



Relationship between Remittances, Foreign Direct Investment, Imports and Economic Growth in Sri Lanka

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Abstract : The relationship between external determinates and economic growth is a heavily debated issue. Although some studies have found evidence of the positive impact of external determinates on economic growth, others have revealed the opposite result. This study investigated the remittances, foreign direct investment, imports, and gross domestic product in Sri Lanka by employing the augmented autoregressive distributed lag (augmented ARDL) bounds testing approach to check the co-integration period of 1977-2020. The estimated results indicated that remittances have significant positive effects on economic growth both in the short run and the long run. At the same time, imports significantly increase economic growth in the short run; however, there is no relationship between foreign direct investment and economic growth.

IndexTerms - ARDL model, FDI, GDP, Imports, Remittances.

1. INTRODUCTION

Achieving a higher level of economic growth to enhance social welfare is one of the primary motives of every country. However, developing countries have not yet reached the desired level of economic growth due to several socio-economic and political factors prevailing domestically and globally (Azam et al., 2016). Like all developing countries, Sri Lanka is finding ways to achieve and sustain long-run economic growth because economic growth is the main factor in boosting the living standard of nations.

Considering the economic literature, various domestic determinants, as well as foreign determinants, lead to economic growth. Political stability, sound macroeconomic policies, national savings, and human capital are examples of domestic determinants, while remittance inflows, foreign direct investment, and imports are external determinants. But, it is more complicated to find the factors which lead to economic growth as numerous factors influence economic growth. However, the researchers have investigated that external determinates such as remittances, foreign direct investment, and imports influence economic growth in developing countries (Tahir et al., 2015; Almfirsi and Almsafir, 2014; Meyer and Shera, 2017; Makun, 2018).

Migrant remittances are the funds sent by people who live and work abroad to their home country, affecting the lives of many individuals around the world. Remittance is a potential source of economic development in a country. Remittances can contribute to economic growth in developing countries due to low levels of financial development. With a low level of financial development, a country has to face several difficulties in borrowing credit and limited access to credit. Therefore, individuals can help a country to solve inefficient financial systems and finally help to increase growth. Workers' remittances have grown significantly in Sri Lanka from 1977-2020. The percentage of remittances to GDP also shows an increasing trend with small fluctuations (Figure 1). Therefore, finding the impact of remittances on GDP in Sri Lanka is worthwhile.

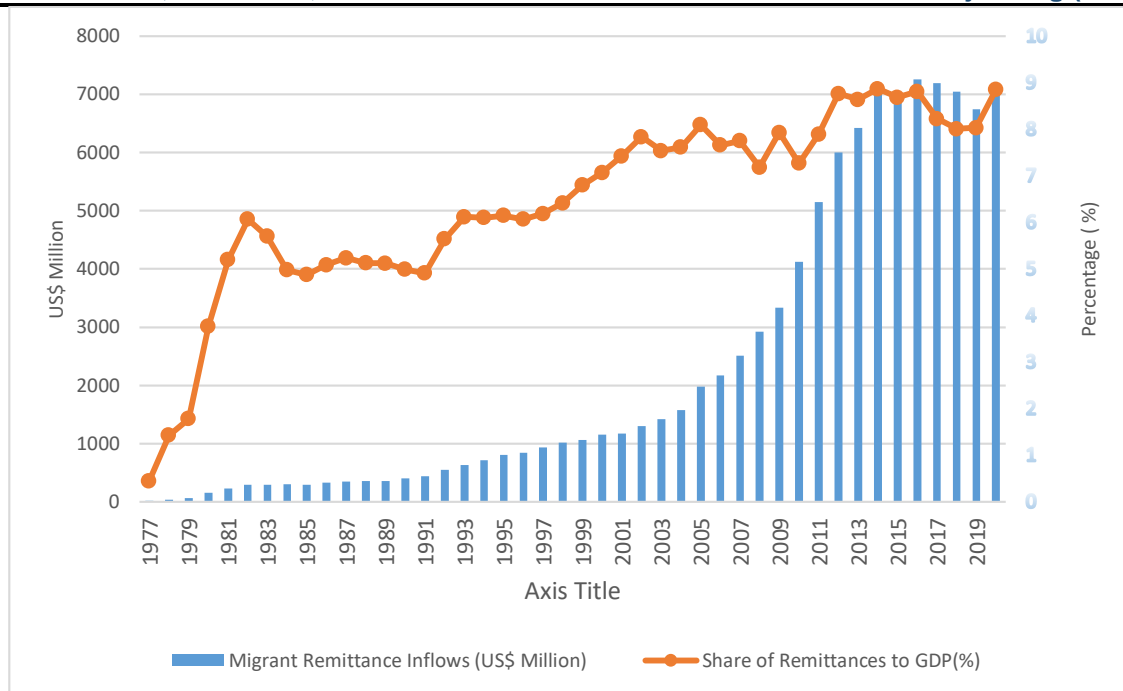


Figure 1: Remittance inflows and Share of remittances to GDP(%) 1977-2020

Source: World Development Indicators (WDI) Database of World Bank (2022)

