

Do Remittances Reduce Social Disparities in Macedonia?

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Abstract

Macedonia faces the highest poverty and inequality in Europe. At the same time, it receives very high amount of remittances. The objective of this study is to investigate whether there is a link between these two, that is, whether remittances reduce poverty and inequality in Macedonia. Two surveys are used for the analysis, conducted in 2008 and 2012, providing grounds for understanding if the relationships changed during the Great Recession. Two approaches are used. The first uses regression techniques to see if remittances affect the probability of a household to be poor. The second simulates the consumption that remittance-receiving households would have if they did not have remittances. We find that remittances have reduced poverty in both years. They also reduced inequality but only in 2012.

Keywords: remittances; poverty, income inequality, Macedonia, Great Recession

JEL classification: O15

1. Introduction

International migration is one of the most important factors that affect economic relations between developed and developing countries in the 21st century. At the start of the century, it was estimated that about 175 million people, roughly three percent of the world population, lived and worked outside the country of their birth (United Nations 2002). International remittances sent back home by these migrant workers have a profound impact on the developing countries of Eastern Europe, Asia, Africa, Latin America and the Middle East.

Remittances that these workers send back to developing countries rose from \$31.1 billion in 1990, to \$76.8 billion in 2000 to \$436 billion in 2014. These flows are expected to rise moderately in 2015 to about \$440 billion (World Bank 2015). They amount to over twice the amount of the official development assistance and are 10 times higher than the net private capital transfers to developing countries (Kapur and McHale 2003). Constituting one of the largest sources of foreign exchange earnings (in some countries even exceeding export revenues and foreign direct investment), remittances become a relatively attractive source of foreign earning for developing countries.

Things are not much different in Macedonia. Since 2004, remittances in Macedonia have averaged 250 million euros per annum (around 4% of GDP), roughly the same as the flows from foreign direct investment. Their upward trend has been maintained despite the recent Great Recession¹ – in 2008, before the crisis, they were 280 million Euros, while in 2012, after the crisis, remittances reached 310 million Euros (Petreski and Jovanovic, eds. 2013). It should also be noted that these figures represent the conservative estimates, i.e. include only money that enters the country through official channels (banks, money transfer agencies, and so on). The upper bound of the estimate for the amount of remittances in Macedonia includes all the money exchanged in cash exchange offices and exceeds 20% of GDP (see NBRM 2012, p. 28). Given the nature, magnitude, and evolution of the remittance flows, it should not be a surprise that they are now seen by development practitioners as having a potentially important role to play in supporting the development efforts of recipient countries. The main channel through which remittances can support these efforts is by helping the neediest groups of the population and therefore directly contributing to poverty reduction. This study will investigate remittances' impact on social disparities in Macedonia, in particular, their effect on poverty and income inequality. Special emphasis will be put on the recent Great Recession, and how these relationships have changed with it.

¹ The term Great Recession refers to the global financial and economic crisis that started in the US at the end of 2007. There is no precise dating of the Great Recession, but usually it is considered that it lasted until the end of 2009. We will use the terms "Great Recession" and "crisis" interchangeably.

Macedonia has very high levels of poverty and inequality. Income inequality, measured by the Gini coefficient, increased significantly, from 38.8% in 2002, to 42.8% in 2006, to 43.6% in 2010, and is currently the highest in Europe. Similar trends are registered in the statistics on poverty: the share of people living on less than two dollars a day (2005 prices, PPP) tripled between 2002 and 2010, reaching 9.1%.

The analysis is done using two household surveys, one conducted in 2008, and one in 2012. The methodological approach is as follows. First, an indicator of poverty is regressed on a set of personal and household characteristics and an indicator if the household is a recipient of remittances. As remittances may be endogenous, we utilize instrumental variables approach, whereby the non-economic motive to migrate is used as instrument. Second, consumption without remittances for remittance-receiving households is simulated, using the results obtained when the consumption of non-receiving households is regressed on the personal and household characteristics. This counterfactual consumption (without remittances) is then compared to the actual consumption (with remittances). Then, poverty rate and the Gini coefficient are calculated for actual and simulated consumption, while the difference between both ascribed to the work of remittances.

This study is organized as follows: Section 2 makes an overview of the literature on this topic. Section 3 presents the main macroeconomic developments. Section 4 draws some stylized facts from the two surveys on remittances. Section 5 portrays the methodology to be used. Section 6 gives the results and offers discussion and the last section concludes and offers policy recommendations.

2. Literature Overview

As for the most economic issues, there is no consensus in the literature about remittances' influence on poverty reduction and income inequality, neither that they are an engine of long-run growth. There are two contrasting views regarding the effects of international remittances on the economy of the labour-sending country: the optimistic view and the pessimistic view. The first one views remittances as mechanisms for economic development while the latter, on the other hand, perceives remittances as an "illness" that weakens the economy.

