with Serbia.

Since the end of the war in June 1999, Kosovo has pursued strong reforms. However, massive population displacements, disruption of the production, destruction of housing and difficult access to education and health resulted in severe vulnerability of the population (World Bank, 2001). The living standards are among the lowest in Europe. According to the CIA World Factbook, the GDP per capita in 2009 is estimated at \$6,400 in Kosovo, against \$7,400 in Albania, \$10,400 in Serbia and \$18,300 in Croatia. According to the Household Budget Survey in 2009, more than one third of the population still lives below an absolute poverty line of €1.55 per adult equivalent per day and 12% lives below an extreme poverty line (€1.02). In addition and contrary to the demographic trends in Europe, the Kosovan population is exceptionally young with an estimated one-half younger than 25. The problem is that the post-conflict reconstruction did not generate significant job creations. The unemployment rate is estimated at 46% in 2009, which is the highest rate found in Europe.

Driven by these unfavorable socio-economic conditions, many Kosovan have decided to migrate to foreign countries over the past 20 years. According to the LSMS survey achieved in 2000, one household in third in Kosovo had one family member living abroad at that time. Interestingly, the UNDP Kosovo Remittance Study (2010) shows that 16% of Kosovan households have plans to migrate in the near future<sup>6</sup>. These international migrants thus play an important role in supporting their family members still living in Kosovo since a large part of their incomes is transferred back home. At the macro level, remittances are estimated to account for 17% of GDP in 2010 according to the Central Bank of Kosovo. Remittances are increasing over time, from €418 million in 2005 to €512 million in 2010 (so a 23% increase).

#### **4/ Data and descriptive statistics**

##### *4.1/ The UNDP survey*

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<sup>6</sup> The share is higher among households that receive remittances (25%).

We use data from the Kosovo Remittance Study 2010. This survey, which was conducted in December 2009, was carried out by the UNDP with the technical and financial assistance of United States Agency for International Development, International Monetary Fund, Central Bank of Kosovo, Statistical Office of Kosovo and Ministry of Finance and Economy. The aim of this international effort was to improve the quality of household survey data for policy needs in Kosovo and to better understand the impact of remittances in that country. Key features of this household survey are the large number of observations and the specific focus on remittances.

The Kosovo Remittance Study 2010 is based on a representative sample of exactly 4,000 households. The stratification of the sample is based on ethnicity (Albanian, Serb and other minorities) and settlement (urban and rural areas). The survey is organized in several distinctive parts in order to collect information. The first one captures general household details like gender, age, ethnicity, marital status, years of education or employment status of each household member. The head of the household further provides the amount of monthly household income along with the amount and distribution of expenditures by month<sup>7</sup>.

The second part of the survey provides rich information related to the receipt of remittances. We know the relationship between the donors and the head of the household (spouse, children, siblings, etc.), where the donors live, the duration of migration and the legal status of the donor in the host country. The survey contains also very detailed questions about the characteristics of remittances: amount (either in cash or in kind), frequency, reception channel, knowledge of the recipient on transfer costs, expectations to receive transfers from abroad in the future, and a self-reported assessment of the remittances contribution to economic welfare.

The third part of the survey describes the uses of remittances, which is the main information of interest for our study. The expenditure types are organized in seven categories: (1) current consumption (food, clothing and other current household expenditures), (2) other consumption (household durables, car, family events), (3) housing investment (renovation or purchase), (4) human investment (education or health), (5) business investment (purchase of land, business or investment goods as tractor for instance), (6) savings (in banks, lend money to relatives, etc.) and (7) debt repayment (acquired to depart or for other reasons)<sup>8</sup>.

With respect to previous studies on remittances, several unusual features of the Kosovo Remittance Study 2010 have to be noticed. First, this survey is specifically designed to analyze remittances. Consequently, the data set covers a wide range of remittance phenomenon. Examples

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<sup>7</sup> The consumption items included in the survey are food, alcohol, cigarettes, clothes, housing, medical services, everyday household goods, transportation and entertainment.

<sup>8</sup> The questionnaire also includes some information on migrants at home during the interview, but we do not use this information in our empirical analysis.

are the subjective questions about the contribution of remittances to economic welfare or expectations to receive remittances. Another advantage of this survey is that we have information on the levels of household income, the amount and distribution of expenditures, and the amount and uses of remittances.

#### *4.2/ The pattern of remittances in Kosovo*

We begin with a description of the pattern of remittances in Kosovo. According to Table 1, the proportion of households receiving either financial or in-kind transfers from abroad is equal to 17.7%. The value of financial remittances is higher than that of in-kind remittances: on average, recipients benefited from €2,821 of cash and €1,861 of in-kind remittances in 2009. A look at the distribution of remittances per trimester in 2009 indicates that the July-September period corresponds to the peak of receipt of transfers from abroad (29.3% of the total amount received in 2009), followed by the October-December period (26.8%). It is interesting to note that the Summer and Christmas seasons also correspond to the periods when migrants visit Kosovo (UNDP, 2010).

Insert Table 1 here

When considering ethnicity, we find that the rate of transfers is much higher among Albanians (21%) than among Serbs (6%) and other minorities (10.9%). Moreover, Albanians and Serbs receive on average higher amounts of remittances than the other minorities. For instance, the value of in-kind remittances is equal to €133.7 for Albanians, €48.8 for Serbs and €15.8 for the others. As shown in Table 1, more than half of the transfer amount is spent on current consumption (54.5%), i.e. to buy for instance food, clothing or services and utilities. It is followed by human investments (13.8%), other consumption (13.3%) such as household durables, housing investments (8.1%), and to a lesser extent in business investment (4.1%), debt repayment (3.6%) and savings (2.6%)<sup>9</sup>. Again, there are substantial differences by ethnicity. Albanians spend more on consumption (68.2%) than Serbs (62.9%) and on housing investments (8.6% against 1.5%). Conversely, Serbs spend more on savings than Albanians (11.5% against 2.1%).

We assess the contribution of remittances to economic welfare using the following subjective question: "Which is contribution of remittances to your household economic welfare?". Possible answers are "very small" (less than 15%), "small" (between 16% and 35%), "mid-level" (between 36% and 65%), "large" (between 66% and 85%) and "very large" (over 85%). As shown in Table 1,

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<sup>9</sup> Among recipients with the lowest monthly income (less than €200), remittances are more often used for current consumption and human investments, with respectively 58.7% and 14.8%. Conversely, the richest recipient households (with more than €600) spend much more on business investment than the poorest (10.1% against 2.5%). Those in an intermediate position spend on average 4 percentage points more on other consumption (roughly 15% against 11%) and 2 percentage points more on housing investments (9% against 7%) than the other recipient households.

recipients claim that on average the contribution of remittances to their economic welfare is large: 43% of answers are at the mid-level, 22.4% at the large level and 13.4% at the very large level. Again, we find substantial differences by ethnicity. The contribution is very large for 14.2% of Albanian recipients, but only 5.9% for Serbs and 7% for other minorities.

When crossing these answers with the recipient's income, we find that the influence of remittances on economic welfare among the poorest households is more often at the mid-level (45.3%). Conversely, the recipient households with the lowest monthly income (less than €200) report less often than those characterized by either intermediate (between €200 and €600) or high income (more than €600) that the contribution of remittances is very small (6% against 11.4% and 7.9% respectively). Finally, the contribution is more often "large" for the richest recipients (28.7%).

Then, we decide to compare the subjective assessment of recipients with more objective indicators of the influential role of remittances. For that purpose, we calculate the contribution of remittances to the total household resources. Results by income deciles are presented in Figure 1. Our main finding is that there are substantial differences between household recipients depending on their position in the income distribution. For the first decile of income, remittances contribute by more than 60% to recipient households' monthly resources (61.3%). This figure is three times lower for the second and third deciles, with 20.7% and 25.3% respectively. Conversely, this proportion is at most equal to 10% for the other deciles of income.

