

Impact of Remittances on the Economic Growth in the Transitional Economies of the European Union

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Abstract

The remittances became one of the major financing sources for the developing countries in the globalized world. This study examines the causal relationship among the real GDP per capita growth, personal remittances received and net foreign direct inflows in the transition economies of the European Union including Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Poland, Romania, Slovak Republic and Slovenia during the period 1996-2013 by using Dumitrescu and Hurlin (2012) causality test. We found that there was unidirectional causality from remittances and foreign direct investment inflows to the economic growth.

Keywords: *economic growth; remittances; foreign direct investment inflows; panel data analysis*

JEL Classification: *C23; F24; F43; O47*

Introduction

Remittances have become an important source of external capital and foreign exchange especially for the developing countries together with the removal of constraints on the cross-border factor movements. The received personal remittances through the official channels in the world reached 460.224 billion US dollars in the world in 2013, while the remittances in the transition economies of the EU (European Union) including Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Poland, Romania, Slovak Republic and Slovenia was about 23.447 billion US dollars in 2013 and this corresponded to about 5.1% of the global remittance flows. The remittance flows both in the world and EU transition economies generally have followed an uptrend as seen in Chart 1, but there existed a decrease in the remittance flows due to 2008 global financial crisis.

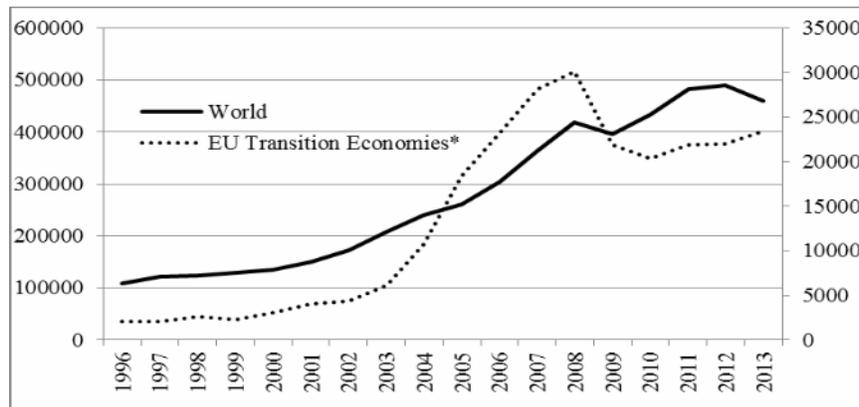


Chart 1. The personal remittances, received (current million US\$)

* includes Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Poland, Romania, Slovak Republic and Slovenia

Source: Authors' own elaboration based on data from World Bank (2015a).

The leading recipients of the remittances in 2013 in the world are India with about \$71 billion, China with about \$60 billion, the Philippines with about \$26 billion, Mexico with about \$22 billion, Nigeria with about \$21 billion), and Egypt with about \$20 billion. Pakistan, Bangladesh, Vietnam, and Ukraine also are the other major countries of remittance recipients. On the other hand the leading recipients of remittances as a percentage of GDP were Tajikistan with 48%, Kyrgyz Republic with 31%, Lesotho and Nepal with 25% each, and Moldova with 24% (World Bank, 2013).

The empirical studies denoted that the impact of the remittances on the economic growth exhibits variability. Firstly, the remittances may affect the economic growth positively by increasing the capital accumulation (Barajas et al., 2009). Secondly, remittances may have positive impact on the economic growth by improving the development of financial sector (Giuliano and Ruiz-Arranz, 2009). On the other hand, remittances may affect economic growth by decreasing the volatility, because remittances do not exhibit too much volatility against changes in the economy relative to FDI inflows and portfolio investments (Ramey and Ramey, 1995). Thirdly remittances may have positive impact on the economic growth by increasing the aggregate demand, but this can increase the import also. So the net impact of the increases in the aggregate demand due to remittances is unclear in this case.

