

The Impact of Remittances, FDI and Capital Formation on Economic Growth: Evidence from Sri Lanka (1977-2023)

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Introduction

Sri Lanka's economic growth trajectory since liberalisation in 1977 has been shaped by both external and internal drivers, most notably foreign direct investment (FDI), workers' remittances, gross capital formation, exports, and savings. These variables are widely recognised as central to the growth process of small open economies, where reliance on external finance is high (Athukorala, 2012). In Sri Lanka, remittances have provided stability to household consumption, particularly during crises, while FDI has contributed to technology transfer and integration into global markets (Alfaro et al., 2004). Similarly, gross capital formation reflects investment in infrastructure and production, whereas exports and savings are important indicators of economic resilience (Levine and Renelt, 1992).

Although many studies have examined these factors, most focus on them in isolation or cover limited periods (De Silva and Kodituwakku, 2018; Jayasuriya and Arunatilake, 2020). This leaves a gap in understanding their combined and dynamic impact on growth, particularly in the face of recent challenges such as the COVID-19 pandemic and the 2022 debt crisis. Previous research has not sufficiently distinguished between short-run adjustments and long-run equilibrium effects, an area that requires further exploration (Loayza and Rancière, 2006). This study seeks to fill that gap by applying the Autoregressive Distributed Lag (ARDL) model to annual data from 1977 to 2023. The contribution of this study lies in providing an updated and integrated assessment of Sri Lanka's key growth drivers, generating insights that can inform policymakers in shaping more resilient and sustainable development strategies.

Objectives

The objective of this study is to examine the impact of remittances, FDI and capital formation on economic growth of Sri Lanka.

Methodology

This study uses annual data from the World Bank's World Development Indicators for the period 1977–2023. Real GDP growth rate is taken as the dependent variable, while the independent variables are workers' remittance inflows (% of GDP), foreign direct investment net inflows (% of GDP), gross capital formation (% of GDP), exports of goods and services (% of GDP), and gross domestic savings (% of GDP). The model is specified as:

$$GDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 REM_t + \beta_3 GCF_t + \beta_4 EXP_t + \beta_5 SAV_t + \varepsilon_t \quad (1)$$

This study adopts the Autoregressive Distributed Lag (ARDL) Bounds testing approach developed by **Pesaran, Shin and Smith (2001)** to explore how remittances, FDI, exports, gross capital formation, and savings have influenced Sri Lanka's economic growth between 1977 and 2023. The ARDL model is particularly suitable for this analysis, as it performs well with small sample sizes and allows for variables integrated at different order to ensure the appropriateness of the model, stationarity tests specifically the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were conducted. These confirmed that the variables met the required conditions for applying the ARDL method. Once a long-term relationship among the variables was established, an Error Correction Model (ECM) was used to assess short-run adjustments and long-run effects.

To validate the reliability of the results, several diagnostic tests were performed. These included the Breusch-Godfrey test for serial correlation, the Breusch-Pagan-Godfrey test for heteroskedasticity, the Jarque-Bera test for normality of residuals, and the CUSUM and CUSUM of Squares tests to evaluate the model's overall stability over time.

Results and Discussions

Prior to estimating the ARDL model, the order of integration of the variables was examined using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. The results indicate that GDP and exports are stationary only after first differencing, indicating they are $I(1)$. Conversely, FDI, remittances, gross capital formation, and savings are stationary at level, confirming they are $I(0)$. Since no variable is integrated beyond order one and the dataset consists of a combination of $I(0)$ and $I(1)$ variables, the ARDL Bounds testing framework (Pesaran, Shin & Smith, 2001) is appropriate. This ensures the validity of the empirical results by capturing both short-run & long-run dynamics without the risk of spurious regression.

ARDL (2,3,3,2,1,3) model was selected as the best model among the top 20 model based on the Akaike Information Criterion (AIC).

The ARDL Bounds test produced an F-statistic of 4.466 (see Table 1 below), exceeding the 5% upper bound of 3.829, indicating the existence of cointegrating relationship between the selected variables. This result, supported by Giles (2013), justifies estimating the long-run coefficients and proceeding with the unrestricted error-correction model, ensuring the robustness of both short- and long-run analysis.

Table 1: Results of ARDL Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Significant	Lower Bound	Upper Bound
F-statistic	4.466178	10%	2.276	3.297
K	5	5%	2.694	3.829
N	44	1%	3.674	5.019

Source: Authors' calculation using E-Views 10

According to Table 2 below, the ARDL model shows that FDI has a positive and weakly significant effect on GDP in the long-run, suggesting growth potential if strategically used (Rathnasiri, 2016). Gross capital formation has a significant negative impact, likely due to inefficient debt-funded projects (Jayawickrama & Thennakoon, 2015). Remittances, exports, and savings are insignificant, highlighting limited long-term contributions. These findings emphasize the need for efficient capital investment, targeted FDI, and productive use of remittances.

Table 2: Results of Long run Coefficients

Variable	Coefficient	Probability Value
REM	-1.138337	0.2155
FDI	6.751543	0.0507
GCF	-0.889026	0.0249**
SAV	0.474947	0.3117
EXP	0.165959	0.3822

Note: *, ** and *** represents the variables are statistically significant at 10%, 5% and 1% level of significant respectively.