Insert Figure 1 here

We consider a large set of demographic and socio-economic household characteristics to explain the receipt of remittances. Descriptive statistics of the sample by ethnicity are reported in Table 2. Albanian recipients and other minorities have more family members living with them than Serbs (5.4 and 5.3 against 3.3). There are substantial differences in education. 63.4% of Serbs have completed secondary school against 24.9% for the other minorities and 45.4% for Albanians. The other minorities are also more likely to be unemployed (37.7% against 24.4% for Albanians and 14.5% for Serbs). Also, we observe ethnic differences between individuals working either in the public sector, in the private sector or being self-employed. Serbs are more often employed in the public sector (38.4% against 19.3% on average), while other minorities are more often self-employed (11.7% against 8.3% for Albanians and 4.2% for Serbs).

Insert Table 2 here

According to the Kosovo Remittances Study, the average consumption expenditure per household amounts to €384. We take both the size of the household and the age composition of its members to compute an adjusted level of consumption per capita. For that purpose, we apply a

standard OECD equivalence scale<sup>10</sup>. The log of consumption per capita is equal to 4.622 for the whole sample. Compared to other ethnicity, the average level of consumption is much higher for Albanians (+36.1%) and for Serbs (+50.1%). The receipt of remittances strongly influences the level of consumption. On average, the log of adjusted consumption is equal to 4.604 for non-recipients and to 4.705 for recipients, so a difference of 10.2%. The gap between recipients and non-recipients is of similar order for Albanian households (+10.2%), but it is about three times higher for other ethnicities (+28.8%)<sup>11</sup>.

In what follows, we turn to an econometric analysis to investigate the effect of remittances on welfare net of the role played by the household characteristics. Following the pattern described in Figure 1, our econometric framework considers the impact of financial transfers from abroad over the distribution of per capita consumption.

## 5/ Measuring the impact of remittances on consumption

### 5.1/ Conditional quantile regressions with exogenous remittances

We decide to study the impact of remittances on consumption using quantile regressions. Introduced by Koenker and Bassett (1978), quantile regressions are models that describe the impact of covariates at the various parts of the conditional distribution of the outcome of interest. In our context, they will shed light on the influence of remittances respectively at the bottom, at the median and at the top of the distribution of per capita consumption. Among other advantages, these regressions are robust to outliers and the approach is semi-parametric since no specific assumption is made about the parametric distribution of regression errors (Koenker, 2005).

For the presentation, let  $C_i$  be the logarithm of per capita consumption for household  $i$ . We denote by  $Q_q(C_i|R_i, X_i)$  the conditional  $q^{\text{th}}$  quantile regression function, where  $R_i$  is a dummy variable indicating the receipt of remittances and  $X_i$  is a set of control variables. Assuming that the conditional quantile regression  $Q_q(C_i|R_i, X_i)$  is linear in  $R_i$  and  $X_i$ , the model that we estimate is:

$$Q_q(C_i|R_i, X_i) = \delta_q R_i + X_i \beta_q \quad (1)$$

The quantile regression estimators  $\delta_q$  and  $\beta_q$  are solutions to an optimization problem solved by linear programming methods. As shown in Cameron and Trivedi (2009), they are asymptotically

<sup>10</sup> Specifically, the OCDE equivalence scale assigns a value of 1 to the head of the household, of 0.7 to each additional adult and of 0.5 to each additional child (aged from 0 to 17 years old).

<sup>11</sup> The difference in log consumption between recipients and non-recipients is negative for Serbs (4.711 against 4.780).

normal under general conditions. In (1),  $\delta_q$  and  $\beta_q$  provide the estimated returns respectively to the receipt of remittances and other covariates at the  $q^{\text{th}}$  quantile of the consumption distribution.

As a preliminary step, we study the effect of the explanatory variables on the conditional mean of per capita consumption using Ordinary Least Squares. As shown in Table 3, gender, age and marital status of the head of the household have no particular influence on the average level of consumption. Consumption is negatively correlated to the size of the household. Many studies have found such negative correlation between household size and consumption or income per capita in developing countries, but the relationship between household size and poverty depends on the size elasticity of the cost of living (Lanjouw and Ravallion, 1995)<sup>12</sup>.

Insert Table 3 here

As expected, the level of consumption improves when the head has a good economic position. The consumption per capita increases by around 4% when the head has achieved a secondary school and by around 13% when he has higher education. When the head is unemployed, consumption is significantly reduced, with a decrease of 8%. Conversely, having a job improves the situation within the household (with a rise exceeding 15%). Nevertheless, we do not observe any difference between individuals working either in the public sector, in the private sector or being self-employed. Finally, living in an urban area is explanatory variable that enhances the average level of per capita consumption.

We also introduce the remittances variable in the OLS regression. In Table 3, we suppose that the receipt of transfers from abroad is exogenous. We thus neglect the possibility of a correlation between remittances and the error term of the semi-logarithmic equation, which could bias the coefficient estimated for the transfer variable. This simplification allows us to present a preliminary characterization of the potential influence of remittances on consumption, but we will further investigate the relevance of the exogeneity assumption in the next subsection. We find a positive relationship between remittances and consumption, significant at the 1% level. Clearly, transfers from abroad strongly contribute to the economic welfare of households in Kosovo.

Since our dependent variable is expressed as a logarithm, the coefficient  $\delta_{OLS}$  of remittances reported in Table 3 cannot be interpreted as the proportional change in  $C_i$  resulting from a unit change in  $R_i$ . As shown in Thornton and Innes (1989), the correct change in  $R_i$  is given by  $\exp(\delta_{OLS}) - 1$ . From our estimates, we deduce that the consumption per capita is 18.2% higher when the household receives some money from abroad. It is interesting to compare our average

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<sup>12</sup> The level of per capita consumption is a decreasing function of the proportion of persons aged 0 to 12 years old and to a lesser extent to the proportion of persons older than 60 years old.

effect of remittances with the self-reported assessment of the respondent. Each household head indicates the contribution of remittances to economic welfare using an ordered variable with five categories. Using the mid-point of each interval, we obtain an average contribution of 9.5% for the whole sample, which is nearly twice lower than our OLS evaluation. This suggests that households in Kosovo tend to underestimate the correct consumption-enhancing effect of remittances.

Next, we study the impact of remittances along the consumption distribution. In Table 3, we report coefficients from conditional quantile regressions estimated respectively at the 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and 90<sup>th</sup> percentiles. Assuming exogeneity of remittances, our main result is that the role played by transfers from abroad is much higher at the bottom than at the top of the consumption. In other words, poor households benefit more than rich households from remittances in terms of additional consumption per capita. The level of consumption increases by 22.4% at the 10<sup>th</sup> percentile, 16.9% at the 25<sup>th</sup> percentile and 14.3% at the 50<sup>th</sup> percentile. The rise is 14.5% at the 75<sup>th</sup> percentile and 12.2% at the 90<sup>th</sup> percentile.

The role played by several other explanatory variables varies over the consumption distribution. For instance, the level of consumption is around 7% higher at the 10<sup>th</sup> percentile for women (at the 10% level). The coefficient associated to the size of the household decreases along the distribution of per capita consumption<sup>13</sup>. The positive effect of secondary education is much higher for the lowest levels of consumption (till the first quartile), while it vanishes in the upper part of the distribution. Conversely, there is always a significant and large correlation between consumption and higher education. Among the poorest households, the negative influence of being unemployed on consumption is very high till the 25<sup>th</sup> percentile. Finally, per capita consumption is much higher when the head works in the public sector for low levels and when the head is employer or self-employed for high levels.

## 5.2/ Estimates of quantile treatment effects

We now focus on the causal impact of remittances on per capita consumption. To account for distributional effects, we turn to the estimation of quantile treatment effects (QTE hereafter) since our aim is to measure the effect of the binary treatment  $R$  on the continuous outcome  $C$ . Let  $C_i^1$  and  $C_i^0$  be the potential levels of per capita consumption of an individual  $i$  respectively when  $R_i = 1$  and when  $R_i = 0$ . By definition, we never observe simultaneously  $C_i^1$  and  $C_i^0$  since only one

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<sup>13</sup> This pattern is somewhat puzzling as for the poorest households the expected increase in welfare from the economies of scale should lead to a rise in per capita consumption of food. As shown in Deaton and Paxson (1998), the per capita demand for food decreases with household size all over the world without clear explanation. The fall in food consumption is even higher in the poorest countries.



outcome is realized (depending on whether individual  $i$  receives or not money from abroad). The observed outcome  $C_i$  is such that  $C_i = R_i * C_i^1 + (1 - R_i) * C_i^0$ .

