

The effects of remittances on poverty alleviation in transition countries

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Abstract. This paper examines the impact of remittances on poverty measures in transition economies using the panel data for the sample of nine countries in the period of 2002-2013. LSDV (Least Squares Dummy Variable) model with panel-corrected standard errors is used for estimation of remittance effects. The results show that remittances have a significant impact on each of the three poverty measures. Taking into consideration the endogenous regressor problem, a 10-percent increase in remittances per capita will lead to a decline, on average a 4.7 percent in poverty headcount, and also 5.2 percent in poverty depth and 5.8 percent in poverty severity. These results can be important for defining the policy measures on providing more efficient management of remittances.

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1. INTRODUCTION

In recent decades, emigration flows from the transition countries have considerably increased. Beside the economic incentives existing in other developing countries too, political circumstances followed the dissolution of the three federal states have additionally contributed to the emigration increase. Accession of some of the Central and Eastern European countries to the European Union has also affected their labour migration trends. Increasing number of emigrants from these countries was logically followed by considerable growth of remittances back to the transition countries. In the early 1990s, remittances accounted for 1 percent of Gross Domestic Product (GDP) in these countries, but during the last decade, their GDP share doubled (Schelburne & Palacio, 2008). According to the World Bank data, remittances in transition countries amounted to \$ 50 billion in 2007, representing almost one fifth of the remittances in all developing countries. More than half of this amount make remittances in the new EU member countries. The Commonwealth of Independent States (CIS) receive around \$11.8 billion, while the flows of remittances in the South Eastern European (SEE) countries amount to almost \$ 9 billion (World Development Indicators). For many transition countries, remittances have become a significant source of

external financing with a portion of GDP that exceeds foreign direct investments and official development assistance (ODA) shares.

The aim of this paper is to test the hypothesis that remittances significantly reduce poverty indicators in the transition countries. Making the transition from socialism to capitalism, these countries have been experiencing a dramatical decline in output which has caused, in its turn, high level of poverty. In relation to the 1990s, poverty has been considerably decreased in Central European countries, while in most of the CIS countries poverty rate remains at rather high levels.

The rest of the paper is organized as follows: Section 2 describes the main characteristics of remittance inflows in transition countries; review of the recent empirical findings is presented in Section 3. Section 4 describes data and specification of the empirical model. Section 5 presents the results and Section 6 concludes.

2. REMITTANCES INFLOWS TO TRANSITION COUNTRIES

According to World Bank, remittances are defined as the sum of workers' remittances, compensation of employees and migrants' transfers. Workers' remittances are private transfers from migrant workers who are considered residents of host country. Compensation of employees includes entire income from migrant workers if the migrants have lived in host country less than one year. Migrants' transfers are the net worth of migrants' assets transferred for a period of a least one year. However, countries use different methodologies for remittance data compilation. As a result, official statistics on remittance tend to underestimate the remittance size. From that reason, World Bank together with International Monetary Fund (IMF) and United Nations (UN) formed a working group to improve remittance statistics. International Monetary Fund in the Balance of Payments Manual, 6th edition presents data for new item "personal remittances" (World Bank, 2011). Personal remittances consist of two items: personal transfers and compensation of employees. Personal transfers are broader defined than workers' remittances because they consist of all current transfers of migrants regardless of migrant income comes from work, entrepreneurship, property or social benefits (World Development Indicators).

According to World Development Indicators data, the new EU members are among the ten transition countries receiving the largest remittances sum. Migration outflows from these countries are considerably increased in period 2003-2007 because of EU accession. From the new EU members, Poland, Hungary and Romania received the largest amount of remittances in 2014. Within the Commonwealth of Independent States (CIS), the largest inflow of remittances had Ukraine (\$ 7,354 million), Tajikistan (\$ 3,853 million), Kyrgyz Republic (\$ 2,243 million), Moldova (\$ 2,083 million) and Armenia (\$ 2,078 million), while among the countries of South Eastern Europe the largest recipients of remittances were Serbia (\$ 3,696 million), Bosnia and Herzegovina (\$ 2,086 million) and Albania (\$ 1,141 million).