Remittances have important contribution to human welfare: this aid flows directly to the people who really need it and it does not require a costly bureaucracy on the sending side and "far less of it is likely to be siphoned off into the pockets of corrupt government officials" (Kapur 2004, p.7). Although most international remittances do not flow directly to the poorest people, remittances often make up an important share of the income of poor people and poor communities. Moreover, non-migrant poor might be affected indirectly (positively or negatively) through the economy-wide effects of remittance expenditure on wages, prices and employment. In accordance with the importance of the

official international remittances, relatively rich literature exists on their effects on poverty alleviation in developing countries. Some more recent contributions include: Acosta, Fajnzylber, and Lopez (2007; 2008); Adams and Cuecuecha (2008); Adams and Page (2005); Banga and Sahu (2010); Javid, Arif, and Qayyum (2012); Jongwanish (2007); Munzele (2005); Nwosu (2009); Siddiqui and Kemal (2006); Spatafora (2005); and all document remittances as significantly reducing the level, depth and severity of poverty, i.e. international migration of labour has substantial potential benefits for poor people.

The remittances of money and goods by migrants to their origin countries can also have important impacts on the distribution of household income and welfare. This is especially the case in developing economies, where household earnings are low, inequality is often pervasive and domestic or international migration of family members can provide a major source of income through the remittances of wage earnings. Literature has been rich in investigating this topic also. For instance, McKenzie and Rapoport (2007) argue that when migration to a new destination starts taking place, the cost of emigrating is usually high; implying that, in the presence of liquidity constraints, only high-income members of population can afford the move. At the beginning, when only richer and more educated people migrate to another country, income inequality actually rises. But, as the number of migrants in that destination increases, the cost of emigration declines, giving individuals in low-income households the opportunity to emigrate. This is because emigration costs include not only transportation and border-crossing costs, but information costs about the specific destination to choose, the search for a job, shelter, and so on. Such information costs are significant and tend to decrease as the size of a network of migrants augments. As a result, over time remittances should accrue to low-income households, thereby reducing income inequality at the origin. The empirical literature – e.g. Anyanwu (2011); Kimhi (2010); Adams (1991); Ebeke and Le Goff (2009) – found mixed results, though, suggesting that remittances' effect on inequality is far from being uniform and usually dependent on factors as the level of country's development; skill endowment of population and potential migrants, existence of information and emigration networks, and so on.

3. Overview of Main Macroeconomic Developments in Macedonia

Since its independence in 1991, Macedonia recorded growth rates which were lower than those of its peer countries, both in the early transition years (before 2000), and afterwards (2001-2008). The economy performed relatively well during and after the global financial crisis of 2007-2009 (see Table 1). This was mainly due to the notion that Macedonian banks were not exposed too much to foreign banks. Indeed, the main channel through which the crisis spread to Macedonia were the exports (see Jovanovikj and Georgievska, 2013).

Table 1 - Growth in GNI per capita in Macedonia and other countries from the region*

	Early transition 1993-2000	Late transition 2001-2008	Crisis 2009	Post crisis 2010-2012
Albania	7.8	6.3	3.5	2.6
Bosnia and Herzegovina	1.1	6.7	-5.0	2.3
Bulgaria	NA	5.3	-2.7	0.6
Croatia	NA	4.3	-6.8	-0.2
Macedonia	0.1	2.7	-1.0	1.7
Montenegro	NA	4.8	-5.8	1.6
Serbia	NA	5.2	-3.1	0.8
Slovenia	4.2	4.1	-8.8	-0.5

*Average annual growth in GNI per capita, PPP, constant 2005 international \$. NA = not available.

Source: World Development Indicators

The growth has been skewed to the higher-income individuals and has excluded the poor. Income inequality in Macedonia, measured by the Gini coefficient, increased significantly, from 38.8% in 2002, to 42.8% in 2006, to 43.6% in 2010, and is currently the highest in Europe. Similar trends are present in the statistics on poverty: the share of people living on less than two dollars a day (2005 prices, PPP) reached 9.1% in 2010, which is much higher than in the second-poorest country in Europe (Moldova), and is comparable to some Latin American countries, which are often given as examples of countries with high poverty (see Table 2). It is also worthwhile noting that poverty in Macedonia has been on an upward trend for the last 10 years, differently from the other countries shown.

Table 2 - Trends in poverty in Macedonia and in other countries

	2002	2006	2010
Brazil	20.2	14.4	10.8*
Ecuador	23.6**	13.7	10.6
Macedonia	3.1	4.6	9.1
Moldova	40.9	11.1	4.4

*2009, **2003

Source: World Development Indicators

Remittances in Macedonia averaged 250 million euros per annum (4% of GDP), being comparable to the amount of FDIs. Their upward trend has been maintained despite the recent crisis – in 2008, before the crisis, they amounted to 277 million euro, while in 2012, after the crisis, they are estimated to be 310 million euro (Petreski and Jovanovic, eds. 2013). As such, they represent an important source for alleviating income constraints of Macedonian households, hence likely contributing to

relieving social difficulties, while also significantly contributing to reducing the large trade deficit in the Balance of Payments.

