Original Paper

The Impact of Migrant Remittances on Economic Growth in Arab Countries

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Abstract

The potential role that workers' remittances are likely to play in promoting economic growth, especially in Arab countries, is currently attracting considerable attention. These remittances have an impact on the remitting economies as well. The Gulf region is considered one of the top sending countries of migrant remittances. In this study, empirical analysis is carried out with panel techniques using data over the last three decades for six Arab countries. Our results show that migrant remittances have a positive and significant impact on economic growth. This relationship is also significant when we use dynamic panel data. An indirect effect of remittances on economic growth is pointed out especially via the investment and the household final consumption expenditure channels.

Policymakers in Arab countries should take appropriate policy actions to increase the outflow of workers. Developed capital markets, as well as a sound macroeconomic policy environment, would provide incentives for sustainable remittances transfers.

Keywords

Migrant remittances, Economic growth, Panel data, Arab countries

JEL Classification: C33, F43, J61

1. Introduction

During the last decade, the inflow of remittances has increased constantly and is now considered as the main component of adjustment structural programs for most developing countries. Recorded remittances to developing countries are expected to reach $444 billion in 2017, an increase of 3.3 percent (World Bank, Outlook 2017).

Remittances remain an especially important and stable source of private inflows to developing

countries since they bring in large amounts of foreign currency that help sustain the balance of payments. In 2013, remittances were significantly higher than foreign direct investment (FDI) to developing countries and were three times larger than official development assistance.

Compared with other regions, the World Bank examines that in the Middle East and North Africa (MENA) region, officially recorded remittances are on course to expand moderately, thus rising by 6.1 percent to reach $52 billion in 2017. Figure 1 indicates that most receiver Arab countries have had a high rate of personal remittances in percentage of Gross Domestic Product (GDP); allowing Jordan, Morocco, and Egypt to represent the top three countries in this respect, with their averages of personal remittances reaching around 17%, 7%, and 7% of GDP, respectively.
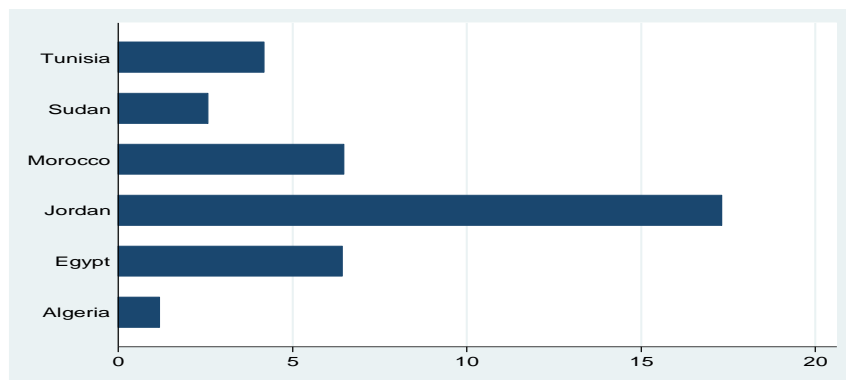
Figure 1. Personal Remittances Received as % of GDP, 2016

Source: World Bank Database, 2017.

Both workers' remittances and FDI inflows seem to emerge as an important component for the purpose of external financing for developing countries (World Bank, 2017). In the meantime, the economic growth of the developing countries was stimulated. This relationship is the subject of a growing body of literature that mostly conclude a positive effect of remittances and FDI on the economic growth of the host countries (Azam et al., 2013; and Imai et al., 2014).

On the other hand, the literature has widely ignored the effects of remittance outflows on the remitting economies. The main reason behind this oversight is that the size of remittances was never significant whether in terms of dollar value or as a percentage of GDP for most remitting countries (Termos et al., 2013).

This paper provides an explanation of how remittances affect the economic growth in Arab countries. It is important to notice that in the previous studies there is a lack of investigation of the link between remittances and economic growth for these countries. Our study aims to contribute to the empirical literature by expanding the discussion of how remittances affect economic growth in these countries, which could assist policymakers in setting expedient economic policies.