FDI plays a vital role in a country's sustainable economic development, especially in developing countries, considering the inadequacy of domestic resources (Zardoub & Sboui, 2021). FDI leads to maintaining financial stability in a country, promoting sustainable development, and ensuring societies' well-being. Especially for developing countries, FDI is considered one of the most appropriate sources of investment due to inadequate domestic resources, which creates jobs, transfers new technologies, and helps go for new international markets. According to the Central Bank of Sri Lanka (2021), foreign direct investment (FDI) into Sri Lanka decreased to \$548 million in 2020, compared to \$793 million in 2019 and \$1.6 billion in 2018.

The relationship between imports and economic growth tends to be more complicated than FDI and remittances. Increased imports of consumer products encourage domestic import-substituting firms to innovate and restructure themselves to compete with foreign rivals. On the other way, the import of consumer products discourages domestic entrepreneurs due to unable competition with the low prices of imported goods. Further, Imports of capital goods and intermediate goods that cannot be produced domestically enable countries to increase consumption and increase the welfare of the society. In contrast, colossal import expenditure will cause a trade deficit in the balance of payment and negatively impact economic growth.

The relationship between external determinates and economic growth is a heavily debated issue. Although some studies have found evidence of the positive impact of external determinates on economic development, others have revealed the opposite result. This paper examines the effect of external determinates on economic growth in Sri Lanka using the ARDL model. Therefore, this paper used observations on remittances inflows, foreign direct investment, and imports in Sri Lanka from 1977 to 2020. This paper is organized as follows; section two discusses the relevant literature, and section three describes the model and model specification. The short-run and long-run relationships are discussed in section four, concluding the paper along with policy recommendations in the last section.

2. LITERATURE REVIEW

The studies on the effects of external factors, including remittances, foreign investment, and trade, on economic growth have resulted in uncertain outcomes. Regarding the impacts of remittances on economic growth, it is argued that remittances have both positive and negative influences. Investigating the relationship between remittance and economic growth was treated as macroeconomics research and policy central subjects. The relationship between remittance and economic growth has been a contention among economists. There is no clear-cut definition of the relationship between economic growth and remittances. There are many controversial issues and findings of this relationship. In literature, a considerable number of studies proved a positive effect of remittances on economic growth (Kumar, 2013; Kumar and Stanvermann, 2014; Imai et al., 2014; Feeny et al., 2014; Adarkwa, 2015, Giuliano and Ruiz-Arranz, 2009; Shera and Meyer, 2013; Goschin, 2013; Javid et al., 2012; Meyer and Shera, 2017).

In this regard, Meyer and Shera (2017) empirically examine the impact of remittances on economic growth using panel data set in six countries from 1999-2013 and found that remittances positively impact economic growth. Goschin (2013) also provides supportive evidence regarding the positive relationship between remittance inflows and economic growth in Romania from 1994-2011. Similarly, Kumar (2013) assembled the annual data over the period 1982-2010 in Guyana, where remittance has a positive and significant effect on economic growth both in the short and long run. Giuliano and Ruiz-Arranz (2009) examined the impact of Remittances on financial development and growth using a newly-constructed dataset covering about 100 developing countries. They highlighted that remittances cause increased growth in countries. Kumar and Stanvermann (2014) analyzed the impact of remittances on Lithuania from 1980 to 2012 and showed a positive impact on short-run and long-run economic growth. Adarkwa (2015) also examined the impact of remittances on economic growth in selected West African countries for the period 2000-2010 and found that remittance inflows positively impacted gross domestic product in Senegal and Nigeria. Shera and Meyer (2013), using a panel data set from 1992 to 2012 for 21 developing countries, investigated the impact of remittances on economic growth. The result concluded that remittances positively

impact the growth of Albanian countries' GDP per capita. Furthermore, they found that a 1 percent increase in remittances leads to a 0.14 percent increase in the GDP per capita income.

Feeny et al. (2014) examined the relationship between remittance inflows and per capita income growth for 136 developing countries, paying particular attention to 25 Small Island Developing States (SIDS) for 1971-2010. Research finding reveals a positive statistically significant association between economic growth and remittances to SIDS.