As discussed in Frölich and Melly (2010), there are several estimators for QTE. We have to distinguish between conditional and unconditional effects with either exogenous or endogenous treatment variable. Conditional QTE are conditional on a set of explanatory variables  $X$ , while unconditional effects indicate the causal effect of a treatment for the entire population. For the moment, we suppose that the treatment variable is exogenous conditional on the covariates  $X$ . The selection is hence on observables, meaning that exposure to treatment is supposed to be random within cells defined by observed covariates  $X$ .

In the case of a linear model for  $C_i$  and with selection on observables, the conditional QTE of  $R_i$  is given by the coefficient  $\delta_q$  in (1) and is obtained using the classical quantile regression estimator of Koenker and Bassett (1978). These estimates, reported in Table 3 (and also in the first row of Table 4 for comparison with other QTE), have already been discussed. Next, we no longer assume that the QTE is conditional on  $X$  and consider instead unconditional QTE with exogenous treatment. The identifying restriction is still that selection to treatment is based on observable characteristics only. Following Firpo (2007), the unconditional QTE is given by<sup>14</sup>:

$$\Delta_q = Q_q^{C^1} - Q_q^{C^0} \quad (2)$$

Although the definition of  $\Delta_q$  does not depend on  $X$ , the covariates  $X$  are still used to estimate the unconditional QTE as they make the identification assumptions more plausible. To estimate  $\Delta_q$ , Firpo (2007, p. 263) shows that both the unconfoundedness and common support assumptions are needed<sup>15</sup>. The estimation procedure includes two steps, with first a nonparametric estimation of the propensity score and then a computation of the difference between two quantiles. The estimator is root-N consistent and asymptotically normal.

As shown in Table 4, the unconditional exogenous QTE estimates strongly decreases along the distribution of consumption. At the 10<sup>th</sup> percentile, the receipt of remittances increases the level of consumption by 25.1%, but the causal effect is more than twice lower at the 25<sup>th</sup> percentile (11.0%). It is even no longer significant in the upper part of the distribution (above the 75<sup>th</sup> percentile). An explanation of this decreasing trend along the consumption distribution is that the additional income received through remittances is vital for very poor and poor families to purchase

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<sup>14</sup> By definition, the conditional and unconditional QTE are the same without covariates.

<sup>15</sup> The set of covariates  $X$  is supposed to contain all confounding variables, meaning that given a set of covariates  $X$ , the outcome  $(C^0, C^1)$  is jointly independent from the exogenous treatment.

more food and everyday goods in order to fulfill their basic needs. Conversely, among wealthy households, part of the financial transfers may be saved in bank or invested in business.

Insert Table 4 here

If our interpretation is correct, then some substantial differences should be observed in the lower part of the consumption distribution. To assess how very poor households are dependent on transfers received from migrants, we plot in Figure 2 the unconditional QTE under exogeneity along the whole distribution of per capita consumption. Our main result is that the consumption-enhancing effect of remittances is much larger in the first decile and to a lesser extent in the second decile. The QTE estimate of remittances is above 40% in the first two percentiles, above 30% at the 5<sup>th</sup> percentile and above 20% at the 10<sup>th</sup> percentile. The profile is rather flat above the 20<sup>th</sup> percentile, with a causal impact of around 10%.

Insert Figure 2 here

The previous sets of QTE estimates are valid only if we observe enough covariates to make the unconfoundedness assumption valid. These estimators are however biased if the treatment  $R$  is endogenous. In our context, there are two potential sources leading to a correlation between the error term of the per capita consumption equation and the receipt of remittances. A first problem is the presence of unobserved heterogeneity. Household remittances should be highly correlated with the characteristics of the migrants (for instance with their incomes in the host country) and with measures of household wealth. Unfortunately, the survey provides no information on these different control variables. A second possible source of correlation is the joint determination of remittances and consumption. This concern is (at least partially) addressed since we model household expenditures spent last month as a function of remittances received during the last year.

Since we are not able to estimate fixed effect models to take unobserved heterogeneity into account, we use an instrumental variable approach to address the endogeneity of remittances. A difficulty here is to find at least one variable that is correlated with the receipt of transfers from abroad, but not with per capita consumption. Also, when estimating quantile treatment effects, we need only one instrumental variable that has to be transformed to a binary variable (see Frölich and Melly, 2010). Unfortunately, the survey offers very little possibility. It is for instance difficult to consider spatial differences in the number of money transfer agencies as there are only 33 municipalities<sup>16</sup>. Also, it is difficult to use proxies for the economic conditions of the destination

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<sup>16</sup> For each town, we have attempted to calculate the number of Financial Union and Money Gram agencies, but failed to find any correlation between the receipt of remittances and total number of agencies. We obtain a positive correlation when considering the number of agencies per inhabitant, but with a very low contribution to the  $R^2$ . Another difficulty is the fact that the number of agencies per inhabitant may capture the economic development of the home commune and hence have a direct influence on the level of household expenditures (Cattaneo, 2012).

country of migration. About 60% of migrants are located in two countries (Germany and Switzerland) and we do not have this information for all family members living outside Kosovo.

In what follows, we consider the number of family members living outside of Kosovo as an instrument for remittances (or more exactly the presence of family members living in a foreign country as we need a binary instrumental variable). This variable should be strongly correlated to remittances. By definition, these transfers have to be sent from anyone living as migrant outside Kosovo in the survey and a large number of migrants offers much more opportunities to receive money from abroad<sup>17</sup>. Our identifying assumption is that the number of migrants does not affect the level of per capita consumption other than through the receipt of remittances. There are two potential threats with respect to the validity of this instrument.

The first one is that households living in Kosovo may change their consumption decisions because they have family members living abroad even without transfers. For instance, they could benefit from the knowledge of the foreign country from their relatives and decide to migrate themselves soon. Also, they could be tempted to overconsume if they become more optimistic because of successful migration of their relatives. The second one is that the exogeneity of the number of migrants is itself questionable. As emphasized in Rapoport and Docquier (2006), household living in less secure environments or characterized by a high degree of risk aversion may be tempted to send more migrants out. This would lead to a diversification of the sources of income. More generally, it may be that our instrument is related to unobserved household characteristics that affect the pattern of consumption. For instance, poor households may have fewer opportunities to place some of their family members in economically attractive countries.

Before implementing the quantile estimates, we consider the average level of consumption and turn to a 2SLS regression. Compared to the transfer coefficient of 0.167 ( $t=7.00$ ) obtained using OLS, we obtain a higher impact of remittances equal to 0.246 ( $t=7.03$ ) with presence of family members living in a foreign country as an instrument. When restricting the sample to households of Albanian origin, the effect of remittances is respectively 0.174 under exogeneity ( $t=6.76$ ) and 0.210 under endogeneity ( $t=5.75$ ). This increase in the role played by remittances after taking endogeneity into account is consistent with previous studies on transition countries (see Duval and Wolff, 2010).

Keeping in mind the possible limitations of our results based on selection on unobservables, we now focus on quantile regressions. Again, we have to distinguish between conditional and unconditional QTE when the treatment is endogenous. For the former, we rely on the estimator

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<sup>17</sup> However, there may be some differences in the pattern of remittances received even for a given number of migrants as shown by Funkhouser (1995) when comparing Nicaragua and El Salvador. Also, Agarwal and Horowitz (2002) note that the number of migrants may reduce the amount of transfer sent by a particular migrant when remittances are motivated by altruism. All sources of transfers are perfect substitutes in that case.

proposed by Abadie et al. (2002). As shown in Table 4, the QTE estimates are larger after accounting for endogeneity of the remittances variables. At the median level, the per capita consumption is 21.5% higher for recipients when remittances are endogenous, which is 6.7 points higher than with exogenous treatment (14.8%). Another result is that the QTE estimates are much higher in the lower part of the distribution. At the 10<sup>th</sup> percentile, the level of per capita consumption increases by 33.4% for recipients (25.7% at the 25<sup>th</sup> percentile).