This paper is, therefore, organized as follows: We start with a brief introduction of the topic in Section 1. Section 2 presents some facts on remittances outflows from Arab Gulf countries. Section 3 is

devoted to a summing up on the theoretical analysis and empirical findings on the impact of migrants' remittances on economic growth. Section 4 describes the econometric model. Section 5 delineates the data and methodology. Section 6 summarizes the results and presents a discussion. Section 7 concludes the effects of remittances in Arab countries on economic growth and suggests a number of key policy recommendations.

2. Remittances from the Arab Gulf Region

The Gulf Cooperation Council (GCC) countries emerge as a remarkable exception with large values of remittances in terms of both, dollar amount and share of GDP. Table 1 highlights the size of remittance outflows from the Gulf region with an aggregate of USD98.2 billion and an average of 7.6% of the GDP. The GCC countries consistently rank among the top ten remitters in the world. The significant amount of remittance outflows from the Gulf region has been largely fueled by a surging influx of foreign workers. This foreign labor base represents a large percentage of the population across the Gulf region (see Figure 2). Among the expatriates in the Gulf region, Arabs, especially from Egypt, Jordan, and Sudan, constitute an important percentage of the GCC countries expatriates.

Table 1. Size of Remittance Outflows (2014)

Country Name	Remittance-Sending GCC Countries, 2014 (US$ billions)	Remittance-Sending GCC Countries, 2014 (% of GDP)
United Arab Emirates	19.3	4.8
Bahrain*	2.4	7
Kuwait	18.1	11.1
Oman	10.3	12.6
Qatar	11.2	5.3
Saudi Arabia	36.9	4.9

Source: World Bank Fact Book, 2016; *Bahrain, WDI.
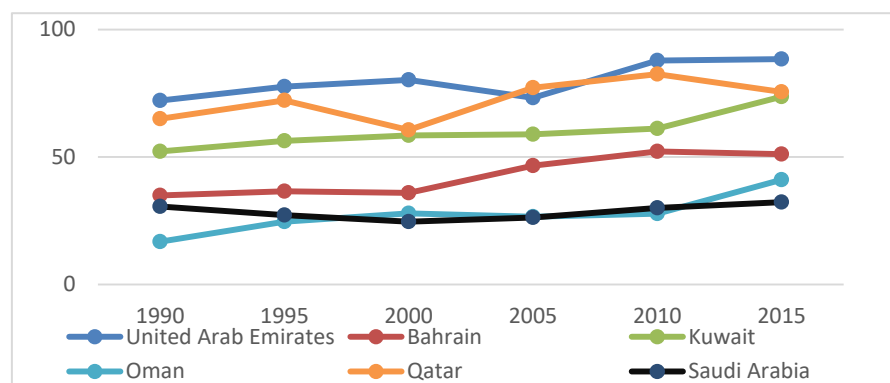
Figure 2. International Migrant Stock (% of Population) in the GCC Countries

Source: World Bank (Databank, 2017).

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3. Remittances and Economic Growth: A Brief Survey on Empirical Studies

A wide range of theoretical and empirical studies have investigated the relationship between remittances and economic growth, especially in developing countries. These studies have reached mixed findings and document various macroeconomic effects of remittance inflows. Accordingly, we classify them into three categories as positive relationship, no relationship and negative relationship between remittances and economic growth. This classification is based on the nature of the relationship between workers' remittances and economic growth (see Table 7 in the Appendix).

Studies in the first category investigate that contribution of workers' remittances to economic growth is positive (Dastidar, 2017; Shera & Meyer, 2017, Pradhan et al., 2008; Fayissa, 2008; Barajas et al., 2009; Nyamongo et al., 2012; Ben Mim & Ben Ali, 2012; Imai et al., 2014; Kumar, 2013; Salahuddin & Gow, 2015).

Dastidar (2017) examined the empirical relationship between remittances and economic growth for a sample of 62 developing countries over the time period 1990-2014. Remittances seem to promote growth only in the "more open" countries. Unlike the "less open" countries, "more open" countries have better institutions and better financial markets to take advantage of the remittances income and channelize them into profitable investments which, in turn, accelerates the rate of economic growth in these countries.