Qayyum et al. (2012) examine the importance of remittance inflow and its implication for Pakistan's economic growth and poverty reduction for the period 1973-2007. The empirical evidence shows that remittances affect economic growth positively and significantly. Furthermore, they highlighted that remittances have a substantial and statistically significant impact on poverty reduction. Imai et al. (2014) examined the effects of remittance on economic growth and poverty using annual panel data for 24 Asia and Pacific countries. They confirmed that remittances contribute to better economic performance and lead to the reduction of poverty. So, the remittance inflows cannot be denied in terms of growth that consequently leads to poverty reduction in a country.

In contrast, some studies concluded that remittances have a negative impact on economic growth (Chami et al., 2003; Karagöz, 2009; Sutradhar, 2020). Using panel methods on a large sample of countries, Chami et al. (2003) found that remittances negatively affect economic growth. Adarkwa (2015) examined the impact of remittances on economic growth in selected West African countries for the period 2000-2010 and found that remittance inflows harm gross domestic product in Cape Verde and Cameroon. Sutradhar (2020) examined the impact of worker's remittances on the economic growth of four South Asian emerging countries from 1977 to 2016 and found a negative effect of remittances on economic growth in Bangladesh, Pakistan, and Sri Lanka, but remittances had a positive impact on economic growth in India. Karagöz (2009) investigated whether workers' remittances have a growing impact on the Turkish economy, using data from the 1970-2005 period, and concluded that remittance flow to Turkey has statistically meaningful but adverse effects on growth.

Mixed empirical evidence has led to continuing debate among academics concerning the effect of FDI on economic growth. Research by Tahir et al. (2015) that examined the nexus between foreign remittances, foreign direct investment, imports, and economic growth in Pakistan during 1977-2013 concluded that remittances and foreign direct investment have a significant positive role in economic growth. Makun(2018) also reported that FDI positively affected economic growth in the Republic of the Fiji Islands from 1980 to 2015. Balamurali and Bogahawatte (2004) found that in the case of Sri Lanka over the studied period 1977-2003, there is bidirectional causality between FDI and economic growth. Further, Sarker and Khan (2020) investigated the causal nexus between FDI and GDP in Bangladesh by employing standard time-series econometric tools from 1972 to 2017. From the opposite view, Tabassum and Ahmed (2014) found that in the case of Bangladesh, using the studied period 1972-2011 and Applying a multiple regression model, FDI is insignificant in influencing economic growth.

Concerning the nexus between imports and economic growth, Uğur (2008) analyzed the relationship between imports and economic growth in Turkey from 1994-2005 using multivariate VAR analysis. The research concluded that there is a bidirectional relationship between GDP and investment goods import and raw materials import. At the same time, there is a unidirectional relationship between GDP and consumption goods import and other goods import. On the contrary, Tahir et al. (2015), that examined the nexus between imports and economic growth in Pakistan during the period 1977-2013, concluded that imports had a significantly adverse effect on the economic growth in this country. Makun (2018) also reported that imports of goods negatively affected economic growth in the Republic of the Fiji Islands from 1980 to 2015.

Objective

The main objective of this study is to examine the relationship between external factors (remittances, foreign direct investment, and imports) and economic growth in Sri Lanka.

3. MODEL AND METHODOLOGY

3.1 Data collection and variables

This study intends to explore the effect of remittances on GDP in Sri Lanka. Time series data were used for analysis from 1977 to 2020 from the World Bank open data repository. Following the recent literature, GDP (constant 2015 US\$) is used as a dependent variable, while the workers' remittances (millions of Dollars), foreign direct investment (% of GDP), and imports (% of GDP) are used as the independent variables. Then all variables are converted into logarithmic form, denoted by LnREMIT (for remittances), LnFDI(for foreign direct investment), LnIMP(for imports), and LnGDP (for GDP) to make the data smooth and remove the problem of heteroskedasticity from the data.

The evolution of these variables (LnREMIT, LnFDI, LnIMP, and LnGDP) and their growth rates (DLREMIT, DLNFDI, DLNIMP, and DLGDP) are shown in Figure 2.