As a final step, we calculate the unconditional endogenous QTE estimates following Frölich and Melly (2008, 2010). Our binary instrumental variable is still having family members abroad. Estimates reported in Table 4 lead to the two following results. First, it is interesting to find very similar profiles when remittances are treated either as exogenous or endogenous. The benefit of receiving money from abroad is much higher among households characterized by low levels of consumption. In particular, the enhancing effect of transfer receipt strongly decreases from the 10<sup>th</sup> to the 25<sup>th</sup> percentile. Secondly, taking into account the endogeneity of remittances substantially increase the positive influence of this additional source of income on consumption. This downward bias of the non-IV estimates is not surprising since omitted variables like household wealth or income are respectively positively related to consumption, but negatively to remittances.

## **6. Consumption and remittances in 2000 and 2010**

The economic situation in Kosovo has strongly improved since the end of the war in 1999, supported in part by international donors and large investments during the post-conflict reconstruction. Kosovo is currently characterized by a stable macroeconomic environment and has joined in 2009 the International Monetary Fund and the World Bank. Nevertheless, high unemployment and poverty are still major challenges in Kosovo (UNDP, 2010).

During the recent global economic crisis, Kosovo has not been as strongly affected as other countries. The average annual growth remains positive in 2009 (2.9%) and continues to increase in 2010 (4.0%). An explanation is that Kosovo is a small size economy with low level of integration into the global economy. However, the international economic slowdown in developed countries has led to indirect costs for Kosovo because that country is highly dependent of the international donors and remittances. Because of the crisis, the international community has decreased its official aids. Also, the rise in unemployment in the host countries of Kosovan migrants has affected remittances. According to the Central Bank of Kosovo, remittances fell to €505.6 million in 2009, registering a 5.6% decline<sup>18</sup>.

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<sup>18</sup> The World Bank (2011) has recently highlighted the resilience of remittances. The decline of remittances for developing countries is very low in 2009 compared to other resource flows. For instance, foreign direct investments fell to 40%

It is hence interesting to know whether there has been any change over recent years in the impact of remittances on per capita consumption. Note that it is difficult to have any priors concerning the role of economic conditions on the consumption-remittances relationship. In a strong economic growth environment, households living in Kosovo should have more opportunities to find a well-paid job. Their private consumption should be less dependent from money received from abroad. At the same time, if migrants also face better economic conditions in the host country, then they may send larger amounts of remittances to their family members living in the origin country.

We study changes in the consumption-remittances relationship during the 2000s using another survey conducted in Kosovo in 2000. The Kosovo LSMS survey was carried out between September and December 2000 by the Statistical Office of Kosovo with the technical and financial assistance of the World Bank<sup>19</sup>. The sample was designed to be representative of urban and rural areas and it includes 2,880 households. We rely on the household questionnaire that collects information at the individual and household levels on demographics, education, employment, social protection and other income, health, housing, consumption and expenditures, enterprises and agricultural activity.

Contrary to the Kosovo Remittance Study 2010, the 2000 LSMS survey was not specifically designed for the purpose of analyzing remittances. It contains questions on the migration history of households and displacement during the war, but does not have a full module on migration and remittances. However, the 2000 LSMS survey is unique because it constitutes a scarce model of household survey conducted immediately after a civil war. The data collection took place just over few months after the end of the NATO bombing campaign against Serbian army (World Bank, 2001). Let us now describe the main information of interest for our analysis, keeping in mind that similar questions in both data sets is needed for the comparison.

First, the Kosovo LSMS survey includes information on the demographic and socio-economic characteristics of households: gender, age, ethnicity, marital status, size, education, employment status and location (urban versus rural areas). Secondly, information on remittances is available in the module on private inter-household transfers. The definition of the transfer variables includes both remittances and transfers from family members living in Kosovo. Nevertheless, as we know where the potential donors live, we can isolate transfers from abroad. Thirdly, we rely on the consumption module to obtain the consumption per capita. The measure includes consumption of food, consumer goods, durable goods, housing and expenditures on health and education.

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between 2008 and 2009. Mohapatra et al. (2010) indicate that two main reasons explain that remittances are persistent over time. First, remittances are sent by cumulated flows of migrants, not only by new migrants during one year. Second, border controls and fear of unemployment back home encourage migrants to stay abroad.

<sup>19</sup> For further information on the Kosovo LSMS survey, see <http://www.worldbank.org/lms/index.htm>.

On average, household consumption per capita was also higher among recipients than non-recipients in 2000<sup>20</sup>. The difference amounts to 11.8% (4.512 among recipients compared to 4.394 among non-recipients). Since we have the same information in the 2000 and 2010 data, we can compare the impact of remittances on consumption for both years. For that purpose, we pool the two data sets and construct a dummy variable  $S_i^{10}$  such that  $S_i^{10} = 1$  when the respondent  $i$  is interviewed in 2010 and  $S_i^{10} = 0$  otherwise. Assuming that remittances are exogenous, we estimate the following conditional quantile regressions:

$$Q_q(C_i | R_i, X_i) = \theta_q R_i + \vartheta_q S_i^{10} + \kappa_q R_i * S_i^{10} + X_i \beta_q \quad (4)$$

with  $\theta_q$  and  $\kappa_q$  coefficients to estimate. For the  $q^{\text{th}}$  quantile of the consumption distribution, the coefficient  $\kappa_q$  indicates whether the influence of remittances has changed between 2000 and 2010. If for instance  $\kappa_q$  is positive and significant, then it means that the enhancing-effect of transfers on consumption has increased between 2000 and 2010.

The corresponding estimates are in Table 5. A first finding is that the impact of remittances is decreasing along the consumption distribution. So, these are mostly poor households that benefit from the receipt of money from abroad in terms of welfare improvement. A second important is that while the level of per capita consumption has increased between 2000 and 2010, the term crossing receipt of remittances times year of survey is never significant conventional level. This means that the positive impact of remittances on consumption has not changed between 2000 and 2010. Concerning the other covariates, estimates from the pooled sample show that the average level of per capita consumption significantly improves when the head is working either in the public or private sector, is self-employed or has completed more than primary school.

Insert Table 5 here

We decide to further study changes in consumption over the period by decomposing the difference  $C_i^{10} - C_i^{00}$  into one component that results from differences in individual characteristics and another component that is explained by the difference in the rewards to identical observable characteristics (Oaxaca and Ransom, 1994). Such decomposition can be implemented either at the mean of the dependent variable or at the various quantiles of the consumption distribution (Machado and Mata, 2005). For the presentation, let  $W$  be a vector of covariates including both  $X$  and  $R$ . We express the level of consumption for each year respectively as  $C_i^{00} = \theta_q^{00} W^{00}$  and

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<sup>20</sup> In an appendix available from authors upon request, we present results similar to those from Tables 2, 3 and 4, but with the LSMS 2000 data.

$C_q^{10} = \theta_q^{10} W^{10}$ . The difference over time in per capita consumption, which is equal to  $C_q^{10} - C_q^{00} = \theta_q^{10} W^{10} - \theta_q^{00} W^{00}$ , can be decomposed in the following way:

$$C_q^{10} - C_q^{00} = \theta_q^{10} (W^{10} - W^{00}) + (\theta_q^{10} - \theta_q^{00}) W^{00} \quad (5)$$

The first term  $\theta_q^{10} (W^{10} - W^{00})$  is the part of the consumption gap that is explained by differences in individual characteristics between the 2000 and 2010 samples. This includes for instance any changes over time in the proportion of households receiving money from family members and other relatives living abroad. The second term  $(\theta_q^{10} - \theta_q^{00}) W^{00}$  is due to differences in the returns to these characteristics<sup>21</sup>.

