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THE IMPACT OF REMITTANCES ON ECONOMIC GROWTH IN DEVELOPING COUNTRIES: EMPIRICAL EVIDENCE FROM TURKEY**Dr. Öğr. Üyesi YILMAZ ONUR ARI**

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ORCID : 0000-0001-7634-2531**ABSTRACT**

Remittances are defined as foreign exchange that workers who live and work abroad send to their home countries to support their families or to make investments. Remittances have a vital importance for developing countries and represent important injections to the sending countries of migrant workers. Turkey is a developing country and has around 6.5 million Turkey-originated people living in the world. Most of them are living in developed Western-Europe countries. Turkish economy has an import-oriented growth and remittances are one of the most important items for foreign exchange inflows in case of a decrease in export or tourism revenues.

In this study, the nexus between remittances and economic growth for Turkey is investigated for the period 1994-2018 by using annual data. In this context, the Johansen Cointegration Analysis is firstly used to determine whether there is a long-term relationship between the two variables, followed by the Granger Causality Analysis which is used for the investigate the causality relationship between the variables. It is found that there is a unidirectional relationship from economic growth to remittances in Turkey. Remittance flows into Turkey do not cause economic growth. That means more important sources of GDP than remittances may affect economic growth in Turkey. At this point it can be concluded that other foreign exchange sources such as FDI, exportation or sectors like tourism and transportation could be the main driving force of Turkey's GDP. Besides, migration barriers, the duration of migration, migration type are important determinants of remittances. Because Turkey gets most of its remittances from Western European Union countries such as Germany, France, Netherlands and Belgium, the impact of remittances may cause Turkey's economic growth with higher labor mobility in European Union. Also economic growth may effect remittances by the conversion of these remittances into important investments that creates employment.

Keywords: Remittances, Economic Growth, Turkish Economy, Developing Countries, Causality Analysis

Jel Codes: F22, F43, J61, O40, O52

1. INTRODUCTION

International migration plays an important role in the global world as it generates massive effects in both sending and receiving countries economically, socially and culturally (Abduvaliev and Bustillo, 2019: 1). Remittances are defined as personal transfers (cash and in-kind) and compensations (income from border, seasonal and other short-term works) sent to their home countries by migrants who live and work in developed countries (Kumar et al., 2017: 95). Examples include Middle Easterners living in Europe, Latin Americas in the United States, and Koreans and Philipinos in Japan (Carrasco and Ro, 2007: 1). Remittances represent important injections to the sending countries of migrant workers, especially during times of economic recession when they provide a crucial source of income for their families in homeland (Huay et al., 2019: 1173).

Two channels, namely formal and informal, are used for transferring remittances. Formal channels involve major money transfer operators and banks. Some migrants use formal channels, but language barriers and related costs for these services both deter migrant workers from using them. Hence, most remittances occur in informal channels (Karagöz, 2009: 1893). The informal channels including Hawala or Hundi for money transfer or carrying cash home tend to operate physical cash and is less expensive, it is swifter, more reliable and is more convenient than the formal channel. This reveals that the actual inflows of remittances are considerably more than those registered in official data sources (Azam, 2015: 691).

As a contribution to the literature, this paper will test the role of remittances for Turkey's economic growth. Because Turkey gets most of its remittances from European Union countries, observing the EU effect on remittances may also constitute the original value of this study for Turkey's economic growth.

The paper is organized as follows: Section 2 discusses a brief review of literature on empirical studies regarding remittances-economic growth nexus in developing countries. Section 3 describes the data, estimation methodology, empirical results and analysis. Finally Section 4 forms the conclusion part.

2. LITERATURE REVIEW

Remittances impact growth in three ways. First, by improving the rate of capital accumulation, remittances increase the rate of physical and human capital. Lowering the cost of capital in receiving country is also an advantage of remittances. This may stabilise the economy and reduce the volatility. Second, remittances may have a negative impact on the labor force participation because the remittance income is replaced labor income. The third effect is that remittances impact the efficiency of investment by affecting TFP growth. Existing macro empirical literature on remittances mostly focus on growth, poverty, output growth volatility and inequality. Most of the studies on remittances use household, cross country and panel data to examine the impact of remittances (Barajas et al, 2009; Salahuddin and Gow, 2015).

