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MIGRANTS REMITTANCES INFLUENCE ON FISCAL SUSTAINABILITY IN DEPENDENT ECONOMIES

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Abstract

Migrants' remittances are an important financial flow to their country of origin. Remittances sent by migrants reduce the level and severity of poverty in developing countries. Householders use this money received from migrants for their private consumption and their investments. This paper aims to analyse the impact of remittances on economic growth, private consumption, private investments and the government tax revenue in low and upper middle-income countries. The paper highlights one of the important migration's drivers, respectively economic reasons. Our findings are based on data from 74 developing countries collected for the period between 1989 and 2015. Using a panel data set, our results show that migrants' remittances are positively related with economic growth and private consumption expenditure. Moreover, the results also indicate that variables such as age dependency ratio and the number of individuals holding an account at a financial institution are statistically significant in models having GDP per capita and private consumption as dependent variables. Furthermore, our results show that migrants' remittances are associated with government tax revenue and real interest rate when instrumental variables were used.

Keywords: migrants' remittances, consumption, investment, government tax revenue, fiscal policy, monetary policy.

JEL Classification: F24, F21, H7, E62, E52

Introduction

Migrants' remittances inflows have grown rapidly since the 1990's in many developing countries (Addih et al., 2009). Recent estimates show that now remittances exceed also rival the private capital inflows, official aid and FDI flows (World Bank, 2006; IMF, 2005; Chami et al., 2008).

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In the literature on remittances, there are many studies regarding the relationship between migrants' financial transfers and the impact on their home countries' economies such as consumption and investment at aggregate level, labour market, economic development and wellbeing. We identified a scarce research of the relation between remittances and *private consumption* and *private investment* on *depending economies*. According to World Bank (2016), remittance *dependent economies* are those countries with a high percentage from GDP as receiving migrants' remittances. For instance, remittances received in 2014 by Tajikistan accounts for 42 percent of GDP, Kyrgyz Republic 30.3 percent of GDP, Nepal 29.2 percent of GDP, Tonga 27.9 percent of GDP, and Moldova 26.2 percent of GDP (World Bank, 2016).

In 2005, Gooptu underlined that through fiscal sustainability, economic growth and macroeconomic balance may be achieved. Fiscal sustainability regards a government capacity to cover its expenses from its own revenues within the economy, reducing their dependence on borrowing (public credit) and budget transfers (Birds, 2003). In order to better understand the impact of remittances on depending economies, we empirically investigate the relationship with private consumption and private investment. Moreover, few research papers showed the impact of remittances on fiscal sustainability and macroeconomic balance. In the main flow, we identified four papers that focused this research topic. Their approach was either theoretical or their study cases were on a limited number of countries (Abdih, 2009, Mallick, 2008). Our paper attempts to fill in this gap by investigating empirically the impact of remittances on fiscal sustainability and macroeconomic balance on an extended group of low and upper middle-income countries. Addih et al. (2009) underline that remittances lead to higher tax base, seigniorage and higher private saving. This suggests that remittances play an important role for government revenues. Thus, the present study aims to evaluate the relationship between GDP per capita growth and remittances; private consumption and remittances; private investment and remittances; and government revenue (which is a proxy variable for fiscal sustainability) and remittances in low and upper middle-income countries. Understanding these relationships may help policy makers to design a proper economic set of policy decisions. The methodology we employed correct for endogeneity of remittances and variables used in the regression models. The results obtained are robust, based on panel data estimations.

The rest of the paper is organized as follows: Section 2 presents the literature review. Section 3 details data and methodology used in the study. Section 4 discusses the empirical results, and final section presents study's conclusions.

1. Literature review

Income inequality, high unemployment rate, country economic level, environmental changes, political divergences are among migration drivers. People migrate from their home countries to high-income countries for a better life, better paid jobs and better living standards. According to World Bank (2016), migrants' families from poorest countries experienced a high increase of income, a double school enrolment rate, a reduction of child mortality and an increase of living standards in their home countries due to remittances.