4. Overview of the Surveys

The empirical analysis in this paper is based on two household (HH) surveys. The first has been collected for the project “Development on the Move: Measuring and Optimizing the Economic and Social Impacts of Migration in the Republic of Macedonia”, by Educon Research, Macedonia. This survey has been collected in July-September 2008 and covers 1,211 households. The primary focus on this survey (and project) is to analyse migration, so there are questions about remittances. For more details, see Educon Research (2009). The second survey has been collected for the project “To consume or to self-employ? Evidence from remittances' use in Macedonia, Bosnia and Herzegovina and Kosovo, with emphasis on crisis, gender and ethnicity role”, by the University American College Skopje. It has been designed by the authors of this study, following the UNDP Kosovo Remittances Survey 2010, and has been collected by GfK Macedonia on a total of 1,000 household (800 nationally representative households and 200 remittances receiving households), during October and November 2012. For further details see Petreski and Jovanovic, eds. (2013).

The data on remittances available from the two household surveys mainly coincide with the official macro data, as can be seen in Table 3. However, households tend to underreport the amount of remittances received – in 2008 the estimates from the available household survey were around 60% of the official macro figures, while in 2012 they were about 80%. Still, the upward trend in the remittances is evident in the micro data too. Looking at them in greater detail, one can observe that the increase in total remittances comes mainly from the extensive margin, i.e. from the increased number of households that get remittances – before the crisis, in 2008, around 16% of the households reported receiving remittances, whereas in 2012, after the crisis, the percentage increased to 21%. At the same time, the average amount of remittances per household remained increased marginally, from 1,990 to 2,070 Euro per receiving household, per year.

Table 3 – Some facts about the remittance flows in 2008 and 2012*

	Average amount of remittances per receiving household (euro)	Percentage of households receiving remittances (%)	Estimated amount of total remittances (mil. euro)	World Bank data on total remittances (mil. euro)
Pre-crisis	1,992	15.7	167.5	276.9
Post-crisis	2,068	20.7	230.6	293.9

Source: DoTM Survey (2008); UACS Remittances Survey (2012).

The share of HHs with migrant member remained roughly the same in the two surveys (Table 4). However, while nearly half of the households in 2008 reported absent migrant who does not send money, this number halved in 2012.

Table 4 – Households with absent migrant

	Total number of households	Remittances' receiving households	% of remittances' receiving households	% of households who reported absent migrant	% of hh with migrants not sending money
Pre-crisis	1,211	190	15.7%	28.2%	44.4%
Post-crisis	801	166	20.7%	27.2%	23.9%

Source: DoTM Survey (2008); UACS Remittances Survey (2012).

Some additional facts about the two surveys are shown in Table 5 in order to build further intuition about the changes between the two time periods. For example, it can be noted that the share of poor households has decreased from 26% in 2008, to 18% in 2012, which is similar to the increase in the share of HH receiving remittances (5 percentage points). This definition of poverty, however, differs from the one mentioned before. Here, poverty is defined in the relative way (i.e. income/consumption lower than 60% of the median income/consumption) while previously it was defined in the absolute way (income lower than 2 USD per day). At the same time, the share of households with self-employed members declined, from 16% in 2008, to 9% in 2012, which may be explained by the global crisis. Finally, it can be observed that the remittance flows have much higher standard deviation in 2008 than in 2012 (5464 vs. 2310), which points out that remittances have been more unequally dispersed before the crisis, and have become more equally distributed after the crisis.

Table 5 – Some additional statistics from the two available surveys

	HHs	Poor	Self employed	St. dev. of remit.
Pre-crisis	1211	25.7%	15.9%	5464
Post-crisis	800*	17.9%	9.2%	2310

*800 households in the representative sample, plus 200 in the booster sample

Source: DoTM Survey (2008); UACS Remittances Survey (2012).

Table 6 looks at the poverty rates before and after the crisis for receiving and non-receiving HHs. Interesting conclusions emerge. First, no large differences existed in poverty rates before the crisis,

depending on whether households were remittances' receivers or not. However, after the crisis, remittance-receiving households exhibit larger reduction of poverty.

Table 6 – Poverty among surveyed households by different characteristics

	All	Remittances' receivers	Non- remittances' receivers
Pre-crisis	25.7%	25.3%	25.8%
Post-crisis	17.9%	13.3%	19.1%

Source: DoTM Survey (2008); UACS Remittances Survey (2012).

