The Impact of Workers' Remittances on Financial Development in Sri Lanka

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ABSTRACT

The purpose of the study was to investigate the relationship between workers' remittances and financial development. The study employed annual time series data for Sri Lanka from 1977 to 2019, and the ARDL Cointegration technique was used to empirically estimate the dynamic relationship between workers' remittances and financial development. The findings show that there is a statistically significant and positive relationship between both variables. The Granger causality test results indicate a unidirectional causality stemming from workers' remittances to financial development. Remittance inflows are a source of foreign exchange, so policymakers should be assisted in developing and implementing appropriate policies.

Keywords: Financial development, workers' remittances, Sri Lanka, ARDL bounds test, Money supply to GDP ratio

1. INTRODUCTION

The financial sector is the collection of organizations, products, markets, and legislative and regulatory frameworks that enable transactions to be carried out using credit. The development of the financial industry is fundamentally about reducing "costs" associated with the financial system. The rise of financial contracts, markets, and intermediaries was the outcome of this process of lowering the costs of gathering knowledge, upholding agreements, and carrying out transactions.

After foreign direct investment (FDI), remittance inflows are the second most important external source of revenue for emerging nations. Migrant workers' wages are remitted from their respective places of employment to their home countries. Financial resource flows generated from the cross-border migration of a country's citizens are also known as financial resource flows (Kapur, 2003). There is no government involvement in remittances; migrants are solely responsible for the massive movement of remittances across global borders.

 In 2019, there were 272 million international migrants worldwide, accounting for 3.5 percent of the world's population (United Nations, 2020). Total international remittances have increased dramatically from US$60,936 million in 1990 to US$716,674 million (717 billion) in 2019, with developing countries accounting for more than three-quarters of these flows ($548,000 million).

Remittances are exchanged in both formal and informal contexts (Aggarwal, Demirguc-Kunt, and Peria, 2011). Recognized financial entities with the authority to undertake money transfer transactions are referred to as formal methods. Banking and non-banking financial institutions are the official channels for transferring remittances (Burgess and Pande, 2005). According to some studies, banks and nonbanking financial institutions attract remittances from recipient households as savings with higher interest rates, which they subsequently channel through productive investment in the economy (Motelle, 2011; Sehrawat and Giri, 2015). The measuring of remittances appears hard because informal means are not taken into account in official databases. For example, informal methods of money transmission, such as handing out cash or cash carried in a person's luggage, are considered illegal (Luqman and Haq, 2016). The informal movement of remittances may result in high remittance costs, which are incompatible with the needs of the developed financial sector.

On a micro level, remittances benefit recipient households in developing nations by providing an additional source of income that helps them meet their expenses and decreases the rate of extreme poverty. Transfers can also help beneficiaries spend more money on needed products and services, invest in healthcare and education, and increase their assets. Migrant remittances are seen as vital because the increase in household income brought about by migrants encourages investments and innovation, supporting the migrants' home country in its economic development (Beijer, 1970). Remittances fund additional spending in the economy, stimulating demand for goods and services at the macro level. Money spent in one area is received as income in another, resulting in additional rounds of spending that ripple throughout the economy. Remittances finance human and physical capital investments, which have long-term transformative consequences in addition to these immediate, short-run effects on national output. A high and steady net inflow of remittances can improve the current account's sustainability and help finance existing trade deficits. As a result, countries are better able to meet their external obligations, which reduces the likelihood of a balance of payments crisis. The country's competitive financial system influences saving rates, facilitates investment decisions, and, as a result, contributes to better growth rates (Schumpeter, 1912; McKinnon, 1973).

To address their economic development issues, most of South Asian countries follow the labor exporting policy. As a result, since the late 1970s, Sri Lanka has pursued a labor exporting policy. Sri Lankan laborers are found almost everywhere in the world. Workers' remittances sent through formal channels in Sri Lanka are noted in the balance of payment as a significant source of finance under secondary income. However, a significant amount of worker remittances reach Sri Lanka through unofficial methods

and are not accounted for in the balance of payment (Aslam and Sivarajasingham, 2020).

Workers' remittances support low- and middle-income countries like Sri Lanka in a very visible and concrete way. Remittances boost recipients' incomes and have a positive multiplier impact, all while boosting their country's foreign exchange reserves (Ratha and Maimbo, 2005). Furthermore, unlike capital transfers, which are cyclical, remittances are relatively steady and frequently consumption smoothing, functioning as a safety net during economic downturns or disasters (World Bank, 2019). Remittances have also evolved into a means of sharing prosperity in a variety of ways, such as their potential to alleviate poverty and raise the living standards of beneficiary households.