In addition to the inflows size, the importance of remittances for the economy depends on a remittance portion of GDP. There are significant differences between transition countries looking at percentage share of remittances in GDP. It seems that remittances are not equally important for all transition countries. The largest share of remittances in GDP in 2014 has low-income countries, Tajikistan (41.7%), Kyrgyz Republic (30.3%) and Moldova (26.2%). For some of the new EU members, which are the largest remittances recipients, remittances do not represent a significant source of external funding. They have the lowest remittance share in GDP (Hungary 3.4%, Romania 1.7% and Poland 1.4%). Among the South Eastern Europe countries, remittances are an important source of foreign assets in Bosnia and Herzegovina (11.4%), Albania (8.6%), Serbia (8.4%) and FYR Macedonia (3.2%) (World Development Indicators).

It is important to note several characteristics of the dynamics of remittances in transition countries during the 2000s. Firstly, accession to the EU has contributed to remittance increase. Secondly, the global

economic crisis has negatively influenced the remittance inflows. The magnitude of remittances has increased rapidly until the global economic crises. After 2008, the inflow of remittances has declined by 20%. Analyzing remittance inflows data in new EU members, the rapidly growth can be observed in the year of their accession to the European Union. During 2005, the remittances inflow in the Baltic countries was larger by 60% in relation to 2004. Similarly level of the growth was continued in 2006, in order to start gradually decline in 2007. In 2004, the remittance inflow in Poland was doubled in relation to previous year and in 2005 it increased by 37%. During 2005, Slovakia has received remittances for app. 80% larger than in 2004.

These changes in remittance inflows size can be partly explained by the large short-term outflow of labour from these countries in the old EU members, especially in Great Britain, Ireland and Sweden. The structure of remittance-sending countries confirms the influence of accession to the European Union on remittances size. From the total remittance inflows in Poland, the portion of remittances sending from Great Britain has increased from 16% in 2004 to 25% in 2007. In the same period, the share of remittances from Ireland has almost tripled (the portion has increased from 8% in 2004 to 23% in 2007) (Center for Social and Economic Research, 2012).

Before the global economic crises, almost all the Commonwealth of Independent States (CIS) recorded double-digit growth rate of remittances. Most of these countries received the largest amount of remittances from other CIS countries, especially from the Russia Federation. From the total amount of remittances in Moldova, 63.7% was from the CIS countries, of which 91% of remittances were received from Russia Federation (Stratan et al., 2013). The remittance size in the CIS countries has rapidly increased in 2007 in relation to 2006 (from 5.993 to 11.812 million \$). Apart of this rise could be explained by five-fold increase in remittances in Ukraine, which is a result of improved remittance data collection systems by the central bank, rather than a real change in the behavior of remittance senders (Kupets, 2012). In the same year, remittance inflow size was rapidly increased in Tajikistan (80% in relation to 2006) and Azerbaijan (60%).

In South Eastern Europe (SEE) countries, remittances are on average raised by 20% to 30% annually until 2005, when their growth rate becomes the single digits. Since 2000, remittances have become the stable source of external financing, especially in Serbia, Bosnia and Herzegovina and Albania. However, the global economic crisis has influenced the remittances decline. Already in 2007, the remittance inflow in Serbia was decreased by 35% in relation to the previous year. In 2008, remittances amounted to \$ 2,710 million, which was 11.6% less than in 2007 (World Development Indicators). In addition to Serbia, the decline in remittances was also in Bosnia and Herzegovina (22%), while in Albania was relatively slight (12%) compared to other countries. The reason for the remittances decline, among the rest, was the rising unemployment rate in host countries, mainly EU members, which influenced the migrant's income and their standard of living.

Decreasing of remittances influenced by the global economic crisis has become a challenge for the CIS countries that are highly depended on their inflow. The worsening of economic situation in the Russia Federation, especially in the construction and trade sectors which employing the highest number of migrants, influenced the size of remittances. In 2009, remittances in Tajikistan were decreased by 30% compared to the previous year, while the decline in inflows in Moldova amounted to 27%.