Shera and Meyer (2017) observed the impacts of remittances on economic growth, using panel data set of six high remittances receiving countries (Albania, Bulgaria, Macedonia, Moldova, Romania, and Bosnia Herzegovina) during the period 1999-2013. According to these authors, remittances have a positive impact on growth and this impact increases at higher levels of remittances relative to GDP.

According to Fayissa (2008) study, the aggregate impact of workers' remittances on economic growth using a conventional neoclassical growth framework with panel data from 1980 to 2004 for 37 African countries is significant. The main results picked up is that remittances boost growth in countries where the financial systems are less developed by providing an alternative way to finance investment and helping overcome liquidity constraints. For example, a 10 percent increase in worker's remittances leads to a 0.3 percent increase in the GDP per capita income for African countries. Quoting Salahuddin and Gow (2015), there is a highly significant long-run positive relationship between remittances and economic growth in these countries. However, there is an insignificant positive association between them in the short run.

There is no effect of worker's remittances on economic growth. This is a result of many other studies such as Barajas et al. (2009), IMF (2005), Ahamada and Coulibaly (2013), Kumar and Vu (2014), Lim and Simmons (2015) concluding that, at best, worker's remittances have no impact on economic growth. Bettin and Zazzazo (2008) argue that remittances contributed little to economic growth in remittances-receiving economies and may have even retarded growth in some. They concluded that they cannot find a significant positive impact of remittances on long-term growth and often find a negative relationship between remittances and growth.

In the meanwhile, Lim and Simmons (2015), Jouini (2015), Ahamada and Coulibaly (2013) pointed out that the remittances would create a moral hazard, lessening the incentive to work. This would reduce the productivity of the country, giving a negative effect on economic growth.

The evidence of Lim and Simmons (2015) study shows that the remittance inflows into the Caribbean are mostly to finance consumption needs rather than investing in growth-enhancing projects which may accumulate the capital stock in the economies.

The third and last category of studies, such as Cham et al. (2003), has concluded a significant negative relationship between remittances and economic growth. This association may result from the possibility of a "Dutch Disease" phenomenon in recipient countries effect via an induced real appreciation of the domestic currency for countries with sizable remittance flows. In the same way, the study of Acosta et al. (2008), through using a panel data estimates for 109 developing and transition economies over the 1990-2003 period, finds that rising levels of remittance flows lead to real exchange appreciation and resource movements that favor the non-tradable sector at the expense of the tradable sector.

These diverse findings have very important implications for academic research as well as for the policy debate because they challenge the views which favor improvements in economic growth.

In order to examine the relationship between remittances and economic growth, we estimate gross fixed capital formation and household final consumption expenditure as dependent variables to avoid the problem of endogeneity.

Myriad of studies based on different data sets, alternative specifications, and estimation methods appeared useful to examine if remittances have any significant growth effects. Our study is a step in this direction. It examines and empirically assesses the significance of the relationships between remittances and economic growth especially through the investment and the household final consumption expenditure channels.

4. Econometric Model

The model is based on the neo-classical production function; a Cobb-Douglas production function, along the lines employed by Jayaraman and Choong (2012) and Kumar et al. (2017) with constant returns and Hicks-neutral technical progress:

$$Y_{it} = A_{it}F(K_{it}, L_{it}) \tag{1}$$

Where Y is real GDP per capita, K is the capital stock and L is labor. A captures the efficiency of production. It can be a dependent variable where we include a set of proxies such as remittance proxy (REM), Gross Fixed Capital Formation to GDP (GFCF), Household final consumption expenditure to GDP (HFC), Foreign direct investment, net inflows (FDI) as a determinant of the efficiency of production. Therefore, we can write the efficiency of production as the following:

$$A_t = F(REM_t, GFCF_t, HFC_t, FDI_t ....) \tag{2}$$

Incorporating the component of A_t, equation (1) can be identified as follow:

$$Y_{it} = \alpha_i + \alpha_{1i}REM_{it} + \alpha_{2i}FDI_{it} + \alpha_{3i}HFC_{it} + \alpha_{4i}X_{it} + \varepsilon_{it} \tag{3}$$

Where t is the time period (1985-2016), i = 1 to 6 countries. In order to estimate equation 3, a panel data is most useful when we suspect that the outcome variable (Y) depends on explanatory variables (REM, FDI, HFC…) which are not observable but correlated with the observed explanatory variables. We estimate a static model (equation 3) using a both fixed and random effect.