In the mid-1970s Sri Lankans started migrating in large numbers for overseas employment. With an annual average of 260000 employees migrating, Sri Lankan labor migration has expanded dramatically and persistently since the government established open market policies, as well as a result of greater employment prospects in the oil-rich Gulf States. The Central Bank of Sri Lanka reported that inflows of worker remittances through official channels totaled US$ 5776 million in 2019, which is approximately equivalent to 8.03 percent of GDP.

Workers' remittances to Sri Lanka are highly vulnerable to economic and political volatility in source countries due to an over-reliance on the Middle Eastern region as a destination for labor migration, despite being a relatively stable source of foreign exchange. The Middle East continues to be the most important market for Sri Lankan migrant workers, accounting for 80-90 percent of yearly outbound remittances and more than half of overall remittance revenues. As a result, the downward trend in

remittances since 2015 can be explained in part by the fall in the income of Middle Eastern oil-exporting countries. Employees are also discouraged from looking for work overseas due to the lack of social security programs for migratory workers. Furthermore, COVID-19 has had a negative influence on migrant workers, with several employers terminating migrant worker employment during the first phase of the epidemic. COVID-19-related travel limitations put a lot of strain on these workers. Sri Lanka currently lacks a contributory job loss insurance scheme for migrants that would provide a minimum income even if they lost their jobs due to a variety of factors, such as a pandemic, or a retirement benefits scheme that would provide a steady income stream for these workers in their later years (CBSL annual report, 2020).

Since 1975, the contribution of workers' remittances to Sri Lanka's financial development has been significant, with an upward direction with minor fluctuations (World Bank, 2017). Previous studies examined the impact of remittance inflows on financial development by focusing on the ratio of credit to the private sector to GDP (loanable funds) as an indicator of financial development. However, none of theresearchers investigated the relationship between workers' remittances and financial development in Sri Lanka using the ratio of money supply (M2) to GDP (liquid liabilities) as an indicator of financial development. The study's objectives are framed to investigate the nature of the relationship between workers' remittances and financial development in Sri Lanka.

2. LITERATURE REVIEW

2.1. *Theoretical framework*

The debate over the expansion of the financial sector and economic growth began with Schumpeter (1912). According to the author, the expansion of the financial sector is

crucial for economic growth since it permits manufacturing enterprises to obtain loans. Goldsmith (1969) and McKinnon (1973), who proposed the two main ideas relating to the financial sector development and economic growth nexus, support Schumpeter's (1912) viewpoint. They are the supply hypothesis and the demand the following assumption. In the same light, two crucial concepts were put forward (Aslam and Sivarajasingham, 2020). According to the first concept, at the early stages of a country's economic development, financial development leads to economic growth. According to the second concept, as the economy develops into a developed economy, demand for financial sector products increases. It might be argued that financial development and economic growth are still interconnected as a result of both principles. The link between financial development and economic growth suggests that an economy's financial development encourages long-term economic development through foreign capital sources such as remittances (Aggarwal, Demirguc-Kunt, and Peria, 2011).

There are also direct and indirect routes to the nexus of remittances and financial development. The first method looked at how remittances help finance development, while the second looked at how financial development affects economic growth. As a result, financial development can be shown to have an indirect impact on economic growth. Investigating the demand and supply mechanisms might reveal the direct link. By encouraging migrant households to register bank accounts and deposit their remittances, formal remittance transfer services will improve their financial literacy. Furthermore, financial literacy increases migrant families' understanding of the significance of improved remittance management. Migrant households also promote credit generation on the supply side by depositing remittances in banks.

Furthermore, the theoretical viewpoint on the relationship between remittances and financial development provided both optimistic and pessimistic perspectives. Since the 1950s and 1960s, the optimistic viewpoint has gained traction, arguing that the primary goal of migration is to bring money to recipients' households as well as innovative ideas, entrepreneurship skills, and information to aid in the development process. Remittance inflows are classed as a solution to the problem of maximizing migrants' household income because of their altruistic aims. Among these incentives are utility maximization as a result of higher household income, capital infusion for productive investment, and the establishment of the information economy as envisioned in the digital scenario (Kindleberger, 1958). Conversely, the pessimistic controversy began to prevail in the late 1970s and 1980s. According to the non-altruistic point of view, worker remittances caused by migration leave a gap in the recipient economy (Fayissa and Nsiah, 2010). Recipient economies are increasingly underdeveloped as a result of brain drain, moral hazard, and over-reliance on international financial flow (Lartey, 2013).

