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TOPIC: "THE IMPACT OF REMITTANCES ON ECONOMIC GROWTH: EVIDENCE FROM FOUR DEVELOPING REMITTANCE-DEPENDENT COUNTRIES: TONGA, JORDAN, PHILIPPINES AND BANGLADESH."

"A PROJECT UNDERTAKEN AS PART OF BSC (HONS) ECONOMICS DEGREE, WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT"

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ABSTRACT

While living in the 21 century, there had been some discussion on the causes of GDP in developing countries. The positive or negative effects of founts of GDP have been very much recorded in writing. Despite the expanding significance of remittances' incomplete global capital streams, still, the direct or indirect connection between remittances and economic growth has not been enough studied. In many developing nations, remittances from traveler laborers are progressively turning into a critical wellspring of exports. This examination plans to break down the elements that influence the GDP of developing countries whereby Tonga, Jordan, Philippines, and Bangladesh, are chosen as a delegate. The work explores the effect of remittances using time series data spanning from 1975-2019. The relationship between GDP and remittances are examined using ARDL and VECM approaches and performing Augmented Dickey-Fuller Test - Stationarity and Johansen Cointegration Tests. Ultimately, a Granger Causality Test was conducted to see if the one time series (GDP per capita) can be used to predict another (remittances).

INTRODUCTION

Emigration is one of the most pressing issues in the contemporary worldwide economy today. It is assessed that more than 110 million individuals currently live outside of their birth country (United Nations, 2010). This has major financial and political ramifications for both the sending and getting nations. There are over 215 million global transients on the planet. In 2010 remittances that were received from developing countries were assessed and consisted 325$US billion, and comprise more than 10% of total national output (GDP) in many creating nations (Coppel et al.)

Economic growth is the primary goal of developing nations as their approach to bring their way of life with developed nations. The role of money transfers in a country's economic growth is expected to be an important part of the research. Remittances have been growing robustly in a positive way and displayed considerably more steadiness compared with private capital inflows and Overseas Development Assistance, since the previous twenty years. Remittances are also considered an accurate source of external financing and accounting for over half of all financial inflows in developing countries, according to the World Bank (Ozaki, M. 2012). Remittances have become as extensive as FDI streams to developing nations. Commonly, every worldwide traveler departs from their home countries and leaves relatives and supports them with a consistent flow of remittances. In this manner, the large number of migrants implies that the majority of individuals are straightforwardly influenced by remittance streams. Since remittances are commonly spent on necessities—food, dress, medication, and haven—they help lift enormous quantities of individuals out of neediness by supporting a more significant level of consumption. The empirical studies signified that the effect of settlements on the growth of nations displays inconstancy. To begin with, remittances have the potential to boost economic activity by rising capital accumulation (Bajaras et. al., 2009). Second, as Giuliano and Ruiz-Allanz(2009) discovered, remittances influence development by strengthening the country's financial sector. However, the effect of remittances on economic development has several drawbacks. They are as follows:

- Information asymmetry is caused since the remitter doesn't have a clue where the settlements are utilized by the beneficiaries (Nyamongo et al., 2012).

- Increase in the value of the currency. An increase in the exchange rate may reduce a competitive strength, resulting in a decrease in exports and an increase in imports. Contrary to popular belief, treaties may have a negative impact on economic growth by causing the exchange rate to rise (Lopez et al. 2007).

There haven't been enough reports on the relationship between remittances and economic development in developing remittance-dependent countries, while there have been broad examinations on this point in the writing. This caused an examination into the impact of remittances on the economic development of four

countries in this case study: Haiti, Tonga, Jordan, Philippines, and Bangladesh. So the goal is to decide whether remittances affect the financial development in the economies of these nations. In this manner, the impact of remittances is investigated using time series data from 1971 to 2019. Since laborers' remittances are used to supplement domestic investment and utilization, they must directly or indirectly lead to economic development. The below is a breakdown of the research. The literature review is discussed in Section 2. regarding the existing empirical studies which were done before; Section 3 displays data and methodology of the progress report; Section 4 provides preliminary results of the empirical work and the last section presents a discussion, policy results, and conclusion with reference.

LITERATURE REVIEW

There is a developing assortment of writing that has analyzed the effects of remittances (Ozden and Schi, 2006). These investigations serve to underscore the expanding significance of remittances given by migrant laborers from developing nations working in different nations. For example, Ratha (2005) stresses the developing significance of remittances as a wellspring of outside funds for agricultural nations.

Remittances can help policymakers to construct the appropriate economic policies. When conducting empirical and theoretical studies on remittances, the results were quite different. According to studies, remittances have positive and negative effects on a country's economic development.

Glytsos (2005) by applying the information for 1969-1998 for Egypt, Greece, Jordan, Morocco, and Portugal observes that the effect of remittances on output fluctuates over time and across nations. For Egypt, Jordan, and Morocco the development creating limit of rising remittances trademark is more modest than the development destroying the limit of falling remittances. Consequently, the huge variances in the genuine estimation of remittances add to huge changes in yield development and cause precariousness in the economies concerned. Further observational works have tracked down no immediate effect of remittances on development yet just a little overflow impact. In this line of exploration, Bhaskara Rao and Gazi Mainul Hassan (2012) in their work "Are the Immediate and Backhanded Development Impacts of Settlements Huge?" examined 40 high remittance beneficiary nations and found that remittances have no immediate development impact, with the effect on development being just little and roundabout. A few creators have contended that remittances move among travelers and their family members in their nations of origin are used principally for utilization. Simultaneously, others have kept up that these remittances are utilized for putting resources into merchandise. For instance, Koc and Onan (2004) and Russell (1992) reasoned that beneficiaries spend their remittances for sure-fire utilization, though Taylor (1992) inferred that settlements were spent to secure homes and land. Moreover, a different line of experimental work presumed that settlements have, indeed, a negative impact on yield development. In this unique situation, Chami, Fullenkamp, and Jahjah (2005) in their work "Are migrant settlement streams a wellspring of capital turn of events" investigated information for 113 nations over the time

frame 1970−1998 and reasoned that settlements adversely affect development; moreover, Barajas et al. (2009) inferred that the development impacts of settlements are immaterial and on occasion even negative.

Numerous examinations have endeavored to address the effect of settlements on monetary development and destitution easing. Pradhan et al. (2008) find that settlements have a little, positive effect on development in a 36 nation cross-sectional work applying a direct relapse model in which remittances structure one of five factors. Aggarwal et al. (2006) led an investigation of 99 nations over the period 1975–2003 and find that settlements positively affect bank stores and credit to Gross domestic product. At that point they introduce the beneficial outcome on improvement by summoning existing considers showing the positive effect of these two factors on monetary development. Taylor (1992) furthermore, Faini (2001) likewise track down a positive relationship between settlements and monetary development.

Taylor (1999) tracks down that each dollar Mexican travelers send back home or bring back home with them expands Mexico's GNP from anyplace somewhere in the range of US$2.69 and US$3.17. Conversely, Spatafora (2005) finds that there is no immediate connection between per capita yield development and settlements. Then, in one of the bigger cross-country studies, Chami et al. (2005) close that settlements negatively affect financial development across an example of 113 nations. A few other distributed investigations comparable to settlements have zeroed in explicitly on the lightening of poverty instead of in general economic development (for instance, see Adams and Page, 2003).