Many researchers and scholars studied the impact of remittances on poverty (Acosta et al. 2008; Chami et al. 2003, Koechlin and Leo'n, 2006), on spending behaviour (Cox Edwards and Ureta, 2003; Adams and Cuecuecha, 2003, 2010b; Yang, 2008; Woodruff and Zenteno,

2007) and their macroeconomic effects (Acosta et al. 2007; Barajas et al. 2009, Buch and Kuckulenz, 2010; Chami et al., 2003, 2008; Sayan, 2006; World Bank, 2006; IMF, 2005). Theoretical and empirical studies regarding the impact of remittances on economic growth, consumption and investment showed mixed results. According to Adams et al. (2013), remittances alleviate poverty, increase households' capital fund, investments and savings. Moreover, the authors underline that migrant remittances increase national disposable income, thus they determined macroeconomic growth. For many countries with low and upper middle income, remittances are the main source of external financing (Lubambu, 2014). However, a number of studies showed that remittances can have a harmful impact on economic growth in the long and medium run (Adams et al. 2003). Thus, remittances can increase inflation, appreciate exchange rate reducing thus competitiveness in tradable sector (Amuedo-Dorantes and Pozo, 2004; Acosta et al., 2009), increase unemployment rate because households receiving remittances choose to live from migrants' transfers than working (Lubambu, 2014). On the positive side, remittances strengthen balance of payment in accumulating foreign exchange reserves (Djajic, 1986; Taylor, 1999).

Remittances are migrants' financial transfers sent to family or friends back in their home country. In all this paper, the term of *remittances* will be used in this perspective. There are several reasons for remitting and remittances to be used. The most frequent are:

- 'Insurance' motives- remittances are considered potential sources for households' income that insure them against external shocks (Lubambu, 2014).

According to Lubambu (2014), households in developing countries receiving remittances have higher level of consumption. Researchers underline that remittances reduce the level of poverty in many developing countries as they increase households' income (Ratha, 2013; Stratan et al., 2013; Adams and Cuechuecha, 2010a).

Adams and Page (2005) analysed 71 developing countries and the results showed a statistically significant relationship between remittances and poverty reduction. The authors demonstrated that an increase of 10 per cent in remittances would lead to a decrease of 3.5 per cent in poverty. In addition, Anyanwu and Erhijakpor (2010) examined the impact of remittances on poverty in 33 African countries between 1990 and 2005, and their results were consistent with Adams and Page (2005).

Furthermore, research made by Kapur (2004) reveals that remittances are considered a strategy for risk spreading that act as a 'social insurance' whenever households are affected by an economic shock and/or political crises. Ambrosius and Cuechuecha, (2013), argue that remittances act as insurance that protect households from over-indebting themselves when they face negative events. This way, households are reinforced to resist to external shocks. Conversely, a study made by Alvarez-Tinajero, (2010) in Angola showed that 16 per cent of households' income depends entirely on remittances. This dependency on remittances may be much higher in developing countries. Continuing their argument, the authors underline that, this reliance may increase in the economy receiving remittances and, in case of a severe crisis in country of the worker remitter, and further may deepen the recipient's vulnerabilities.

The World Bank (2016) official estimates show that remittances have grown steadily from \$ 431 billion in 2014 at \$ 441 billion in 2015, showing resilience to economic downturns. The highest stocks of money sent by migrants have been recorded in low and middle-income countries, which in fact tend to show remittances dependency (World Bank (2016). Low income countries are defined as those with a GNI per capita of \$1,045 or less in 2014 and

middle-income countries are those with a GNI per capita greater than \$1,045 but less than \$12,736 (World Bank, 2016).

- ‘Altruist’ motives-migrants remit to their relatives in home countries for living expenses (Karpestam, 2009) or family maintenance (Mallick, 2008).

Migrants send money home to their family for maintenance. The total utility of remittances depends on the consumption level of migrant household members. According to Chami et al., (2005), mutual caring for family is an important reason to remit funds from abroad. Remittances are an important financial support for family members left behind in many developing countries. They influence directly the living standards of the receiving households. The amount is spent on household consumption and human capital formation such as education and health (Karpestam, 2009; Mallick, 2008)

- ‘Self-interest’ motives-remittances are used for investment or entrepreneurial purposes (Agunias, 2006).

