Özer ÖZÇELİK (ed.)

Studies on Interdisciplinary Economics and Business – Volume III

PETER LANG

Bibliographic Information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available online at http://dnb.d-nb.de.

Library of Congress Cataloging-in-Publication Data
A CIP catalog record for this book has been applied for at the Library of Congress.

Printed by CPI books GmbH, Leck

ISBN 978-3-631-81903-6 (Print)
E-ISBN 978-3-631-83211-0 (E-PDF)
E-ISBN 978-3-631-83212-7 (EPUB)
E-ISBN 978-3-631-83213-4 (MOBI)
DOI 10.3726/b17417

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Internationaler Verlag der Wissenschaften
Berlin 2020
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This publication has been peer reviewed.

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Foreword

Researchers from various universities and institutions provided support for the third volume of the book Interdisciplinary Economics and Business which its first volume was published in 2018 and the second was released in 2019. Most of the studies in this volume consisted of economics and business administration branches. Studies have been specifically made for Turkey and generally made on a global scale. Conceptual and analytical studies are summarized as follows:

In their study Kırca and Ozer attempted to estimate the relationship between international tourism demand and sectoral income. Mere and Masca studied the gravity model in international trade flows. Şengür and Obiero tried to estimate the relationship between income inequality and economic growth in Kenya. In their study, Altıner and Bozkurt focused on the effects of economic freedom on foreign direct investments. In his study, Vardari analyzed active portfolio management in emerging markets. Guler made an analysis to fix inflation expectations for vulnerable economies under open inflation targeting strategy. In their study, Türedi and Yavuz analyzed the relationship between remittances and economic growth in scale of Turkey. Canbay and Mercan focused on the application and operation of the interest rate corridor. In his study, Gokce created an energy security flaw index for the European Union and for Turkey. Belke and Özel analyzed the relationship between inflation and growth in developing countries. Güney estimated the impact of the geopolitical risks on the stock market dynamics in Turkey. Topçuğlu and Buladi Cubukcu observed the state policies for promoting tourism in Turkey according to the provinces. Durmaz examined the Tekirdağ industry in the first years of the Republic. Kasa analyzed the relationship between domestic violence against women and economic development. Akinci examined the privatization revenues in Turkey in the period between 1986 and 2020. Aytekin analyzed the tax amnesties implemented in Turkey. In his study, Tüzüntürk focused on The Applications of Two-Sample Hotelling's T2 Test and One-Way Multivariate Analysis of Variance (MANOVA) Test. Hacıhasanoğlu examined the impact of climate change on financial risks. Çelik analyzed the financial performance of the paper products, printing and publishing companies traded at BIST. In his study, Yunus Düğer investigated the effects of COVID-19 (Coronavirus) on human rights. Kestane researched the role of internal control system in strengthening the corporate management in banks. In their study, Özbek and Altınbay examined the effects of organizational and professional commitment on the behavior of auditors working in

independent audit companies. Tamer studied communication issues in health institutions. Yavuz Selim Düğer examined the issue of deliberate blindness in effective leadership and discussed whether this difficulty would be overcome. Tirgil and Acar studied on mental illness, gender, and labor supply. In her study, Koçyiğit examined the continuation of competition advantage in industry 4.0 era. Varışlı discussed the importance of strategic human sources management in creating a culture of competition and innovation. In their study, Eroğlu, Özsoy and Esen examined the expectation of the industries from the designers. Dülgeroğlu studied the sales issue with NLP. Göçmen made an investigation for discovery problem solving method in the solution of management problems. Bayar examined the importance of managers' attitudes and behaviors against cultural differences observed in organization. Kırpık made a literature review on "decision fatigue".

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I express my gratitude to the authors of the book chapters that contributed to the book "Studies on Interdisciplinary Economics and Business – Volume III" without losing their research spirit in spite of the Covid-19 epidemic, which is on the global agenda.

