IMPACT OF REMITTANCES ON ECONOMIC GROWTH AND POVERTY REDUCTION IN TAJIKISTAN

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Abstract

The main goal of this paper is to assess the effect of remittances on economic growth and poverty reduction in case of the Tajik economy. In this paper we use a panel data set on economic growth and poverty estimates (poverty headcount). We found that, on an average, a 1%-point increase in remittances would provoke a 0.21% to 1.8% increase in the average per capita GDP of a Tajik economy. Moreover, our result suggests that there is a long relationship between remittances and poverty reduction in case of Tajik economy. Remittances are found to have a significant impact on the poverty headcount. We found that, on average, an increase in remittances by 1% leads to a reduction in poverty level from 0.7% to 2.82%.

Keywords: Tajikistan, remittances inflows, poverty measures, economic growth

INTRODUCTION

It is known that the Post-Soviet republics was blocked space and international migration movements were controlled by the state. Until the fall of the Iron Curtain and the liberalization of procedures for leaving the Soviet Union in the late 1980s the population of the Post-Soviet republics changed due to natural increase and net migration exchanges boosted. The main reason of sharp increase in volume of migration in Post-Soviet space were several similar and common characteristics, such as: psychological easiness to move, common language (Russian), former common territory, educational system, similar state control and policies, similar cultural, similar mentalities and behavior patterns, religion, geographical proximity, 'transparent' borders (visa-free movements), demographic complementarity, mutual interest towards common labor market and large-scale irregular migration. However, from the view of economic crisis, there were limited job creation, civil war and riots in several Post-Soviet republics, notable civil war in Tajikistan from 1992 to 1994 that this riot leaded to refuge a large scale of Tajik migrants in abroad. Tajikistan case is the best example as a former Soviet Republic that can theoretically enjoy from the migrant remittances as one of the ten top remittances recipient country in the world.

The main goal of the present paper is to contribute to the empirical side of the question using a time series methodology that analyzes annual data from the 2000 to 2018 period for Tajik economy. We attempt to assess the effect of remittances on economic growth and poverty level in Tajikistan and explain it from the viewpoint of that hypothesis:

H1: The volume of remittances is associated to a higher standard of living (higher per capita GDP).

H2: The volume of remittances is positively associated with poverty reduction.

The remainder of the article proceeds as follows: Section 2 provides a comprehensive literature survey, whilst Section 3 presents the econometric estimation and the expected signs of the utilized variables, whereas Section 4 describes the variables, sources as well as data used in the analysis. In Section 5 we examine the main results obtained in the empirical research. Last but not least, Section 6 concludes the paper.

STYLIZED FACTS REGARDING REMITTANCES IN TAJIKISTAN

An external labor migration and remittances play a dominant role for the economic and social development of Tajikistan. The World Bank (2017) estimates the volume of inward remittances to recipient countries reached $529 billion in 2018, an increase of 9.6% over the previous record high of $483 billion in 2017. Global remittances, which include flows to high-income countries, reached $689 billion in 2018, up from $633 billion in 2017, which over a

22 percent of these are estimated, to flow to former transition economies, and almost 11 percent to the Commonwealth of Independent States (CIS)[1] economies. Russia and Kazakhstan are the main destination for migrants in the CIS region while with 93 percent of the Tajik migrants heading to Russia.

Long before the Russian economic crisis, triggered by the Western economic sanctions against Russia over the Ukraine Crisis in mid-2014, the labour migrants provided approximately 49.6% of Tajikistan's GDP, 38.1% of Kyrgyzstan's GDP, 26.9% of Moldova's GDP and 16% of Uzbekistan's GDP (World Bank, 2015).

Since 2014, the migrant remittances started to decline and annual GDP growth averaged about 7%. While the ratio of remittances to GDP decreased and in 2018 reached to 27.7%, respectively (see figure 1).