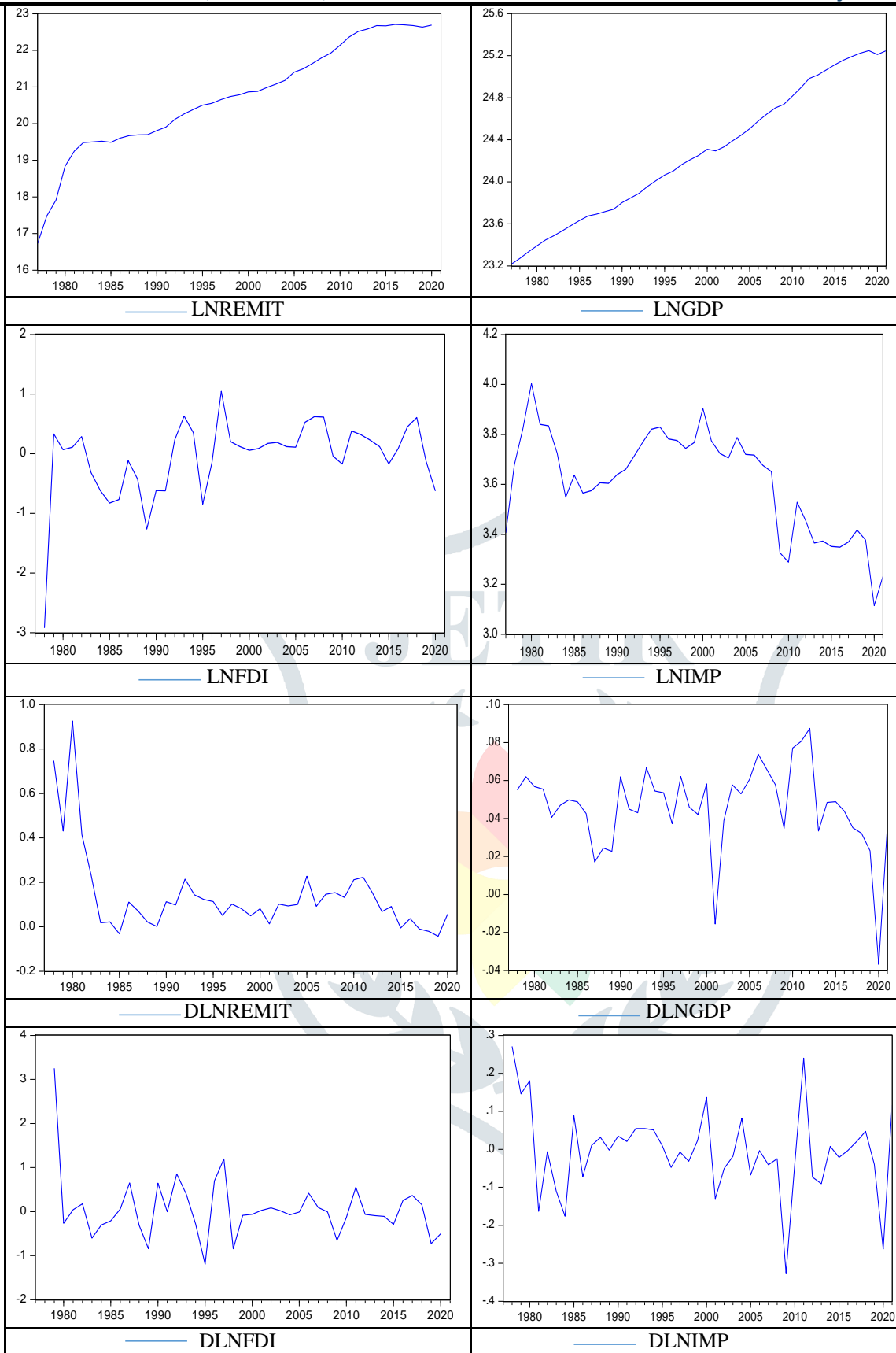


Figure 2: Time plots of GDP, Remittances, FDI, Imports, and their growth rates

3.2 Model specification

This study's primary purpose is to investigate external factors' effect on economic growth. Real Gross Domestic Product (GDP), Workers' remittances (REM), Foreign Direct Investment (FDI), and Imports (IMP) were utilized as external factors in this analysis. Workers' remittances are measured in millions of US dollars. Foreign direct investments and imports are calculated as a share of GDP. Empirical investigations were conducted using observations during the 46 years from 1977 to 2022. The model specification for the econometric analysis is shown in Eq. (01);

$$\ln GDP_t = \alpha_0 + \beta_1 \ln REM_t + \beta_2 \ln FDI_t + \beta_3 \ln IMP_t + \varepsilon_t \dots \dots \dots (01)$$

Where: $\ln GDP_t$ is the log of real GDP, $\ln REM_t$ is the log of remittances, $\ln FDI_t$ is the log of foreign direct investment and $\ln IMP_t$ log of imports. In this regression model (01), real GDP is used as a dependent variable, and remittances, foreign direct investment, and imports are used as independent variables.