When it comes to estimating the impact of remittances on economic growth, the findings of existing studies mostly point out a positive nexus. For example, the study of Rapoport and Docquier (2005) showed that international workers' remittances inflows are usually utilized to repay loans taken to finance migration or education, insurance and strategic motives. They stated that migration and remittances have a positive impact on economic growth in the long run. Pradhan et al. (2008) assessed the impact of remittances on economic growth using data from 39 countries during the period 1980-2004. They found that remittances have a positive impact on economic growth by using fixed effect models. Arı and Özcan (2011) investigated the remittances' impact on economic growth covering 30 developing countries for the period 1996-2009, by employing dynamic panel data analysis. They concluded that there is a positive relationship between remittances and economic growth. Nsiah and Fayissa (2013) used the Panel Fully Modified OLS approach to analyze the impact of remittances on economic growth. Using a data set covering 64 countries for the period 1985-2007, they found that remittances promote economic growth. Nyeadi et al. (2014) analyzed the causal link between remittances and economic growth in Nigeria, Senegal and Togo from 1980 to 2012 by using Granger-causality and co-integration tests under the Vector Autoregressive Regression (VAR) framework. Remittances are found to lead to economic growth while economic growth does not lead to remittances inflows in Nigeria and Senegal. However, there is no causal link between remittances and economic growth in Togo. Majumder and Donghui (2016) investigated the impact of the remittance on economic growth from 1975-2013 by employing Autoregressive Distributed Lag (ARDL) model. They found that there is a statistically significant long run

positive relationship between remittance and economic growth of GDP in Bangladesh. Nwosa and Akinbobola (2016) examined the role macroeconomic policies in the relationship between capital inflows (proxy by FDI, foreign aid and remittances) and economic growth in Nigeria for the period 1970 to 2013. The study employed ARDL Bound co-integration technique. The study found that macroeconomic policy plays a fundamental role in the relationship between remittances and economic growth in Nigeria. Pontarollo and Munoz (2018), analyzed the temporary and permanent effects of remittances on economic growth in Ecuador, by employing OLS technique. They found that both effects are statistically significant. Şakalak (2018) investigated the impact of remittances on economic growth for Turkey within the range of 1984 and 2017 using Granger Causality Analysis. Şakalak found that there is no causality between remittances and economic growth for Turkey. Eggoh et al (2019), used Panel Smooth Transition Regression (PSTR) and the Generalized Method of Moments (GMM) and they reached positive findings. Specifically, the authors found that remittances have a positive and significant effect on economic growth in developing countries.

Despite the fact that most of the studies support remittances' positive effect in developing countries, past findings are mixed and do not always confirm this prediction (Piteli et al, 2019: 2). Chami et al. (2003), found a negative relationship between remittances and economic growth in a study on 113 countries. Siddique et al. (2010), investigated the causal link between remittances and economic growth in three countries, Bangladesh, India and Sri Lanka. They employed Granger causality test and showed that growth in remittances does not lead to economic growth in India, even though it does in Bangladesh. Feeny et al (2014), found no statistically significant link between remittances and economic growth from a large sample of 136 developing countries over the period 1971-2010. Sevinç et al (2016), investigated the relations between remittances and economic growth in developing countries through panel data methods. According to the findings of the study, migration has a negative impact on growth for Turkey, Iran, Gabon, Belize, Costa Rica and Mexico but has a positive impact on growth for Algeria, Botswana, China, Paraguay, Ecuador and Peru. Bird and Choi (2019) examined the impact of remittances, FDI and foreign aid on economic growth in 51 low-income and middle-income developing countries over the period from 1976 to 2015 by using a dynamic panel model. They found a negative relationship between remittances and economic growth, whereas they suggested that FDI has a positive effect and the effect of foreign aid is ambiguous on economic growth. Finally in one interesting study, Dieck-Assad et al (2020) investigated the impact of Mexican remittances on Mexican economy for the period from 1995 to 2007. They applied an autoregressive vector model and concluded that Mexican remittances impact the Mexican service sector's GDP but have no effect on Mexican industrial sector.