5. Data and Methodology

5.1 Data

The methodology used to conduct the study is to analyze the relationship between personal remittances received as a percent of GDP and economic growth (Real GDP per capita at constant prices). We use data for a sample of six Arab countries; Algeria, Egypt, Jordan, Morocco, Sudan, and Tunisia. The analysis covers the time period from 1985 to 2016, chosen primarily on the base of data availability. Data for all variables are collected from the World Development Indicators.

In fact, the idea was to start with a sample representing all the Arab world including twenty-two countries. However, we had to eliminate not only some of the countries due to lack of consistent data for all of the variables over the 30-year period but also we excluded the GCC countries as well since they represent a source of workers' remittances. Indeed, all the Arab oil-exporter countries except Algeria were dropped from the sample because they are considered remittances sending countries (Bahrain, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and the United Arab Emirates). The other missing countries (Comoros, Djibouti, Lebanon, Mauritania, Oman, Somalia, Syria, West Bank Gaza and Yemen) were dropped because of the lack of the remittances data.

5.2 Methodology

As discussed above, our aim is to explore various effects of remittances on economic growth. A random effect and fixed effect model should be used as a preliminary estimation. The model is also tested using the system general method of moments (GMM) to check the robustness of the results of the estimation method.

However, due to the potential problem of endogeneity of some variables such as gross fixed capital formation and household final consumption expenditure, the dynamic GMM model will be employed and estimated to explore the relationship between remittances and economic growth.

Therefore, the dynamic variant of the model in this paper is estimated by GMM method based on the Arellano-Bond (1991) estimation technique:

$$\Delta Y_{it} = \delta' \Delta Y_{i,t-1} + \beta' \Delta REM_{i,t-1} + \gamma' \Delta X_{i,t} + \alpha_i + \varepsilon_{it} \qquad (4)$$

Where:

ΔY_{it}—first difference in the log of GDP growth in country i at time t;

$\Delta Y_{i,t-1}$—lagged difference of the log of GDP growth;

$\Delta REM_{i,t-1}$—vector of the lagged level and differenced Personal remittances, received (% of GDP)

δ, β and γ—coefficients of parameters to be estimated;

α_i—country-specific effects which have an independent and identical distribution over the countries;

εit—noise stochastic disturbance term and assumed to be independently distributed.

Two diagnostic tests are carried out; Sargan test for over-identifying restrictions and Arellano-Bond test.

6. Results and Discussion

In our paper, we used STATA 12 as an econometric software to run both estimations; fixed versus random effect model. A summary of descriptive statistics of all the variables used as well as the matrix of correlation is reported in Tables 2 and 3 respectively. Remittances represent on average 6.35 percent of the GDP over the sample.

Table 2. Descriptive Statistics

Variable	Description	Mean	Sd Dev	Min	Max
GDPGROWTH	GDP per capita growth (annual %)	2.17	3.02	-4.23	8.63
REM	Personal remittances, received (% of GDP)	6.35	5.69	0.06	22.84
GFCF	Gross fixed capital formation (% of GDP)	23.23	6.26	5.53	43.14
FDI	Foreign direct investment, net inflows (% of GDP)	2.25	3.11	-0.59	23.53
GDS	Gross domestic savings (% of GDP)	18.27	13.05	-15.54	57.06
POP	Population growth (annual %)	2.24	1.05	0.76	5.56
Balance	External balance on goods and services (% of GDP)	-7.27	10.84	-40.87	26.89
EMP	Employment to population ratio. ages 15-24. total (%)	24.21	5.01	15.32	38.22
HFC	Household final consumption expenditure (% of GDP)	65.89	13.21	30.18	92.60
OPENNESS	Sum of exports and imports to GDP.	67.18	32.96	11.08	149.45
EXPORT	Exports of goods and services (% of GDP)	29.94	14.18	3.33	59.83

Note. All data are transformed into logs.