3.3 Estimating Methodology

There are various econometric tools [such as Engle-Granger, Johansen multivariate co-integration test, and the recently developed ARDL (Autoregressive Distributed Lag Models)] for analyzing time series data. This paper adopts the auto-regressive distributed lag (ARDL) time series econometric technique proposed by Pesaran et al. (2001). Because the ARDL Model has several advantages. It is possible to test the co-integrating association between variables regardless of not involving pre-testing variables. It means that the test on the existing relationship between variables in levels is applicable irrespective of whether the underlying regressors are purely I(0), purely I(1) or a mixture of both (Pesaran et al., 2001). Further, it is appropriate to test if the sample period is small and infinite sample sizes (Pesaran et al., 2001). Therefore this paper used the ARDL to estimate short-run and long-run parameters simultaneously if the chosen variables were non-stationary.

Since time series variables were used in the model, examining and confirming the variables' stationarity is necessary to avoid spurious regression in model estimation. To obtain reliable regression results, first, the model must be able to be subject to "spurious regression." Therefore, firstly, the nature of the time series should be tested to determine whether they are stationary or non-stationary. Unit root tests were used to estimate whether the time series data were stationary. When time-series data is non-stationary and used for analysis, it may give spurious results because estimates obtained from such data will possess a non-constant mean and variance. In this regard, Augmented Dickey-Fuller (ADF) and PP tests were used to test for unit roots. The Dickey-Fuller test was applied to both variables to detect if these variables were stationary or non-stationary. Both variables proved non-stationary; regression tests were used for the first differences.

In the following, to find the relationships Auto-Regressive Distributed Lags (ARDL) Bounds test was used to find co-integration between variables. The ARDL bounds testing approach to co-integration explained by Pesaran et al. (2001) does not require a unique integration order for co-integration estimation. The null hypothesis ($H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$) stated that there is no co-integration, and the alternative hypothesis ($H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$) state the existence of co-integration between variables. The long-run relationship is investigated by comparing the F- statistic with the upper and lower bounds of critical values. If the calculated F value exceeds the upper bound critical value at the considered significance level, it indicates a long-run relationship between variables to reflect the null hypothesis. Suppose the calculated F value is lower than the lower bound of bound critical value at the considered significance level. In that case, it indicates no long-run relationship between variables as acceptance of the null hypothesis. However, the F statistic between the upper bound of critical value and the lower bound of the critical value decision is inconclusive.

The next step is to find short and long-run elasticity using the ARDL-ECM model to determine the long-run relationships. A model to be trusted must be robust. The robustness of an estimated model can be done using various diagnostic tests. The Breusch Godfrey serial correlation LM test, the Breusch-Pagan Godfrey Heteroskedasticity test, and the Jarque-Bera test is some of the tests encountered in these applications. Further, CUSUM and CUSUM OF SQUARES tests were examined and analyzed to find stability.

3.4 Co-integration Analysis (ARDL)

The ARDL method is a two-step technique. To examine the presence of long-run co-integration, Eq. (01) is re-arranged as an unrestricted error correction model (UECM) in the ARDL framework as Eq.(02);

$$\Delta \ln GDP_t = \alpha_0 + \beta_1 \ln GDP_{t-1} + \beta_2 \ln REM_{t-1} + \beta_3 \ln FDI_{t-1} + \beta_4 \ln IMP_{t-1} + \sum_{i=1}^n \beta_5 \Delta \ln GDP_{t-1} + \sum_{i=1}^n \beta_6 \Delta \ln REM_{t-1} + \sum_{i=1}^n \beta_7 \Delta \ln FDI_{t-1} + \sum_{i=1}^n \beta_8 \Delta \ln IMP_{t-1} + \varepsilon_t \dots \dots (02)$$

Where Δ is the difference operator and represents short-term relationships. The parameters attached, along with one period lagged variables measure long-term relationships. The null hypothesis of no long-run co-integration ($H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$) shall be tested against the alternative hypothesis, which states the presence of the existence of a long run relationship ($H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$). The presence of a long-run co-integrating relationship shall be accepted if the null hypothesis is rejected. Other coefficients such as $\beta_5, \beta_6, \beta_7$ and β_8 represents short-run dynamics.