Table 7 shows some patterns in remittances for different groups in the Macedonian society, before and after the crisis. It can be observed that female-headed households, on average, get more remittances than male-headed. However, this difference was especially pronounced before the crisis. After the crisis, female-headed households continued to receive roughly the same amount of remittances than before the crisis (464 vs. 437 euro), while remittances for male-headed households increased substantially (to 420 from 220 euro). This may happen if the increase in remittances was due to children starting working abroad, instead of the households' heads. Another interesting fact is that Albanian households get much higher remittances than Macedonian households, both before and after the crisis. Moreover, remittance flows increased during the crisis for Albanians (to 886 from 440 euro), while they remained unchanged for Macedonians (267 vs. 265). Similar trends are observed in the incidence of remittances, which is higher for Albanian households than for Macedonian ones, especially for the period after the crisis; the share of Albanian households receiving remittances increased during the crisis (to 42%, from 18%), while the share of Macedonian declined (to 14%, from 16%). It seems that the crisis hit differently Albanian and Macedonian remitters, which may be explained by the fact that Albanian migrants are located in countries which coped relatively well during the crisis (like Switzerland), while most of the Macedonian remitters work in EU countries who have suffered more during the crisis, like Italy.

Table 7 - Some patterns in remittances across different groups, before and after the crisis

	All HHs	Male headed	Female headed	Poor	Non poor	Albanian	Macedonian
<i>Pre-crisis</i>							
Average consumption (euro)	3550	3537	3567	1031	4420	4464	3213
Average remittances (euro)	313	220	437	338	304	440	265
% of remittance in consumption (for HHs receiving remit.)	14.6%	6.9%	25.0%	39.3%	7.0%	29.6%	8.9%
Share of households getting remittances (%)	15.7%	13.8%	19.2%	17.2%	15.8%	17.5%	15.6%
<i>Post-crisis</i>							
Average consumption (euro)	4946	5101	4302	1631	5678	4105	5242
Average remittances (euro)	429	420	464	269	464	886	267
% of remittance in consumption (for HHs receiving remit.)	11.2%	10.7%	13.4%	15.7%	10.2%	24.6%	6.5%
Share of households getting remittances (%)	20.7%	20.7%	21.2%	15.6%	22.0%	41.7%	13.5%

Source: DoTM Survey (2008); UACS Remittances Survey (2012).

Table 8 shows some statistics on remittances for households with different economic welfare, i.e. households belonging to different consumption groups². It can be observed that households belonging to the lower consumption quartiles, i.e. poorer households, received lower amounts of remittances, in absolute terms, both before and after the crisis, which supports the observation from above that remittances might have increased inequality, instead of decreasing it. The finding that poorer households receive fewer remittances than richer is not surprising, because poorer households are less

² We will use consumption as a measure of welfare, for two reasons. First, consumption is much less volatile category than the income, which can be contaminated by various shocks when observed at one point in time. For example, a person which is in a good economic situation, but is temporarily without a job, will have zero income, which would lead to wrong conclusions about his/her economic situation. If his/her welfare is measured through the consumption, though, a more reliable picture will be obtained, since his/her consumption will not be zero. Second, in the former available survey, for 2008, the data on income is incomplete, since there are data on income from earnings only, not from other sources, such as pensions and social benefits.

likely to migrate, due to the costs of migration which they cannot afford. In addition, even if they migrate, poorer households usually are less educated, because of what are likely to earn less and to send less money back home.

Table 8 – Remittances by different consumption groups

	Quartile	Average consumption (euro)	Average remittances (euro)	% of remittance in consumption (for HHs receiving remit.)	% of remittance in consumption (for all HHs)	Share of households getting remittances (%)
Pre-crisis	1 st	1016	338	234.4	39.8	17.0
	2 nd	2136	121	45.4	6.0	13.2
	3 rd	3383	360	66.8	9.9	14.9
	4 th	7664	431	28.3	5.4	19.1
Post-crisis	1 st	1903	287	83.2	14.8	17.9
	2 nd	3411	386	42.7	11.3	26.5
	3 rd	4849	612	58.3	12.9	22.1
	4 th	9691	426	35.4	5.8	16.2

Source: DoTM Survey (2008); UACS Remittances Survey (2012).

Looking at the income from remittances relative to households' consumption, for different groups, it can be observed that the share of remittances in consumption was much higher for the households from the first quartile than for the other households, before and after the crisis, which points out that remittances play important role in satisfying consumption needs for poorer households and might alleviate poverty.