Remittances and bank deposits may not enhance loanable money if spent on consumption, or remittance receivers may not trust financial institutions sufficiently to deposit their funds with them. Furthermore, because remittances provide necessary funds, recipients may not require credit from financial institutions, which will have a negative impact on the development of the credit market. Furthermore, if banks prefer to store liquid assets rather than lend, or if banks prefer to lend to the public sector rather than the private sector, a rise in remittances may not always result in an increase in credit to the private sector (Aggarwal, Demirguc-Kunt, and Peria, 2006).

2.2. *Empirical analysis*

Several scholars have investigated the impact of remittances on financial growth in individuals and groups of countries. Between 1975 and 2003, Aggarwal and Peria (2006) studied this relationship in 99 developing countries. They discover that remittances have a positive impact on recipient countries' financial development. Giuliano and Ruiz-Arranz (2009) examined the impact of remittances on financial development using data from 100 developing countries. They discovered that remittances have a significantly greater impact on financial systems that are less developed than those that are well-managed. Using data from 37 African countries from 1980 to 2004, Fayissa and Nsiah (2010) discovered that remittances have a positive effect on economic growth in countries with less developed financial systems. Aggarwal et al. (2011) examined the relationship between cumulative deposits and remittance inflows, as well as the relationship between credits issued by the local banking sector and remittance inflows, in 109 developing countries from 1975 to 2007. According to the Fixed Effects Model and the GMM dynamic system, remittance inflows have a positive impact on financial sector development and they are interrelated. Furthermore, Bettin and Zazzaro (2012) used annual time series data for 66 developing countries from 1970 to 2005 to examine the financial development effect of workers' remittances. This study used the workers' remittances to stimulate financial progress, according to a study using the penal regression technique. Shahzad et al. (2014) investigated the impact of workers' remittances on financial development in several South Asian countries, including Pakistan, India, Sri Lanka, Bangladesh, and Nepal, from 1989 to 2011. They employed both panel regression and the generalized movement method. They found that workers' remittances have a positive impact on financial development. Azizi (2020) investigated the link between remittances and

financial development. The study concentrated on three financial development indicators: domestic credit to the private sector as a percentage of GDP, bank deposit to GDP ratio, credit to GDP ratio, and liquid liabilities to GDP ratio. A fixed effect model on panel data for 124 developing economies was used for the period of 1990–2015. A 10% increase in the remittance to GDP ratio leads to a 1.7 percent increase in domestic credit to the private sector, according to the findings. It also contributes to an increase of 1.9 percent in bank credit, 1.2 percent in bank deposits, and 0.8 percent in liquid liabilities. Basnet et al. (2021) examined the impact of workers' remittances on financial growth in Bangladesh, India, Nepal, Pakistan, and Sri Lanka using panel data from 1980 to 2017. In the study, the Panel co-integration test was used to confirm long-run relationships between remittances and financial development. Bindu et al. (2021) investigated the impact of remittances on financial development in BRICS countries using annual time series data from 1990 to 2019. They employed both fixed and random effect models. According to the study's findings, remittances and bank deposits have a long-run relationship, but there is no short-run relationship between remittances and financial development.

Some studies looked at the relationship between workers' remittances and financial development using data from a single country. In view of that, Oke et al. (2011) investigated the relationship between remittance inflows and Nigerian financial sector development from 1977 to 2009. The study employed the techniques of ordinary least squares and the generalized method of moment estimation. The private credit to GDP ratio and the money supply to GDP ratio were the two indicators used to assess financial development. With the exception of the private credit to GDP ratio, remittance inflows were discovered to have a positive effect on financial development. Chowdhury (2011) examined the impact of workers' remittances on financial development in Bangladesh

using annual time series data from 1971 to 2008. In this study, the Johansen and Juselius cointegration technique was used. According to the study's findings, Workers' remittances have a long run relationship with financial development. In the Sri Lankan context, Aslam and Sivarajasingham (2020) used annual time series data from 1975 to 2017 to examine the relationship between workers' remittances and financial development using the ARDL bounds test. The private credit to GDP ratio is used as an indicator of financial development. According to the bounds test, Remittances from employees have a long-term positive impact on economic growth. The Granger causality test was used in the investigation to confirm the bidirectional connection between remittances and financial growth.