Migrants’ earnings are allocated between own savings and their decision to use remittances for investments in home country’ assets. Migrants’ households invest remittances in physical capital or real estate in order to make profit, which conform the remittances self-interest theory (Mallick, 2008). Assets built from received remittances enhance investment opportunities and facilitate access to financial services (Orozco, 2004; IMF, 2005). According to Rahman (2015), remittances have an indirect impact on economic growth as they generate employment opportunities that lead to an increase in private consumption. As a result, private consumption may lead to economic growth because it generates investment demand through its multiplier effect. Remittances are mostly used on consumption and a small proportion is saved or used for investments (Mallick, 2008).

The study made by Rapoport and Docquier (2005) shows that remittances support access to self-employment and enhance small business investment. Moreover, the same authors suggest that remittances contribute to improvement of financial systems in the receiving country.

On the other side, some studies underline that remittances do not lead to long-term investment, as migrants’ relatives spend the money on food, health and household needs and hardly ever invest in durable businesses. Remittances do not automatically turn people into entrepreneurs, since remittances play the strategic role of social insurance in favour of families. (Van Hear, 2004; Guarnizo et al., 2003; Gillespie and McBride’s, 2012).

Remittances influence investment and consumption decisions in receiving countries. According to Chami, Montiel et al. (2012), remittances tend to increase the governments expenditures. In their research, the authors analysed 111 countries where they empirically validated the impact of remittances on institutional quality, specifically on corruption. Their findings disclose that an increase in the ratio of remittances to GDP enhances corruption control, rule of law and government effectiveness. Likewise, Chami and Fullenkamp (2013) show that remittances may relatively increase government expenditure enabling them more resources and distribution to those in power rather than spend in community projects.

Worldwide have been introduced remittances-taxing policies. These taxing policies were approached seriously during economic recession and when the burden on state finances grew (Ebeke, 2010). Taxing remittances can be realized either directly through wage taxes or by taxing money that are send or received (Lubambu, 2014). These measures were suggested in

both countries of origin and in destination countries. Even though governments' revenue increases by taxing remittances, this measure is not recommendable as it raises transaction costs and alongside the incentives to use informal channels (UNCTAD, 2013).

- Remittances lead to higher tax base.

They indirectly increase the government revenue since they contribute to increased consumption of imported and domestic goods. Approximately half of the tax revenues are registered in developing countries due to production and consumption taxes (Gordon and Li, 2006). Thus, an increase in remittances leads to higher tax base which can also lower the country risk and thereby the marginal cost of borrowing is reduced (Abdih, 2009). According to UNDP (2016), remittance inflows can improve country creditworthiness. If, in the debt to exports ratio (an indebtedness indicator), the remittances were excluded from denominator, then this ratio would increase significantly. Remittances are used to repay debts (Stark, 1991).

Empirical studies made by Solimano (2003) and World Bank (2006) suggest that remittances positively affect economic growth. According to Aggarwal et al., (2006) and Giuliano and Ruiz-Arranz (2005) studies there is a positive and significant relationship between remittances and both bank credit and bank deposits, as regards the private sector. Ratha (2013), Anzoategui, Demirguc-Kunt, and Martinez Peria, (2014) showed that remittances increased domestic savings and improved financial intermediation. Likewise, Yasseen (2012) showed that there is a positive relation between remittances and development of financial systems in emerging or developing countries.

Remittances increase deposits in banking system. Thus, they enhance private savings. This private saving could be efficiently used as instruments by the banks. Ambrosius and Cuecuecha (2015) empirically studied if high private debt determines people to migrate. Their results showed that remittances are used to pay existing debts, of recently borrowed money. Moreover, the authors suggest that migrants or their relatives holding a bank account in their home country for savings have easy access to financial services. Thus, as underlined by authors remittances and loans are complementary. Remittances increase domestic demand for loans. When demand for money rise, inflation rate raises as well, then the government seigniorage revenue tend to increase.