Table 3. Matrix of Correlation

	GDPPC	REM	GFCF	HFC	FDI	OPENESS
GDPPC	1					
REM	0.1397	1				
GFCF	0.6050	0.1033	1			
HFC	-0.4862	0.4297	-0.0426	1		
FDI	0.1094	0.4387	0.0524	0.3115	1	
OPENESS	0.6238	0.6828	0.4347	-0.0088	0.4176	1

The generally accepted way of choosing between fixed and random effects runs a Hausman test which lets us know if either a fixed or a random effect is suitable to characterize the country-specific effect

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(denoted by α in the equation 3). A fixed-effect means that the error term is decomposed in a fixed part that does not vary over time but among countries, and in a random part for each observation, while under random effects the first component of the error term is no longer fixed but rather random with a specific mean and a variance different to 0. The results from this test suggest fixed effects for the economic growth (GDP growth) since its statistic takes a value large enough to produce p values close to 0.

Therefore, a fixed country-specific effect is assumed for all models regressed. Fixed and random effects results are reported in Table 4.

Table 4. Fixed versus Random Effects Estimation

	1	**2**	**3**
	Fixed effect specification	**Fixed effect specification**	**Random effect specification**
Constant	8.400 (1.90*)	-1.809 (0.83)	0.023 (0.02)
REM	0.123 (1.46*)	0.022 (0.10)	0.014 (0.07)
FDI	0.171 (2.89***)	0.159 (2.68***)	
GFGC	-0.077 (1.21)	-0.078 (1.33*)	-0.131 (2.66***)
EMP	0.198 (2.71***)	0.183 (2.49**)	0.143 (3.98***)
HFC	0.400 (2.71***)		0.219 (3.79***)
POP	-1.07 (3.56***)	-0.976 (3.70***)	-0.531 (2.64***)
BALANCE	-.056 (1.46*)		-0.086 (2.00**)
OPENESS	-0.146 (0.23)		
EXPORT		0.003 (0.21)	
GDS		0.044(1.33)	
Observations	156	156	156
Number of countries	6	6	6
R-squared	0.32	0.45	0.33

Note. t-statistic in parentheses; ***, **, *: significant at 1%, 5% and 10% respectively.

We argue that the coefficient on remittances is positive and significant with the fixed effect estimation, suggesting that remittance contribute significantly to economic growth.

Accordingly, we point out that a 1 percent increase in the remittances of our sample would result in about 0.12 percent increase in GDP growth. Similarly, a 1 percent increase in FDI increases GDP growth by 0.17 percent, by far the main variable which spurs economic growth.

Our results also indicate that the external balance on goods and services to GDP ratio (BALANCE) has a negative effect on GDP growth and its impact is significant.

This result is consistent with many studies reviewed in Table 7 section 1. They show that the impact of remittances (REM) on economic growth is positive, but quite small in magnitude, when the remittances variable is simply added as an additional explanatory variable in a long-run growth regression. Table 5 represents the dynamic panel model estimation results. It is, therefore, lucid that all the variables have expected signs.

Table 5. Dynamic Model Estimation Results

	Dependent variable: GDP growth	
	Arellano Bond (1991) GMM estimator	Arellano Bond (1991) GMM estimator
Initial per capita GDP	0.016 (1.16)	0.107 (1.23)
REM	0.103 (2.16**)	0.055 (2.67***)
FDI	0.074 (2.06**)	0.030 (1.90*)
GFGC	0.028 (0.84)	
EMP	0.022 (0.47)	0.031 (0.70)
HFC	0.011 (1.97*)	
POP		-0.154 (2.11)
BALANCE		-0.046 (2.01**)
OPENNESS		0.015 (1.76)
Sargan Test: Arellano-Bond Test: Observation	0.55	0.67
	0.27	0.31
	156	156

Note. t-statistic in parentheses; ***, **, *: significant at 1%, 5% and 10% respectively.

The difference equation is instrumented with the lagged levels, two periods, of the dependent variable and the levels equation with the difference lagged one period. Two diagnostic tests, the Sargan test for over-identifying restrictions under which the null hypothesis is that the instruments are not correlated with the residuals, and the Arellano–Bond test for second order correlation in the first-differenced residuals, are carried out.

First, we are using the GMM approach to estimate the relationship between remittances and other independent variables which are potential determinants of economic growth. In order to get a better overview of the marginal effects of independent variables, we lagged both dependent and independent variables.