Özer Özçelik
Kütahya/Türkiye

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Salih Türedi & Vildan Yavuz

Remittances and Economic Growth: A Causality Analysis for Turkey

1 Introduction

In order to achieve economic growth, countries need to translate their sources into investments in productive fields. However, it might sometimes not be possible to create these sources through domestic savings and, thus, many countries have to apply to external sources. From this aspect, as stated by Barajas et al. (2010), the remittances have become a non-ignorable external funding source for developing countries in achieving the sustainable growth thanks to the advantages they offer such as not creating repayment obligation as foreign debts do, as well as the stability it offers. According to the estimations of the World Bank, the remittances in developing countries increased from 28.6 Billion USD in 1990 to 74.7 Billion USD in 2000 and 526 Billion USD in year 2018. Thus, approx. 18 folds increase in the remittances in the last 30 years drew the attention of economists and the macroeconomic outcomes of the remittances became one of the most discussed subjects especially in the recent period. The relationship between remittances and economic growth is widely discussed in the literature from this aspect.

In the theoretical literature, there are two prominent opinions about the relationship between these variables. According to the first one, the remittances create positive effects on economic growth by increasing the consumption, savings, and investments (Dridi et al., 2019: 7). Within this context, the remittances that are an additional income for the households in the recipient country contribute to the improvement of the level of welfare by reducing the income inequality and, consequently, the poverty. On the other hand, through the positive multiplier effect they create by increasing the consumption expenses that are an important component of total demand in the economy, they support the total demand and economic growth (Gupta et al., 2009: 105; Ratha, 2003: 164; Eggoh et al., 2019: 2). Besides that, the remittances (if stable and at a significant level) increase the level of savings, besides the consumption, and create an important source for funding the investments, which are one of the main determinants of growth (Barajas et al., 2009: 5; Yiheyis and Woldemariam, 2016: 247). This positive effect of remittances on economic growth is stronger in countries, in which

the financial system is not developed enough, because both the financial system cannot fulfill its role as an intermediary and the access to the credits is limited due to the lack of savings and capital accumulation. From this aspect, the remittances reduce the credit constraints, accelerate the investments, and contribute to the economic growth (Lartey, 2013: 1039; Abbas, 2019: 93; Jongwanich, 2007: 5–6).

According to the second opinion, the effect of remittances on economic growth is negative. In theoretical literature, this negative effect is explained with "*Moral Hazard*" and "*Dutch Disease*" arguments. According to the Moral Hazard argument, the remittances, which are considered as a non-labor income, might encourage households in the recipient country to work less and to demand more leisure time (Sutradhar, 2020: 276). It might undermine the economic growth by reducing the efforts to join the labor market and labor supply in the recipient country (Chami et al., 2008: 60). Finally, sustained and significant remittances negatively affect the economy by creating a situation like Dutch Disease. According to this argument, the increase in disposable income due to the increase in remittances causes an increase in demand/price of non-commercial goods. This process resulting in the appreciation of the national currency and, consequently, increase in the real exchange rate negatively affect the growth by reducing the export performance of the recipient country (Catrinescu et al., 2009: 82; Ahortor and Adenutsi, 2009: 3277; Muratoğlu, 2017: 461).

In the present study, the long-term causality relationship between remittances and economic growth was investigated. For this purpose, the time-series data of Turkey for the period between 1974 and 2018 were used. As a result of the empirical analysis, the evidences indicating that there is a significant and one-way causality relationship from remittances to economic growth in Turkey were obtained. Thus, it can be stated that remittances might play an important role as an external funding source in establishing the sustainable economic growth in Turkey.