Figure 1. Tajikistan: Migrant remittances inflow as percentage of GDP, 2000-2018
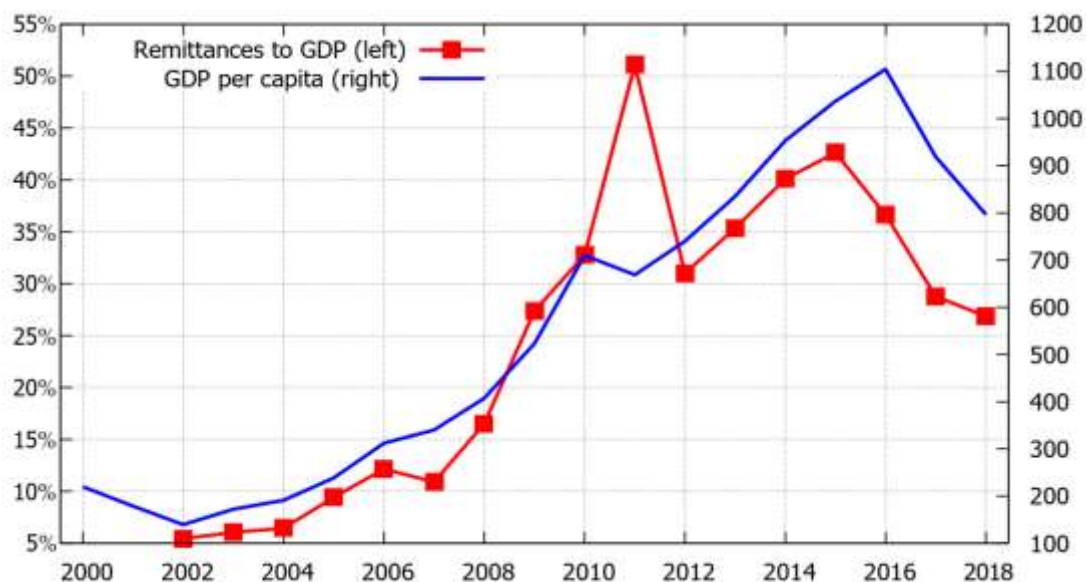

Source: World Bank Datasheet, 2018

The development prospect group of the World Bank (2017) reports that Tajikistan is listed amongst the world top ten countries in the world for receiving remittances according to the ratio of remittances to GDP (Figure 2).

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[1] Commonwealth of Independent States a confederation of independent states that were formerly constituent republics of the Soviet Union established in 1991. CIS members are the Republic of Azerbaijan, the Republic of Armenia, the Republic of Belarus, the Republic of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Moldova, the Russian Federation, the Republic of Tajikistan, the Republic of Turkmenistan, the Republic of Uzbekistan and Ukraine

Figure 2. Remittances inflow as a percentage of GDP, 2017
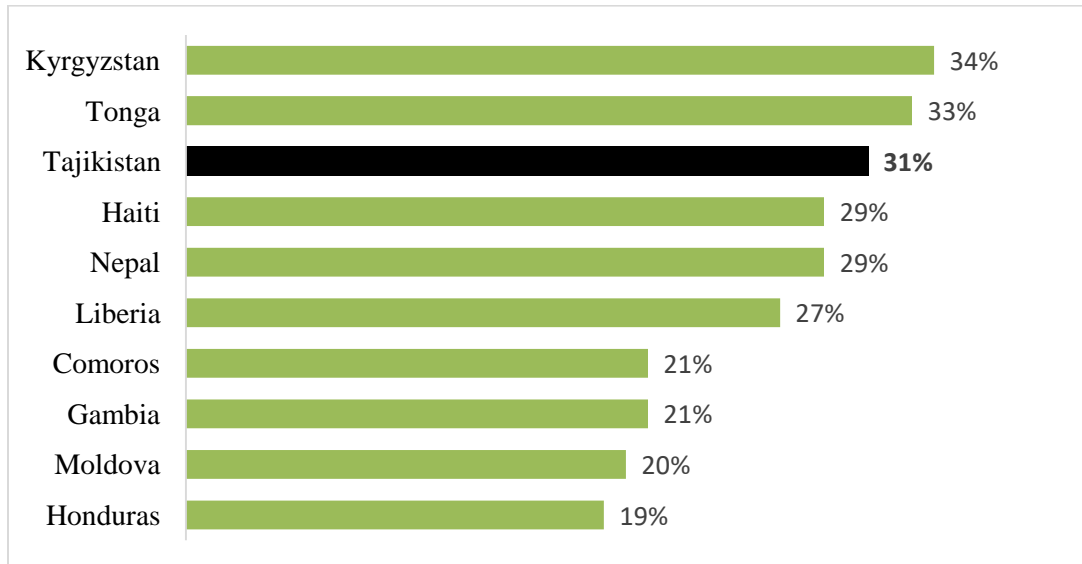
Source: World Bank, 2017

We can predict that Tajikistan will continue to suffer from Russian economic stagnation as long as they are dependent on Russia's economic health through migrant remittances and financial flows. Considering that a large share of remittances contributes to GDP, remittance-dependent countries amongst CIS Tajikistan face serious economic risks, as governments are having difficulties when trying to find foreign-exchange reserves for imports' current spending. On the other hand, if the Russian economic downturn continues, remittance-dependent countries will find themselves facing a set of unprecedented challenges because of the possibility of the return of a large number of migrants to a domestic labour market that has a more than limited capacity to absorb them (Abduvaliev M.H., and Bustillo R.M., 2019).