Remittances, according to Giuliano (2008), contribute to growth in countries with less developed financial frameworks because they provide an alternative to investment speculation and reduce liquidity constraints. By unwinding resource conditions, laborer remittances also play a major role in human resource investment in the countries. The impact of remittances on economic development in developing countries is positive, according to Adams and Page; Acosta et al. (2003), and the World Bank, due to their participation in reserve funds and interest in human and actual resources. Pradhan et al. (2008) discovered a positive relationship between remittances and economic growth in 39 developing countries from 1980 to 2004 using the panel regression approach. In a study conducted by Qayyum et al. (2008), the effect of remittances on the economic growth Of Pakistan from 1973 to 2007, the evidence demonstrates that remittances have a positive effect on economic growth. Giuliano and Ruiz Arranz (2009) found a strong association using the panel data analysis approach in their empirical work involving 100 developing countries. The multiplier effects of remittances, the development of monetary organizations that manage remittance installments, the use of remittances as foreign exchange, and the role of remittances as an alternative to an obligation that relieves people's credit constraints in countries where small-scale financing isn't widely available are all positive formative impacts of remittances. Through Pedroni panel cointegration and the FMOLS process, Ramirez (2012) found a positive correlation between Latin American and Caribbean remittances from 1990 to 2007. Calero (2008) found that agreements increase school enrollment while decreasing the amount of work done by children. Remittances, according to Barajas et al., would most likely increase the volume of funds flowing into

the financial system. This may result in improved monetary activities and, as a result, high financial growth through one or both of two channels: (1) increased economies of scale in monetary intermediation, or (2) a political economy effect, in which a larger number of backers (contributors) can push the government into implementing beneficial monetary change.

According to Chami and Jahjah (2005), transient remittances have a negative impact on per capita livelihood production. The investigation revealed three adjusted meanings: first, that a "significant portion, and sometimes the majority," of remittances are expended on consumption; second, that a smaller portion of remittance reserves is spent on saving or speculation; and third, that the typical ways in which remittances are saved or invested – in housing, property, and gems – are "not valuable" to the entire economy. The study revealed that the correlation between remittances and development is positive across the board, based on the latest work on panel data from 64 African, Asian, and Latin American-Caribbean countries from 1987 to 2007. (Fayissa, B., & Nsiah, C., 2010). According to Mim and Ali (2012), an analysis based on panel data of 15 Middle Eastern and North African countries from 1980 to 2009 found that remittances had a positive effect on economic development, investment, and consumption in these areas. Another viewpoint contends that remittances have a negative impact on economic development by reducing labor supply and participation. Rodrik (2007) revealed that outperformance of the real exchange rate undermines a country's economic development, particularly in developing nations in which economy and institutions are poor due to disproportionate output of products. According to Chami et al. (2008), remittances have a negative effect on GDP growth in 113 countries. The study used panel data from 1970 to 1998 that spanned 29 years. There was a downward association between the growth of remittances and the growth of the economy. Remittances are also used to finance education when households are facing absolute shocks, since they are linked to increased job exercises, according to the report. Global remittances also contribute significantly to the reduction of inequity and neediness. Acosta et al. (2007) presented family unit research base evaluations for ten Latin American countries, confirming that remittances have unfavorable but relatively minor inequality and neediness alleviating effects. Oshota S. O. and Badejo A.A. (2014) conducted a report that looked at the effect of remittances on economic development in Nigeria from 1981 to 2011 and concluded that remittances had a positive long-term impact on these countries economic growth. Nevertheless, there is a short-term negative correlation between remittances and GDP growth. Over the timeframe, 1994–2013, Pradhan, K. C. (2016) investigated the effect of remittances on economic growth in five nations: Brazil, India, China, South Africa, and the Russian Federation, and found a favorable and important impact of remittances on economic growth in China, but a negative association amongst remittances and economic growth in Brazil, India, and the Russian Federation. Remittances and economic development in South Africa have a strong and statistically negligible relationship, according to the findings.

The literature cited above focuses primarily on the effect of remittances on developed or emerging economies. Various studies have discovered various remittance outcomes (positive, negative, neutral). These

studies are based on various countries, but this study would show how remittances affect GDP in remittance-receiving countries in terms of GDP percentages for each country separately. Siddique et al. (2010) employed time-series evidence from 1976 to 2006 to perform regression tests and use Granger causality tests in terms of South Asian countries. They discovered that there is bidirectional causality between workers' remittances and economic growth in Sri Lanka, but unidirectional causality from workers' remittances to economic growth in Bangladesh, However, there is no evidence of a connection between worker remittances and economic growth in India. For the period 1990-1999, Leon-Ledesma and Piracha (2004) looked at the effects of remittances in eleven Eastern European countries. The findings of the regression suggest that remittances have a positive influence on production and wages, both directly and indirectly by investment.

With the increment in remittance, specialists appeared interested in looking at its effect on financial development in both the host and nation of the beginning of the ostracized laborers. As to its effect on monetary development in the nation of the starting point of the ostracized laborers, contradicting sees have arisen. Some contend that remittances emphatically affect monetary development (see Adelman and Taylor, 1990; Durand et al., 1996; Faini, 2007; Glytsos, 1997; Ruiz and Vargas-Silva, 2010; and Vargas-Silva and Huang, 2006); while others, (for example, Chami et al., 2005; Ekanayake and Halkides, 2008; and Spatafora, 2005) hold the contrary view. Although there is a conflict about whether there is a positive or negative effect of settlements on a Gross domestic product, it is surely known that settlements have a huge effect on monetary development. Then again, past research concentrates likewise show that a country's financial development can affect settlements (see Barajas et al., 2010; Glytsos, 1997; Swamy, 1981; and Vargas-Silva and Huang, 2006). For instance, seven investigations have recorded that settlements react emphatically to an increment in the host country Gross domestic product and a reduction in the nation of origin Gross domestic product (Adelman and Taylor, 1990; Durand et al., 1996; Ekanayake and Halkides, 2008; Faini, 2007; Glytsos, 1997; Ruiz and Vargas-Silva, 2010; and Vargas-Silva and Huang, 2006). No less than six investigations have additionally found that the nation of origin monetary conditions influences the measure of settlement it gets (Clarke and Wallsten, 2004; Charmi et al., 2005; Mohapatra et al., 2009; Ratha, 2005; Spatafora, 2005; and World Bank, 2005). In particular, a significant degree of joblessness in a home nation would build the number of its residents searching for occupations in a host country. On the other hand, when the income level builds, individuals would now be able to bear to go abroad to search for better-paid positions and this thusly would expand settlements to the nation of origin. The aforementioned reasons could contend that economic development would affect the degree of settlement income.

DATA AND METHODOLOGY

For this study, data about the variables of the model are taken from the World Bank’s World Development Indicators (WDI) database. Annual time-series data is used, involving four developing countries like Tonga, Jordan, the Philippines, and Bangladesh. Research is conducted based on the empirical literature. The study's key goal,

which is to analyze the effect of remittances on economic development, justifies the selection of countries based on per capita GDP. GDP per capita is used to calculate economic growth in this situation for Tonga, the Philippines, and Bangladesh, while GDP growth is used for Jordan. The period in this investigation covers the time frame from 1975 till 2019 and the clarification for this is a direct result of the informational index constraints which were brought about by political reasons or autonomy year of these four nations.

The focus of the research is to inspect the relationship between countries' remittances and other explanatory variables as capital formation, consumer expenditure, population growth, and trade impact on economic growth.