In this theoretical frame, our aim is to empirically investigate if remittances affect GDP per capita growth, private consumption and investments. Moreover, we identified only a few research papers that investigated the relation between remittances and government revenue. Thus, we investigate also this relation. Another line of research less investigated so far is the link between private consumption and investments and aged household receiving remittances. In order to investigate the effects of remittances on private consumption and private investments of households we linked them with age dependent ratio, respectively young, old and work-age population. Dependency ratio shows the age composition of population. Young dependency ratio refers to children less than 15 years old, old dependency ratio shows people at the age of 65 years old and over, usually retired. As revised in literature, migrants send money in order to support their families. Many migrants leave their children with their relatives in order to find a (better) job aboard and to enhance their children education, living standards and other family needs. This is also the case of old persons, respectively their children migrate aboard searching for a job to support their families. These two types of ratio reflect the migrants' altruist motives to remit. Another type of dependency ratio is working-age. Analysing the age dependency ratio by groups, the impact of each one

on important macroeconomic indicator as well as development of fiscal and monetary policy can be identified.

We expect a statistically significant relation between GDP per capita growth, private consumption and investments and all age dependent ratios. In order to relate remittances with age groups we considered that households receiving remittances used as channels bank accounts for money transfers and to save. These bank accounts allow migrants to control the use remittances for (or between) spending and saving.

2. Data and methodology

The database was collected from World Bank over the period of 1989 to 2015 for all low and upper middle-income countries. According to World Bank (2016) there are 135 countries in these two income groups. From a total of 135 countries only 74 remained in our data set because of the missing data. Many low and middle-income countries do not report their data on remittances (World Bank, 2016). Moreover, given the variables used in the regression model, the number of observations dropped significantly due to incomplete data.

To empirically investigate the relation between remittances and GDP per capita, private consumption (PC), private investment (PI) and government revenue, we employed panel data regression model. The advantages of panel data are that they greatly reduce the multicollinearity problem, have more degrees of freedom, controls for heterogeneity across panel units and for variables that cannot be observed or measured (Baum, 2008). The regression model used in our research is the following:

$$Y_{it} = \alpha + \beta X_{it} + c_i + u_{it}, \quad i = 1, 2, \dots, N; \quad t = 1, 2, \dots, T \quad (1)$$

where:

i -represents the units numbers or entities;

t -represents the period considered for empirical analysis;

Y_{it} -dependent variable;

α - constant term or intercept term;

β - the coefficient of independent variable;

X_{it} -independent variable;

c_i - unobservable individual-specific time-invariant effect;

u_{it} - idiosyncratic error term.

Regression models with panel data have the idiosyncratic error term as follow:

$$u_{it} = \mu_i + \pi_{it} \quad (2)$$

where:

μ_i -represents the entity specific effects which does not vary in time and are unobserved;

π_{it} - represents the remaining errors (Baum, 2008).

Thus, u_{it} captures the unobserved specific effects of the entities (represented in this research by the low and middle-income countries) which are not included in the regression model. The unobserved specific effect regards variables or characteristics that cannot be measured, such as culture, religion, customs, education and others, of migrants and their families from our data sample countries.

The model (1) can be estimated either with fixed effects or with random effects based on the error that can be a fixed or random constant. In this sense, we run Hausman test to determine which of the two models, fixed or random, fits the paper regression models. The null hypothesis of Hausman says that μ_i is not correlated with X_{it} and in this case, the random effect model is the proper model. When μ_i is correlated with X_{it} than the fixed effects model is the right model. Thus, a p-value greater than 0.05 shows that random effect model is suitable and a p-value less than 0.05 shows that fixed effects is the proper model.

In order to test the impact of remittances we employed three regression models having same independent variables in each model but different dependent variables, respectively economic growth (GDP per capita), private consumption (PC) and private investment (PI). Panel is strongly balanced. Table no. 1 presents the variables used in the regression models, their acronyms and type of variables.