LITERATURE REVIEW

Many studies have highlighted the important nexus between the remittances and development. Taking into account the nature of evolution of remittances should not be a surprise as a potential important factor for supporting of poverty reduction in recipient countries (Pablo and Humberto, 2010). Similar argue have been suggested by the several authors in their country case studies, such as: Egypt (Adams 1991), Lesotho (Gustafsson and Makonnen 1993), Ghana (Adams et al. 2005) or case of CIS countries (Abduvaliev M.H., and Bustillo R.M., 2019).

Amongst studies supporting an optimistic view regarding remittances effect on growth, firstly Chami et al. (2009), who used panel data of 157 countries over the period 1990–2005, stated that remittances have a significant effect on welfare and economic growth, reduce the

country risk, improve the sustainability of government debt and increase household savings in recipient countries.

Adelman and Taylor (1990) found that every dollar Mexican migrants send back home increases Mexico's GNP from anywhere between $2.69 and $3.17, depending on which household income group received the remittances. Similarly, Durand et al. (1996) suggest that for every $2 billion in remittances entered to Mexico, production in the economy increased by over a $6.5 billion. Sufian et al., (2008) using panel data for the period 1975-2006 with fixed effect model of regression, reports about a quite significant effect of remittances on per capita economic growth rate in MENA (Middle East and North Africa) countries. Adolfo et al. (2009) also reports a positive effect of remittances on economic growth using OLS model and fixed effect model for the sample data for 84 recipient countries with annual observation for the years 1970-2004.

Apart from the controversial relationship between remittances and growth, many studies have also examined the link between remittances and poverty reduction. For instance, Adams and Page (2005) studied a set of 71 developing countries, finding that a 10% increase of migrant remittances leads to a 1.9% decline in the level of poverty. Lopez-Cordova (2006), using 1,782 Mexican households in 2003, found that a 10% increase in the share of remittances over GDP led to a 0.77% reduction of people living under headcount poverty and a 0.53% fall of people living under squared poverty and poverty gap.

While a group of authors argue the positive side of remittances, others group of authors report a possible negative effect of remittances on development. Supporting such argues Mansoor and Quillin, (2006) claims that the large inflow of remittances relative to the size of the recipient economy, may bring some undesirable consequences including the possibility of real exchange rate appreciation, loss of competitiveness in the tradable sector of the economy, foreign exchange provision and the base of foreign direct investment might occur a "Dutch disease" to recipient countries. While, Spatafora (2005) found that there is no direct link between real per capita output growth and remittances. Similarly, Chami et al (2003) using panel data for 113 developing countries for the period 1970 to 1998, argue that the remittances have a negative effect on economic growth. According to Shera and Meyer (2013) compensatory remittances that ensure the public against adverse economic shocks and insulate them from government policy reduce households' incentives to pressure the government to implement reforms to facilitate economic growth.

To summarize, regarding the literature about the effect of remittances on economic development, we find that experts' evidence on the issue is ambiguous. A large number of authors has proved the positive effects of remittances; hence, we utilize panel data for Tajikistan

in order to check empirically whether remittances enhance economic growth and/or reduce the level of poverty.