GDP per Capita

Based on the literature, GDP growth is used as a metric for the nation's economic development. The key reason for using this measure is that the current GDP does not allow for inflation in the economy. Furthermore, since GDP varies from state to state, the natural logarithm was included in the study to reduce data uncertainty and prevent the issue of heteroscedasticity. GDP growth is the lagged prior year's per capita GDP of the detection area, that is utilized to permit for convergence, based on an empirical study of the economic growth and remittance relationship.

Personal Remittances

This variable represents the entry of remittances to each nation in specific years during the span. Transactions inflow and other explanatory variables are normalized by the GDP of the respective countries, as performed by previous researchers, and the share of such regressors concerning GDP has been chosen for the study.

Gross Capital Formation

This proxy reflects a country's Gross Capital Formation as a percentage of its total GDP. Most scholars, including Chami, Giuliano, and Ruiz-Arranz, used stock as a surrogate for investment in their models, using either private or government investment, or both. It's worth noting that GCF, which refers to the implementation of current assets, facilities, and machinery in the region, along with their reconstruction, may be critical for long-term economic development and productivity gains. Given the characteristics of the component and its archival documents in the economic activity of sample countries, the variable is predicted to have a favorable and important impact on the economy.

Consumer expenditure

Our profits fund a substantial portion of our consumption. As a result, real incomes will be critical, but other factors such as interest rates, inflation, confidence, saving rates, and creditworthiness will also affect consumer spending. Higher wages are a much more important factor in encouraging customer purchases.

Population growth

The relationship between population growth and economic productivity growth has been extensively studied. Population growth affects the age distribution of a country's population, international migration, economic

inequality, and the size of a country's labor force. Aggregate economic growth influences and is affected by these factors.

Trade

Among the most important aspects of a nation's GDP growth (GDP) measure is the balance of trade. If there would be a trade surplus, Economic output rises when the total amount of products and services exported by domestic exports represents the maximum amount of goods and services imported by local producers.

Therefore, we specify the following equation to investigate the impact of remittances on economic growth:

$$lnRGDP = \beta 0 + \beta 1 lnPRem + \beta 2 \ln Capfor + \beta 3 \ln Con\exp + \beta 4 \ln Pop\ gr + \beta 5 \ln Trade + \varepsilon$$

Where

- $\beta 0$ is the intercept;
- lnRGDP is the real GDP per capita;
- lnPRem indicates personal remittances;
- lnCapfor is gross fixed capital formation;
- lnConexp shows consumer expenditure;
- lnPop gr is measure of population growth of the country;
- ln Trade is the log of the trade.

However, in the case of the above-mentioned developing nations, there are incomplete records, so these years were omitted when the cointegration methodology test was used.

We begin by examining the long-run relationships between the variables in our model via using the unit root test, which determines whether series are stationary for each variable so that the examination will be empowered to give much better and fair-minded evaluations. Since time-series data of economic nature are typically non-stationary at the ground, the analysis intends to test for stationarity using the Augmented Dickey-Fuller (ADF) test. In all levels and first differences, the tests were conducted on actual price indices and logarithm-transformed statistics. If the variables are stationary after the first discrepancy, the Johansen cointegration procedure was used in the analysis. When the model's variables are I(1), which means that they're stationary in first difference, they are integrated to order one. Meanwhile, as the previous scientists had discovered, a Johansen Cointegration Test is needed to determine if the variables have a long-term relationship. The Johansen analysis is performed to determine whether or not much non-stationary time series have cointegrating relationships. The Johansen test, unlike the Engle-Granger test, enables multiple cointegrating relationships to exist. The Johansen test can be used to see whether three or more time series are cointegrated. However, before performing the cointegration test, the lag order of the variables is determined using the varsoc command. Following that, cointegration is detected using trace statistics and the maximal Eigenvalue. Using the vector error correction model (VECM) method, the existence of a long-run equilibrating association and a

short-run connection is determined. To explore the causality amongst money transfers and GDP in Bangladesh, Jordan, and Tonga, this research used the ARDL bounds checking method of cointegration. If the regressors are I (1) and/or I (0), the ARDL co-integration technique is used. We use a Granger Causality Test within the VAR method to see whether dependent variable can be used to estimate remittances in the sample countries.

RESULTS

Table 1 shows descriptive and inferential statistics for the samples.

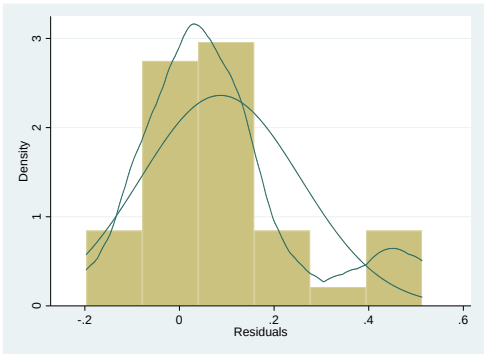
Table 1

	Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Tonga	gdp per capita log	43	7.333118	0.7795388	5.81868	8.42
	per remit log	36	3.090252	3375322	2.502792	3.613244
	cap formation log	38	3.162594	0.1962073	2.817684	3.585711
	con expend log	38	4.728422	0.0459452	4.623948	4.822641
	popul growth log	43	-0.9078981	0.6640789	-2.624327	0.1629212
	trade log	43	4.384433	0.1712286	3.935308	4.71982
Jordan	gdpgrowth log	40	1.555278	0.7302813	-0.026594	3.19087
	per remit log	43	2.866176	0.2421634	2.333145	3.214842
	cap formation log	42	3.319655	0.2135853	2.98741	3.829238
	con expend log	42	4.627115	0.0687027	4.479349	4.791386
	popul growth log	43	1.243872	0.3496228	0.5562269	1.791386
	trade log	42	4.777663	0.1383007	4.40476	5.006985
Philippines	gdp per capita log	43	6.931985	0.5917772	5.887967	8.002678
	per remit log	41	1.765205	0.6714847	0.5454341	2.589516
	cap formation log	43	3.104528	0.2004777	2.663528	3.492195
	con expend log	43	4.395453	0.0601286	4.268918	4.457145
	popul growth log	43	0.7824639	0.2120733	0.4283241	1.034001
	trade log	43	4.205486	0.2857132	3.797185	4.684446
Bangladesh	gdp per capita log	43	5.947808	0.6116673	4.858333	7.324169
	per remit log	42	1.278259	0.8005666	-1.685019	2.359716
	cap formation log	43	2.973288	0.3452355	1.816112	3.418069
	con expend log	43	4.432836	0.0791735	4.313088	4.634522
	popul growth log	43	0.6351962	0.3465016	0.0477401	1.036583
	trade log	43	3.271262	0.3553668	2.397498	3.873509

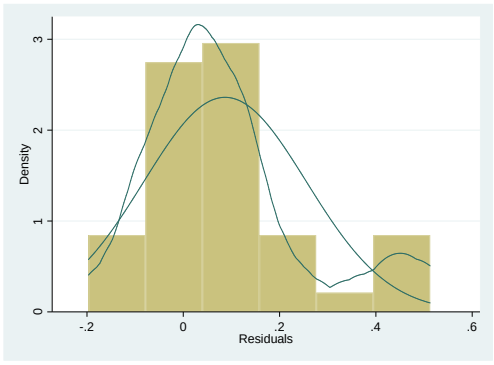
The data is first subjected to stationarity testing using the ADF test in all countries. The results of the extended Dickey-Fuller test are presented in Tables 1A-D (in the appendices). Temporary variables of Tonga, Jordan, and Bangladesh are either I (0) or I (1) according to the ADF measure, therefore the ARDL model is appropriate for this calculation for the mentioned countries. The analysis determined that lag 1 is the optimal lag. Moreover, at the first difference, all the variables are stationary. To examine the causal relationship associated with personal

remittances and GDP per capita in Tonga, Jordan, and Bangladesh the ARDL bounds research method of cointegration established by Pesaran, Shin and Brown et al (2001) had been used.