According to Arellano-Bond (1991) GMM method, two specifications are reported in our paper; (i) we run a regression on all the independent variables available for the model. (ii) we exclude some independent variables from the equation based on their significance level such as fixed capital

formation, household final consumption expenditure.

As reported in Table 5 the dynamic model estimation shows that the process of catching up (conditional convergence) of the countries with the higher initial level of per capita income tends to grow faster than the countries with low levels of initial per capita income, is not confirmed. The result in the same table indicates also that the coefficient of REM is positive and statistically significant.

According to the results of both models, we have noted a direct positive effect of remittances on the GDP growth. For the dynamic estimations, the GMM estimator provides better results in terms of standard deviation as compared to static model because it includes not only the previous instruments but also the lagged differences of the variables (Arellano-Bond, 1991). The signs of both foreign domestic investment and population growth remain positive and negative respectively which is according to the expectations. Trade openness has the expected positive sign, but it does not have a significant impact on economic growth.

As mentioned before and confirmed by many studies, the direct positive effect of remittance revealed by the findings in this paper is critical and not plausible. That's why we focus here on the indirect impact on economic growth through affecting gross fixed capital formation, household final consumption expenditure, …, etc. as discussed earlier in the literature review.

We choose two channels through which remittances can affect economic growth. First, we examine the impact of remittances on gross fixed capital formation (investment). Second, we regress the household final consumption expenditure on remittances along with other independent variables.

Based on the results recorded in Table 6, it is obvious that the higher the amount of remittances is, the higher both gross fixed capital formation and household final consumption expenditure. Otherwise, the coefficient of remittances is significant and positive.

Table 6. Remittances' Gross Fixed Capital Formation and Household Final Consumption Expenditure

	Gross fixed capital formation (GFCF)		Household final consumption expenditure (HFC)	
	Fixed effects (1)	GMM (2)	Fixed effects (3)	GMM (4)
Initial per capita GDP	-0.322 (1.00)			-0.12 (0.36)
REM	0.325 (2.05*)	0.075 (0.84)	0.102 (0.51)	0.207 (1.36)
FDI	-0.016 (0.14)	-0.059 (0.96)	0.264 (1.62)	0.101 (0.94)
POP	1.328 (2.49*)	0.580 (1.76**)	0.312 (0.46)	-0.995 (1.75)
BALANCE	-0.189 (3.65***)	-0.128 (3.80***)	-0.447 (6.57***)	-0.333 (5.64***)
OPENESS	0.177 (6.17***)	0.079 (4.15***)	-0.239 (6.73***)	-0.074 (2.26**)
CONS	5.45 (2.21)	-0.196 (1.33)	0.088 (4.49)	0.635 (1.15)

Note. t-statistic in parentheses; ***, **, *: significant at 1%, 5% and 10% respectively.

In the first and second equations, the gross fixed capital formation is regressed on independent variables such as remittances, initial per capita gross domestic product, population, etc. The results indicate that remittances have both positive and significant effect on gross fixed capital in fixed effect, and positive in GMM models. The population variable is as expected to be positive and significant in both models.

In the third and fourth equations, the household final consumption expenditure is regressed as the same dependent variable of gross fixed capital formation. Our results indicate that the signs of the coefficient are in accordance with the expectation except for the variable OPENNESS. For this regression, remittances add positively but not statistical significance to household final consumption expenditure in fixed and GMM models.

7. Conclusion

This study is conducted to explore the impact of remittances on the economic growth of six selected Arab countries using annual data from 1985-2016. In order to explore the relationship between remittances and economic growth, we used different diagnostic tests to confirm the major assumption of multiple regression analyses such as the dynamic panel data model.

We were motivated by the fact that there are no studies that investigated the link between remittances and economic growth for these countries using these specification models.

The main findings showed that the impact of workers' remittances on economic growth is positive and significant for static estimation but insignificant for the dynamic estimation. Further analyses of channels through which these impacts turn into economic growth are conducted. Therefore, estimating the gross fixed capital formation and household final consumption expenditure as dependent variables, showed that remittances' effect is positive and statistically significant.