METHODOLOGY

Following the basic model suggested by Jongwanich (2007), and Fayissa and Nsiah (2008), to estimate the parameter variables of interest from the data under consideration, we employ a panel data estimation. The relationship between remittances and economic growth that we want to estimate can be written as in Equation 1. While using the basic growth poverty model suggested by Ravallion and Chen (1997) which this model has been posited on their empirical work by Dollar and Kraay (2004), Berg and Krueger (2003), Adam and Page (2005) and relationship of remittances and poverty reduction can be written as in Equation 2:

$$lnGDP\ pc_{it} = \beta_0 + \beta_1 \ln REM_{it} + \beta_2 \ln Edu_{it} + \beta_3 \ln GINI_{it} + \beta_4 \ln Inf_{it} + \beta_5 \ln Govex_{it} +$$
$$\beta_6 \ln OPN_{it} + \eta_i + \varepsilon_{it} \quad (1)$$

Where,. $lnGDPpc_{it}$ is the natural log of real GDP per capita in i country at time t and $\ln REM_{it}$ is log of received remittances per capita in US\$; β_2 is the log of secondary school enrolment; β_3 is the log of inequality proxied by GINI coefficient, whilst η is an unobserved country-specific effect and ε_{it} is the error term. Based on Giuliano and Ruiz-Arranz (2005) and Jongwanich (2007), we are going to include in our model as control variables other variables such as inflation (β_4), government consumption expenditure (β_5) and openness to trade (β_6).

The second strand is the one that links remittances and poverty level. The model to assess the role of remittances on poverty reduction is based on Ravallion and Chen (1997) and Adams and Page (2005).

The relationship that we want to estimate can be written as follows:

$$LnPOV_{it} = \beta_1 \log(q_{it}) + \beta_2 \log(\gamma_{it}) + \beta_3 \log(Rem_{it}) + \beta_4 \log(X_{it}) + a_i$$
$$\varepsilon_{it}\ , (i = 1, \dots N;\ t = 1, \dots, T)\ \ (2)$$

Where, POV is the measure of poverty i country at time t; a_i is the fixed effect reflecting qualitative differences amongst countries. β_1 is the elasticity of poverty with respect to income inequality proxied by the GINI coefficient (q). β_2 is the elasticity of poverty with respect to real per capita GDP given (γ). β_3 is the elasticity of poverty with respect to international remittances

(Rem). X contains the control variables, human capital, inflation, government expenditure and openness and ε is the error term.

The dependent variable in Equation 2, which is poverty, will be estimated via measurement poverty headcount. We measured poverty rate based on a methodology of Foster, Gareer and Thorbecke (FGT) (Foster et al., 1984). The most widely used measure is the headcount index, which simply measures the proportion of the population that is counted as poor, often denoted by P_0 and described by the following formula:

$$P_0 = \frac{N_p}{N}$$

Where, N_p is the number of poor and N is the total population. Here is the number of poor people divided to the number of total population and the for reasons that will be clearer below and can be rewritten as follow:

$$P_0 = \frac{1}{N} \sum_{i=1}^{N} I\left(y_i < z\right)$$

Where, "I ($\cdot$) is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. So if expenditure (y_i) is less than the poverty line (z), then I ($\cdot$) equals 1 and the household would be counted as poor" (Haughton and Khandker, 2010, pp. 68-69, Chapter 4).

To investigate the impact of remittances on economic growth and poverty reduction of Tajik economy we have employed OLS and Vector Error Correction Model Techniques (VECM). Moreover, in order to receive a robust result, we have employed Vector Auto regression (VAR), Two-Stage Least Squares (TSLS) and WLS techniques based on the behavior of data and the objectives of the study.

Notable we have mostly focused on the results suggested by the VECM method as well for approaching our investigation on several considerations. First, VECM model allows to reveal jointly the long run and short run relationships between variables. Secondly, VECM model would be correctly specified and interpretation of results are simple yet intuitive. Third, VECM allows us to deal with both stationary and non-stationary variables despite of different order of integration. Fourth, VECM Granger casualty tests allows us examines the serial correlation, functional form, normality and heteroscedasticity. Sims (1980) state that VECM technique is very appropriable in studies involving a description of data, forecasting, structural inference and

policy analysis, while Ayadi et al., (2000) is often employed VECM analysis in the evaluation of the performance of large macroeconomic model.

In estimating the model, various analytical techniques such as unit root test, Augmented-Dickey Fuller test (Dickey and Fuller,1979), ADF-GLS (generalised least squares) test (Fuller, 1976), KPSS test (Kwiatkowski et al., 1992), and CUSUM and CUSUMQ stability test (Luger, 2001).