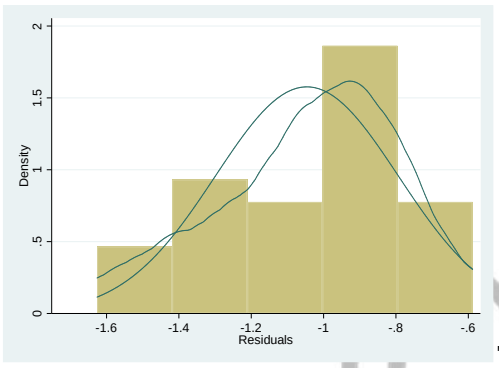
Graphs 1-4



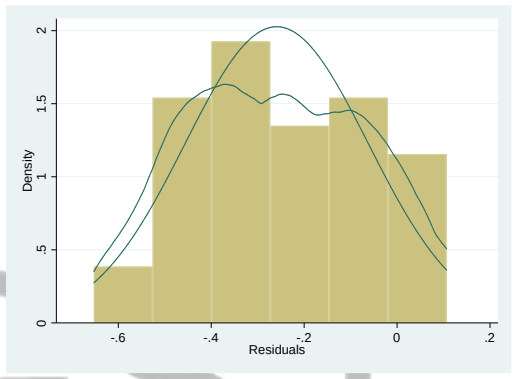
Bangladesh



the Philippines



Tonga



Jordan

The data from all four countries was tested for normality, and the results showed that the data were normal and unaffected by non-normality.

TABLE 2

	(1)	(2)	(3)
	Tonga	Jordan	Bangladesh
VARIABLES	gdp_per_caplog	gdp_growthlog	gdp_per_caplog
L.gdp_per_caplog	1.058***		0.872***
	(18.70)		(14.33)
per_remlog	-0.108	0.880	-0.335***
	(-1.18)	(1.03)	(-5.98)
L.per_remlog	0.246**	-0.422	0.263***
	(2.42)	(-0.43)	(6.10)
cap_forlog	0.177	1.504	0.096
	(1.15)	(1.41)	(0.43)
L.cap_forlog	-0.256	-0.538	-0.380
	(-1.46)	(-0.47)	(-1.50)
con_explog	-0.552	-1.977	-0.230
	(-1.04)	(-0.70)	(-0.53)
L.con_explog	-0.124	3.673	-0.028

	(-0.27)	(1.27)	(-0.07)
pop_grlog	-0.086	1.271	-0.280
	(-0.90)	(0.82)	(-0.97)
L.pop_grlog	0.102	-1.699	-0.060
	(1.03)	(-1.10)	(-0.20)
tradelog	0.216	-0.698	0.134
	(0.76)	(-0.42)	(1.42)
L.tradelog	0.296	0.864	0.035
	(1.14)	(0.57)	(0.33)
L.gdp_growthlog		-0.080	
		(-0.44)	
Constant	0.440	-10.961	2.580
	(0.15)	(-0.74)	(0.79)
Observations	29	38	41
R-squared	0.992	0.523	0.995

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As can be seen from Table 2, the model in Tonga is significant, since the probability is below 5%. Equally, 99% variation of the dependent variable is explained by independent variables in the model. Independent variables such as capital formation, consumer expenditure, population growth, and trade show insignificance, while personal remittances represent significance. If personal remittances increase by 1, then GDP per capita will decrease by 1 in the short run. If the first lag of personal remittances increases by 1, GDP per capita will increase by 2. If the first lag of consumption increases by 1, then GDP per capita will increase by 2. Consumer expenditure has a negative impact on a dependent variable, whereas trade has a positive impact. Population growth has a positive impact in the first lag.

The results stipulate that the model in Jordan is significant since the probability of F-statistics is less than 5%. Furthermore, a 52% variation of GDP growth in Jordan is explained by independent variables. If personal remittances increase by 1, then GDP growth will increase by 0.88 in the short run. If the first lag of personal remittances increases by 1, then GDP growth will decrease by 0.42. capital formation and population growth have a negative influence on the dependent variable in the first lag, while others have a positive influence.

Table 6 reports that the model in Bangladesh is also significant since the probability is below 5% and is accurately explained by independent variables in the model (99% of variation). When personal remittances increase by 1, GDP per capita will decrease by 0.33, When personal remittances in the first lag increase by 1, GDP per capita will increase by 0.26. Variables such as consumer expenditure and population growth have a negative impact on the dependent variable in the given country, while other variables have a positive impact.

Table 3

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

	Tonga			Jordan			Bangladesh		
VARIABLES	ADJ	LR	SR	ADJ	LR	SR	ADJ	LR	SR
per_remlog		-2.405			102.975			-0.560	
		(-0.88)			(0.01)			(-1.57)	
cap_forlog		1.369			-371.489			-2.207	
		(0.69)			(-0.01)			(-1.14)	
con_explog		11.743			-1,254.376			-2.009	
		(1.07)			(-0.01)			(-0.44)	
pop_grlog		-0.275			267.775			-2.649**	
		(-0.53)			(0.01)			(-2.53)	
tradelog		-8.902*			-298.872			1.322	
		(-1.80)			(-0.01)			(1.27)	
L.gdp_per_caplog	0.058			0.000			-0.128**		
	(1.02)			(0.01)			(-2.11)		
D.per_remlog			-0.246**			-0.089			-0.263***
			(-2.42)			(-0.67)			(-6.10)
D.cap_forlog			0.256			0.272*			0.380
			(1.46)			(1.74)			(1.50)
D.con_explog			0.124			-0.143			0.028
			(0.27)			(-0.31)			(0.07)
D.pop_grlog			-0.102			-0.071			0.060
			(-1.03)			(-0.30)			(0.20)
D.tradelog			-0.296			-0.694***			-0.035
			(-1.14)			(-3.69)			(-0.33)
Constant			0.440			-3.289			2.580
			(0.15)			(-1.40)			(0.79)
Observations	29	29	29	41	41	41	41	41	41
R-squared	0.415	0.415	0.415	0.500	0.500	0.500	0.711	0.711	0.711

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The next step is checking for the long-run relationship of the dependent and independent variables. The EC representation is used to measure the nature of a long-run/cointegrating relation. By understanding, if the factors are incorporated in order zero or one, I(0) or I(1), a bounds checking technique is used to draw definitive implications (Pesaran, Shin, and Smith, 2001). According to the results from Table 3, no long-run relationship between the dependent and independent variables in Tonga and Jordan came out, therefore we accept Ho. Since our model had no long-run relationship, there is no need to run an error correction model. When it comes to Bangladesh, the long-run relationship between GDP per capita and independent variables exist, because F statistics (7.050) is above than upper bound (3.79) and the t statistics (-2.112) is below the upper bound (-4.19) in the 5% significance level in the model. 71% variation has been shown by independent variables in the long run. In the long run, population growth is significant, whereas personal remittances, capital formation, consumer expenditure, and trade are insignificant at a 1% significance level. If personal remittance increase by 1, then GDP per capita will decrease by 0.56, if capital formation increase by 1, GDP per capita will decrease by 2.21 if consumer expenditure increase by 1, GDP per capita will decrease by 2, if population growth increase by 1, GDP per capita in Bangladesh will decrease by 2.64 and if trade increase by 1, GDP per capita will increase by 1.32 in the long run.