Comparing the situation before the crisis vs. the situation after the crisis, it can be observed that only the lowest-quartile households recorded a drop in the amount of remittances received in 2012 relative to 2008 (from 338 euro to 287). This points out that the crisis has affected the poorest most severely. This is confirmed by the dynamics in remittances for households below and above the poverty line between the two time periods (Table 9). One indeed gets the impression that the crisis has affected the poor most adversely – the share of poor households that receive remittances has fallen after the crisis (to 14.9%, from 16.8%), while the share of non-poor households that get remittances has increased (to 22%, from 15.8%). Similarly, the average amount of remittances for the poor households has fallen substantially (from 338 to 269 euro), while it has increased for the non-poor households (from 304 to 464 euro).

Table 9 – Remittances for poor and non-poor households

	Quartile	Average Consumption (euro)	Average remittances (euro)	% of remittance in consumption (for HHs receiving remit.)	% of remittance in consumption (for all HHs)	Share of households getting remittances (%)
Pre-crisis	Poor	1031	338	233.0	39.3	16.8
	Non Poor	4420	304	44.3	7.0	15.8
Post-crisis	Poor	1631	269	105.2	15.7	14.9
	Non Poor	5678	464	46.7	10.2	22.0

Source: DoTM Survey (2008); UACS Remittances Survey (2012).

Finally, Table 10 portrays the usage of remittances inflows. The crisis likely led to households increasing the usage of remittances for consumption, but also for property purchase and savings, at the expense of longer-term ventures, like education, health-related spending, starting-up a business and agricultural land purchase. However, the increase in consumption has been more prominent for the non-poor.

Table 10 – Usage of remittances

	Consumption of the household (good, clothes, home equipment, car)	Family events	Property investment (except. agr. land)	Education	Health	Starting up a business	Agricultural land investment	Savings	Debt repayment	Lending
<i>Pre-crisis</i>										
All	40.2%	9.8%	6.1%	11.0%	11.0%	7.3%	4.9%	6.1%	3.7%	0.0%
Male-headed	35.7%	14.3%	4.8%	7.1%	9.5%	9.5%	9.5%	4.8%	4.8%	0.0%
Female-headed	45.0%	5.0%	7.5%	15.0%	12.5%	5.0%	0.0%	7.5%	2.5%	0.0%
Macedonian	38.7%	8.1%	8.1%	8.1%	9.7%	8.1%	6.5%	8.1%	4.8%	0.0%
Albanian	45.0%	15.0%	0.0%	20.0%	15.0%	5.0%	0.0%	0.0%	0.0%	0.0%
Poor	47.6%	4.8%	4.8%	23.8%	9.5%	0.0%	4.8%	4.8%	0.0%	0.0%
Non-poor	37.7%	11.5%	6.6%	6.6%	11.5%	9.8%	4.9%	6.6%	4.9%	0.0%
<i>Post-crisis</i>										
All	47.9%	5.0%	15.8%	6.4%	8.3%	0.7%	0.3%	10.1%	4.5%	1.1%
Male-headed	50.1%	4.2%	16.9%	5.0%	7.3%	0.7%	0.5%	10.2%	3.9%	1.1%
Female-headed	43.2%	6.8%	13.2%	9.3%	10.4%	0.7%	0.0%	9.6%	5.7%	1.1%
Macedonian	44.6%	4.6%	15.8%	6.1%	6.9%	1.0%	0.2%	15.8%	4.4%	0.6%
Albanian	52.0%	5.5%	15.8%	6.8%	10.0%	0.3%	0.5%	3.0%	4.5%	1.8%
Poor	49.6%	2.5%	11.8%	7.6%	9.2%	0.8%	1.7%	11.8%	4.2%	0.8%
Non-poor	47.7%	5.4%	16.4%	6.2%	8.1%	0.6%	0.1%	9.8%	4.5%	1.2%

Source: DoTM Survey (2008); UACS Remittances Survey (2012).

To summarize, the descriptive analysis provides some indications that remittances may be important for poverty. The increase in remittances between 2008 and 2012 has been coupled by a decline in relative poverty. The reduction in poverty has been especially present in households that receive remittances. Furthermore, poorer households receive more remittances (relative to their income, i.e. consumption). Finally, remittances are used mostly for consumption, and this is more pronounced in poor households.

5. Methodology and Data

5.1 Models

The model used in the poverty analysis is very similar to the one from World Bank and Statistical Office of Kosovo (2011). Broadly speaking, it is in accordance with the other existing studies on this issue surveyed in section 2. The main regression is as follows:

$$Pr(Poor) = c1 + c2*gender_head + c3*age_head + c4*age_head_squared + c5*married + c6*education_head + c7*size_HH + c8*size_HH_squared + c9*dependency_ratio + c10*main_income + c11*no_income + c12*albanian + c13*geography + c14*own_house + c15*remittances + c16*dummy2012 + u \quad (1)$$

The dependent variable is poverty, i.e. the probability of being poor - a dummy variable taking a unitary value if a household had a consumption per capita below the 60th percentile of the median of the consumption per capita in that year. The explanatory variables are standard in the literature: gender of the head, age of the head, age squared, marriage status of the head, education of the head, size of the household, size squared, the dependency ratio, main income in the household, ethnicity, urban/rural, whether household owns a house, the amount of remittances received and a dummy variable for the time/crisis effect. The coefficient on the remittances variable will tell us if remittances affect poverty or not. Also, a cross product between the remittances and the dummy for the crisis period will be included in order to see if the effect of the remittances on poverty changes with the crisis. Differently from other studies, we decide to include the amount of remittances received, and not a dummy variable for receiving remittances. The main reason for this is that we believe that there is a difference in the effect on poverty if a household receives 500 euros of remittances and if it receives 50,000 euros.