RESULTS AND DISCUSSION

Table 1. Dependent variable per capita GDP

	MODEL 1	MODEL 3	MODEL 2	MODEL 4	MODEL 5
Const.	−6.21951	1.69118	−7.51637	−47.2707	−12.9121
	(0.0017 ***)	(0.2461)	(0.0740 *)	(0.0383**)	(0.0164**)
L_REMcur	0.621419	0.293926	0.633366	1.83902	0.679785
	(0.0001 ***)	(0.2945***)	(0.0001 **)	(0.0090***)	(0.0005***)
L_OPN	0.511082	0.06456	0.531662	2.52065	0.521209
	(0.0084 ***)	(0.7163)	(0.0414*)	(0.1351)	(0.1853)
L_GovExp	0.180504	0.167157	0.391389	−0.138654	0.489656
	(0.4602)	(0.4048)	(0.3774)	(0.0811**)	(0.3729)
L_Infl	0.134910	0.769903	0.329903	1.29415	0.368162
	(0.0837*)	(0.1087)	(0.2096)	(0.0007***)	(0.1325)
L_GINI	0.0431567	0.421325	0.0683281	0.105037	0.0813469
	(0.0020 ***)	(0.9256)	(0.0627 **)	(0.0446**)	(0.0348)
L_Edu	−0.390606	−0.73440	−0.402507		
	(0.0058 ***)	(0.0147**)	(0.0062 ***)		
R-squared	0.761150	0.755934	0.962925	0.728976	0.906053
Adjusted R.	0.727850	0.733746	0.925850	0.559585	0.847336
Akaike criterion	−5.509791			34.83984	51.67169
Hannan-Quinn	−5.923886			34.48490	51.31676
Durbin-Watson	2.546098	2.234403	2.552961		
Log-likelihood	−77.1663			−11.41992	−19.83585
AIC		-23.1423			
BIC		-20.7087			
HGC		-23.6425			

Table 1 shows the results when Equation (1) is estimated using abovementioned models. The log transformation of all the variables allows us to interpret the coefficients as elasticities. The results reveal that the relationship between the GDP per capita and the explanatory variables, representing the sources of growth, show the expected signs, according to our prior prediction. The results from our model specify that the remittances variable has a positive and statistically significant effect at 5% and 10% on the GDP per capita. We found that, on an average, a 1%-point increase in remittances would provoke from 0.21% to 1.8% increase in the average per capita GDP of a Tajik economy.

The negative coefficient associated with governance. Barajas et al. (2012), focusing on the relationship between remittances and government policies, conclude that remittances reduce public spending in countries with governance issues. In other words, public subsidies can be replaced by remittances that will work as private subsidies, and therefore "households will not have the incentive to monitor the government and exert pressure on it for change when they are insured through remittances" (Ebeke et al., 2013, pp. 6-9).

Table 2. Dependent variable Poverty Headcount

	MODEL 1	MODEL 3	MODEL 4	MODEL 5	MODEL 6
Const.	5.83915	−0.145171	4.86600	4.37201	0.518012
	(0.0001 ***)	(0.2721 *)	(0.0001***)	(0.0001***)	(0.8796)
L_REMcur	−0.0737642	−2.82739	−0.0430503	−0.0347422	0.154412
	(0.0009 ***)	(0.0245 **)	(0.1565)	(0.0034***)	(0.0747*)
L_GDPpc	−0.0683645	−1.05544	−0.02163	−0.0760697	0.270426
	(0.0245 **)	(0.0006 ***)	(0.6961**)	(0.0001***)	(0.0724*)
L_GovExp	−0.0551259	−0.23347		−0.0355126	0.0956474
	(0.1602)	(0.8057)		(0.0001***)	(0.5726)
L_GINI	−0.0032724	−2.26225	0.001062	0.000248	0.0223937
	(0.2980)	(0.9378)	(0.7924)	(0.7678)	(0.0487**)
L_Edu	−0.0049476	2.83925	−0.0103045	−0.065047	−0.026612
	(0.7680*)	(0.0578*)	(0.6959)	(0.00571)	(0.7486)
R-squared	0.856320	0.785552	0.494102	0.963043	0.996558
Adjusted R^2	0.818879	0.766057	0.451943	0.939945	0.991051
Akaike criterion	−51.85574		2.047052		
Hannan-Quinn	−52.26983			−42.88214	
Durbin-Watson	2.624046	1.850333		−43.23708	2.336305
Log-likelihood	32.92787		20.24280	27.44107	
AIC		8.2251	3.1082		-7.1242

BIC	10.0503	5.0253	-6.3026
HGC	7.8499	2.9307	-7.2003

There is a long relationship between remittances and poverty reduction in case of Tajik economy. Remittances are found to have a significant impact on the poverty headcount. We found that, on average, an increase in remittances by 1% leads to a reduction in poverty headcount from 0.007% to 2.82% (see Table 2).