The indicators referred to the ADF test in the Philippines were found to be non-stationary, justifying the use of the Johansen approach of cointegration to investigate the long-run relationship among the variables. The analysis determines that lag 1 is the best lag. Either the Trace and Max-Eigen figures indicate the presence of the two long-run cointegrating relationships among the variables. Further, the analysis proceeded to approximate the vector error correction model(VECM) while defining the cointegrating association between the factors D_gdp_per_caplog, D_per_remlog, D_con_explog, D_pop_grlog, and D_tradelog (the first differences) variables are expressed by VECM model.

The model is useless since the R square of the variables has no explanatory force. Almost all factors are immediately converted into their first lag by the VECM software. The error correction terms are the coefficients of the variables (ECT). There is a long-term causality among the research variables when the ECT is meaningful as well as the indicator is negative.

Table 4

	(1)	(2)	(3)	(4)	(5)	(6)
	Philippines					
VARIABLES	D_gdp_per_caplog	D_per_remlog	D_cap_forlog	D_con_explog	D_pop_grlog	D_tradelog
L._ce1	-0.089	0.086	-0.071	0.039***	0.011	-0.005
	(-1.60)	(0.95)	(-0.97)	(7.96)	(0.89)	(-0.09)

Constant	0.045**	0.042	-0.006	0.003**	-0.017***	-0.000
	(2.54)	(1.44)	(-0.24)	(2.18)	(-4.46)	(-0.01)
Observations	24	24	24	24	24	24

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In the Philippines, there are 24 observations. Except for consumer spending variable, the model is insignificant since the p value of dependent and independent variables is greater than 0.05 or the z-score is between (-1.96 and 1.96).A one-point shift in GDP per capita's first lag corresponds to a 0.089-point decrease in GDP per capita. A 0.086 point rise in GDP per capita is correlated with a change in personal remittances. If the country's capital formation rises by one, GDP per capita falls by 0.071.

Table 5

Johansen normalization restriction imposed

beta	*Coef.*	*. Std. Err.*	*. z*	*P>|z|*	*[95% Conf*	*. Interval]*
_ce1						
gdp_per_caplog	1					
per_remlog	-.2817278	.2494969	-1.13	0.259	-.7707328	.2072772
cap_forlog	1.523756	.3146867	4.84	0.000	.9069812	2.14053
con_explog	-26.24391	3.183748	-8.24	0.000	-32.48395	-20.00388
pop_grlog	2.659778	.6532408	4.07	0.000	1.379449	3.940106
tradelog	.4052145	.34803	1.16	0.244	-.2769118	1.087341
_cons	101.4827					

Since we have cointegrating equations we run a vector error correction model. We are specifying vecm with p lags, but the model is estimated with (p-1) lag. Long run equation of Johansen normalization restriction imposed. The restriction in this test is placed on GDP per capita which is indicated as a target variable.

The signs of the coefficients are reversed in the long run. Capital formation, consumer spending, and demographic growth all indicate importance, but personal remittances and trade do not (the z-score ranges from -1.96 to +1.96). In the long run, personal remittances and consumer expenditure have a positive impact on GDP per capita, while capital formation, population growth, and trade have a negative impact on the GDP per capita of the country. In the long run, all the independent variables have an asymmetric effect on GDP per

capita, on average, ceteris paribus. Asymmetric effects tell us that the variables have an opposite impact on GDP per capita. The VECM specification imposes 4 unit moduli, which is performed for checking whether we have correctly specified the number of cointegrating equations. When personal remittances increase by 1, GDP per capita decreased by 0.28. Similarly, consumer expenditures impact is negative, where the change in consumer expenditure variable is associated with the decrease of GDP per capita by 26.24. When capital formation increases by 1, GDP per capita increases by 1.52 as well as the change in population growth is associated with the change in GDP per capita by 2.66. the impact of the trade on the country is not so big, since the change in trade is associated with the increase in GDP per capita by 0.41.

The next step is to see how the dependent variable causes the independent variables or vice versa. The Vector Autoregression Model is developed first (see Tables 6,7 in the Appendices). Then, for each nation separately, a Granger Causality test has run. The test's result was predicted depending on the hypotheses. Null hypotheses: Personal remittances does not cause GDP per capita or GDP growth in the case of Jordan.

Alternative hypotheses: Personal remittances cause GDP per capita or GDP growth in the case of Jordan.

Personal remittances do not cause GDP per capita in Tonga, Jordan, or Bangladesh because the probability is greater than 5%, and GDP per capita does not cause personal remittances. In Bangladesh, however, the probability is 0.007 (p value 0.05), implying that personal remittances cause GDP per capita and GDP per capita causes personal remittances (p value is 0.011). (Tables 8-11 in the appendices)

POLICY SUGGESTIONS AND LIMITATIONS

To begin, policymakers in these countries should encourage official remittance networks by removing internal obstacles or lowering the cost of transactions, allowing the true effect of all such sending on growth in the economy to be thoroughly investigated. Furthermore, authorized monetary institutions for financial transactions may trigger remittance flows to transform into even more appealing investment opportunities. Most specifically, developing-country policymakers should devise a strategy to prevent remittance recipients from increasing their intake as a result of such funds, instead of encouraging them to save or spend them in enterprises. And at that point would the negative impact turn positive, assisting the country's strongest economic results. In addition to the fact that incoming remittances cause moral hazard or decreased labor force involvement, the government, as well as employers, can provide incentives for workers to sustain their competitiveness by offering fair salaries.

This research, however, suffers from a lack of evidence, since data for these countries is only available from 1975 to 2019, limiting the study time. Since the econometric approach cannot produce estimates with

more independent variables with small sample size, certain other variables, such as the exchange rate and school attendance, were excluded from the model. Furthermore, because institutional data is highly aggregated, future studies will rely on individual indicators rather than composite indicators.

CONCLUSION

In this paper, we aim to give an empirical response to the question of whether worker remittances led to economic development in developing countries like Tonga, Jordan, the Philippines, and Bangladesh. While it is still difficult to establish conclusive results from regression analysis, the results from this research should be regarded as indicative, and much further work in this field is needed. As a result of the findings presented in this Research Paper, we have reached the following main conclusions. As Glytsos (2005) points out, the impact of remittances on output varies over time and across countries. Mim and Ali (2012) analyzed the negative relationship between GDP and remittances in developed countries, whilst Pradhan et al. (2008) identified a favorable relationship. Matter of fact, several scholars confirmed the positive impact of remittances on the country's GDP, as documented in the literature, but the current case can help to maintain Chami et. al's claim. (2003). They stated that the moral hazard issue caused by remittance inflow to the host country can often be

very significant, resulting in economic stagnation and a much-lowering labor participation rate. As a result, unlike all other external fund instruments such as international assistance, that could be explicitly used on governmental programs, remittance can not be a major source of foreign funds in industrialized economies.