The long-term parameters can be calculated based on the ARDL unrestricted regression estimates by dividing the coefficients of individual explanatory variables with lag one coefficient of the response variable and multiplying it by minus one (Khatun and Ahamad, 2012). Therefore, the long-run coefficients for remittances can be calculated as $(\beta_2/\beta_1) - 1$

The next step is to develop an error correction model to examine the short-run dynamics and to check the stability of the parameters of the long run. Based on equation (02), an error correction model is specified as follows:

$$\Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^n \beta_5 \Delta \ln GDP_{t-1} + \sum_{i=1}^n \beta_6 \Delta \ln REM_{t-1} + \sum_{i=1}^n \beta_7 \Delta \ln FDI_{t-1} + \sum_{i=1}^n \beta_8 \Delta \ln IMP_{t-1} + ECM_{t-1} + \varepsilon_t \dots \dots (03)$$

Where ECM stands for the error correction term, we expect a negative relationship between the ECM and the dependent variable. The ECM shall be calculated from the long-run normalized coefficients based on equation (02).

4. ESTIMATION AND ANALYSIS

4.1 Unit Root Analysis

Even though the ARDL model does not require the pre-testing of the unit root problem, in the empirical analysis, it is essential to undertake a unit root test to ensure that none of the variables are integrated of order greater than one. Therefore, as a first step, two-unit root tests (Augmented Dickey-Fuller (ADF) test and Phillips Perron (PP) test) were used to check the order of integration for each variable. The results for the ADF and PP tests are detailed in Table 01.

Table 1 – Unit root testing

ADF Test							
Variables	Level		First Difference			Conclusion	
	Constant	Constant plus trend	Constant	Constant plus trend	plus trend		
$\ln GDP_t$	-0.972961 (0.7547)	-1.909746 (0.6322)	-4.585182*** (0.0006)	-4.585483*** (0.0035)		I(1)	
$\ln REM_t$	-1.540839 (0.5034)	-7.540447*** (0.0000)	-4.153221*** (0.0022)	-4.036199** (0.0148)		I(1)	
$\ln FDI_t$	-7.115744*** (0.0000)	-4.149866** (0.0113)	-6.286719*** (0.0000)	-6.195088*** (0.0000)		I(0)/I(1)	
$\ln IMP_t$	-1.537029 (0.5058)	-3.320217 (0.0763)	-5.704569*** (0.0000)	-5.667802*** (0.0002)		I(1)	
PP Test							
Variables	Level		First Difference			Conclusion	
	Constant	Constant plus trend	Constant	Constant plus trend	plus trend		
$\ln GDP_t$	-0.812879 (0.8055)	-1.688774 (0.7395)	-4.562022*** (0.0007)	-4.592275*** (0.0034)		I(1)	
$\ln REM_t$	-3.271662** (0.0225)	-5.192181*** (0.0006)	-4.561736*** (0.0007)	-4.038414** (0.0148)		I(0)/I(1)	
$\ln FDI_t$	-6.799687*** (0.0000)	-6.831379*** (0.0000)	-17.46209*** (0.0000)	17.53836*** (0.0000)		I(0)/I(1)	
$\ln IMP_t$	-1.647456 (0.4504)	-3.431889 (0.0601)	-7.292690*** (0.0000)	-7.337624*** (0.0000)		I(1)	

Note: ** shows significance at 5%, *** shows significance at 1%

ADF: Augmented Dickey-Fuller; PP: Phillips-Perron.

Source: Researcher calculation using E-Views 10.

Both ADF and PP tests were applied simultaneously on two sets, intercept and trend and intercept alone. The results have confirmed that real GDP and imports are non-stationary at all levels. But remittances are stationary at all levels under the PP test except the ADF test. However, in the first difference, both variables are stationary. Further, foreign direct investments are stationary at both levels and first differences. Therefore, the unit root test results confirmed that the order of integration of all variables' was not higher than one, which is important for the analysis of the long-run co-integration test.

4.2 Lags selection

Selecting of appropriate lag length before applying the ARDL test, as inappropriate lag length selection leads to a spurious outcome. Here, the applicable lag length of the variables was selected using the Akaike information criteria (AIC). The criteria show the top twenty models, as shown in Figure 3. The ARDL model proceeded with AIC (1, 3, 0,1) for this analysis. It is possible to use different lags of the variables (Duasa, 2007). The next step is estimating the ARDL model and identifying the long-run relationship between the independent and dependent variables.