On the other hand remittances have had some negative effects on economic growth. The first cause behind the negative impact of the remittances on the economic growth is arisen from the information asymmetry. Because the remitter does not know where the remittances are used by the recipients, the information asymmetry emerges. In this case recipients may not use the remittances in the productive investment projects. The second cause behind the negative impact of the remittances on the economic growth is use of most of the remittances for the consumption. Therefore the recipients regard the remittances as a substitution for labour income and they increase their leisure times and affect economic activity negatively (Nyamongo et al., 2012, p.241). The final cause behind the negative impact of the remittances on the economic growth is the exchange rate appreciation. The exchange rate appreciation may decrease the competitiveness of the countries and thus decrease the export and increase the import. The remittances may affect the economic growth negatively through the exchange rate appreciation (Lopez et al. (2007))

There have been relatively few studies on the relationship between remittances and economic growth in the transition economies of the EU in the literature, while there have been extensive studies on this topic in the literature. This motivated us to conduct a study in this sample of

countries. So our objective is to determine whether the remittances have significant impact on the economic growth in the transition economies of the EU. Therefore, we examined the impact of remittances and net foreign direct investment (FDI) inflows on the economic growth in the transition economies of the European Union during the period 1996-2013 by using Dumitrescu and Hurlin (2012) causality test. The structure of the study is as follows. Section 2 reviews the existing literature on the relationship between remittances and economic growth and Section 3 describes the data and presents the empirical analysis and results. Finally the study ends with Conclusion.

Literature Review

Many empirical studies have conducted on the impact of remittances on the economic growth in the major remittance recipients such as India, China, the Philippines, Mexico, Nigeria, Egypt, Pakistan, Bangladesh, Vietnam, and Ukraine. Most of the studies generally have found that remittances had positive impact on the economic growth (see Pradhan et al.(2008), Giuliano and Ruiz-Arranz (2009), Fayissa and Nsiah (2010), Nyamongo et al. (2012), , Imai et al. (2014) and Nwaogu and Ryan (2015)), but relatively few studies have found that there was no significant relationship between remittances and economic growth (see Barajas et al. (2009), Jouini (2015) and Lim and Simmons (2015)).

Table 1. Recent literature on the relationship between remittances and economic growth

Study	Countries, period	Method	Impact of Remittances on Economic Growth
Pradhan et al. (2008)	39 developing countries, 1980-2004	Panel regression	Positive
Qayyum et al. (2008)	Pakistan, 1973-2007	ARDL	Positive
Barajas et al. (2009)	84 countries, 1970-2004	Panel regression	No impact
Giuliano and Ruiz-Arranz (2009)	100 developing countries, 1975-2002	Panel data analysis	Positive
Fayissa and Nsiah (2010)	36 African countries, 1980-2004	Panel regression	Positive
Rao and Hassan (2011)	40 countries, 1960-2007	Panel regression	No direct growth effects, but had small indirect growth effects
Nyamongo et al. (2012)	36 African countries, 1980-2009	Panel regression	Positive
Cooray (2012)	South Asian countries, 1980-2008	Panel data analysis	Positive
Siddique et al. (2012)	Bangladesh, India and Sri Lanka, 1976-2006	Panel causality	Unidirectional causality from remittances to economic growth in Bangladesh and a bidirectional causality in Sri Lanka
Ramirez (2013)	Latin American & Caribbean countries, 1990-2007	Pedroni panel cointegration and FMOLS	Positive
Nsiah and Fayissa (2013)	64 countries, 1985-2007	Panel cointegration and FMOLS	Positive
Kumar (2013)	Guyana, 1982-2010.	ARDL cointegration	Positive
Salahuddin (2013)	Bangladesh, India, Pakistan and Philippines	Panel cointegration	Positive

Table 1 (cont.)

Ahamada and Coulibaly (2013)	20 Sub-Saharan African countries, 1980–2007	Panel Granger causality	No causality
Senbeta (2013)	50 countries, 1970–2004	Panel regression	Positive impact on capital accumulation
Olubiyi (2014)	Nigeria, 1980–2012	VECM Granger causality	Unidirectional causality from remittances to GDP
Zizi (2014)	Central and Eastern Europe countries, 1995–2011	Panel regression	Positive
Kumar and Vu (2014)	Vietnam, 1980–2012	Autoregressive distributed lag (ARDL) cointegration, Granger causality	Bidirectional causality between remittances and economic growth
Imai et al. (2014)	24 Asia and Pacific countries, 1980–2009	Panel data analysis	Positive
Nyeadi and Atiga (2014)	Ghana, 1980–2012	Johansen and Juselius cointegration test, Granger causality test	Unidirectional causality from remittances to economic growth
Kumar and Stauvermann (2014)	Bangladesh, 1979–2012	ARDL cointegration, Granger causality test	Positive in the long run, bidirectional causality
Salahuddin and Gow (2015)	Bangladesh, India, Pakistan and the Philippines, 1977–2012	Panel cointegration tests, Pooled Mean Group (PMG) regression	Positive in the long run, statistically insignificant impact in the short run
Lim and Simmons (2015)	Caribbean Community and Common Market	Panel cointegration test	No significant relationship between remittances and economic growth in the long run
Jouini (2015)	Tunisia, 1970–2010	ARDL cointegration	No impact on the economic growth in the long run and bidirectional causality between remittances and growth in the short run.
Nwaogu and Ryan (2015)	53 African and 34 Latin American and Caribbean countries	Panel data analysis	Positive

Source: Authors' own elaboration based on the literature review.