Based on the literature review, it can be concluded that the most of the studies agree that workers' remittances have a positive relationship with financial development. There is no evidence that the relationship between worker remittances and financial development in Sri Lanka has been studied using the money supply to GDP ratio as a financial development indicator. Therefore, it is hoped that this research will help to fill in the gaps.

3. METHODOLOGY

The current study examined the causal relationship between worker remittances and financial development using annual time series data from Sri Lanka over the period of 1977 to 2019. The data for the money supply to GDP ratio (FD), workers' remittances to GDP ratio (RM), gross domestic product (GDP), and inflation (INF) were extracted from the World Development Indicator of the World Bank data base. The first three variables are transformed into natural logarithms.

Following the empirical literature (e.g., Aslam and Sivarajasingham, 2020), develop the long-run relationship between the variables as below:

$$LFD_t = \beta_0 + \beta_1 LRM_t + \beta_2 LGDP_t + \beta_3 INF_t + U_t \tag{1}$$

Where the variables are named as explained above, U_t is the white noise error term, and t represents the time period.

The estimation of equation (1) begins with determining the order of integration of each variable using the Augmented Dickey-Fuller (ADF) unit root test. In the second step of the estimation procedure, we must determine the optimal lag length that can be used in the model. Several methods have been proposed to address the issue of correctly determining the appropriate lag length for time series models. There are several criteria for selecting the optimal lag length, including sequentially modified Likelihood Ratio (LR) statistics, Akaike Information Criterion (AIC), Swartz Information Criterion (SC), Hannan-Quin Information Criterion (HQIC), and Final Prediction Error (FPE). However, we will adopt either one or more of these criteria in our analysis according to the results and the requirements.

In the third step, use the ARDL cointegration technique developed by Pesaran et al. (2001) to empirically estimate the dynamic relationship between the variables described in equation (1). An ARDL representation of equation (1) is formulated as below:

$$\Delta LFD_t = \delta_0 + \delta_1 LFD_{t-1} + \delta_2 LRM_{t-1} + \delta_3 LGDP_{t-1} + \delta_4 INF_{t-1} +$$

$$\sum_{i=1}^{q1} \beta_{1i}\Delta LFD_{t-i} + \sum_{i=0}^{q2} \beta_{2i}\Delta LRM_{t-i} + \sum_{i=0}^{q3} \beta_{3i}\Delta LGDP_{t-i} +$$

$$\sum_{i=0}^{q4} \beta_{4i}\Delta INF_{t-i} + e_t \tag{2}$$

Where, Δ denotes the first difference operator, δ_0 is the drift component, e_t is the white noise error term, $\delta_1 \rightarrow \delta_4$: denotes the long-run coefficients, the remaining expressions with the summation sign $(\beta_{1i} \rightarrow \beta_{4i})$ represent the short run dynamics of the model.

The bound testing procedure for equation (2) is then used to determine the existence of the cointegrating relationship between the variables. Once the cointegrating relationship between the variables has been confirmed using the above test, the next step in the estimation procedure is to obtain the short-run dynamics of parameters and long-run adjustment of the model by estimating the error correction version of the ARDL model pertaining to the variables in equation (2).

$$\Delta LFD_t = \delta_0 + \sum_{i=1}^{q1} \beta_{1i}\Delta LFD_{t-i} + \sum_{i=0}^{q2} \beta_{2i}\Delta LRM_{t-i} + \sum_{i=0}^{q3} \beta_{3i}\Delta LGDP_{t-i} +$$

$$\sum_{i=0}^{q4} \beta_{4i}\Delta INF_{t-i} + \lambda ECT_{t-1} + V_t \tag{3}$$

where, λ: speed of adjustment coefficient which should have statistically significant and negative sign to support the long run adjustment towards steady state line, V_t: pure random error term.

Finally, the Granger causality test was used to examine the causality relationship between the variables, as shown below:

$$\Delta LFD_t = C_i + \sum_{i=1}^{p} \alpha_i\Delta LRM_{t-i} + \sum_{i=1}^{p} \beta_i\Delta LFD_{t-i} + U_{1t} \tag{4}$$

$$\Delta LRM_t = C_i + \sum_{i=1}^{p} \delta_i\Delta LRM_{t-i} + \sum_{i=1}^{p} \gamma_i\Delta LFD_{t-i} + U_{2t} \tag{5}$$

4. RESULTS AND DISCUSSION

4.1. *Descriptive Analysis*

It's important to get a understanding of our dataset before starting regression analysis to identify what are the information contained in our sample. This study use raw data for summary statistics. The result is presented in Table 1.