To determine the order of integration, we used two-unit root tests, the Augmented-Dickey Fuller test (comparing AIC) and KPSS (Kwiatkowski, D., P. C. B. Phillips, P. Schmidt and Y. Shin) unit root test. The results are summarized in Table 3.

Table 3. Summary of ADF, DF-GLS and KPSS unit roots tests

Variable	ADF	KPSS
	with constant and trend	test statistic including trend
$LnGDPpc_t$	0.9718	0.118528
$LnREMcur_t$	0.8362	0.0519
$LnEdu_t$	0.8040	0.6962
$LnGovEx_t$	0.7520	0.02324
$LnOPN_t$	0.6875	0.1080
$LnGINI_t$	0.7525	0.4191
$LnPOV_t$	0.0173	0.6012
$LnINFL_t$	0.1167	0.4374
Variables' first difference		
$\Delta LnGDPpc_t$	0.0253**	0.7489**
$\Delta LnREMcur_t$	0.0149**	0.0001**
$\Delta LnEdu_t$	0.0004***	0.4348
$\Delta LnGovEx_t$	0.0624*	0.0031***
$\Delta LnOPN_t$	0.0003***	0.7879
$\Delta LnGINI_t$	0.0002***	0.4304
$\Delta LnPOV_t$	0.1148*	0.2010 ***
$\Delta LnINFL_t$	0.3165 ***	0.0037 ***

Note: the lag of ADF test is determined by the AIC values.

Model: (1-L)y = (a-1)*y(-1) + ... + e

Lag order is shown in parenthesis based on AIC and BIC at ADF level.

*   ** and *** indicate significant at 1%, 5% and 10%, respectively.

For DF-GLS critical values after the first difference as follow:

-2.79 (10%), -3.02 (5%), -3.33 (2.5%), -3.61 (1%)

For KPSS critical values after the first difference: 0.126 (10%), 0.150 (5%), 0.202 (1%)

The results show that all variables were confirmed to be stationary in ADF test while LnOPN and LnGINI are not stationary in KPSS regression. Expectedly, the LnGDPpc, LnREM and LnPOV are stationary at 1% and 5% in both models, respectively. The remaining variables are stationary at 1% and 10% in both models, respectively.

Table 4. Variables, measures and data sources

Variable	Measurement	Expected signs	Data source
L_GDPpc	Natural logarithm of GDP growth per capita	−/+	World Banks' WDI IMF DOT
L_Rem	Natural logarithm of remittances in ratio to GDP	−/+	World Banks' WDI
L_POV	The log headcount index measures the proportion of the log of population that is poor and lives below the poverty line	−	World Banks' WDI
L_GINI	The standard measure of income inequality based on Lorenze Cruve that ranges from 0% to 100%, with 0 representing perfect equality and 100 representing perfect inequality	−	World Banks' WDI
L_Edu	log of secondary school enrollment (in percentage) used as a proxy for the measure of investment in human capital	+/−	Barro and Lee (1996) See updated version at: www.cid.harvard.edu/cid data.ciddata.htm
L_GovExp	General government final consumption expenditure (% of GDP)	+	World Banks' WDI
L_OPN	Ration of the sum of imports and exports to the GDP that gives the measure of openness of economy	+/−	World Banks' WDI
L_Infl	Annual Percentage change in CPI	−	World Banks' WDI