Table no. 1: Variables used in regression models

Variables as used in regression tables	Variable' full name	Type of variables
GDP per capita	GDP per capita (annual growth, %)	Dependent variables
GDP	GDP (annual growth, %)	
PC	Private consumption expenditure (annual, % growth)	
PI	Private investment (logarithmic values)	
Remittances	Remittances received (% of GDP)	Independent variables
ADY	Age dependency ratio, young (% of working-age population)	
ADW	Age dependency ratio (% of working-age population)	
ADO	Age dependency ratio, old (% of working-age population)	
Population %	Population annual growth, %	
AFI	Account at a financial institution (logarithmic values)	
DIR	Deposits' interest rate (%)	Instrumental variables
R	Real interest rate (%)	
GTR	Government Tax Revenue	

Source: made by authors.

3. Empirical results

As presented above in methodology we employed three regression models. Before presenting the results, Table no. 2 shows the descriptive statistics of all variables used in the study. We can notice that variables regarding private consumption and age dependency ratio have the highest mean.

Table no. 2: Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
Remittances	1661	3.91	5.73	0.00	49.74
GDPpercapita	1928	1.95	7.24	-65.00	92.36
GDP	1928	3.72	7.47	-64.05	106.28
GTR	1415	4.41	13.68	-68.24	277.31
PC	1807	2.30e+13	2.24e+14	8.60	5.59e+15
ADY	1943	63.13	23.68	19.00	107.48
ADW	1943	72.12	20.38	34.49	112.97
ADO	1943	8.99	4.64	4.00	30.42
Population %	1996	1.71	1.45	-6.34	7.99
AFI	119	37.13	23.61	1.52	92.18
DIR	1567	41.71	546.47	0.28	17235.81
R	1488	7.83	14.24	-94.22	93.94
PI	1144	18.98	2.23	12.43	24.98

Source: made by authors

Table no. 3 shows the information regarding Person correlation matrix for variables considered in the regression models. This matrix shows the correlation between data set considered in this research paper and measures how well variables are related. For accurate results variables needs to show a low correlation between them. We consider a low correlation those variables having a coefficient less than 0.20. Moreover, not only the correlation is important but also the significance of p value. It can be noticed that remittances are statistically significant with PI at 1% level, PC at 5% level, ADY at 10% level, ADO at 1% level and Population % at 1% level. Variables such as PC and Population % are highly correlated with GDP per capita, and PC is highly correlated with GDP as well.

Table no. 3: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) GDP per capita	1						
(2) GDP	0.98***	1					
(3) PC	0.69***	0.71***	1				
(4) PI	0.02	0.02	0.04	1			
(5) Remittances	0.04	0	-0.07*	-0.16***	1		
(6) ADY	-0.12***	0.01	-0.05	-0.16***	-0.09**	1	
(7) ADW	-0.12***	-0.01	-0.08*	-0.19***	-0.05	0.98***	1
(8) ADO	0.06*	-0.07*	-0.06	0.03	0.16***	-0.71***	-0.53***
(9) Population %	-0.12***	0.07*	0.03	-0.03	-0.14***	0.69***	0.62***
(10) AFI	0.05	-0.19	-0.19	0.14	0	-0.63***	-0.64***
(11) DIR	-0.10**	-0.09**	-0.04	-0.02	-0.05	0.02	0.03
(12) R	0.01	0.03	-0.01	0.18***	0.04	0.02	0
(13) GTR	0.30***	0.34***	0.16***	0.01	-0.07*	0.08*	0.03
Variables	(8)	(9)	(10)	(11)	(12)	(13)	
(8) ADO	1						
(9) Population %	-0.68***	1					

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(10) AFI	0.39***	-0.48***	1				
(11) DIR	-0.01	0.02	0.04	1			
(12) R	-0.07*	0.06	0.06	-0.11***	1		
(13) GTR	-0.18***	0.14***	-0.33**	-0.05	0.01	1	

Source: made by authors. p-value significance * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The regression results are presented in Table no. 4. Columns 1-3 present the results for the regression models having as dependent variable GDP per capita (1), Private consumption (2) and Private investments (3).