Moreover, as explained by Giuiliano and Ruiz-Arranz (2005) in their article, if the essence of remittance is more compensatory, with remitters sending money for altruistic purposes to help their existing families in their home countries, the impact of remittance on economic growth could be negative. As a consequence, the credibility of this estimate is bolstered by the fact that a large portion of transferred funds from remitters emerging in developing countries is predominantly utilized for consumption in the initial stages but not for investment. Meanwhile, the conclusions and figures are valid for the four sample countries as a whole, they apply to all of them individually, as country-specific conditions are taken into account. Overall, inward remittance movement in Tonga, Bangladesh, and the Philippines is correlated with negative economic development in the region's countries. It is obvious that Jordan has a significant and favorable relationship regarding remittance and GDP per capita, while the other nations have a destructive association. The existing research and regression findings are acknowledged as adequately defining the model that reflects the cases of Tonga, Jordan, the Philippines, and Bangladesh, and as being in a strong position to have unbiased estimates.

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APPENDICES

Table 1A

ADF testing for Tonga

```
. dfuller gdp_per_caplog , lags(1), if countryn_id == 241

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                                 ------------ Interpolated Dickey-Fuller ------------
                    Test         1% Critical       5% Critical      10% Critical
                  Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)             -2.100            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.2447
```

```
. dfuller per_remlog , lags(1), if countryn_id == 241

Augmented Dickey-Fuller test for unit root         Number of obs   =        32

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -1.596            -3.702            -2.980           -2.622
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.4854

. dfuller cap_forlog , lags(1), if countryn_id == 241

Augmented Dickey-Fuller test for unit root         Number of obs   =        36

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -2.451            -3.675            -2.969           -2.617
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.1279

. dfuller con_explog , lags(1), if countryn_id == 241

Augmented Dickey-Fuller test for unit root         Number of obs   =        36

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -2.680            -3.675            -2.969           -2.617
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0776


. dfuller pop_grlog , lags(1), if countryn_id == 241

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -4.023            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0013

. dfuller tradelog , lags(1), if countryn_id == 241

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -1.879            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.3418
```

TABLE 1B

ADF testing for Jordan

```
. dfuller gdp_growthlog , lags(1), if countryn_id == 120

Augmented Dickey-Fuller test for unit root         Number of obs   =        36

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -2.833            -3.675            -2.969           -2.617
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0537
```

```
. dfuller per_remlog , lags(1), if countryn_id == 120

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -2.090           -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.2487
. dfuller cap_forlog , lags(1), if countryn_id == 120

Augmented Dickey-Fuller test for unit root         Number of obs   =        40

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -2.949           -3.648            -2.958           -2.612
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0400


. dfuller con_explog , lags(1), if countryn_id == 120

Augmented Dickey-Fuller test for unit root         Number of obs   =        40

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -1.964           -3.648            -2.958           -2.612
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.3024

. dfuller pop_grlog , lags(1), if countryn_id == 120

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -7.021           -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000


. dfuller tradelog , lags(1), if countryn_id == 120

Augmented Dickey-Fuller test for unit root         Number of obs   =        40

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -3.102           -3.648            -2.958           -2.612
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0264
```

TABLE 1C

ADF testing for the Philippines

```
. dfuller gdp_per_caplog , lags(1), if countryn_id == 193

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                                 ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -0.479           -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.8961
```

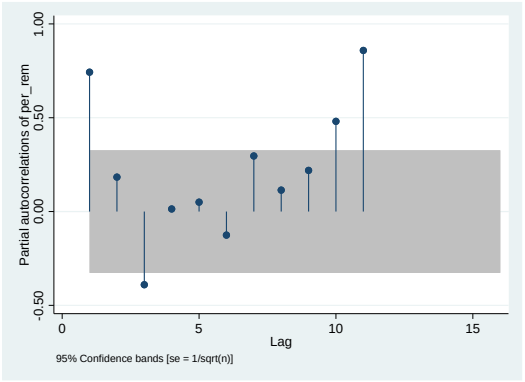
```
. dfuller per_remlog , lags(1), if countryn_id == 193

Augmented Dickey-Fuller test for unit root         Number of obs   =        39

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -1.695            -3.655            -2.961           -2.613
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.4339

. dfuller cap_forlog , lags(1), if countryn_id == 193

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -3.115            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0255

. dfuller con_explog , lags(1), if countryn_id == 193

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -2.156            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.2225

. dfuller pop_grlog , lags(1), if countryn_id == 193

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -0.476            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.8965


. dfuller tradelog , lags(1), if countryn_id == 193

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)            -1.588            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.4895
```

TABLE 1D

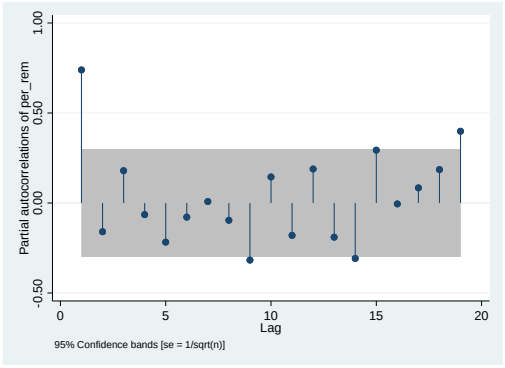
ADF testing for Bangladesh

```
. dfuller gdp_per_caplog , lags(1), if countryn_id == 17

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                              ---------- Interpolated Dickey-Fuller ----------
                 Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)             0.365            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.9801
```

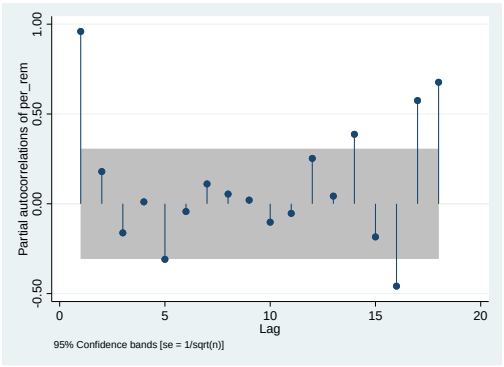
```
. dfuller per_remlog , lags(1), if countryn_id == 17

Augmented Dickey-Fuller test for unit root         Number of obs   =        40

                                 ---------- Interpolated Dickey-Fuller ----------
                    Test         1% Critical       5% Critical      10% Critical
                  Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)              -2.418            -3.648            -2.958           -2.612
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.1366

. dfuller cap_forlog , lags(1), if countryn_id == 17

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                                 ---------- Interpolated Dickey-Fuller ----------
                    Test         1% Critical       5% Critical      10% Critical
                  Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)              -1.371            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.5960

. dfuller con_explog , lags(1), if countryn_id == 17

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                                 ---------- Interpolated Dickey-Fuller ----------
                    Test         1% Critical       5% Critical      10% Critical
                  Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)              -2.280            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.1785

. dfuller pop_grlog , lags(1), if countryn_id == 17

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                                 ---------- Interpolated Dickey-Fuller ----------
                    Test         1% Critical       5% Critical      10% Critical
                  Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)              -1.146            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.6962

. dfuller tradelog , lags(1), if countryn_id == 17

Augmented Dickey-Fuller test for unit root         Number of obs   =        41

                                 ---------- Interpolated Dickey-Fuller ----------
                    Test         1% Critical       5% Critical      10% Critical
                  Statistic           Value             Value            Value
------------------------------------------------------------------------------
 Z(t)              -0.751            -3.641            -2.955           -2.611
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.8331
```