Table 3 below presents the ECM regression analysis indicates both short-run dynamics and long-run equilibrium adjustments in Sri Lanka's economic growth. The error correction term (CointEq (-1)) is negative and highly significant (-0.5302, $p < 0.01$), suggesting that about 53% of deviations from the long-run equilibrium are corrected annually.

Table 3: Results of Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Probability
D(GDP(-1))	-0.495417	0.100628	-4.923235	0.0001***
D(FDI)	1.383758	0.543592	2.545582	0.0178**
D(FDI(-1))	-1.859771	0.570900	-3.257611	0.0033***
D(FDI(-2))	-1.991084	0.549141	-3.625813	0.0013***
D(REM)	-3.401456	0.574606	-5.919635	0.0000***
D(REM(-1))	-0.204328	0.470996	-0.433822	0.6683
D(REM(-2))	-1.028033	0.423724	-2.426183	0.0231**
D(GCF)	0.393405	0.114871	3.424756	0.0022***
D(GCF(-1))	0.275578	0.141090	1.953203	0.0625
D(EXP(-1))	-0.189271	0.142877	-1.324715	0.1977
D(SAV)	0.301284	0.124364	2.422608	0.0233**
D(SAV(-1))	-0.120833	0.121102	-0.997781	0.3283
D(SAV(-2))	0.647680	0.150649	4.299262	0.0002***
CointEq(-1)*	-0.530208	0.084815	-6.251325	0.0000***
R-squared	0.856897			
Adjusted R-squared	0.794886			
S.E. of regression	1.527110			
Sum squared resid	69.96197			
Log likelihood	-72.63606			
Durbin-Watson stat	1.735171			

Note: *, ** and *** represents the variables are statistically significant at 10%, 5% and 1% level of significant respectively

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

In the short run, foreign direct investment (FDI) has mixed effects: current FDI inflows positively impact growth (1.3838, $p < 0.05$), while lagged values exert negative effects (-1.8598 and -1.9911), possibly due to temporary adjustment costs or crowding out of domestic investment. Remittances (REM) generally show negative short-run impacts, with current (-3.4015, $p < 0.01$) and second-lag (-1.0280, $p < 0.05$) coefficients indicating that excessive reliance on remittances may reduce labour participation and productivity (Amutabi, 2023). Conversely, gross capital formation (GCF) and savings (SAV) positively influence growth, with significant coefficients in both current and lagged periods, emphasizing the importance of domestic investment and savings mobilization. The model exhibits strong explanatory power ($R^2 = 0.8569$; Adjusted $R^2 = 0.7949$) and no major autocorrelation concerns (Durbin–Watson = 1.7352), highlighting the need for careful management of FDI and remittances alongside promotion of domestic capital formation to achieve sustainable economic growth (Engle and Granger, 1987; Amutabi, 2023).

The diagnostic tests presented in Table 4 confirm the robustness of the ARDL model. The Breusch-Godfrey LM test indicates no serial correlation, the Jarque-Bera test shows that the residuals are normally distributed, and the Breusch-Pagan-Godfrey test confirms homoscedasticity. These results validate the model’s assumptions, suggesting that it is well-specified and provides a reliable framework for analyzing both short-run adjustments and long-run relationships in Sri Lanka’s economic growth.

Table 4: Results of ARDL (2 3 3 2 1 3) Model Diagnostic Test

Diagnostic Test	Test Statistic	P Value
Breusch-Godfrey Serial Correlation LM Test	0.526008	0.596300
Normality Test (Jarque-Bera)	2.989087	0.224351
Breusch-Pagan-Godfrey Heteroscedasticity Test	0.561676	0.800900

Source: Authors’ calculation using E-Views 10

Conclusion and Policy Recommendations

This study reveals that Sri Lanka’s economic growth is significantly influenced by FDI, gross capital formation, and savings, which play vital roles in both the short and long run. The ARDL results indicate that FDI has a positive long-run effect on GDP, suggesting growth potential if

strategically managed, while GCF shows a negative long-run impact, likely due to inefficiencies in debt-funded projects (Rathnasiri, 2016; Jayawickrama & Thennakoon, 2015). Remittances, exports, and savings are largely insignificant in the long run, highlighting the need for targeted policies to ensure external inflows are directed toward productive investment rather than mere consumption. The ECM findings emphasize that short-run dynamics also matter: current FDI promotes growth, whereas lagged FDI and remittances can have temporary adverse effects, while GCF and savings positively contribute to short-term growth (Engle and Granger, 1987; Amutabi, 2023).

Policy implications suggest improving investment efficiency, enhancing governance, and creating a stable, investor-friendly environment are crucial for sustaining growth. Policymakers should also encourage productive use of remittances through financial literacy Programmes and entrepreneurship incentives, support export diversification, promote innovation and SMEs, and prioritize sustainable infrastructure. A balanced approach that leverages both domestic and foreign resources under sound policy frameworks is essential for achieving long-term, inclusive, and resilient economic growth.

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