Figure 3. Bivariate correlations of regression variables
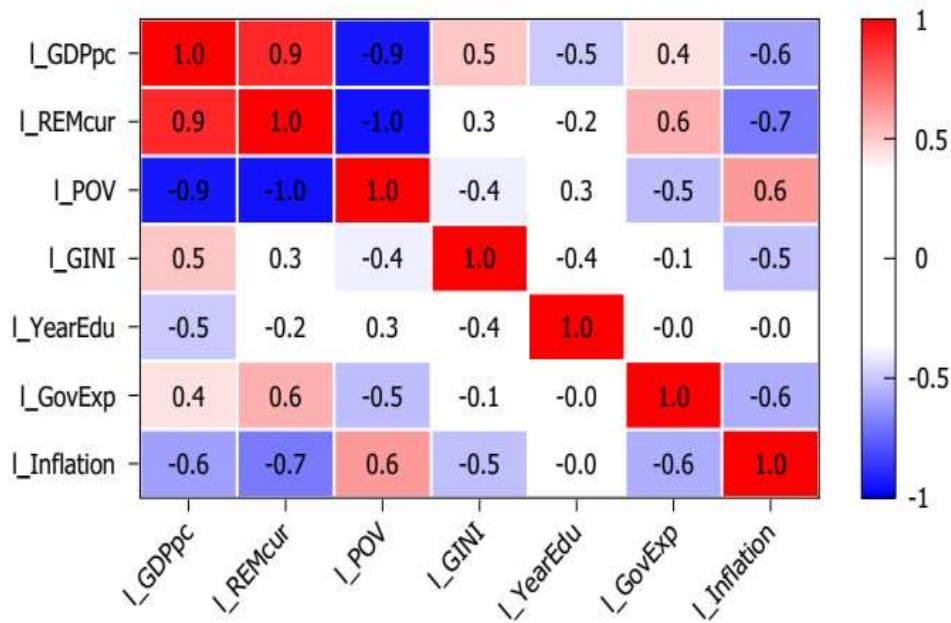
Note: Raw data after a log transformation.

Table 5. Descriptive statistics of regression variables

Variable	Mean	Median	S.D.	Min	Max
L_GDPpc	6.10	6.26	0.705	4.94	7.01
L_REMcur	20.9	21.3	1.22	18.2	22.0
L_OPN	4.67	4.67	0.294	4.22	5.30
L_POV	3.64	3.56	0.170	3.46	3.96
L_GINI	4.61	3.48	2.70	3.38	10.7
L_Edu	10.0	9.94	0.470	9.36	10.7
L_GovExp	2.38	2.41	0.210	2.11	2.69
L_Inf.	2.23	1.96	0.570	1.61	3.65

Note: Raw data after a log transformation.

Stability test result

We applied CUSUM and CUSUMQ to determine the parameter stability and monitor the change of detection. The diagnostic test examines heteroscedasticity and serial correlation and the reliability of our estimation result (Brown et al., 1975). The CUSUM and CUSUMQ are plotted against the plotted lines at 5% level of significance (See figures 4 and 5).

Figure 4. Plot of CUSUM and CUSUMQ (Stability test for GDP per capita)
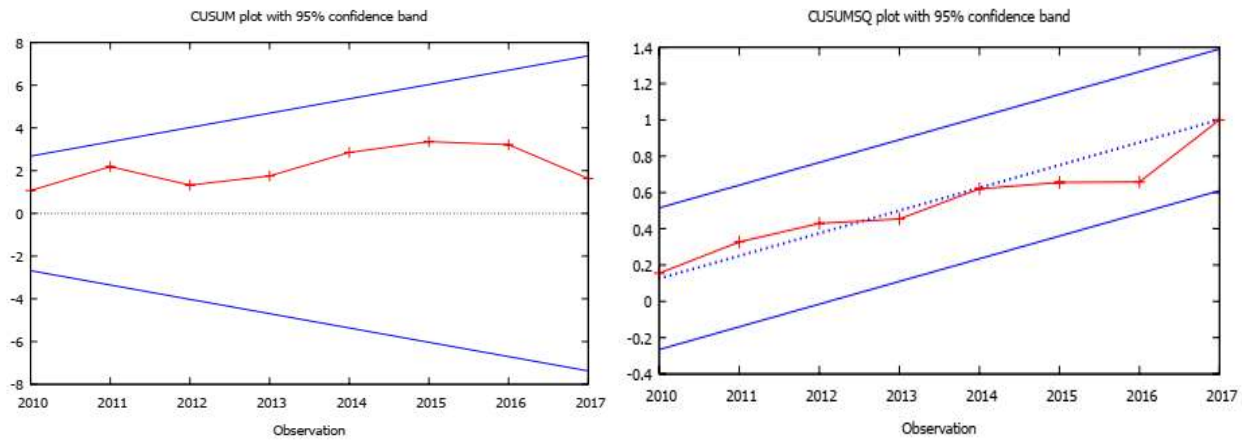
Note: The straight lines represent critical bounds at 5 % significance level, indicating the stability of the model. CUSUM test for stability of parameters mean of scaled residuals = 0.0195215; sigmahat = 0.0957905; Harvey-Collier t (7) = 0.576415 with p-value 0.5824