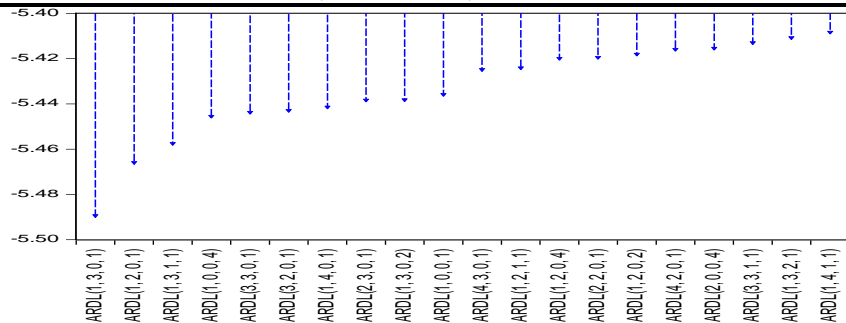


Figure 3. Akaike Information Criteria (top 20 models)
Source: Researcher calculation using E-Views 10.

Table 3 – Bound co-integration test

Level of Significance	Critical Value		Calculated F statistic
	Lower bound	Upper bound	
1%	4.29	5.61	10.858913
5%	3.23	4.35	
10%	2.72	3.77	

Source: Researcher calculation using E-Views 10.

4.3 ARDL Estimation

The Wald F-test result for the ARDL model is shown in table 3. The null hypothesis is accepted if the calculated F value is higher than the upper bound. Therefore, according to the result Calculated F – statistic (10.858913) is greater than the critical value at 1%,5%, and 10% for the upper bound I(1), it is concluded that there is co-integration. The findings contain that long-run relationships exist among remittances, foreign direct investment, imports, and GDP in Sri Lanka.

Table 4- ARDL (1, 3, 0, 1) Model

Variables	Coefficient	t-scores	Probability
$lngdp_t(-1)$	-0.256947	-6.219156	0.0000***
$lnremt_t(-1)$	0.125519	6.239185	0.0000***
$lnfdi_t$	0.001843	0.270804	0.7883
$lnimp_t(-1)$	0.022123	1.005751	0.3221
$d(lnremt_t)$	0.172968	5.106541	0.0000***
$d(lnremt_t(-1))$	-0.005464	-0.245554	0.8076
$d(lnremt_t(-2))$	-0.038145	-2.047619	0.0489**
$d(lnimp_t)$	0.084837	3.089199	0.0041***
Constant	3.571119	5.929304	0.0000***
R-squared	0.999533		
Adjusted R-squared	0.999416		
F-statistic	8553.248		
Prob(F-statistic)	0.000000		

Note: ***, ** Significance at 1 percent and 5 percent level

Source: Researcher's calculation using E-Views 10.

The estimated ARDL model shows the long-run relationship between the independent variables and dependent variables. The results of the ARDL model are shown in table 4. Table 5 shows different diagnostic tests of the ARDL (1, 3, 0, and 1) model to check the reliability of the model. Breusch-Godfrey Serial Correlation Lagrange Multiplier test of serial correlation indicates that the residuals are not serially correlated. The normality test (Jarque Bera) highlighted that the hypothesis of normally distributed residuals could not be rejected, and the error is normally distributed. The distribution is normal if the Jarque-Bera probability test is insignificant ($p > 0.05$). Moreover, the Breusch –Pagan- Godfrey test shows that the residuals do not have a Heteroskdasticity problem. Therefore the diagnostic tests show that the estimated ARDL model is free from any severe econometric issues.

Table 5. ARDL (1, 3,0,1) model diagnostic tests

	Diagnostic test	F statistic	Probability Value
Serial correlation	Breusch-Godfrey Serial Correlation LM Test	0.526008	0.5963
Normality	Normality Test (Jarque-Bera)	2.989087	0.224351
Heteroscedasticity	Breusch-Pagan-Godfrey	0.561676	0.8009

Source: Researcher calculation using E-Views 10.

In the next step is calculated the long-run coefficients of the independent from the estimated ARDL model. The long-run coefficient is presented in table 6. The technique for finding the long-run coefficient is to divide the coefficient value of the independent variable by the first lag value of the dependent variable and multiply it by a negative sign.

Table 6- Long run coefficients

Variable	Normalized long-run coefficients
$lnremt_t$	0.478157(0.0000)***
$lnfdi_t$	0.007172(0.7895)
$lnimp_t$	0.086098(0.3229)

Note: *** Significance at 1 percent level

Source: Researcher's calculation using E-Views 10.

The result of the long-run coefficients shows that the economy of Sri Lanka benefited significantly from the inflow of remittances. The result is consistent with the findings of Tahir et al.(2015). The calculated coefficient is 0.48, which explains that an increase of one percent in remittances would influence real economic growth by 0.48. Remittances have played a vital role in the growth process of Sri Lanka. Remittances help deprived families and domestic savings and boost economic growth.