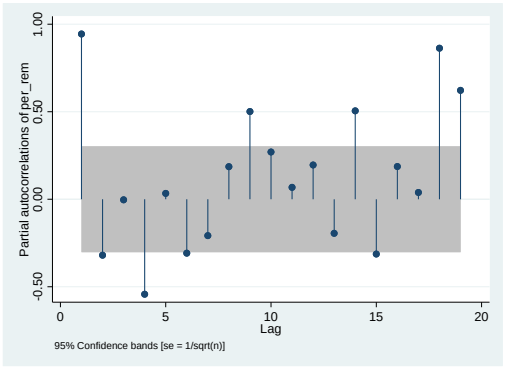
Tonga



Jordan



the Philippines



Bangladesh

Table 6 **(VAR model results for Tonga and Jordan)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Tonga						Jordan					
VARIABLES	gdp_per_caplog	per_remlog	cap_forlog	con_explog	pop_grlog	tradelog	gdp_per_caplog	per_remlog	cap_forlog	con_explog	pop_grlog	tradelog
L.gdp_per_caplog	1.023***	-0.075	-0.013	0.040**	-0.081	-0.118***	0.995***	-0.055	-0.101*	0.012	-0.014	-0.041
	(29.03)	(-0.87)	(-0.25)	(2.50)	(-0.93)	(-3.89)	(25.07)	(-1.04)	(-1.87)	(0.82)	(-0.38)	(-1.06)
L.per_remlog	0.074	0.598***	-0.105	0.053**	0.646***	-0.018	-0.009	0.655***	-0.287**	-0.001	-0.167*	-0.144
	(1.47)	(4.78)	(-1.37)	(2.33)	(5.20)	(-0.41)	(-0.10)	(4.95)	(-2.15)	(-0.04)	(-1.81)	(-1.50)
L.cap_forlog	-0.045	0.277	0.857***	-0.022	-0.505**	0.154**	0.038	0.173	0.748***	0.073*	-0.201**	0.095
	(-0.55)	(1.37)	(6.90)	(-0.59)	(-2.52)	(2.18)	(0.36)	(1.23)	(5.24)	(1.85)	(-2.04)	(0.92)
L.con_explog	0.207	-0.683	0.145	-0.125	-0.66	0.485	0.487**	-0.103	0.314	0.709***	1.043***	-0.19

					9							7
	(0.56)	(-0.75)	(0.26)	(-0.75)	(-0.73)	(1.51)	(2.06)	(-0.32)	(0.98)	(7.98)	(4.72)	(-0.85)
L.pop_grlog	0.040*	-0.140***	0.034	-0.009	0.976***	-0.017	-0.063	-0.124	-0.050	-0.051**	0.899***	-0.100
	(1.86)	(-2.62)	(1.02)	(-0.94)	(18.34)	(-0.91)	(-0.97)	(-1.41)	(-0.57)	(-2.06)	(14.72)	(-1.56)
L.tradelog	0.302*	-1.144***	-0.325	0.135*	0.204	0.151	0.200	0.119	0.097	-0.007	0.573***	0.725***
	(1.79)	(-2.75)	(-1.27)	(1.77)	(0.49)	(1.04)	(1.49)	(0.66)	(0.53)	(-0.13)	(4.56)	(5.52)
Constant	-2.448	9.028**	1.646	4.349***	2.372	1.842	-3.152**	0.881	0.572	1.104**	-6.189***	2.758**
	(-1.36)	(2.03)	(0.60)	(5.35)	(0.54)	(1.19)	(-2.57)	(0.53)	(0.34)	(2.39)	(-5.39)	(2.30)
Observations	29	29	29	29	29	29	41	41	41	41	41	41

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7 (VAR model results for the Philippines, Bangladesh)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Philippines						Bangladesh					
VARIABLES	gdp_per_caplog	per_remlog	cap_forlog	con_explog	pop_grlog	tradelog	gdp_per_caplog	per_remlog	cap_forlog	con_explog	pop_grlog	tradelog
L.gdp_per_caplog	0.622***	0.061	0.046	0.024	0.025*	0.002	0.622***	0.061	0.046	0.024	0.025*	0.002
	(7.95)	(0.46)	(0.33)	(1.15)	(1.73)	(0.03)	(7.95)	(0.46)	(0.33)	(1.15)	(1.73)	(0.03)
L.per_remlog	-0.108	0.480***	-0.035	-0.007	-0.015	0.097	-0.108	0.480***	-0.035	-0.007	-0.015	0.097
	(-1.38)	(3.65)	(-0.25)	(-0.32)	(-1.03)	(1.52)	(-1.38)	(3.65)	(-0.25)	(-0.32)	(-1.03)	(1.52)
L.cap_forlog	0.156*	-0.059	0.786***	-0.011	-0.009	0.152**	0.156*	-0.059	0.786***	-0.011	-0.009	0.152**
	(1.96)	(-0.44)	(5.63)	(-0.51)	(-0.60)	(2.33)	(1.96)	(-0.44)	(5.63)	(-0.51)	(-0.60)	(2.33)
L.con_explog	0.851**	1.153*	0.698	0.831***	-0.048	1.405***	0.851**	1.153*	0.698	0.831***	-0.048	1.405***
	(2.06)	(1.66)	(0.97)	(7.59)	(-0.64)	(4.17)	(2.06)	(1.66)	(0.97)	(7.59)	(-0.64)	(4.17)

L.pop_grlog	-1.293***	-0.618	0.063	0.048	1.026***	0.377*	-1.293***	-0.618	0.063	0.048	1.026***	0.377*
	(-4.70)	(-1.34)	(0.13)	(0.66)	(20.54)	(1.68)	(-4.70)	(-1.34)	(0.13)	(0.66)	(20.54)	(1.68)
L.tradelog	-0.075	0.528***	-0.081	0.023	-0.006	0.699***	-0.075	0.528***	-0.081	0.023	-0.006	0.699***
	(-0.71)	(2.98)	(-0.44)	(0.81)	(-0.30)	(8.12)	(-0.71)	(2.98)	(-0.44)	(0.81)	(-0.30)	(8.12)
Constant	-0.038	-6.104**	-2.384	0.495	0.080	-5.840***	-0.038	-6.104**	-2.384	0.495	0.080	-5.840***
	(-0.02)	(-2.24)	(-0.84)	(1.15)	(0.27)	(-4.40)	(-0.02)	(-2.24)	(-0.84)	(1.15)	(0.27)	(-4.40)
Observations	40	40	40	40	40	40	40	40	40	40	40	40