The literature review showed there have been extensive empirical studies on the relationship between remittances and economic growth, but there have been conducted a few studies on this topic for the transition economies of the EU.

Data and Econometric Methodology

We investigated the causality among the real GDP growth, remittances and FDI net inflows in Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Poland, Romania, Slovak Republic and Slovenia during the period 1996–2013 by using Dumitrescu and Hurlin (2012) causality test. We excluded Latvia and Lithuania in our sample due to non-availability of data.

Data

We used the annual values of the real GDP growth rate, remittances as a percent of GDP and FDI inflows as a percent of GDP in the analysis for the transitional economies of the EU countries during the period 1996–2013. The availability of data determines our sample and study period. All the data were obtained from the World Development Indicators of World Bank. Eviews 8.0 and Stata 12.0 statistical packages were used in the econometric analysis.

Table 2. Variables used in the econometric analysis and their symbols

Variable	Symbol	Source
Remittances as a percent of GDP	REM	World Bank (2015a)
Real GDP per capita growth	RGRW	World Bank (2015b)
FDI inflows as a percent of GDP	FDI	World Bank (2015c)

Source: Authors' own elaboration

Econometric Methodology

We firstly tested the cross-sectional dependence among the cross-sectional units by Lagrange multiplier (LM) test of Breusch and Pagan (1980) because time dimension is higher than cross-section dimension, then conducted the stationarity by Cross-Sectionally Augmented Dickey-Fuller (CADF) unit root test of by Pesaran (2007). Finally we analysed the causal relationship among economic growth, remittances and FDI inflows by Dumitrescu and Hurlin (2012) causality test.

Cross-Sectional Dependence Test

The determination of the cross-sectional dependence is important for the selection of further tests. If we disregard the cross-sectional dependence, our findings can be biased and inconsistent (Breusch and Pagan, 1980). In this study because $T=18$ is larger than $N=9$, we used the LM test developed by Breusch and Pagan (1980). The test statistic of the test is calculated as follows (Breusch and Pagan, 1980):

$$LM = T \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij}^2 \quad (1)$$

$\hat{\rho}_{ij}$ is the sample estimate of the pair-wise correlation of the residuals and is as follows:

$$\hat{\rho}_{ij} = \hat{\rho}_{ji} = \frac{\sum_{t=1}^T e_{it} e_{jt}}{(\sum_{t=1}^T e_{it}^2)^{1/2} (\sum_{t=1}^T e_{jt}^2)^{1/2}} \quad (2)$$

and $e_{it} = y_{it} - \beta_i' x_{it}$. On the other hand β_i is the estimates of β_i from the ordinary least squares regression of y_{it} on x_{it} . The null hypothesis of this test is cross-sectional independence.

CIPS Panel Unit Root Test

The first generation panel unit root tests assume that all the cross-sections are independent (Hurlin, 2004). Because Breusch and Pagan (1980) LM test denoted that there was cross-sectional dependence, we used the Cross-Sectionally Augmented Dickey-Fuller (CADF) unit root test developed by Pesaran (2007). In this test, Augmented Dickey Fuller (ADF) regression is improved by using cross-sectional averages of lagged levels and first differences of the series in the study. The individual CADF statistics are used for the calculation of CIPS (cross-sectional IPS (Im et al., 2003)). The CADF equation is as follows (Pesaran, 2007):

$$\Delta y_{it} = \alpha_{0i} + \alpha_{1i} y_{it-1} + \alpha_{2i} \bar{y}_{t-1} + \alpha_{3i} \Delta \bar{y}_{t-1} + \varepsilon_{it} \quad (3)$$

In (3) numbered equation $\bar{y}_t = \frac{\sum_{i=1}^n y_{it}}{n}$, $\Delta \bar{y}_t = \frac{\sum_{i=1}^n \Delta y_{it}}{n}$

The panel version is developed by a cross-sectional extension of the IPS. CIPS statistics is the average of all the calculated t values for each cross-sectional unit.