Table no. 4: Regressions results

Variables	(1) GDP percapita	(2) PC	(3) PI	(4) GDPpercapita FE IV	(5) PC FE IV	(6) PI FE IV
Remittances	0.42 (.10) [†]	.005 (0.07) [†]	0.02 (.868)	-0.09 (.542)	0.11 (.859)	-0.12 (.514)
ADY	0.33 [†] (.046)*	-.030 (.057) [†]	0.01 (.920)	0.03 (.161)	-0.10 (.277)	-0.06** (.004)
AFI	-0.09* (.039)*	.018*** (.000)***	-0.02 (.152)	-0.01 (.547)	-0.08 (.292)	-0.00 (.925)
Population %	-2.51 (0.309)	-.104 (.686)	-0.17 (.859)	-1.09** (.004)	-0.77 (.581)	0.69 (.178)
_cons	3.26* (.315)	29.25*** (.000)***	20.11*** (.002)	3.54 [†] (.058)	10.64 (.132)	22.44*** (.000)
F statistic	3.60*** (.0118)*	7.25*** (.000)***	0.48 (.612)	2.37 [†] (.057)	1.21 (.702)	8.25*** (.000)
R-sq	0.22	0.37	0.04	0.14	0.04	0.31
Obs	115	113	102.00	96.00	88.00	94.00
N	61	60	56			
Hausman (p-value)	12.66 (.0131)	20.82 (.0003)	3.93 (.4156)			
Wald Test-Het for FE (p-value)	4.3 (.000)	8.2 (.000)	1.2 (.000)			
Bruch-Pagan (p-value)	1.67 (.007)	41.87 (.000)	24.19 (.000)			

Source: Made by authors. Note: (1) p-value significance at [†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; (2) the second row in parenthesis presents robust standard error.

Thus, the results show that there is a positive and statistically significant relation between remittances and GDP per capita and private consumption, after we check for robustness. Thus, an increase of remittances with 1% enhances GDP per capita with 42%. The resulted high coefficient of 42% shows a great dependence of these economies on migrants' remittances for GDP per capita to increase. When Human Development Index (HDI) is calculated by United Nations, is taken into account measures such as life expectancy, literacy rate, school enrolment and GDP per capita. As revised in the literature, remittances enhance life expectancy, literacy rate, school enrolment of migrants' families (Karpestam, 2009; Mallick, 2008). Therefore, our results show that migrants' remittances have a great impact not only on GDP per capita but also on HDI. In other words, HDI is highly relying on migrants' remittances in the case of dependent economies. In the second regression model are given the results regarding the relationship between remittances and private consumption.

The results are statistically significant at 10% level. An increase of remittances with 1% enhances private consumption with 5%. In this model, the coefficient of remittances is much smaller comparing with the first model where the dependent variable is GDP per capita. This result reinforces the literature which underline that migrants' families use only a small part of remittances on private consumption and a large part on savings, investments (Agunias, 2006) or to repay debts (Cuecuecha, 2015). We also run the regression model with GDP (annual growth, %) as dependent variable and we found same positive and statistical significance regarding the influence of remittances. In the models with dependant variables GDP per capita and private consumption, independent variables ADY and AFI are statistically significant. The first model having as dependent variable GDP per capita show a positive and statistically significance between ADY and GDP per capita. The regression results of this model indicate that young dependency ratio increases significant GDP per capita next to remittances. Young dependency ratio refers to children less than 15 years old. This result empirically validates migrants' altruist motives to remit. In the second regression model, having as dependent variable private consumption, the independent variable AFI is statistically significant at 1% level. Increases with 1% of persons holding an account at a financial institution enlarges private consumption with 18%. These results validate this paper hypothesis: there is a positive relation between remittances through bank accounts and young dependency ratio. Moreover, we also run the same regression model by substituting ADY with ADW and ADO. Our results showed that ADW is statistically significant as well as ADY. We interpret this result as follows: active population, respectively those between 18 to 65 years old, either prefer to live on remittances received from their migrants' relatives than to work or their income is complemented by remittances. In the case of ADO-people at the age of 65 years old and over, the regression results showed no statistically significance.