When turning to the data, we perform the decomposition both at the average level of consumption (the so-called Oaxaca-Blinder decomposition) and at the various percentiles of the consumption distribution. We follow the procedure described in Machado and Mata (2005) to generate the counterfactual density. First, we draw a set of 500 numbers  $\omega_j$  ( $j = 1, \dots, 500$ ) at random from the interval (0,1). Then, for each  $\omega_j$ , we estimate the conditional quantile estimates  $\theta_{q=\omega_j}^{10}$ . Finally, we make 500 draws at random with replacement from the 2000 sample and obtain  $W_j^{00}$ . We deduce for each  $j$  the counterfactual density  $\theta_{q=\omega_j}^{10} W_j^{00}$ .

We begin with results from a decomposition at the mean. The average level of per capita consumption has increased by 21.2% between 2000 and 2009. We find that 40.7% of the gap in consumption is due to differences in characteristics between the two samples, while 59.3% is due to differences in the effect of the selected covariates. A detailed decomposition provides additional information on the potential role played by remittances on the consumption gap<sup>22</sup>. On the one hand, we find a negative coefficient for the remittances variable when considering the explained part of the consumption gap. Recalling that fewer households have benefitted from remittances in 2010, the gap in consumption would have been reduced had the proportion of transfer recipients remained constant. On the other hand, the remittances dummy is not significant in the unexplained part.

Results of the quantile decomposition show that the gap in consumption does not remain constant across the consumption distribution. As shown in Figure 3, the difference in living standard between 2000 and 2010 is much higher at the top than at the bottom of distribution. More precisely, the overall difference is strongly increasing till the 15th percentile, then it remains rather flat from the 20th till the 75th percentile, and finally it strongly increases afterwards (it is above 30% at the

<sup>21</sup> Note that the counterfactual group that we consider is made of individuals having the characteristics of the 2000 sample, but with the returns of the 2010 sample. We can do the same decomposition assuming that households have the individual characteristics of the 2010 sample. See Oaxaca and Ransom (1994) for an extended discussion.

<sup>22</sup> These results are available in an appendix available upon request.

95th percentile). In fact, the increasing shape of the total gap in consumption is mainly due to differences in the returns to observable characteristics. Since the impact of remittances on consumption is much higher at the bottom of the distribution, it follows that money from abroad can absolutely not explain the huge increase in consumption among the more well-off people in Kosovo.

## **7/ Conclusion**

The purpose of this paper was to measure the effect of remittances on welfare proxied by per capita consumption expenditure in Kosovo. We have explored this issue using the Kosovo Remittance Study conducted by the UNDP for 2010, a survey that was specifically designed for an analysis of transfers from abroad. We have also considered the Kosovo LSMS survey provided by the World Bank for 2000 to study changes in the pattern of remittances of consumption over time. We rely on a quantile regression framework in order to assess the effect of remittances on household expenditures at various locations of the consumption distribution.

Our main conclusions are as follows. First, we find that remittances significantly improve the living standard of the recipient households. The average level of consumption per capita is 18.2% higher for households having received money from abroad. Secondly, the benefit of remittances is much higher among households characterized by low levels of consumption, especially when the possible endogeneity of remittances is taken into account in the estimation. Thirdly, when considering changes in the consumption-remittances relationship during the 2000s, we show that the positive impact of remittances on consumption has remained constant between 2000 and 2010.

As they stand, our results suggest that remittances are an effective mechanism for alleviating poverty in Kosovo. Due to the paucity of household surveys in post-civil war context, it would be useful to pursue research from this perspective in Kosovo in order to formulate the most appropriate policies. The situation in Kosovo is still fragile and the welfare of households remains a heated topic in the conditions of long-term recovery and stability of the country. We leave this issue for future research.

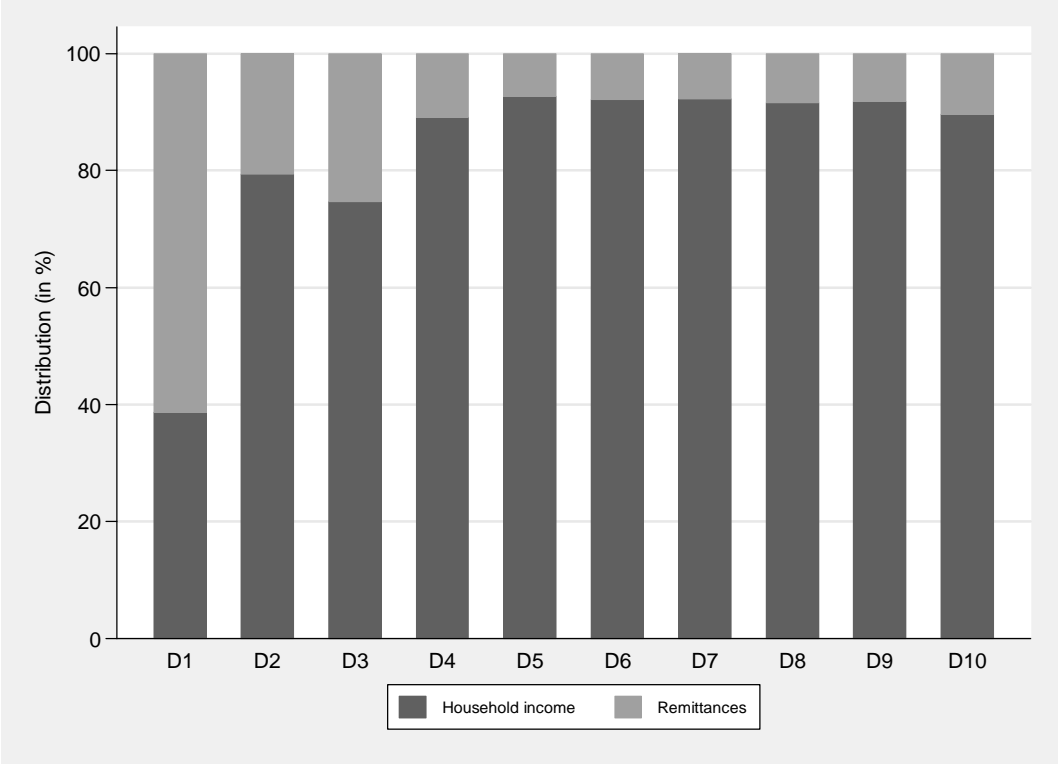


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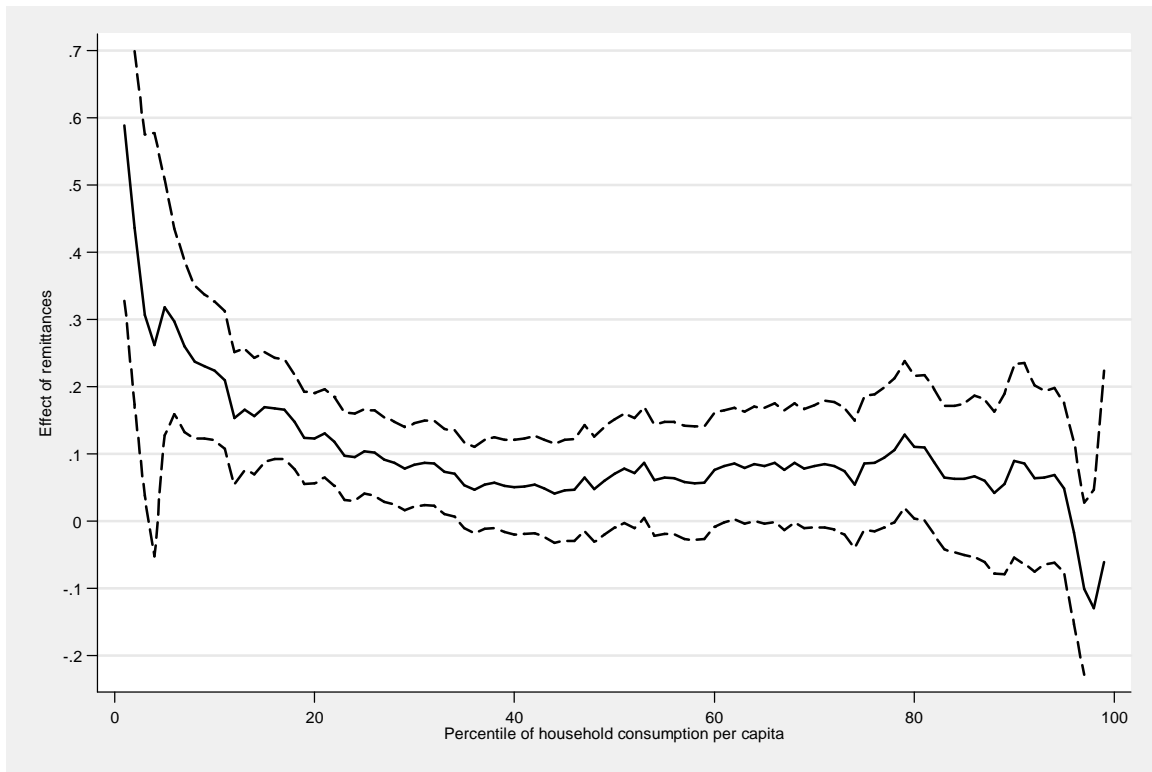
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**Figure 1. Contribution of remittances to total household resources, by income decile**