A similar trend in remittances inflows was also presented in the new EU members. The largest decline in remittances was achieved in Romania, where the inflow in 2009 was reduced by 47% than 2008. The reasons of halved remittances in Romania become clear if one having in minds that the largest number of Romanian migrants have working in Italy and Spain, where the unemployment rate of immigrants in 2010 amounted to 30.2%. In Ireland and the UK, which received a significant number of migrants from the new EU members, the unemployment rate also reached a high level (13.7% and 9.6% in 2010) (Eurostat Database). The amount of remittances has been significantly reduced in Poland (22%), Bulgaria (17%) and Slovakia (15%).

After the initial decline, the remittance inflows size in most transition countries is stabilized. The rising of oil prices and improving the economic situation in the Russian Federation influenced the increasing of remittances in the CIS countries. In 2013, the largest amount of remittances is received by Ukraine and Tajikistan, whose dependence on remittances has become even more intensive given that remittance share in GDP of these countries is increased to 49% (World Bank, 2013). The crisis in the euro zone and weak economic recovery in European countries caused a continued downward trend in the size of remittances in the South Eastern Europe countries and most of the new EU members.

3. LITERATURE REVIEW

The empirical evidence points toward a statistically significant impact of remittances on poverty measures reducing. However, there is considerably difference between the sizes of remittance effects on poverty. This could be the consequence of data quality, used samples size or the applied estimating methods. Considering the number of countries in the sample, Adams and Page (2005) conducted one of the more comprehensive researches. Based on data of 71 low- and middle-income developing countries, they found that a 10 percent increase in remittance per capita would lead in decline the share of poor in population by 1.8 percent (Adams & Page, 2005). Researching the remittance impact on poverty in sample of 76 developing countries, Gupta et al. (2009) have found the similar results. Using three-stage least squares estimation method, they found that a 10 percent increase of remittance share in GDP results in a 1.5 percent decline in poverty headcount and 1.1 percent decline in poverty depth, while the remittance effect on poverty severity is not statistically significant (Gupta et al., 2009).

In order to estimate the remittance effects on poverty, a panel data is used for 77 developing countries in empirical study of UNCTAD. A 10 percent rise of the share of remittances in GDP would reduce the poverty headcount to 3.1 percent and the poverty depth by 3-5 percent (UNCTAD, 2011). Another group of empirical studies focused on estimating the impact of remittances on poverty in countries of the certain region. Anyanwu and Erhijakpor (2010) have estimated the remittance effects on poverty in 33 countries of Sub-Saharan and North Africa over the period 1990-2005. Using the ordinary least squares method they found that a 10 percent increase in the share of remittances in GDP reduces the poverty headcount by 2.7 percent, and the depth and severity of poverty by 2.9 percent, respectively. (Anyanwu & Erhijakpor, 2010). Adenutsi (2011) confirmed the contribution of remittances to poverty alleviation in the Sub-Saharan Africa.

Jongwanitch (2007) has researched the impact of remittances on poverty headcount in 17 Asian developing countries using panel data for the sample period 1993-2003. The results show that a 10 percent increase in the share of remittances in GDP will reduce the portion of the population living on less than \$ 1 per day by 2.8 percent. However, if we take into account the effects of remittances on economic growth and human capital that indirectly contribute to reducing poverty, the overall effect of a 10 percent increase in the share of remittances in GDP on reducing the poverty headcount would be 4.3 percent (Jongwanitch, 2007). Similar results for Asian and Pacific countries have found Katsushi et al. (2012). Vargas-Silva and Huang (2009) have estimated that a 10 percent increase of remittance share in GDP results in a 1.4 percent decline in poverty depth, while remittance effect on poverty headcount is not statistically significant.

Le Goff (2010) also points out the possibility that the real effect of the remittances on poverty can be underestimated if the indirect impact of remittances on GDP growth and inequality is not included. A certain part of the remittance effect on poverty alleviation can pass through income and inequality. Therefore, he uses GDP per capita and Gini coefficient net of the effect of remittances as variables in estimating procedure (Le Goff, 2010).