Table. 1: Summary Statistics for key variables (1977 - 2019)

	FD	RM	GDP	INF
Mean	37.84452	6.360995	3321957.	10.21167
Median	37.35342	6.415567	1017986.	9.770585
Maximum	63.01888	8.866736	15016142	22.79926
Minimum	24.23627	0.450308	36407.00	0.583906
Std. Dev.	9.164669	1.959097	4530130.	5.473857
Skewness	1.196766	-1.118465	1.375047	0.471580
Kurtosis	3.945103	4.228624	3.507086	2.753980
Jarque-Bera	11.86479	11.66980	14.01111	1.702223
Probability	0.002652	0.002924	0.000907	0.426940
Observations	43	43	43	43

INF is normal distribution based on the skewness value, because these variable' skewness values are close to 0. This variable also have a kurtosis value of less than 3, indicating that they are platykurtic. These series have lower values than the sample mean, according to the platykurtic. The right tail of the other variables is long,

indicating that these series are positively skewed and leptokurtic. Because the kurtosis values are more than 3, these are peaked distributions. The null hypothesis for the Jarque-Bera test is that the distribution is normal. Therefore, the probability value of INF is 0.4269, which is above the significance value of 0.05. So, with respect to INF, we cannot reject the null hypothesis. So, this study concludes that INF is normally distributed. On the other hand, we clearly reject the null hypothesis of the normal distribution for all other variables. Because the probability values are highly significant. So, the distribution of FD, RM, and GDP is clearly not normal. These results are close to the results of kurtosis and skewness of these four variables.

The correlation analysis determines the degree of association between the variables. The results of the correlation matrix are presented in Table 2.

Table 2. Correlation analysis

	LFD	LRM	LGDP	INF
LFD	1.000000			
LRM	0.637757 (0.0000)	1.000000		
LGDP	0.866517 (0.0000)	0.729819 (0.0000)	1.000000	
INF	-0.578759 (0.0000)	-0.326329 (0.0327)	0.0327 (0.0017)	1.000000

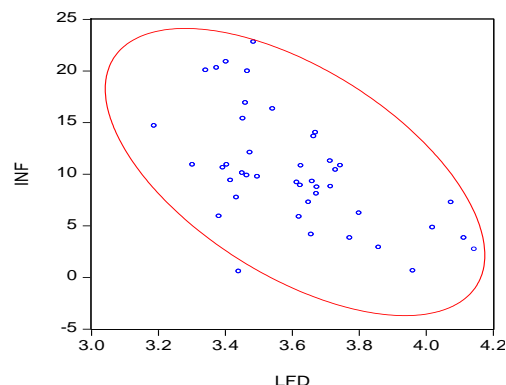Note: P-Value is given in parenthesis.

Graph 1. Relationship between financial development and workers' remittances
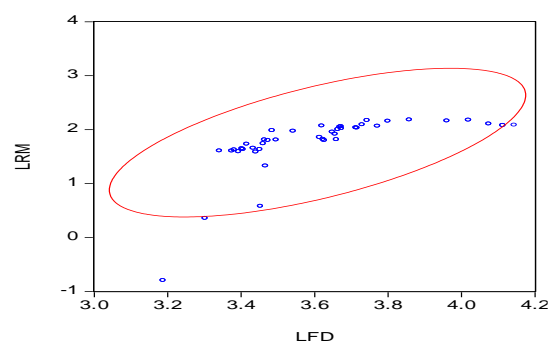
Graph 2. Relationship between financial development and gross domestic product
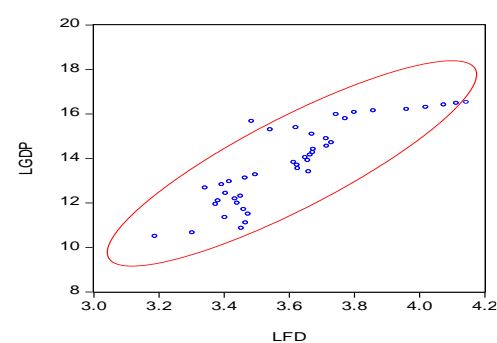
Graph 3. Relationship between financial development and inflation

LFD have a strong positive correlation with LRM and LGDP because the correlation coefficient is between 0.5 and 0.9 and it is statistically significant at a 1% level of significance. Scatter plot (1) and (2) also confirmed, LFD have a positive relationship with LRM and LGDP. INF has a statistically significant and negative correlation with LFD at 1% significance level. The confidence Ellipse for INF also shows the same results.