Further remittances help to increase foreign exchange earnings which support paying the heavy import bills. There is a quite high unemployment rate in Sri Lanka which is 4.3% in 2022. This analysis shows that there is a positive relationship between remittance and GDP. Therefore, policymakers should make arrangements to provide facilities for laborers willing to work abroad.

4.4 Short-Run Error Correction Model

The Error Correction Model (ECM) is used to identify the short-run relationships and check the stability of the long-run coefficients. The error correction term is calculated by using the normalized long-run coefficients. The result of the ECM is presented in table 6.

Table 7- Error correction model

Variables	Coefficient	t-scores	Probability
Constant	3.57119	6.974693	0.0000***
$d(lnremt_t)$	0.172968	5.503010	0.0000***
$d(lnremt_t(-1))$	-0.005464	-2.265207	0.7926
$d(lnremt_t(-2))$	-0.038145	-2.203230	0.0349**
$d(lnimp_t)$	0.084837	3.832901	0.0006***
ECM(-1)	-0.256947	-6.892584	0.0000***
R-squared	0.693729		
Adjusted R-squared	0.649976		
F-statistic	15.85558		
Prob(F-statistic)	0.000000		

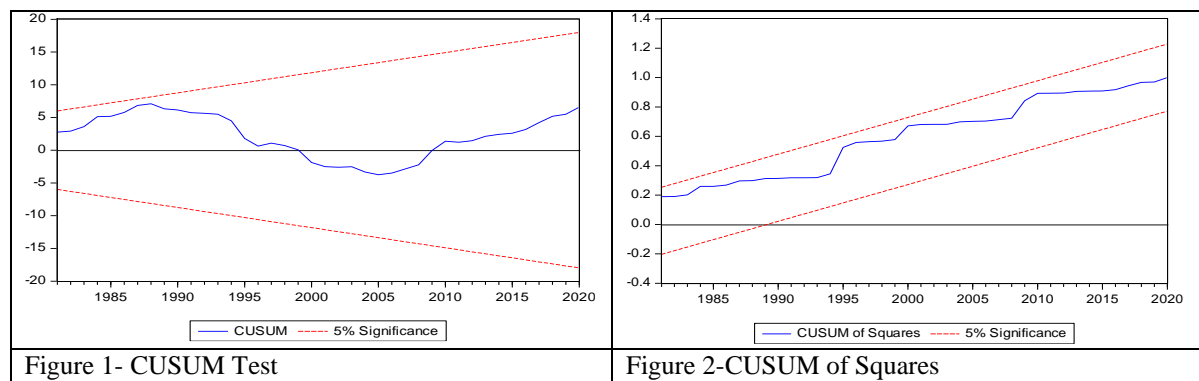
Note: ***, ** Significance at 1 percent and 5 percent level

Source: Researcher's calculation using E-Views 10.

The error correction term is a negative coefficient and statistically significant at a 1 percent level, which is preferable. It indicates that the model is reliable. Further, the error correction term's coefficient is known as the adjustment speed, which is -0.26. It explains that the short-run disequilibrium can be corrected at a speed of 0.26, which is very low. Further ECM model shows that in the short run, remittances and imports significantly influence economic growth positively.

4.5 Stability checking

The stability of the model is checked through CUSUM and the Square of CUSUM test. The following graphs are obtained.



Figures 1 and 2 show that the estimated line is within the critical limits at a 5 percent level. The estimated models are, therefore, reliable and stable.

5. CONCLUSION

The study mainly examined the relationship between external factors and economic growth in Sri Lanka. The ARDL model was employed to find a relationship. The estimated results indicated that remittances have significant positive effects on economic growth both in the short run and the long run. At the same time, imports significantly increase economic growth in the short run. On the other hand, there is no relationship between foreign direct investment and economic growth.

The findings of this study have crucial policy implications. It is found that remittances affect economic growth positively and significantly in the short run and long run. Strengthening of remittance inflow can lead to boost economic growth in Sri Lanka. The increase in economic growth helps several macroeconomic and socio-economic benefits to society, such as improving the welfare of poor households, reducing the unemployment problem, narrowing of current account deficit in the Balance of Payment, alleviation of poverty, and improving the foreign liquidity in the banking system and improved creditworthiness. If possible, policymakers should actively formulate a policy for migrants that enhances the number of remittances. Moreover, it can be done by reducing the transaction cost of transferring the remittances through proper channels, providing training for migrants, being aware of laws and regulations related to foreign workers, creating an appropriate system of monitoring for migrants, and an insurance scheme for migrants, and introducing a pension system for them. Further, introducing investment opportunities in the country to utilize their money productively is essential in a capital-scare country like Sri Lanka.

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