4. DATA AND METHODOLOGY

Making the sample of transition countries, the author was faced with a few limitations. For several transition countries poverty data is available only for certain years. In particular countries that have accessed to the EU in the observed period, poverty measures are calculated using income rather than consumption survey data due to which they are not included in the sample. Depending on poverty data availability, in the sample are selected nine countries: Armenia, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Poland, Romania and Ukraine. The observed period is from 2002 to 2013 because the poverty data for that period are available for all countries in the sample. The poverty measures and Gini coefficient data used in this paper are from the World Bank's PovcalNet database. They are calculated using the international absolute poverty line of \$ 3.1 PPP per day per person defined by the World Bank as one of the poverty line for the Europe and Central Asia. The rest of the data series are from the World Bank World Development Indicators Online.

Using the basic growth-poverty model suggested by Ravallion and Chen (1997), Ravallion (1997) and the previous related empirical models of remittance effects on poverty, the specification of panel data model can be written as:

$$\log P_{it} = \alpha_i + \beta_1 \log G_{it} + \beta_2 \log REM_{it} + \beta_3 \log netGDP_{it} + \beta_4 \log GC_{it} + \beta_5 WEC + u_{it} \\ (i = 1, 2, \dots, N; t = 1, 2, \dots, T) \quad (1)$$

$$\log GDP_{it} = \gamma_i + \delta_i \log REM_{it} + netGDP \quad (2)$$

where P is poverty measured by the poverty indicators class according to Foster, Greer and Thorbecke (1984, p. 763) poverty headcount, poverty depth and poverty severity in country i at time t ; G is Gini coefficient as a measure of income inequality; REM is remittance per capita; GDP is real GDP per capita; $netGDP$ is the part of the coefficient GDP which is not affected by the effect of remittances; GC is government final consumption expenditure expressed as a ratio of the GDP; WEC is dummy variable which captures the world economic crisis impact, it has value 1 for all years in period 2008-2013 and value 0 for other years; u_{it} is disturbance term.

In economic literature there are many empirical studies that confirmed the positive statistically significant impact of remittances on economic growth and growth of income reduces poverty. Ledesma-Leon and Piracha (2004) have found that remittances in transition countries contributes the GDP growth. Jongwanitch (2007), Le Goff (2010) also point that part of the remittance effect on reducing poverty can pass through income. For that reason, following the methodology of research by Le Goff (2010), the author in estimating procedure uses GDP per capita net of the effect of remittances ($netGDP$) and evaluates total effect of remittances on poverty.

The Foster-Greer-Thorbecke (FGT) poverty indices are used as dependent variable. The most commonly calculated poverty measure is the poverty headcount. The poverty headcount represents the proportion of the population who are poor and whose consumption per capita is below the absolute poverty line. However, the poverty headcount does not take into account the intensity of poverty i.e., to what degree the poor people are poor. In the case of reducing the consumption level of poor people, the poverty headcount remains unchanged. Therefore, it is necessary to use the more sensitive measure of poverty express the gap between the consumption level of the poor and the poverty line. The depth of poverty represents the average consumption deficit as a percentage of the poverty line of the total population. The severity of poverty places a higher weight on the poor who are further away from the poverty line. It measures inequality among the poor (Statistical Office of the Republic of Serbia, 2008).

The empirical literature confirms that the economic growth and income inequality have influenced on poverty. The model assumes that the growth of income will reduce poverty. The coefficient of income

variable is expected to be negative and statistically significant. The effect of income on poverty depends on levels of inequality. Ravallion has found that the high inequality in income distribution in developing countries reduces the impact of economic growth on poverty (Ravallion, 1997). Since the growing of income inequality increases the level of poverty, the regression coefficient β_1 is expected to be positive. The measure of income inequality is Gini coefficient, which is directly derived from the Lorenz's curve. It represents the ratio of the area between the Lorenz curve and the line of perfect equality to the area below the diagonal. The Gini coefficient ranges from 0 (when expressed perfect equality in income distribution) to 1 (perfect inequality). Since the public expenditure in transition countries is mainly unproductive, i.e. the considerable part of assets is directed on financing the national health and pension insurance system, it is necessary to estimate the public expenditure impact on poverty measures.