Our study encountered a few limitations: it considers a small panel of countries for analysis although the small sample size limitation was offset by the application of a very advanced econometric technique (GMM) which is appropriate for a small sample; remittances affect not only economic growth but also some other macro variables that have been ignored in this study such as capital market development, and the findings are not invariant along the range of different methodological applications in the same area. Although the findings are consistent with most of the existing literature that highlights the positive role of migrants' remittances in spurring economic growth, future research should continue to explore various indirect channels through which remittances impact GDP growth. In addition, the different microeconomic effects of remittances in the economy could be further investigated.

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Appendix

Table 7. The Relationship between Remittances and Economic Growth

Section 1. Positive Relationship between Remittances and Economic Growth				
Study	**Country**	**Period**	**Econometric Techniques**	**Conclusion**
Dastidar, S. G. (2017)	62 developing countries	1990-2014	Panel Data	Remittances seem to promote growth only in the "more open" countries. Unlike the "less open" countries, "more open" countries have better institutions and better financial markets to take advantage of the remittances income and channelize them into profitable investments which, in turn, accelerates the rate of economic growth in these countries
Shera and Meyer (2017)	Albania, Bulgaria, Macedonia, Moldova, Romania, and Bosnia Herzegovina	1999-2013	Panel Data	According to these authors, remittances have a positive impact on growth and that this impact increases at higher levels of remittances relative to GDP
Salahuddin and Gow (2015)	Bangladesh, India, Pakistan, and the Philippines	1977-2012	Cross-sectional dependence test. Cross-sectionally augmented panel unit root test (CIPS test)	The high significant long-run positive relationship between remittance and economic growth. In the short run, there is an insignificant positive association
Ramirez (2013)	Latin American & Caribbean countries	1990-2007	Pedroni panel cointegration and FMOLS	The positive relationship between remittances and economic growth
Pradhan et al. (2008)	39 developing countries	1980-2004	Panel regression	Remittances have a positive impact on growth
Nyamongo et al. (2012)	36 countries in Africa	1980-2009	A panel econometrics framework	Remittances are considered as an important source of growth for these countries in Africa during the period under study. However, their volatility appears to have a negative effect on growth
Ben Ali and	15 MENA countries	1980-2009	Panel data techniques	Empirical results suggest that remittances can

Ben Mim (2012)				enhance growth by encouraging human capital accumulation. Human capital is, therefore, an effective channel through which remittances stimulate growth in MENA countries
Nsiah and Fayissa (2013)	64 countries: 29 from Africa, 14 from Asia, 21 from Latin America and the Caribbean	1985-2007	Panel unit-root tests, Cointegration tests, panel fully modified OLS	Remittances have a positive and significant effect on economic growth for all regions as a group and in each of the three in the study
Kumar and Vu (2014)	Bangladesh,	1979-2012.	ARDL cointegration, Granger causality test	The positive relationship in the long run Bidirectional causality
Goschin (2014)	10 countries in CEE	1995-2011	Panel estimation method	A significant positive influence of remittances on both absolute and relative GDP growth in our panel of CEE countries
Adela and Dietmar (2013)	21 developing countries	1992-2012	Panel regression	Remittances do have positively impact on the growth of GDP per capita in countries studies
Section 2. No Relationship between Remittances and Economic Growth				
Lim and Simmons (2015)	Caribbean Community and Common Market (CARICOM)	1990-2012	panel cointegration tests	No evidence of a long-run relationship between remittances and real GDP per capita
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
Ahamada and Coulibaly (2013)	20 Sub-Saharan African (SSA) countries	1980-2007	Panel Granger causality testing approach.	No causality between remittances and growth
Barajas et al. (2009)	84 countries	1970-2004	Panel regression	No impact
IMF (2005)	101 developing countries	1970-2003	GMM approach	No statistical relationship
Section 3. Negative Relationship between Remittances and Economic Growth				
Rao and Hassan (2011)	40 countries	1960-2007	Panel regression	No direct growth effect of remittance but small indirect growth effects
Karagoz (2009)	Turkey	1970-2005	Time series regression	Remittances have a statistically meaningful but negative impact on growth
Chami et al. (2003)	113 developing countries	1970-1998	Panel regression	A negative effect of remittance on economic growth

Source: Authors own summary based on the literature review.

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