$$CIPS = \frac{\sum_{i=1}^N CADF_i}{N} \quad (4)$$

Dumitrescu and Hurlin (2012) Causality Test

We tested the causality among the variables by Dumitrescu and Hurlin (2012) causality test. Dumitrescu and Hurlin (2012) causality test considers the cross-sectional dependence among the cross-sections of the panel and this method can be applied in case time dimension is larger than cross-sectional dimension and it also yields efficient results in unbalanced panel data sets (Dumitrescu and Hurlin, 2012). The casual relationship between Y and X is tested by the following model ((Dumitrescu and Hurlin, 2012)):

$$Y_{i,t} = \alpha_i + \sum_{k=1}^K \gamma_i^k Y_{i,t-k} + \sum_{k=1}^K \beta_i^k X_{i,t-k} + \varepsilon_{i,t} \quad (5)$$

If (5) numbered equation K denotes optimal lag length. The null hypothesis of the test is there is no causality relationship from X to Y in all the cross-sectional units, while alternative hypothesis is that there is causality from X to Y in some cross-sectional units. Dumitrescu and Hurlin (2012) calculates individual Wald statistics ($W_{i,T}$) for each cross-sectional unit, then calculated the Wald statistics of the panel ($W_{N,T}^{HNC}$) by taking arithmetic average of the individual Wald statistics. Dumitrescu and Hurlin (2012) suggests the use of $Z_{N,T}^{HNC}$ test statistics with asymptotic distribution when $T > N$, and Z_N^{HNC} test statistics with semi-asymptotic distribution when $T < N$. Dumitrescu and Hurlin (2012) calculates the test statistics and their probabilities by using Monte Carlo simulation.

$$Z_{N,T}^{HNC} = \sqrt{\frac{N}{2K}} (W_{N,T}^{HNC} - K) \quad (6)$$

$$Z_{N,T}^{HNC} = \frac{\sqrt{N} [W_{N,T}^{HNC} - N^{-1} \sum_{i=1}^N E(W_{i,T})]}{\sqrt{N^{-1} \sum_{i=1}^N Var(W_{i,T})}} \quad (7)$$

Empirical Analysis

Results of Breusch and Pagan (1980) Cross-Sectional Dependence Test

We applied Breusch and Pagan (1980) LM test to determine there was cross-sectional dependence among the variables and the results of the test were presented in Table 3. The null hypothesis of this test is that there is cross-sectional independence. Because our probability value was found to be smaller than 1%, we can say that there was cross-sectional dependence among the cross-sectional units of the panel with 95%.

Table 3. The results of Breusch and Pagan (1980) LM test

Test	Test statistics	Prob.
LM	222.240	0.0000

Source: Authors' own elaboration based on the results of Breusch and Pagan (1980) LM test.

Results of CIPS Panel Unit Root Test

We tested the unit root by CADF unit root test and the null hypothesis of the test is that there is unit root. When we examined the results of the test, we saw that the probability values for the RGRW were smaller than 5%, therefore we rejected the null hypothesis and accept the alternative hypothesis and concluded that RGRW was $I(0)$ with a 95%. On the other hand, the probability values of the other variables, REM, FDI and GDS were higher than 5% at the level, so accepted the null hypothesis and it meant that these variables had unit root at the level. Later we took the first differences of these variables and again tested their stationarity and found that the probability values of these variables were smaller than 5%, rejected the null hypothesis and concluded that these variables were $I(1)$ with 95% as seen in Table 4.

Table 4. The results of Pesaran (2007) CADF Unit Root Test

Variables	Pesaran (2007) Panel Unit Root test (CIPS- Z [t-bar])			
	Intercept only		Intercept + Trend	
	$p = 0$	$p = 1$	$p = 0$	$p = 1$
RGRW	-2.78(0.003)***	-1.654 (0.049)**	-3.128 (0.001)***	-0.578 (0.282)
dRGRW	-9.690 (0.000)***	-4.576 (0.000)***	-8.160 (0.000)***	-2.779 (0.003)***
REM	0.829 (0.796)	-1.002 (0.158)	1.050 (0.853)	-0.574 (0.283)
dREM	-7.461 (0.000)***	-2.614 (0.004)***	-6.174 (0.000)***	-1.104 (0.135)
FDI	-2.932 (0.002)***	-0.500 (0.309)	-1.755 (0.040)**	-0.056 (0.478)
dFDI	-9.442 (0.000)***	-4.539 (0.000)***	-8.523 (0.000)***	-3.330 (0.000)***

Source: Authors' own elaboration based on the results of Pesaran (2007) CADF unit root test

Notes: (1)***, **, * denote significant at 1%, 5% and 10% level respectively

(2) The lag order, p , is selected by the AIC or BIC with the maximum order number being set to 3.