2 Literature Review

The "Relationship between Remittances and Economic Growth" is an important and actual subject investigated not only in theoretical researches but also in empirical studies. In empirical studies carried out in different countries and different periods by using econometric methods, it can be stated that the evidences indicating that this relationship can be positive, negative, or insignificant depending on the level of financial development and institutional infrastructure in recipient countries, as well as on how these incomes were used. For instance, using the panel co-integration test, Ramirez and Sharma (2008) estimated that

remittances positively affected the economic growth in Latin America and Caribbean countries. Stating that there is no consensus in the literature about the effect of remittances on the growth, Catrinescu et al. (2009) emphasized in a panel data analysis for 162 countries that the remittances created positive effects on the economic growth but this effect was stronger in countries having high-quality political and economic policies and institutions. In their VAR-VECM analysis carried out on Bangladesh by using time-series data for the period of 1976–2005, Ahmed and Uddin (2009) found a one-way causality relationship from remittances to economic growth. Stating that remittances are an important external financing source for developing countries, Bjuggren et al. (2010) determined in an analysis of 79 developing countries that remittances accelerated the growth via investments. According to the results of Granger's causality test conducted on Bangladesh, India, and Sri Lanka, Siddique et al. (2012) reported that there was no significant relationship between these variables in India. Researchers also reported a one-way causality relationship from remittances to economic growth for Bangladesh and a two-way causality relationship between the variables for Sri Lanka. Investigating the causality relationship between remittances and growth in Tunisia, Jouini (2015) reported a two-way causality relationship between the variables in the short-term and one-way causality relationship from remittances to economic growth in the long-term. Emphasizing that the remittances are important for the countries having insufficient savings, Karamelikli and Bayar (2015) used ARDL test and determined that remittances have a positive effect on growth in Turkey. Stating that remittances affect the growth through consumption, savings, and investments, Meyer and Shera (2016) carried out an analysis on 6 countries having a high-level of remittance (Albania, Bulgaria, Macedonia, Moldova, Romania, and Bosnia Herzegovina) and reported that remittances contributed to the economic growth in these countries. In GMM estimation using the data of 1980–2012 for 4 MENA countries (Tunisia, Morocco, Algeria, and Egypt), Zghidi et al. (2018) found a positive relationship between remittances and growth. In another study, in which the GMM method was used, Eggoh et al. (2019) determined that remittances increased the growth in 49 developing countries. Abduvaliev and Bustillo (2019) reported that 1 % increase in remittances increased the economic growth by 0.25 % and reduced the poverty by 2 % in the Commonwealth of Independent States.

In their study on 13 Latin America and Caribbean countries, Amuedo and Pozo (2004) revealed that remittances had a negative effect on export industries by decreasing the competitive power of these countries. In their panel data analysis on 113 countries, Chami et al. (2005) reported that there was a negative correlation between remittances and economic growth and, consequently, the

remittances did not contribute to the economic growth. As a result of their study on 84 countries by using the annual data for the period 1970–2004, Barajas et al. (2009) showed that remittances had no significant effect on economic growth. Thus, the researchers suggested that other policies should be implemented instead of increasing the remittances in order to increase the growth. In a regression analysis on Turkey by using data of the period between 1970 and 2005, Karagöz (2009) showed that the remittances had a negative and significant effect on the economic growth. In a time-series analysis carried out on Bangladesh, Ahmed (2010) reported that the remittances negatively affected the growth. Kaphle (2018) tested the short- and long-term relationships between remittances and economic growth in Nepal by using time-series methods such as co-integration and error-correction model. According to the results obtained, there was no significant short-term relationship between these variables, whereas there was a significant relationship in the long-term. Using a balanced panel data series for 1977–2016, Sutradhar (2020) investigated the effect of remittances on economic growth in 4 South Asian countries. According to the results, the remittances affected the growth positively in India and negatively in Bangladesh, Pakistan, and Sri Lanka.