Furthermore, some researchers correlate remittances with financial system or even government regime of a country. Aydas et al. (2005) investigated the determining factors of Turkish workers' remittances. They implied that improving financial intermediation and preventing exchange rate misalignments help escalating the inflow of remittances to Turkey. Giuliano and Ruiz-Arranz (2009) and Bettin and Zazzaro (2012) investigated the outcome of remittances on economic growth in the panel of hundred developing countries. They opined that countries with well-developed financial system experience a significant and positive impact of remittances on economic growth. Chen and Jayaraman (2016) analyzed the remittances-growth nexus for the Fiji Island. They concluded that while remittances have a positive impact on economic growth, its interaction with the financial system is not very encouraging. Williams (2018) investigated in 109 developing countries for the period 1975-2014 and argued that remittances are more effective in promoting growth in developing countries with strong democratic institutions. Olaniyan (2019), investigated the interactional effects of remittances and financial sector development on economic growth in Nigeria over the period 1977-2017 by applying the IV-

GMM estimator. He found that remittances do not have a direct significant impact on economic growth by themselves, but their impacts depend on how well the financial sector has been developed. Similarly, Efobi et al. (2019) found that remittances can drive industrialization through the financial development mechanism, by using a panel of 49 African countries for the period 1980-2014.

3. METHODOLOGY AND EMPIRICAL RESULTS

3.1 Data and Methodology

The data is made up annual time series data of total remittances inflows and gross domestic product (GDP) of Turkey. The data ranges from 1994 to 2018. Real GDP is measured in US dollars and it is extracted from the World Bank (WB) website while the remittances also measured in US dollars is obtained from The Global Knowledge Partnership on Migration and Development (KNOMAD) website.

The unit root test was conducted formally on the natural logs of the variables (total remittances inflows and GDP). In testing for the stationary of the variables, Augmented Dickey Fuller (ADF) (1981) and Philip Perron (PP) (1988) tests were used. I carried out the test using on both constant (intercept) only and constant with trend in order to see how robust the outcome will be.

In the study, the causality relationship between variables was examined with Granger causality test. Granger equations are modeled as follows:

$$\Delta Rem_t = \alpha_0 + \sum_{n=i}^k \alpha_{1n} \Delta Rem_{t-n} + \sum_{n=1}^k \alpha_{2n} \Delta GDP_{t-n} + \varepsilon_{1t} \quad (1)$$

$$\Delta GDP_t = \beta_0 + \sum_{n=i}^k \beta_{1n} \Delta GDP_{t-n} + \sum_{n=1}^k \beta_{2n} \Delta Rem_{t-n} + \varepsilon_{2t} \quad (2)$$

Rem shows the total remittances inflows to Turkey, while total GDP represents the economic growth for Turkey in the models (1) and (2) above. Two different hypotheses will be tested within the two-variable VAR model. Hypotheses are as follows:

H₀ : Remittances are not the Granger cause of economic growth.

H₀ : Economic growth is not the Granger cause of remittances.

3.2 Empirical Results and Analysis

In this analysis, economic growth variable and remittances inflows were indicated “GDP” and “REM”, respectively. ADF and PP Unit Root Test results were shown as constant and constant and trend in Table 1 and Table 2. For both two variables, unit root test results in their levels showed that variables were not stationary (Table 1). The non-stationery series were tested again by taking their first difference in order to make them stationary. In this respect, the first difference of both series was taken. GDP variable of Turkey became stationary at the first difference using both ADF and PP tests. REM variable of Turkey became stationary at the first difference (Table-2).

Table 1: Results of ADF and PP Unit Root Test (Level)

	LEVEL			
	ADF		PP	
	C	C+T	C	C+T
lnGDP				
Turkey	-1.171888	-0.794550	-1.169603	-0.926970
lnRem				
Turkey	-3.381888	-4.222530	-1.476791	-2.367281

Source: Computed by author using e-views 10.

Table 2: Results of ADF and PP Unit Root Test (1st Difference)

	1 ST DIFF.			
	ADF		PP	
	C	C+T	C	C+T
lnGDP				
TR	-4.065535*	-4.115441**	-4.065535*	-4.115441**
lnRem				
TR	-6.065150*	-6.784168*	-3.563700**	-3.443102***

Note: Significance at 1 % is denoted by * and significance at 5 % is denoted by **, while *** denotes 10 % significance. C represents Constant while C+T represents Constant with trend. Turkey has $I(1)$ integration for both variables.

Source: Computed by author using e-views 10.

According to the results of ADF and PP Unit Root tests, Turkey's GDP and remittances series became stationery at first difference so they are adequate and sufficient for Johansen Cointegration Analysis.

For Johansen Cointegration Analysis, it is useful to determine the appropriate lag length. For this purpose, the VAR model was established for two variables. Thus, the length of the lag was determined. The following tables (3 and 4) show the appropriate lag lengths according to different information criteria.