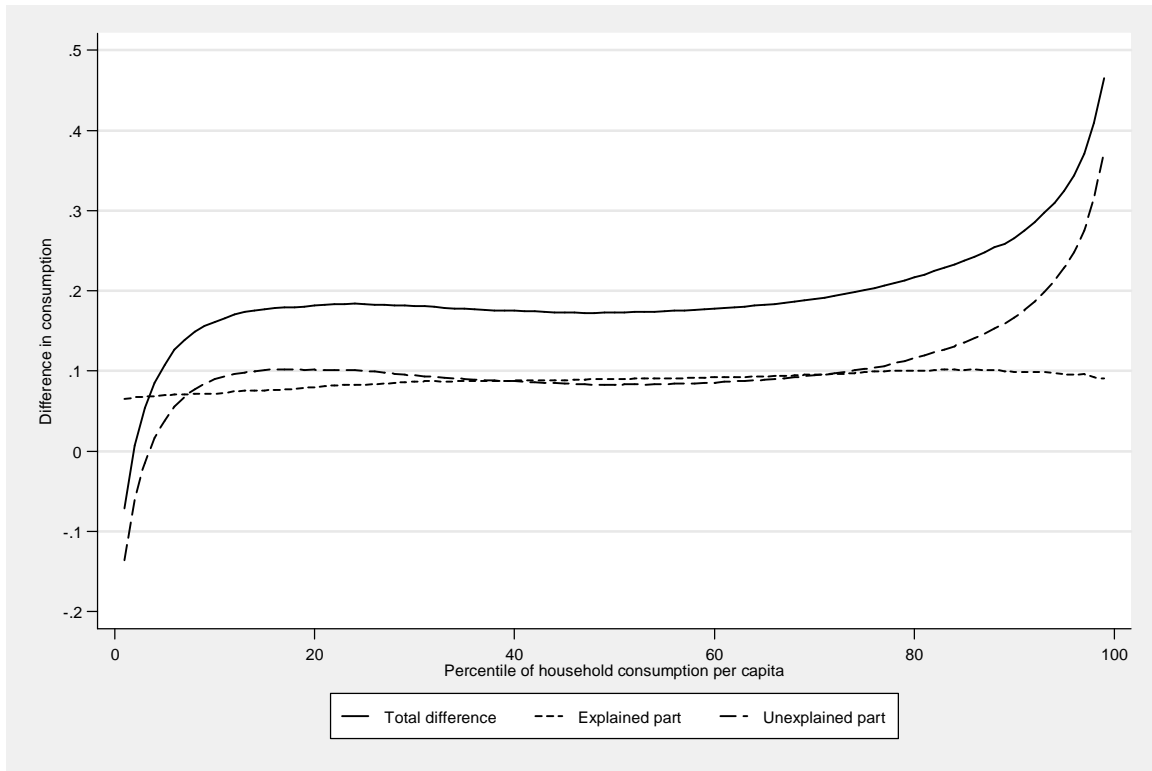
Source: authors' calculations, UNDP Kosovo Remittance Study 2010.

Figure 2. Unconditional QTE estimates of remittances, with exogenous transfers



Source: authors' calculations, UNDP Kosovo Remittance Study 2010.

Figure 3. Quantile decomposition of the difference in consumption between 2000 and 2010



Source: authors' calculations, LSMS Kosovo 2000 and UNDP Kosovo Remittance Study 2010.

**Table 1. Descriptive statistics of remittances, by ethnicity**

Year	Albanians	Serbs	Other minorities	All
<i>Pattern of remittances</i>				
Receipt of financial/in-kind remittances (in %)	21.0	6.0	10.9	17.7
Value of financial remittances	609.7	172.8	162.4	500.1
Value of financial remittances per recipient	2909.2	2885.4	1484.5	2821.6
Value of in-kind remittances	133.7	48.8	15.8	109.4
Value of in-kind remittances per recipient	1931.9	2257.2	444.7	1861.3
<i>Expenditures type</i>				
Current consumption	54.7	52.9	53.5	54.5
Other consumption	13.5	10.0	11.7	13.3
Housing investments	8.6	1.5	5.0	8.1
Human investments	13.3	17.9	18.5	13.8
Business investment	4.2	5.0	2.1	4.1
Savings	2.1	11.5	4.5	2.6
Debt repayment	3.7	1.2	4.6	3.6
<i>Contribution of remittances to economic welfare</i>				
Very small (less than 15%)	9.5	5.9	4.7	9.1
Small (16-35%)	10.5	32.4	20.9	12.2
Mid-level (36-65%)	42.8	29.4	55.8	43.0
Large (66-85%)	22.9	26.5	11.6	22.4
Very large (over 85%)	14.2	5.9	7.0	13.4
Number of observations	3006	601	393	4000

Source: authors' calculations, UNDP Kosovo Remittance Study 2010.

**Table 2. Descriptive statistics of the sample by ethnicity**

Variables	Albanians	Serbs	Other minorities	All
Household consumption per capita (log)	4.636	4.776	4.275	4.622
Head : Female	0.159	0.158	0.117	0.155
Head : Age	49.042	49.586	47.321	48.954
Head : Married	0.852	0.824	0.817	0.845
Size of the household	5.401	3.358	5.300	5.084
Head : Primary school	0.278	0.116	0.570	0.283
Head : Secondary school	0.454	0.634	0.249	0.461
Head : More than secondary school	0.268	0.250	0.181	0.257
Head : Unemployed	0.244	0.145	0.377	0.242
Head : Employed in public sector	0.171	0.384	0.069	0.193
Head : Employed in private sector	0.331	0.206	0.290	0.308
Head : Employer or self-employed	0.083	0.042	0.117	0.081
Head : Others (pensioner, housewife, ...)	0.171	0.223	0.148	0.177
Urban area	0.500	0.431	0.774	0.517
Number of observations	3006	601	393	4000

Source: authors' calculations, UNDP Kosovo Remittance Study 2010.