R-sq for the first and second model shows a value of 0.22, respectively 0.37. R-sq is a measure of the goodness-of-fit of the model. This means that variables used in the model explain the dependent variable variation by approximately 22%, respectively 37%.

This paper focuses on fixed effects models (FEM) because it takes into account each country special characteristics that may influence the predictor variables. In order to test whether fixed effects models are appropriate we run Hausman test. The results show that fixed effects model is appropriate for the second regression model. In the case of first and third model, random regression seems appropriate. Because only one model shows fixed effects and two models random effects, we run specific test for each model in order to verify the Hausman results. For each model, we conducted diagnostic tests for heteroskedasticity in fixed effects residual regression model and panel effects. Wald test shows no heteroskedasticity in fixed effects model. In the case of random effects, we test for variance across countries. Our results show no evidence of significant difference across countries. This means that random effects are not appropriate. The null hypothesis of Bruch-Pagan is that variance across countries is zero (no panel effects). In all model we do not reject the null hypothesis and we conclude that panel effects, respectively fixed effects are appropriate and random effects are not.

In order to control for endogeneity we employed Instrumental Variable (IV) method. Thus, we add new variables uncorrelated with error term but correlated with an independent variable. We instrumented remittances as influencing Government Tax Revenue, Deposit interest rate, and Real interest rate. Instruments were ADY, AFI and Population. Columns 4-6 in Table no. 4 present the regression results with IV. We performed the regression of each model with one IV in turn, in order to analyse the impact of instruments one by one. In all

models, GTR was associated with remittances. This means that remittances enhance government income. The model having as dependent variable GDP per capita is the regression that showed the highest R-sq, respectively of 0.14 when GTR IV was employed. The models having Deposit interest rate and Real interest rate IV did not show statistically significant results in models having PCas dependent variable. The regression model with PI as dependent variable showed an Rsq of 0.31 when we instrumented remittances as influencing Real interest rate. Moreover, in this model also ADY are strongly significant. This means that remittances are spread in private savings that influence the deposit interest rate and migrants' family's private investments. We interpret this result as follows: PI are either made with loans thus with migrant remittances existing debts are paid or based on existing bank accounts migrant family or migrant itself can borrow money. Our results consist with Ambrosius and Cuezuecha (2015, 2013), remittances are used to pay existing debts and are a guarantee for new loans.

Conclusions

The present study examined the effects of remittances on GDP per capita, private consumption and investments using panel data for 74 countries with low and upper middle income between the periods of 1989-2015. The regression results confirm that remittances have a positive and statistical significance on economic growth and private consumption. These findings are robust regarding the endogeneity concerns. We empirically validated the high dependency on remittances for economic growth, GDP per capita growth. This results show that human development sustainability measured with HDI is determined also by migrants' remittances. The cycle of remittances and HDI can be a future research topic, respectively if remittances are procyclical or countercyclical. Remittances increase private consumption but not as much as GDP per capita. The results show that migrants' remittances are mostly saved in bank account. The paper also presents new evidence regarding the variables such as age dependency ratio and individuals holding an account at a financial institution and their effect on GDP per capita and private consumption in the remittances model. Variables regarding age dependency ratio, young and working-age resulted to be strongly significant especially in the case of private consumption model. In this case model, the private consumption variation is explained by the young dependency ratio and persons holding a bank account.

Moreover, we employed instrumented variable for remittances as influencing Government Tax Revenue, Deposit interest rate, and Real interest rate. The results showed that Government Tax Revenue and Real interest rate are associated with remittances in the models with GDP per capita and private investment as dependent variables. Our paper contributes to the literature investigating empirically the impact of remittances on fiscal sustainability and macroeconomic balance on the all group of low and upper middle-income countries. Our future research consists on tracing the influence of remittances on Human Development Index, migrants' welfare, more precisely migrants' lives and their well-being in host countries and in home country, in the case of a temporary migration.

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