3 Dataset and Descriptive Statistics

In the present study examining the causality relationship between remittances and economic growth, the annual data of Turkey for the period between 1974 and 2018 were used. In the estimation models, [GDPpc: Gross Domestic Product per capita] refers to the economic growth and [REM] refers to the remittances. Calculated using the prices of year 2010 in USD, [GDPpc] variable was obtained from the World Bank's World Development Indicators [WDI] database. Moreover, [REM] variable obtained from [WDI] database and the Electronic Data Distribution System of the Central Bank of the Republic of Turkey was realized using GDP deflator (2010=100). The variables were used with logarithmic values in the analysis. The descriptive statistics of the variables are presented in Table 1.

It can be seen that the mean remittance in Turkey for the period between 1974 and 2018 was $2.940 Billion. The year with the lowest remittance was 2018 with $0.329 Billion, whereas the highest remittance value was achieved in 1988 with $6.838 Billion. Mean GDPpc in Turkey was calculated to be $8281. The lowest GDPpc value was achieved in 1974 with $4744.4, whereas the highest value was found to be $15069 in 2018. According to the results of the Jarque-Bera normality test, the (J-B) test statistic was found to be [5.3238] for GDPpc and [2.6284] for

REM. The test statistics < 5.99 (or p-values > 0.05) indicate that both series have a normal distribution.

Table 1. Descriptive Statistics (1974–2018)

Variables	GDPpc [year]	REM [year]
Mean	8281	2.940
Maximum	15069 [2018]	6.838 [1988]
Minimum	4744.4 [1974]	0.329 [2018]
Jarque-Bera (J-B) test statistic	5.3238	2.6284
J-B (p-value)	0.0698	0.2686
Number of observations	45	45

4 Econometric Methodology and Findings

In econometric analyzes, if the variables contain unit-root should be examined primarily in order to achieve reliable findings. For this purpose, it was first investigated if the LGDPpc and LREM variables were stable by using (ADF), (PP), and (DF-GLS) tests. In this test, which was conducted using the level values of variables, it was determined that both variables were non-stationary. Then, by taking the first differences of variables, the tests were repeated. The null hypothesis that the series include unit root was rejected and it was determined that both series were stationary at the first difference. Thus, it was found that $[d_{max} = 1]$ for LGDPpc and LREM.

Table 2. The Results of Unit-Root Tests

Variables	ADF	PP	DF-GLS
LGDPpc	-1.9268	-1.9958	-1.9345
LREM	-2.3441	-1.1967	-2.4654
ΔLGDPpc	-4.9595***	-6.5670***	-4.3480***
ΔLREM	-4.5338***	-5.4605***	-4.1533***

Notes: The constant-trend model was used in the tests. *** refers to statistical significance at 1 %.

4.1. Toda-Yamamoto and Bootstrap Toda-Yamamoto Causality Tests

Toda-Yamamoto [TY] causality test is a test that can be conducted regardless if the series are stationary or co-integrated. In the first step of the test, the unit root tests are used for determining the variables' maximum degree of integration

[d_{max}]. Then, the optimal lag (p) of VAR model is determined. In the final step, a VAR model at ($p+d_{max}$) degree is estimated. The first (p) of calculated coefficients is subjected to MWALD test. The null hypothesis that the independent variable coefficients are equal to zero in MWALD test with asymptotic χ^2 distribution was tested against an alternative hypothesis stating that the coefficients are not equal to zero. If it is found that the coefficients are not equal to zero, then the null hypothesis is rejected and it is accepted that there is causality between the variables (Kónya, 2004: 84; Zombe et al., 2017: 174–175; Michael and Emmanuel, 2016: 76). The same procedure is applied with Bootstrap [TY] test recommended by Hacker and Hatemi-J (2006). On the other hand, Hacker and Hatemi-J (2006) reported that having an ARCH error process in asymptotic standard χ^2 distribution yields greater distortions but these distortions are not significant while using bootstrap distribution (Hacker and Hatemi-J, 2006: 1499). Thus, emphasizing that the [TY] test would not provide reliable results in presence of above mentioned problems, Hacker and Hatemi-J (2006) recommended using MWALD test, which has bootstrap distribution, instead of asymptotic χ^2 distribution (Tülümce and Zeren, 2017: 304). In the present study, besides the standard [TY] test, also the Bootstrap [TY] test was applied in order to achieve more robust findings.