5. EMPIRICAL RESULTS AND DISCUSSION

In the process of selection an appropriate specification of panel data model, first we tested the existence of unobservable individual-specific effects by performing an F test for the fixed effects model and modified Breusch-Pagan (1980) test for the random effects model. The results in Table 1 show that individual-specific effects are significant. The presence of heteroscedasticity and serial correlation is confirmed by performing modified Wald test and Baltagi-Li (1991) LM test. The result of Pesaran (2004) CD test indicates cross-sectional independence except for panel data model of poverty depth. Given that the sample included nine transition countries, it seems that the fixed effects model is more likely to be appropriate than random effects model. In addition, the result of the Hausman (1978) misspecification test suggests that individual effects should be treated as fixed parameters. Due to the presence of heteroscedasticity and autocorrelation, LSDV (Least Squares Dummy Variable) model with panel-corrected standard errors and Prais-Winsten transformation is used (Greene, 2002).

Table 1

Tests in the panel model

	log (poverty headcount)	log (poverty depth/gap)	log (poverty severity)
F test	27.60 (p=0.0000)	34.15 (p=0.0000)	32.03 (p=0.0000)
BP test	123.13 (p=0.0000)	146.96 (p=0.0000)	143.69 (p=0.0000)
Wald test	243.87 (p=0.0000)	95.07 (p=0.0000)	84.64 (p=0.0000)
Pesaran CD test	-1.587 (p=0.1126)	-1.693 (p=0.0904)	-1.620 (p=0.1051)
Baltagi-Li LM	13.66 (p=0.0002)	15.28 (p=0.0001)	15.72 (p=0.0001)
Hausman test	19.82 (p=0.0013)	37.64 (p=0.0000)	21.07 (p=0.0008)

Source: Author's calculation

Results in Table 2 show that the explanatory variables are statistically significant. According to the results of estimation, a 10 percent increase in remittance per capita will lead to decline, on average a 4.9 percent in poverty headcount, a 5.4 percent in poverty depth and 5.8 percent in poverty severity. The positive sign of Gini coefficient indicates that large inequality in income distribution is associated with the high poverty level. The estimated regression coefficient of income variable conformed that the increase of GDP per capita impacts on reducing the poverty measures.

Table 2

Results of LSDV model

	Dependent variable		
	log (poverty headcount)	log (poverty depth/gap)	log (poverty severity)
log G	3.061** (2.38)	3.624*** (2.84)	4.073*** (2.62)
log REM	-0.489*** (-6.31)	-0.538*** (-7.25)	-0.576*** (-7.02)
netGDP	-3.058*** (-4.23)	-3.330*** (-5.36)	-3.467*** (-4.95)
log GC	1.472** (2.30)	1.807*** (2.81)	1.855*** (2.90)
WEC	-0.168** (-2.18)	-0.225*** (-3.14)	-0.270*** (-3.76)
cons	-5.384** (-2.55)	-7.290*** (-3.40)	-8.541*** (-3.42)
R ²	0.77	0.82	0.82
Wald	3105.17 (p=0.0000)	3569.78 (p=0.0000)	2306.08 (p=0.0000)

Dummy variables for individual effects are included; z-values are in parentheses

Source: Author's calculations

*** represents statistical significance at 1 percent, ** represents statistical significance at 5 percent, * represents statistical significance at 10 percent

In empirical literature the issue of reverse causality between remittances and poverty measures is considered. The remittance receiving sum has an impact on poverty level but the opposite could also be true. Considering endogeneity problem, the model is estimated using three-stage least squares method which allow us to observe the reverse effect of poverty on remittances too. The results of the specification of poverty equation is the same as Equation (1) and (2). Based on Gupta et al. (2009), UNCTAD (2011) who also used three-stage least squares estimation method, author includes similar variables in the specification of remittances per capita equation. In addition, the unemployment rate in transition countries is considered as determinant of remittance-receiving amount (Schrooten, 2005). The specification of remittance equation is:

$$\log REM_{it} = \gamma_i + \delta_1 \log P_{it} + \delta_2 \log REM_{i,t-1} + \delta_3 \log PHE_{it} + \delta_4 \log UNEMP_{it} + \epsilon_{it}$$

$$(i = 1, 2, \dots, N; t = 1, 2, \dots, T) \tag{3}$$

where REM_{it} is remittance per capita in country i at time t ; P is poverty measured by poverty headcount, poverty depth and poverty severity; $REM_{i,t-1}$ is lagged remittance; PHE is public health expenditure as percent of GDP; $UNEMP$ is unemployment rate and ϵ_{it} is disturbance term.