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 - Tonga

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gdp_per_caplog	per_remlog	2.1499	1	0.143
gdp_per_caplog	cap_forlog	.30751	1	0.579
gdp_per_caplog	con_explog	.3114	1	0.577
gdp_per_caplog	pop_grlog	3.4718	1	0.062
gdp_per_caplog	tradelog	3.2166	1	0.073
gdp_per_caplog	ALL	7.1004	5	0.213
per_remlog	gdp_per_caplog	.74873	1	0.387
per_remlog	cap_forlog	1.8834	1	0.170
per_remlog	con_explog	.55567	1	0.456
per_remlog	pop_grlog	6.87	1	0.009
per_remlog	tradelog	7.5675	1	0.006
per_remlog	ALL	13.622	5	0.018
cap_forlog	gdp_per_caplog	.06195	1	0.803
cap_forlog	per_remlog	1.8697	1	0.172
cap_forlog	con_explog	.0663	1	0.797
cap_forlog	pop_grlog	1.0383	1	0.308
cap_forlog	tradelog	1.6091	1	0.205
cap_forlog	ALL	6.2902	5	0.279
con_explog	gdp_per_caplog	6.2258	1	0.013
con_explog	per_remlog	5.4131	1	0.020
con_explog	cap_forlog	.34293	1	0.558
con_explog	pop_grlog	.8922	1	0.345
con_explog	tradelog	3.1314	1	0.077
con_explog	ALL	15.405	5	0.009
pop_grlog	gdp_per_caplog	.8717	1	0.350
pop_grlog	per_remlog	27.067	1	0.000
pop_grlog	cap_forlog	6.3439	1	0.012
pop_grlog	con_explog	.53915	1	0.463
pop_grlog	tradelog	.24364	1	0.622
pop_grlog	ALL	34.772	5	0.000
tradelog	gdp_per_caplog	15.137	1	0.000
tradelog	per_remlog	.16601	1	0.684
tradelog	cap_forlog	4.7528	1	0.029
tradelog	con_explog	2.2886	1	0.130
tradelog	pop_grlog	.82247	1	0.364
tradelog	ALL	18.5	5	0.002

Table 9 - Jordan

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gdp_per_caplog	per_remlog	.00932	1	0.923
gdp_per_caplog	cap_forlog	.1321	1	0.716
gdp_per_caplog	con_explog	4.2568	1	0.039
gdp_per_caplog	pop_grlog	.94728	1	0.330
gdp_per_caplog	tradelog	2.2205	1	0.136
gdp_per_caplog	ALL	10.69	5	0.058
per_remlog	gdp_per_caplog	1.0745	1	0.300
per_remlog	cap_forlog	1.5011	1	0.221
per_remlog	con_explog	.10403	1	0.747
per_remlog	pop_grlog	1.9915	1	0.158
per_remlog	tradelog	.43535	1	0.509
per_remlog	ALL	7.024	5	0.219
cap_forlog	gdp_per_caplog	3.5127	1	0.061
cap_forlog	per_remlog	4.6382	1	0.031
cap_forlog	con_explog	.95954	1	0.327
cap_forlog	pop_grlog	.32477	1	0.569
cap_forlog	tradelog	.28012	1	0.597
cap_forlog	ALL	8.2398	5	0.144
con_explog	gdp_per_caplog	.67616	1	0.411
con_explog	per_remlog	.00126	1	0.972
con_explog	cap_forlog	3.4102	1	0.065
con_explog	pop_grlog	4.2558	1	0.039
con_explog	tradelog	.01656	1	0.898
con_explog	ALL	8.753	5	0.119
pop_grlog	gdp_per_caplog	.143	1	0.705
pop_grlog	per_remlog	3.2941	1	0.070
pop_grlog	cap_forlog	4.1733	1	0.041
pop_grlog	con_explog	22.321	1	0.000
pop_grlog	tradelog	20.8	1	0.000
pop_grlog	ALL	39.945	5	0.000
tradelog	gdp_per_caplog	1.1308	1	0.288
tradelog	per_remlog	2.2398	1	0.135
tradelog	cap_forlog	.84574	1	0.358
tradelog	con_explog	.72662	1	0.394
tradelog	pop_grlog	2.4368	1	0.119
tradelog	ALL	6.1526	5	0.292

Table 10 - The Philippines

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gdp_per_caplog	per_remlog	1.8986	1	0.168
gdp_per_caplog	cap_forlog	3.837	1	0.050
gdp_per_caplog	con_explog	4.2618	1	0.039
gdp_per_caplog	pop_grlog	22.113	1	0.000
gdp_per_caplog	tradelog	.50819	1	0.476
gdp_per_caplog	ALL	26.309	5	0.000
per_remlog	gdp_per_caplog	.21207	1	0.645
per_remlog	cap_forlog	.19245	1	0.661
per_remlog	con_explog	2.7672	1	0.096
per_remlog	pop_grlog	1.7901	1	0.181
per_remlog	tradelog	8.8955	1	0.003
per_remlog	ALL	18.186	5	0.003
cap_forlog	gdp_per_caplog	.11034	1	0.740
cap_forlog	per_remlog	.06317	1	0.802
cap_forlog	con_explog	.93376	1	0.334
cap_forlog	pop_grlog	.01705	1	0.896
cap_forlog	tradelog	.19052	1	0.662
cap_forlog	ALL	2.0758	5	0.839
con_explog	gdp_per_caplog	1.3209	1	0.250
con_explog	per_remlog	.10366	1	0.747
con_explog	cap_forlog	.25763	1	0.612
con_explog	pop_grlog	.43313	1	0.510
con_explog	tradelog	.64977	1	0.420
con_explog	ALL	1.6127	5	0.900
pop_grlog	gdp_per_caplog	2.9813	1	0.084
pop_grlog	per_remlog	1.0565	1	0.304
pop_grlog	cap_forlog	.36369	1	0.546
pop_grlog	con_explog	.40349	1	0.525
pop_grlog	tradelog	.08876	1	0.766
pop_grlog	ALL	22.792	5	0.000
tradelog	gdp_per_caplog	.00074	1	0.978
tradelog	per_remlog	2.3008	1	0.129
tradelog	cap_forlog	5.4391	1	0.020
tradelog	con_explog	17.413	1	0.000
tradelog	pop_grlog	2.8159	1	0.093
tradelog	ALL	30.512	5	0.000

Table 11 - Bangladesh

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gdp_per_caplog	per_remlog	1.8986	1	0.168
gdp_per_caplog	cap_forlog	3.837	1	0.050
gdp_per_caplog	con_explog	4.2618	1	0.039
gdp_per_caplog	pop_grlog	22.113	1	0.000
gdp_per_caplog	tradelog	.50819	1	0.476
gdp_per_caplog	ALL	26.309	5	0.000
per_remlog	gdp_per_caplog	.21207	1	0.645
per_remlog	cap_forlog	.19245	1	0.661
per_remlog	con_explog	2.7672	1	0.096
per_remlog	pop_grlog	1.7901	1	0.181
per_remlog	tradelog	8.8955	1	0.003
per_remlog	ALL	18.186	5	0.003
cap_forlog	gdp_per_caplog	.11034	1	0.740
cap_forlog	per_remlog	.06317	1	0.802
cap_forlog	con_explog	.93376	1	0.334
cap_forlog	pop_grlog	.01705	1	0.896
cap_forlog	tradelog	.19052	1	0.662
cap_forlog	ALL	2.0758	5	0.839
con_explog	gdp_per_caplog	1.3209	1	0.250
con_explog	per_remlog	.10366	1	0.747
con_explog	cap_forlog	.25763	1	0.612
con_explog	pop_grlog	.43313	1	0.510
con_explog	tradelog	.64977	1	0.420
con_explog	ALL	1.6127	5	0.900
pop_grlog	gdp_per_caplog	2.9813	1	0.084
pop_grlog	per_remlog	1.0565	1	0.304
pop_grlog	cap_forlog	.36369	1	0.546
pop_grlog	con_explog	.40349	1	0.525
pop_grlog	tradelog	.08876	1	0.766
pop_grlog	ALL	22.792	5	0.000
tradelog	gdp_per_caplog	.00074	1	0.978
tradelog	per_remlog	2.3008	1	0.129
tradelog	cap_forlog	5.4391	1	0.020
tradelog	con_explog	17.413	1	0.000
tradelog	pop_grlog	2.8159	1	0.093
tradelog	ALL	30.512	5	0.000