Because there might be endogeneity in the relationship poverty-remittances, i.e. because poverty (the dependent variable) may also affect whether a household receives remittances and the amount it receives, we will use an instrumental variable technique to estimate Equation 1. The variable that will instrument remittances should satisfy two properties: 1) it should be correlated with the variable it instruments (i.e. remittances); 2) it should not be correlated with the shocks on the dependent variable

in the main regression (i.e. probability of being poor) through channels other from the variable it instruments (i.e. remittances). Our instrument will be a dummy variable for migrating for completely non-economic reasons (political, education, marriage, war, discrimination etc.). Our both surveys have questions for the reasons for migrating. The questions are multiple-answer. We take only those cases which reported migrating for studying, marriage, political reasons etc., but not for economic reasons. Hence, our variable is likely to be uncorrelated with the incidence of poverty, i.e. the second criterion from above should be satisfied³. It should also satisfy the first criterion, because migrants who left for purely non-economic reasons should also send money back home.

The impact of remittances on income inequality will be measured through a comparison between the Gini coefficient of the actual household consumption and the Gini coefficient of the consumption that would prevail if there were no remittances in the household. The simulation of the household consumption without the remittances is done following the existing literature (Acosta, Fajnzylber, and Lopez 2007; 2008; Adams 1991; Adams and Cuecuecha 2008; Barham and Boucher 1998). First, household consumption per capita *for households without remittances* is regressed on a set of conventional explanatory variables:

$$\begin{aligned}
\text{Consumption } p/c = & c1 + c2*gender_head + c3*age_head + c4*age_head_squared \\
& +c5*married + c6*education_head + c7*size_HH + c8*size_HH_squared + \\
& c9*dependency_ratio + c10*main_income +c11*no_income + c12*albanian + \\
& c13*geography +c14*own_house +c15*self_employment + c16*dummy2012 + c17*lambda \\
& + u
\end{aligned}
\tag{2}$$

Because the sample of non-remittances-receiving households might be non-random, the model is corrected for the selection bias, following Heckman (1979), by including a variable measuring the probability for not receiving remittances (*lambda*). Lambda is actually the inverse Mills ratio from the following regression:

$$\begin{aligned}
Pr(no_remittances) = & c1 + c2*gender_head + c3*age_head + c4*age_head_squared + \\
& c5*married + c6*education_head + c7*size_HH + c8*size_HH_squared + \\
& c9*dependency_ratio + c10*main_income +c11*no_income + c12*albanian + \\
& c13*geography +c14*own_house + c15*self_employment + c16*dummy2012 + \\
& c17*remittances_region + u
\end{aligned}
\tag{3}$$

The last variable in this regression, *remittances_region*, is required to satisfy the *exclusion restriction* – in order the model to be identified, the first step regression needs to include a variable which does

³ It is true that the non-economic reasons for migration might be correlated with the economic background (i.e. poorer persons may be more likely to get married abroad). However, those cases are also likely to cite economic reasons for migration, besides the non-economic. By taking only those observations who cite only non-economic reasons, we believe we exclude these cases.

not affect the consumption directly, but affects the probability to receive remittances. Following Acosta, Fajnzylber, and Lopez (2008), we take the share of households that receive remittances in every region as the exogenous variable. This share is likely to affect the probability to receive remittances through network effects. On the other hand, it is not very likely to affect the consumption directly.

This consumption regression is then used to predict the consumption that remittances-receiving households would have, had they not received remittances. The predicted values from the model would have very low variance, because they exclude all the random factors that affect household consumption. Hence, to make them comparable to the original consumption data, we add a random component, which would be a series drawn from a normal distribution with a mean and a standard deviation as the residuals from the consumption regression. Finally, the Gini coefficient of the actual consumption and the simulated one will be compared. Higher Gini of the simulated series would suggest that remittances decrease inequality.

5.2. Method and Data

The poverty regression (equation 1) will be estimated using a logit method, since the dependent variable is binary. The reported results are the marginal effects when the variables are on their mean values (for instance, how much the probability of being poor increases when age of the household head increases from the mean value of 47 to 48).