**Table 3. Quantile estimates of the log of per capita consumption, with exogenous transfers**

Variables	Percentile					OLS
	P10	P25	P50	P75	P90	
Constant	4.199*** (0.095)	4.435*** (0.061)	4.569*** (0.077)	4.939*** (0.082)	5.380*** (0.125)	4.667*** (0.063)
Head : Female	0.071* (0.040)	0.015 (0.025)	0.036 (0.033)	-0.011 (0.035)	-0.069 (0.055)	-0.004 (0.027)
Head : Age	0.002* (0.001)	0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)	-0.001 (0.002)	-0.000 (0.001)
Head : Married	-0.020 (0.038)	0.002 (0.025)	0.036 (0.032)	0.055* (0.033)	0.036 (0.051)	0.029 (0.026)
Size of the household	-0.102*** (0.005)	-0.069*** (0.003)	-0.045*** (0.005)	-0.031*** (0.006)	-0.022** (0.010)	-0.045*** (0.004)
Proportion of persons aged 0-12	-0.185** (0.074)	-0.241*** (0.048)	-0.374*** (0.063)	-0.472*** (0.069)	-0.660*** (0.108)	-0.488*** (0.052)
Proportion of persons aged >60	-0.253*** (0.083)	-0.155*** (0.050)	-0.067 (0.064)	-0.067 (0.069)	-0.133 (0.105)	-0.127** (0.053)
Head : Secondary school	0.183*** (0.036)	0.103*** (0.022)	0.062** (0.029)	0.015 (0.031)	-0.045 (0.048)	0.041* (0.024)
Head : More than secondary school	0.188*** (0.041)	0.141*** (0.026)	0.128*** (0.033)	0.144*** (0.035)	0.171*** (0.052)	0.124*** (0.027)
Head : Unemployed	-0.212*** (0.047)	-0.151*** (0.030)	-0.053 (0.037)	-0.033 (0.039)	-0.040 (0.060)	-0.078** (0.031)
Head : Employed in public sector	0.173*** (0.052)	0.123*** (0.032)	0.091** (0.040)	0.098** (0.042)	0.097 (0.063)	0.128*** (0.033)
Head : Employed in private sector	0.099** (0.049)	0.067** (0.031)	0.136*** (0.038)	0.164*** (0.040)	0.181*** (0.060)	0.156*** (0.032)
Head : Employer or self-employed	0.137** (0.062)	0.104*** (0.039)	0.170*** (0.050)	0.172*** (0.053)	0.213*** (0.082)	0.167*** (0.041)
Head : Serb	0.079* (0.043)	0.003 (0.026)	-0.011 (0.034)	-0.037 (0.036)	0.028 (0.056)	0.036 (0.028)
Head : Other minorities	-0.275*** (0.047)	-0.265*** (0.030)	-0.268*** (0.038)	-0.281*** (0.041)	-0.354*** (0.062)	-0.351*** (0.032)
Urban area	0.013 (0.027)	0.074*** (0.017)	0.137*** (0.022)	0.184*** (0.024)	0.212*** (0.036)	0.158*** (0.018)
Receipt of remittances	0.202*** (0.037)	0.156*** (0.023)	0.134*** (0.029)	0.135*** (0.030)	0.115** (0.047)	0.167*** (0.024)
Observations	4000	4000	4000	4000	4000	4000
Pseudo R <sup>2</sup> - R <sup>2</sup>	0.179	0.112	0.134	0.105	0.114	0.194

Source: authors' calculations, UNDP Kosovo Remittance Study 2010.

Note: estimates from quantile and OLS regressions, with standard errors in brackets. Significance levels are respectively 1% (\*\*\*) , 5% (\*\*) and 10% (\*). Each regression also includes a set of regional dummies.



**Table 4. Conditional and unconditional QTE estimates of the log of per capita consumption**

Variables	Percentile				
	P10	P25	P50	P75	P90
(1) Conditional exogenous QTE					
Receipt of remittances	0.222*** (0.032)	0.162*** (0.029)	0.138*** (0.024)	0.134*** (0.029)	0.134*** (0.048)
(2) Unconditional exogenous QTE					
Receipt of remittances	0.224*** (0.053)	0.104*** (0.032)	0.071* (0.041)	0.086* (0.051)	0.089 (0.074)
(3) Conditional endogenous QTE					
Receipt of remittances	0.288*** (0.049)	0.229*** (0.045)	0.195*** (0.037)	0.213*** (0.043)	0.201*** (0.072)
(4) Unconditional endogenous QTE					
Receipt of remittances	0.379*** (0.054)	0.279*** (0.043)	0.295*** (0.053)	0.159** (0.072)	0.042 (0.084)

Source: authors' calculations, UNDP Kosovo Remittance Study 2010.

Note: estimates from quantile regressions, with standard errors in brackets. Significance levels are respectively 1% (\*\*\*), 5% (\*\*), and 10% (\*). The various regressions include all the explanatory variables introduced in Table 3.

**Table 5. Quantile estimates of the log of per capita consumption in 2000 and 2010**

Variables	Percentile					OLS
	P10	P25	P50	P75	P90	
Constant	3.829*** (0.077)	4.122*** (0.060)	4.450*** (0.056)	4.853*** (0.072)	5.394*** (0.086)	4.524*** (0.049)
Head : Female	0.053 (0.033)	0.034 (0.027)	0.030 (0.025)	-0.013 (0.033)	-0.045 (0.038)	0.001 (0.022)
Head : Age	0.003*** (0.001)	0.002*** (0.001)	0.001 (0.001)	0.001 (0.001)	-0.000 (0.001)	0.001* (0.001)
Head : Married	-0.002 (0.030)	0.032 (0.024)	0.029 (0.023)	-0.025 (0.030)	-0.043 (0.035)	0.003 (0.021)
Size of the household	-0.068*** (0.004)	-0.051*** (0.003)	-0.040*** (0.003)	-0.034*** (0.004)	-0.032*** (0.006)	-0.042*** (0.003)
Proportion of persons aged 0-12	-0.171*** (0.057)	-0.237*** (0.045)	-0.361*** (0.042)	-0.399*** (0.055)	-0.524*** (0.066)	-0.387*** (0.037)
Proportion of persons aged >60	-0.351*** (0.057)	-0.318*** (0.044)	-0.225*** (0.042)	-0.234*** (0.053)	-0.313*** (0.061)	-0.299*** (0.037)
Head : Secondary school	0.196*** (0.027)	0.142*** (0.021)	0.104*** (0.019)	0.058** (0.024)	0.027 (0.029)	0.087*** (0.017)
Head : More than secondary school	0.192*** (0.031)	0.205*** (0.024)	0.187*** (0.022)	0.217*** (0.028)	0.196*** (0.032)	0.184*** (0.020)
Head : Unemployed	-0.146*** (0.035)	-0.117*** (0.028)	-0.080*** (0.025)	-0.040 (0.032)	-0.033 (0.037)	-0.096*** (0.022)
Head : Employed in public sector	0.218*** (0.036)	0.102*** (0.028)	0.098*** (0.026)	0.087*** (0.032)	0.081** (0.037)	0.119*** (0.023)
Head : Employed in private sector	0.149*** (0.033)	0.075*** (0.026)	0.127*** (0.024)	0.148*** (0.030)	0.130*** (0.034)	0.133*** (0.021)
Head : Employer or self-employed	0.256*** (0.044)	0.201*** (0.035)	0.226*** (0.033)	0.243*** (0.041)	0.283*** (0.048)	0.226*** (0.029)
Head : Serb	-0.003 (0.031)	-0.001 (0.024)	-0.036 (0.023)	-0.086*** (0.029)	-0.043 (0.034)	-0.025 (0.020)
Head : Other minorities	-0.340*** (0.040)	-0.276*** (0.031)	-0.224*** (0.029)	-0.230*** (0.037)	-0.242*** (0.043)	-0.290*** (0.026)
Urban area	0.060*** (0.021)	0.083*** (0.017)	0.107*** (0.015)	0.119*** (0.019)	0.100*** (0.023)	0.116*** (0.014)
Receipt of remittances	0.220*** (0.034)	0.208*** (0.027)	0.140*** (0.025)	0.105*** (0.032)	0.080** (0.037)	0.158*** (0.022)
Year 2010	0.083*** (0.025)	0.100*** (0.020)	0.097*** (0.018)	0.125*** (0.024)	0.175*** (0.028)	0.113*** (0.016)
Receipt of remittances * Year 2010	0.002 (0.047)	-0.055 (0.038)	0.016 (0.035)	0.059 (0.045)	0.080 (0.052)	0.014 (0.031)
Observations	6880	6880	6880	6880	6880	6880
Pseudo R <sup>2</sup> - R <sup>2</sup>	0.147	0.115	0.099	0.099	0.114	0.199

Source: authors' calculations, LSMS Kosovo 2000 and UNDP Kosovo Remittance Study 2010.

Note: estimates from quantile and OLS regressions, with standard errors in brackets. Significance levels are respectively 1% (\*\*\*), 5% (\*\*) and 10% (\*). Each regression also includes a set of regional dummies.

## Appendix. Not for publication

Tables A, B and C are similar to Tables 2, 3 and 4 with the 2000 data.

Table D reports estimates from the detailed Oaxaca-Blinder decomposition.