In [TY] causality test, after determining the optimal lag length (p=3) for models (1) and (2) as seen in Table 3, VAR(4) model was estimated using SUR model according to the principle of VAR ($p+d_{max}$). As seen in Table 4, it was found that the calculated MWALD χ^2 test statistic was statistically significant for Model (1) at 10 % but insignificant for Model (2). This finding empirically suggests the presence of one-way and significant causality relationship from remittances to economic growth.

Table 3. Optimal Lag Lenght of the VAR Model

Lags	LR	FPE	AIC	SIC	HQ
0	NA	0.025423	2.0036	2.0880	2.0341
1	204.2261	0.000125	-3.3159	**-3.0626***	**-3.2243***
2	4.0929	0.000136	-3.2329	-2.8107	-3.0802
3	**9.8427***	**0.000123***	**-3.3311***	-2.7400	-3.1174
4	2.0411	0.000142	-3.1970	-2.4370	-2.9222
5	5.2195	0.000147	-3.1770	-2.2481	-2.8411

* indicates optimal lag lenght.

Table 4. The Results of Toda-Yamamoto [TY] Test

Models	χ^2 statistic		Result
Model (1): LGDPpc = *f* (LREM) [H_0: LREM does not Granger cause LGDPpc]	**7.378** [0.0608]*	H_0 Reject	LREM → LGDPpc
Model (2): LREM = *f* (LGDPpc) [H_0: LGDPpc does not Granger cause LREM]	3.630 [0.3042]	H_0 Accept	

Notes: [] refers to the probability values of test statistics and * refers to statistical significance at 10 % levels.

The results of bootstrap [TY] test are presented in Table 5. It can be seen that MWALD χ^2 test statistic was higher than bootstrap critical values for Model (1) at the level of 5 % but lower than bootstrap critical values for Model (2). For this reason, the null hypothesis was rejected for Model (1) but could not be rejected for Model (2). In conclusion, in corroboration with the results of [TY] test, the results of bootstrap [TY] test showed the presence of a statistically significant one-way causality from remittances to economic growth.

Table 5. The Results of Bootstrap Toda-Yamamoto [TY] Test

		Bootstrap Critical Values				
Models	**χ^2 statistic**	**1 %**	**5 %**	**10 %**		**Result**
Model (1): LGDPpc = *f* (LREM)] [H_0: LREM does not Granger cause LGDPpc]	**4.593****	7.41	4.15	2.83	H_0 Reject	LREM → LGDPpc
Model (2): LREM = *f* (LGDPpc) [H_0: LGDPpc does not Granger cause LREM]	1.129	7.58	4.13	2.84	H_0 Accept	

Notes: Optimal lag length was calculated using HJC criterion. ** refers to statistical significance at 5 %. The number of bootstraps is 10.000.

5 Conclusion

In theoretical and empirical literature, there are many studies investigating the relationship between remittances and economic growth. In these studies, it can be seen that different findings were achieved and there is still no consensus on this subject. The present study aims to reveal which type of relationship there is between remittances and economic growth by providing new evidences. Within this context, by using the time-series data of Turkey for the period between 1974

and 2018, the Toda-Yamamoto and Bootstrap Toda-Yamamoto causality tests were conducted. The empirical findings yielded evidences proving the presence of one-way significant relationship from remittances to economic growth. Considering that the remittances increase the level of welfare by increasing the consumption and accelerate the economic growth by expanding the access to credit opportunities in countries with a lack of savings and capital accumulation, it can be stated that remittances might play an important role in Turkey's growth process. From this aspect, for the macroeconomic policymakers in Turkey, it might be recommended to develop policies aiming to increase the level of remittances and canalizing these revenues to productive areas.

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