Figure 5. Plot of CUSUM and CUSUMQ (Stability test for Poverty reduction)
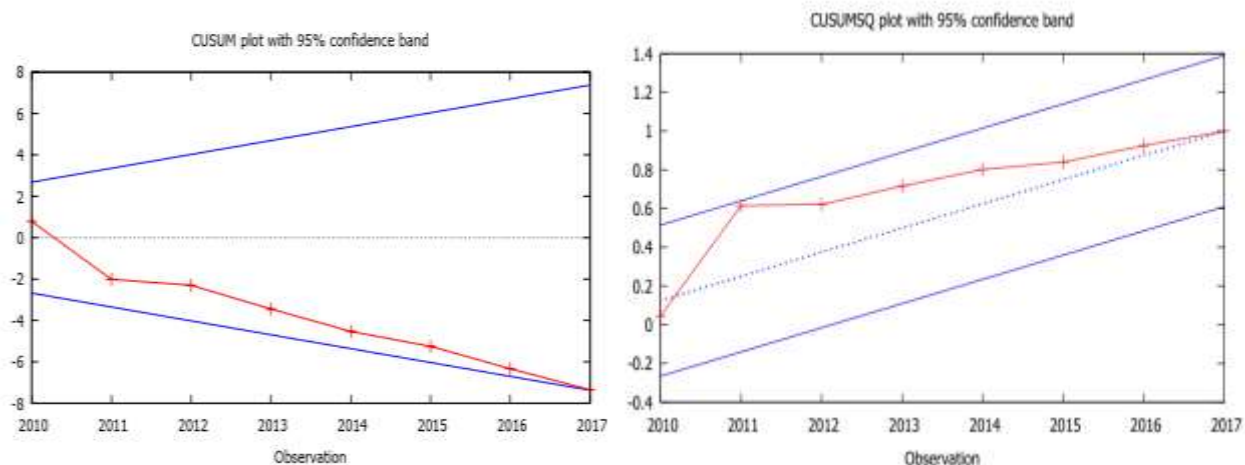
Note: The straight lines represent critical bounds at 5 % significance level, indicating the stability of the model.

Figure 4 and figure 5 indicate that CUSUM and CUSUMQ statistics are well inside and between the critical bounds at 5% confidence interval of parameter stability.

Moreover, in order to make sure that our results are accurate and valid, we have conducted several model robustness checklists as presented in Table 7. All the test results show that the model is linear and correctly specified and the error term is normally distributed.

Table 7. Model diagnostics

Test Type	Test Statistic (p-value)
RESET test for specification	0.252
Breusch-Pagan	0.534979
Breusch-Godfrey (Ljung-Box Q')	0.205
Durbin-Watson statistic	0.270993
ARCH of order 1 (LM)	0.326509
Auxiliary regression for non-linearity test	0.025293
White's test	0.375485
Koenker	0.418543

CONCLUSION

One of the main conclusions of this paper is that aid has played a crucial role in Tajikistan's development and it is hard to imagine a further development of the country without coordinated external financial flow. This study gives insights into two important channels through which remittances do positively affect economic growth and do negatively affect poverty in case of Tajik economy. All variables we included in our two equations reach the theoretically expected sign and statistical significance and confirm the hypotheses put forward in the beginning of the paper.

We found that, on an average, a 1%-point increase in remittances would provoke a 0.21% to 1.8% increase in the average per capita GDP of a Tajik economy. Moreover, our result suggests that there is a long relationship between remittances and poverty reduction in case of Tajik economy. Remittances are found to have a significant impact on the poverty headcount. We found that, on average, an increase in remittances by 1% leads to a reduction in poverty headcount from 0.007% to 2.82%.

We should also mention that, although remittances contribute significantly to the overall economy, we should not regard them as the main source of development. More remittances inflows leads to more people migrating abroad as they enjoy higher wage-earning opportunities in labour-receiving countries, and therefore, this may have detrimental effects, such as less government spending on welfare, fewer or no institutional reforms, moral hazard and/or brain drain (Abduvaliev M.H., and Bustillo R.M., 2019). The promotion of remittances should only be

one part of any country's development strategy. Governments in remittance-receiving countries should seek to break the cycle of remittance dependency by ensuring good welfare coverage and a secure investment climate.

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APPENDIX

All variables after the log transformation