Table 3: Appropriate Lag Length (Turkey)

Lag	LR	FPE	AIC	SC	HQ
0	NA	64573.25	16.75114	16.85072	16.77058
1	78.66410	946.3858	12.52384	12.82256	12.58216
2	1.909999	1264.468	12.79651	13.29438	12.89370
3	13.93461*	672.2544*	12.12462*	12.82163*	12.26068*
4	2.632185	852.6707	12.28533	13.18149	12.46027
5	2.964551	1047.020	12.35593	13.45124	12.56975

LR: Likelihood Ratio Criterion, **FPE:** Final Prediction Error Criterion **AIC:** Akaike Information Criterion, **SC:** Schwarz Information Criterion, **HQ:** Hannan-Quinn Information Criterion

Source: Computed by author using e-views 10.

The maximum length was taken as 5 while determining the appropriate lag length. As a result of all information criteria, it has been concluded that the appropriate lag length is 3. The Table 4 shows the results of the Johansen cointegration test, where the lag length is taken as 3.

Table 4: Johansen Cointegration Test (Turkey)

	Trace Statistics		
	Statistics	0.05 Critical Value	Probability
$H_0: r=0, H_1: r=1$	20.97632	18.39771	0.0213
$H_0: r=1, H_1: r=2$	0.063687	3.841466	0.8007
	Max- Eigen Statistics		
	Statistics	0.05 Critical Value	Probability
$H_0: r=0, H_1: r=1$	20.91263	17.14769	0.0135
$H_0: r=1, H_1: r=2$	0.063687	3.841466	0.8007

Source: Computed by author using e-views 10.

When the results of Johansen test of Turkey are examined, it can be claimed that the null hypothesis is rejected. This tells us that there is a cointegration relationship between the variables, in other words, the series move together in the long term. On the other hand, the fact that the series are moving together does not allow us to provide an inference about the causality and causality between the variables. For this reason, a Granger causality analysis between remittances inflows to Turkey and economic growth of Turkey was applied. Table 5 shows the results of the Granger test.

Table 5: Results of Granger Causality Test (Turkey)

DEPENDENT VARIABLE: GDP (TR)		
	Chi-sq	Prob.
REM (TR)	6.565803	0.0871
DEPENDENT VARIABLE: REM (TR)		
	Chi-sq	Prob.
GDP (TR)	7.945571	0.0472

Source: Computed by author using e-views 10.

“ H_0 : Economic growth is not the Granger cause of remittances.” hypothesis is rejected. That means economic growth is the Granger cause of remittances for Turkey. However, “ H_0 : Remittances are not the Granger cause of economic growth.” hypothesis is accepted since

probability value is greater than 5%. In the case of Turkey, there is a unidirectional causality link flowing from economic growth to remittances. Economic growth leads to the flow of remittances into Turkey but remittances flow into Turkey do not cause economic growth.

4. CONCLUSIONS

The study used an annual time series data for the period of 1994-2018 on Turkey. The relationship between economic growth and remittances was analyzed by employing Granger causality and Johansen co-integration tests in the study. GDP is measured in US dollars and it is extracted from the World Bank (WB) website while the remittances also measured in US dollars is obtained from The Global Knowledge Partnership on Migration and Development (KNOMAD) website. In the econometric analysis of the data, Eviews10 econometric package program was used.

According to the results of the Johansen test, it was found that the two variables have a long-term co-integration relationship for Turkey. According to Granger causality test, there is a unidirectional relationship from economic growth to remittances in Turkey. Remittance inflows mostly from developed Western Europe countries -where Turkish originated migrant workers live and work- to Turkey do not cause economic growth. That means more important sources of GDP than remittances may affect economic growth in Turkey. At this point it can be concluded that other foreign exchange sources such as FDI, exportation or sectors like tourism and transportation could be a driving force of Turkey's GDP. This result is supported by the earlier findings of Şakalak (2018) who found that there is not a Granger causality from remittances to economic growth for Turkey.

Glytsos (2005: 470) asserts that migrants in Western Europe countries are not subjected to violent changes of remittance flows, because of the limited exposure of the receiving countries to extreme economic shocks. Most of the Turkish-originated migrants live and work in Western Europe countries such as Germany, France, Belgium and Netherlands. Migration barriers, the duration of migration and migration type are important determinants of remittances inflows to Turkey. Thus, it can be claimed that convenience at labor mobility in EU borders enables Turkish workers to bring Turkey more remittances from Western Europe countries such as Germany, France, Austria and Belgium. The impact of remittances may cause Turkey's economic growth with higher mobility. Economic growth may also effect remittances by the conversion of these remittances into important investments that create employment.

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