The first-step regression in the simulation exercise (equation 3) will be estimated using probit. The second-step regression (equation 2) will be estimated using OLS.

As introduced in Section 4, two household surveys are available for Macedonia: DotM Survey of 2008 and Remittances Survey of 2012. The first step in the preparation of the surveys is to define their structure. This is very important, because failure to account for the correct survey design can lead to wrong inference. The representative 800 households of the 2012 survey are stratified on two levels – region⁴ and rural/urban. On the first level of stratification, each region is included in the survey with a number of households proportional to the total number of households in that region. Then, on the second level of stratification, the number of rural and urban households from each region is proportional to the total number of rural/urban households in that region. Then, after the number of rural and urban households for each region has been determined in this way, those households are selected randomly. For the booster sample, 25 remittance-receiving households from each region have been selected and in the survey design they were assigned a probability proportional to the number of

⁴ There are 8 regions in Macedonia – Skopje, Vardar Valley, Pelagonija, Polog, South-West, North-East, East and South-East.

remittance-receiving households in each region without reference to urban-rural characteristic. Because the exact design of the 2008 survey was not known, it was assumed that it is the same as the representative part of the 2012 survey. Then, on the grounds of this information, the probability of being selected was calculated for each household from the two surveys, and these probabilities were used to correct the regression estimates.

6. Econometric Analysis and Discussion

Table 13 presents the results of the poverty analysis. The first two columns present the baseline results, while the next three columns – the results of the analysis of the effects of the crisis. The first column of the baseline results and the first two columns of the crisis results present the first-step regressions, i.e. the regression where the endogenous explanatory variables (the remittances) are regressed on the instruments (the dummy for non-economic migration)⁵. The most important results of the first-stage regressions are those regarding the strength of the instruments. It can be seen that the dummies for non-economic migration (*Non-economic motive to migrate* and *Non-economic motive to migrate * Year 2012*) are significant, pointing out that the instrument is unlikely to be weak.

The results of the baseline second-stage regression are shown in the second column. In general, results have the expected signs. They suggest that only those heads who have university education have lower probability of falling into poverty, which justifies the investment in tertiary education, while the other educational degrees are found not to matter for poverty. The age and marriage are also unimportant for poverty. Each additional member of the household increases the probability of being poor suggesting that larger households are, on average, poorer than smaller ones. Also, those households which have higher number of dependent members (children and elderly) have higher probability of falling into poverty.

With respect to income, we find that it does not matter for poverty what is the source of the main income of the household. Owning a house is not important for poverty, which may be explained by the high home-ownership rate in Macedonia (around 95%). The probability of being poor is the same for Albanians and Macedonians and for urban (other than capital) and rural inhabitants, as the respective coefficients are insignificant. On the other hand, those living in Skopje, the capital city, have lower probability of being poor than rural counterparts, which is not surprising, given the role of Skopje as administrative and financial centre of the country. Gender does not matter, either, as well as the crisis, which points out that the fall in the poverty between the two years is explained by the change in the other variables that are included in the regression.

⁵ There are two first-stage regressions in the 'crisis' analysis, one for the remittances, the other one for the cross-product of the remittances with the dummy for 2012.

Finally, remittances – the focus of this study – are found to affect poverty in a positive fashion, so that additional remittance money reduces the probability of being poor. The results of the crisis second-stage regression are shown in the last column of Table 13. Most of the coefficients are very similar to the baseline results. The main variable of interest here is the *Non-economic motive to migrate * Year 2012*, which shows whether the effect of remittances on poverty differed in 2012, with respect to 2008. This variable is insignificant, pointing out that the relationship remained unchanged.

Table 13 - Results of the regression

	Baseline regression		Crisis		
	1st step	2nd step	1st step	1st step	2nd step
	<i>remit</i>	<i>poor</i>	<i>remit</i>	<i>remit* dum2012</i>	<i>poor</i>
Age of the head (years)	-38.03	-0.0078	-36.88	0.201	-0.0071
Age of the head, squared	0.356	7.61E-05	0.344	-0.0865	6.27E-05
Married head	289.7***	0.0447	289.9***	202.9***	0.0547
Secondary education of head	-58.01	-0.0307	-64.32	-29.27	-0.0318
University education of head	-136.3	-0.167***	-136.6	-32.07	-0.167***
Above university education of head	83.14	-0.0379	70.72	37.83	-0.0371
Size of HH	-106.6	0.0736*	-98.14	-176	0.0602
Size of HH, squared	13.33	0.00175	12.12	16.24	0.00296
Dependency ratio	251.6	0.441***	250.5	239.8*	0.454***
Main income from pension	-129.2	-0.047	-119	-76.75	-0.0503
Main income from social assistance	-91.65	0.238	-81.94	-5.405	0.24
Main income from other sources	235	-0.0973	246.6	304.6	-0.0823
No income	188.1	0.0418	194	78.93	0.0453
Own house	14.37	-0.0411	13.33	399.9***	-0.008
Albanian	169.2	0.0594	157.4	217.9***	0.0742
Urban	149.8	0.0355	149	197.7***	0.0492
Capital	0.167	-0.0657*	7.773	102.9	-0.0594
Male head of HH	-223.1**	0.0163	-229.3**	-157.2**	0.00814
Year 2012	360.1***	0.000973	333.7***	579.4***	0.0403
Remittances		-0.000272*			-0.00026
Remittances*Year 2012					-7.95E-05
Non-economic motive to migrate	425.2***		84.44	-36.93	
Non-economic motive to migrate * Year 2012			606.0**	702.0***	
Constant	985		969.4	-174.1	
Observations	1,690	1,690	1,690	1,690	1,690
F stat	4.4		4.5	7.9	
R-squared	0.03		0.031	0.095	