(3)The Pesaran (2007) test is performed by "multipurt" command written by Markus Eberhardt

Results of Dumitrescu and Hurlin (2012) Causality Test

In this study, we applied Dumitrescu and Hurlin (2012) causality test for 0, 1 and 2 lags and the results were presented in Table 5 and the bold rows showed the statistically significant causality relationship, because their probability values were smaller than 10%. The results demonstrated that there was unidirectional causality from remittances to the economic growth when lag was selected as 1. On the other hand there was unidirectional causality from FDI net inflows to the economic growth when lag was selected as 2 and 3.

Table 5. Results of Dumitrescu and Hurlin (2012) panel causality test

K=1			
Null Hypothesis	W-Stat.	Zbar-Stat.	Prob
DREM does not homogeneously cause RGRW	2.61504	2.22793	0.0259**
RGRW does not homogeneously cause DREM	0.67374	-0.78980	0.4296
DFDI does not homogeneously cause RGRW	1.81859	0.98985	0.3222
RGRW does not homogeneously cause DFDI	1.12016	-0.09584	0.9236
DFDI does not homogeneously cause DREM	1.49672	0.48951	0.6245
DREM does not homogeneously cause DFDI	1.06810	-0.17678	0.8597

Table 5 (cont.)

K=2			
Null Hypothesis	W-Stat.	Zbar-Stat.	Prob
DREM does not homogeneously cause RGRW	3.78059	1.19033	0.2339
RGRW does not homogeneously cause DREM	2.50863	0.00802	0.9936
DFDI does not homogeneously cause RGRW	4.56798	1.92222	0.0546*
RGRW does not homogeneously cause DFDI	1.56544	-0.86869	0.3850
DFDI does not homogeneously cause DREM	3.63975	1.05941	0.2894
DREM does not homogeneously cause DFDI	3.91344	1.31381	0.1889
K=3			
Null Hypothesis	W-Stat.	Zbar-Stat.	Prob
DREM does not homogeneously cause RGRW	6.26990	1.10888	0.2675
RGRW does not homogeneously cause DREM	5.66597	0.78534	0.4323
DFDI does not homogeneously cause RGRW	10.9332	3.60706	0.0003***
RGRW does not homogeneously cause DFDI	3.23169	-0.51874	0.6039
DFDI does not homogeneously cause DREM	5.69278	0.79971	0.4239
DREM does not homogeneously cause DFDI	7.80952	1.93367	0.0532*

***, **, * denotes significant at 1%, 5% and 10% level respectively

Source: Authors' own elaboration based on the results of Dumitrescu and Hurlin (2012) panel causality est.

Consequently our empirical findings indicated that both remittances and FDI inflows had significance impact on the economic growth and this finding is consistent with the general trend in the empirical literature (See Siddique et al. (2012), Olubiyi (2014), Nyeadi and Atiga (2014)). In this context, both remittances and FDI inflows are an important component of the economic growth.

Conclusion

We investigated the causality among the economic growth, remittances and net FDI inflows in the transition economies of the EU during the period 1996-2013 by using Dumitrescu and Hurlin (2012) causality test. In parallel with this purpose, we firstly tested the cross-sectional dependence among the cross-sectional units by LM test of Breusch and Pagan (1980) and found that there was cross-sectional dependence among the variables. Therefore, we tested the stationarity of the variables by Pesaran (2007) CADF unit root test. Finally we examined the causality among economic growth, remittances and FDI inflows by Dumitrescu and Hurlin (2012) causality test and found that there was unidirectional causality from remittances to the economic growth at one lag, while there was unidirectional causality from FDI net inflows to the economic growth at two and three lags. In other words remittances and FDI net inflows had significant impact in the explanation of the economic growth in our sample of countries. Remittances affect the economic growth by contributing to the national savings and meeting foreign exchange requirements of the countries partially, while FDI net inflows affect the economic growth by providing resources including capital and technical knowledge, also creating job creation and employment.

Consequently we saw that both remittances and FDI net inflows fostered the economic growth in the EU transition economies. Therefore governments should establish the environment to attract both remittances and FDI inflows in the developing and underdeveloped countries. Further empirical studies can be conducted to determine the channels which the remittances affect the economic growth and this will be useful for the policymakers to increase the impact of the remittances on the economic growth.

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