When endogenous problem is determined in this manner, the statistically significant effect of remittances on poverty measures still remains. The estimated value of remittance effects on poverty headcount and poverty depth are slightly lower in relation to LSDV model results. However, the interpretation of the results is needed to be taken with a certain caution due to the relatively lower level of quality and mutual comparability of the used data. The less number of countries in sample and the short observed period also may affect the results, making possibility for the further empirical studying with the more comprehensive data.

Table 3

Three-stage least square estimation

	Dependent variable Poverty headcount		Dependent variable Poverty depth/gap		Dependent variable Poverty severity	
	log (poverty headcount)	log REM	log (poverty depth/gap)	log REM	log (poverty severity)	log REM
log G	4.196*** (3.14)		4.583*** (3.49)		5.157*** (3.62)	
log REM	-0.473*** (-4.23)		-0.522*** (-4.75)		-0.580*** (-4.88)	
netGDP	-2.921*** (-4.39)		-3.172*** (-4.85)		-3.178*** (-4.48)	
log GC	2.455*** (4.95)		2.652*** (5.44)		2.709*** (5.12)	
WEC	-0.189* (-1.80)		-0.255** (-2.45)		-0.297*** (-2.63)	
log P		0.076*** (2.89)		0.068*** (2.92)		0.062*** (2.92)
log REM _{t-1}		0.888*** (29.76)		0.888*** (29.84)		0.889*** (29.96)
log PHE		0.262* (1.92)		0.276** (2.00)		0.287** (2.07)
log UNEMP		0.182 (1.47)		0.188 (1.52)		0.192 (1.56)
cons	-8.235*** (-4.21)	-0.049 (-0.31)	-9.716*** (-5.05)	-0.010 (-0.06)	-11.11*** (-5.32)	0.010 (0.06)
R ²	0.89	0.91	0.91	0.90	0.92	0.91
chi ²	853.01 (p=0.000)	1072.00 (p=0.000)	1148.09 (p=0.000)	1078.18 (p=0.000)	1189.16 (p=0.000)	1085.46 (p=0.000)

Dummy variables for individual effects are included; z-values **are** in parentheses

Source: Author's calculations

*** represents statistical significance at 1 percent, ** represents statistical significance at 5 percent, * represents statistical significance at 10 percent

6. CONCLUSIONS

During the 2000s, the remittance inflows have considerably increased in transition countries. In some countries remittances represent a significant source of external funding having a high share in GDP. Besides improving economic development, one of the possible contributions of remittances in the poverty reduction. The previous empirical studies have shown that remittances have a significant effect on poverty alleviation in developing countries. The impact of remittances on poverty indicators was estimated using panel data for nine transition countries in observed period from 2002-2013.

The results confirms the hypothesis about negative statistically significant relationship between remittances and poverty measures. Taking into consideration endogenous regressor problem, a 10 percent increase in remittance per capita will lead to decline, on average a 4.7 percent in poverty headcount, a 5.2 percent in poverty depth and 5.8 percent in poverty severity. Despite the numerous limitations in the availability of data for transition countries, the results of estimation are consistent with theoretical views and previous empirical studies for developing countries.

Based on these empirical results, it is necessary to define the policy measures toward providing more efficient managing of remittances. The governments of remittance receiving countries could identify a number of possible policy instruments for shaping the national policy on remittances. Firstly, they should take the measures to enhance the remittance amount, particularly through formal channels.

Lowering the costs of sending the remittances will encourage a larger inflow of remittances through financial channels. Secondly, it is important to know whether the poor receive the remittances and how remittances are used. Evidence has shown that remittances are mostly used for investment and consumption of consumer durables, utilities, health expenditures and housing. For obtaining answers to these questions it is important to improve remittance data on household level. Survey data would provide better insight in characteristics of remittance receivers, using and real volume of remittances because they would include also informal flows.

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