Table E reports treatment effect estimates using respectively 2000 and 2010 data.

**Table A. Descriptive statistics of the sample**

Variables	No remittances	Remittances	All
Household consumption per capita (log)	4.394.	4.512.	4.429.
Head : Female	0.074.	0.105.	0.083.
Head : Age	50.629.	50.655.	50.636.
Head : Married	0.862.	0.892.	0.871.
Size of the household	6.113.	6.477.	6.221.
Head : Primary school	0.447.	0.504.	0.464.
Head : Secondary school	0.329.	0.284.	0.316.
Head : More than secondary school	0.224.	0.212.	0.220.
Head : Unemployed	0.128.	0.152.	0.135.
Head : Employed in public sector	0.241.	0.202.	0.230.
Head : Employed in private sector	0.283.	0.233.	0.268.
Head : Employer or self-employed	0.084.	0.081.	0.083.
Head : Others (pensioner, housewife, ...)	0.263.	0.332.	0.283.
Head : Albanian	0.720.	0.946.	0.787.
Head : Serb	0.227.	0.015.	0.164.
Head : Other ethnicities	0.053.	0.039.	0.049.
Urban area	0.527.	0.436.	0.500.
Number of observations	2025	855	2880

Source: authors' calculations, LSMS Kosovo 2000.

**Table B. Quantile estimates of the log of per capita consumption, with exogenous transfers**

Variables	Percentile					OLS
	P10	P25	P50	P75	P90	
Constant	3.588*** (0.149)	3.999*** (0.093)	4.602*** (0.094)	5.126*** (0.102)	5.483*** (0.131)	4.529*** (0.076)
Head : Female	0.055 (0.082)	0.083 (0.051)	-0.038 (0.054)	-0.021 (0.058)	0.031 (0.072)	0.008 (0.043)
Head : Age	0.006*** (0.002)	0.005*** (0.001)	0.003** (0.001)	0.002 (0.001)	0.001 (0.002)	0.003*** (0.001)
Head : Married	0.064 (0.065)	0.044 (0.041)	-0.114*** (0.044)	-0.094** (0.047)	-0.126** (0.058)	-0.035 (0.035)
Size of the household	-0.053*** (0.007)	-0.043*** (0.004)	-0.041*** (0.004)	-0.041*** (0.005)	-0.045*** (0.007)	-0.044*** (0.003)
Proportion of persons aged 0-12	-0.145 (0.111)	-0.217*** (0.065)	-0.285*** (0.065)	-0.349*** (0.067)	-0.276*** (0.084)	-0.268*** (0.053)
Proportion of persons aged >60	-0.458*** (0.104)	-0.469*** (0.061)	-0.444*** (0.062)	-0.489*** (0.063)	-0.398*** (0.074)	-0.477*** (0.050)
Head : Secondary school	0.185*** (0.050)	0.178*** (0.030)	0.144*** (0.030)	0.113*** (0.030)	0.140*** (0.037)	0.150*** (0.024)
Head : More than secondary school	0.239*** (0.056)	0.230*** (0.034)	0.254*** (0.034)	0.253*** (0.034)	0.310*** (0.041)	0.252*** (0.027)
Head : Unemployed	-0.063 (0.071)	-0.111*** (0.042)	-0.119*** (0.042)	-0.170*** (0.043)	-0.110** (0.054)	-0.112*** (0.034)
Head : Employed in public sector	0.193*** (0.066)	0.130*** (0.039)	0.071* (0.039)	0.042 (0.039)	0.021 (0.047)	0.097*** (0.031)
Head : Employed in private sector	0.166*** (0.060)	0.098*** (0.036)	0.102*** (0.036)	0.064* (0.037)	0.080* (0.045)	0.104*** (0.029)
Head : Employer or self-employed	0.435*** (0.083)	0.324*** (0.050)	0.304*** (0.050)	0.256*** (0.051)	0.191*** (0.063)	0.320*** (0.040)
Head : Serb	-0.065 (0.059)	-0.039 (0.036)	-0.098*** (0.037)	-0.123*** (0.038)	-0.123*** (0.047)	-0.102*** (0.030)
Head : Other ethnicities	-0.292*** (0.091)	-0.211*** (0.056)	-0.113** (0.056)	0.025 (0.058)	-0.035 (0.071)	-0.130*** (0.046)
Urban area	0.070* (0.040)	0.096*** (0.025)	0.057** (0.025)	0.038 (0.026)	0.028 (0.031)	0.057*** (0.020)
Receipt of remittances	0.195*** (0.043)	0.191*** (0.026)	0.134*** (0.026)	0.098*** (0.027)	0.087*** (0.032)	0.136*** (0.021)
Observations	2880	2880	2880	2880	2880	2880
Pseudo R <sup>2</sup> - R <sup>2</sup>	0.131	0.125	0.112	0.117	0.124	0.211

Source: authors' calculations, LSMS Kosovo 2000.

Note: estimates from quantile and OLS regressions, with standard errors in brackets. Significance levels are respectively 1% (\*\*\*) , 5% (\*\*) and 10% (\*). Each regression also includes a set of regional dummies.

**Table C. Conditional and unconditional QTE estimates of the log of per capita consumption**

Variables	Percentile				
	P10	P25	P50	P75	P90
(1) Conditional exogenous QTE					
Receipt of remittances	0.195*** (0.043)	0.191*** (0.026)	0.134*** (0.026)	0.098*** (0.027)	0.087*** (0.032)
(2) Unconditional exogenous QTE					
Receipt of remittances	0.226*** (0.044)	0.140*** (0.050)	0.142*** (0.044)	0.107* (0.055)	0.078 (0.070)
(3) Conditional endogenous QTE					
Receipt of remittances	0.370*** (0.069)	0.326*** (0.060)	0.270*** (0.050)	0.230*** (0.064)	0.204** (0.084)
(4) Unconditional endogenous QTE					
Receipt of remittances	0.397*** (0.101)	0.378*** (0.071)	0.306*** (0.061)	0.129** (0.063)	-0.022 (0.075)

Source: authors' calculations, LSMS Kosovo 2000.

Note: estimates from quantile regressions, with standard errors in brackets. Significance levels are respectively 1% (\*\*\*), 5% (\*\*) and 10% (\*). The various regressions include all the explanatory variables introduced in Table B.

**Table D. Oaxaca-Blinder detailed decomposition of the log of per capita consumption**

Variables	Explained part		Unexplained part	
	Coef	St. error	Coef	St. error
Constant			0.138	(0.099)
Head : Female	0.000	(0.002)	-0.001	(0.004)
Head : Age	0.001	(0.001)	-0.194***	(0.064)
Head : Married	-0.001	(0.001)	0.055	(0.038)
Size of the household	0.051***	(0.006)	-0.003	(0.033)
Proportion of persons aged 0-12	0.048***	(0.006)	-0.050***	(0.017)
Proportion of persons aged >60	0.003**	(0.001)	0.044***	(0.009)
Head : Secondary school	0.006*	(0.003)	-0.034***	(0.011)
Head : More than secondary school	0.005***	(0.002)	-0.028***	(0.009)
Head : Unemployed	-0.008**	(0.003)	0.005	(0.006)
Head : Employed in public sector	-0.005***	(0.002)	0.007	(0.011)
Head : Employed in private sector	0.006***	(0.002)	0.014	(0.012)
Head : Employer or self-employed	0.000	(0.001)	-0.013***	(0.005)
Head : Serb	0.000	(0.001)	0.023***	(0.007)
Head : Other ethnicities	-0.017***	(0.003)	-0.011***	(0.003)
Urban area	0.003	(0.002)	0.050***	(0.014)
Receipt of remittances	-0.020***	(0.003)	0.009	(0.009)
Total	0.078***	(0.012)	0.114***	(0.016)

Source: authors' calculations, LSMS Kosovo 2000 and UNDP Kosovo Remittance Study 2010.

Note: estimates from Oaxaca-Blinder decomposition, with standard errors in brackets. Significance levels are respectively 1% (\*\*\*), 5% (\*\*) and 10% (\*). The regression also includes a set of regional dummies.