Dependent variables in italics. *** p<0.01, ** p<0.05, * p<0.1

Table 14 presents the results from the inequality analysis. Several things can be noted. First, inequality has decreased from 2008 to 2012 – the Gini coefficient for the actual consumption is lower in 2012 than in 2008. Next, for 2008, the Gini coefficient for the actual consumption is higher than that for the simulated consumption (consumption without remittances). That points out that remittances have been increasing consumption inequality in 2008, but only a little - the difference between the two figures is rather low. On the other hand, for 2012, the Gini coefficient for the actual consumption is lower than that for the simulated consumption. That points out that in this year remittances have been lowering inequality.

Table 14 – Gini coefficient

	Actual consumption	Consumption without remittances
2008	0.4599	0.4499
2012	0.3524	0.3831

Source: Authors' estimates

7. Conclusion

During the last decade, Macedonian economy has been receiving remittance inflows of approximately 4 percent of its GDP every year. How has this money contributed to poverty and inequality, which are the highest in Europe? That has been the objective of this study.

To investigate this, we used two household surveys, one from 2008, one from 2012. We used two approaches. We first regressed an indicator of poverty on a set of personal and household characteristics and an indicator if the household is a recipient of remittances. Then, we simulated consumption without remittances for remittance-receiving households, and we compared this counterfactual consumption (without remittances) with the actual consumption (with remittances) in terms of their poverty rates and their Gini coefficients. The findings indicated that remittances in Macedonia reduced poverty in both 2008 and 2012, and reduced inequality only in 2012.

The findings, therefore, suggest that remittances improve the standard of living of households and reduce economic disparities. The first question that comes to mind is – what would happen if a sudden stop in the remittances occurs? Such a shift would probably have adverse effects on poverty and would increase inequality, and policy-makers should closely monitor the developments in remittances, in order to devise appropriate and targeted measures, in case such a reversal occurs.

Another question that emerges is – what are the underlying structural factors that make Macedonia have the highest poverty and inequality in Europe? The usual suspects would be the flat tax rates, the

regressive social contributions, and the small and poorly targeted social security spending. Policymakers should consider the factors that contribute to rising poverty and inequality and try to tackle them immediately.

One limitation of the present research is that it focuses mainly on the direct effects of remittances on poverty and inequality. There can be also indirect effects, through household investment, education, healthcare, labour force participation etc. Remittances are likely to affect all of these outcomes, and these outcomes can all affect poverty and inequality. This remains to be done on some occasion in the future.

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Appendices - Descriptive statistics

Table 11 – Descriptive statistics of the quantitative variables used in the analysis

	Absolute income inequality	Age of head (years)	Size of household (no. of members)	Dependency ratio	Remittances (EUR)	Consumption per capita (EUR)
Mean	-1.8	47.1	3.5	0.6	516.6	1342.6
Maximum	0.9	93.0	12.0	1.0	30952.4	17668.4
Minimum	-2978.2	17.0	1.0	-0.5	0.0	0.3
St. Dev.	67.4	14.7	1.4	0.3	1771.8	1233.6
25th perc.	-0.6	35.0	3.0	0.5	0.0	636.6
75th perc.	0.4	58.0	4.0	0.8	136.1	1598.0
No. Obs.	1952.0	1986.0	1986.0	1986.0	1986.0	1952.0

Source: Authors' estimations

Table 12 - Descriptive statistics of the qualitative variables used in the analysis

Attribute	% of HH with the attribute
Poor	21.5
Self employment	12.6
Male head	73.1
Married head	79.5
Education of head, secondary	29.6
Education of head, university	12.0
Education of head, postgraduate	0.4
Main income from pensions	9.8
Main income from social benefits	1.7
Main income from other sources	1.4
No income	14.7
Albanian	27.0
Urban	47.8
Capital	18.1
Own house	95.6

Source: Authors' estimations

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