4.2. *Econometric Analysis*

Table 3 presents the results of the augmented Dickey-Fuller (ADF) test for all levels and the first-differenced series included in the analysis.

Table 3. The results of ADF unit root test

Variable	Level	1st Difference	I(0)/ I(1)
LFD	0.9668	0.0000*	I(1)
LRM	0.0000*	0.0000	I(0)
LGDP	0.0673***	0.0014	I(0)
INF	0.1003	0.0000*	I(1)

Note: *, ***indicates that variables are statistically significant at 1% and 10% level, respectively.

Augmented Dickey-Fuller (ADF) tests show that the money supply to GDP ratio (LFD) and inflation (INF) are non-stationary in level and become stationary after the first difference, whereas workers' remittances (LRM) and gross domestic product (LGDP) are stationary in level. As a result, the study used the ARDL Bounds test to examine the existence of the cointegrating relationship between workers' remittances and financial development. LR, FPE, AIC, and HQ criteria suggested using three lags. Implying that the optimum lag would be three, and three lags were used in the ARDL Bounds test. Akaike Information Criteria (AIC) suggested the use of the ARDL (1, 3, 3, 0) model. Table 4 shows the results of the ARDL Bounds test.

Table 4. The results of ARDL (1, 3, 3, 0) model

Panel A: F- Test for the existence of a cointegration				
F- Bound test 95% level of confidence				
F- Statistics	Lower Bound		Upper Bound	
7.166542	2.79		3.67	
Panel B: Long run coefficient estimates				
Constant	LRM	LGDP	INF	R^2
2.551963	0.608868*	0.658653***	-0.052674***	0.971551
(0.0000)	(0.0083)	(0.0946)	(0.0711)	

Note: P-Value is given in parenthesis. *, *** indicates that variables are statistically significant at 1% and 10% level, respectively.

In Table 4, the calculated F- Statistics is 7.16, which is greater than the upper bound critical value (at a 5% level of significance), indicating that the variables considered in this study have a cointegrating relationship. This implies that all the explanatory variables simultaneously and jointly influenced the variations in the financial development. According to the regression results, LRM has a significant and positive long-run impact on LFD. While other things remain constant, a 1% increase in the remittances to GDP ratio boosts financial development by 0.60%. As a result, remittances increase the size of financial intermediaries and the level of financial intermediation. This will help to overcome the liquidity constraints. This implies that the presence of appropriate channels for remittance transfers can lead to an increase in remittance inflows, resulting in financial sector development. This finding is consistent with the findings of Oke et al. (2011) and Azizi (2020). The relationship between LGDP and the financial development proxy as liquid liabilities was positive and significant because economic development facilitates financial development. If GDP increased by 1%, financial development increased by 0.65% while all other variables remained constant. The result is consistent with the research done by Aggarwal, Demirguc-Kunt, and Peria, (2011), who discovered that Demand for financial sector products is created as a result of economic expansion. As a result, one may argue that financial development and economic growth remain closely intertwined. Demand for financial sector products is created as a result of economic expansion. As a result, one may argue that financial development and economic growth remain closely intertwined. This finding is also in line with the endogenous growth concept, which claims that economic growth drives financial system development by establishing a market for financial products, which leads to financial sector deepening and expansion (King and Levine, 1993). The result also confirms the findings of Wahid, Shahbaz, and Azim (2011).

Further, inflation has a significant negative impact on financial development. If inflation increased by 1%, financial development decreased by 0.05%, while all other factors remained constant. Inflation, as indicated by the fact that it discourages financial intermediation and so slows financial growth, is a serious problem (Boyd, Levine, and Smith, 2001). This finding is consistent with Mackinnon's (1991) theory, which states that High inflation rates discourage long-term contracting, create informational asymmetry and moral hazard, and hinder financial expansion. Furthermore, the results support the findings of Bittencourt (2011) and Wahid, Shahbaz, and Azim (2011).

Table 5. Error correction representation for the selected ARDL (1, 3, 3, 0) model

Short run coefficient estimates and error correction representation				
Lag Order	ΔLFD	ΔLRM	$\Delta LGDP$	ΔINF	ECT(-1)
0		0.293971***	0.505364	-0.014065*	-
		(0.0546)	(0.1406)	(0.0006)	0.163782**
1	1.072900*	-	-0.052299	5.27E-05	(0.0414)
	(0.0006)	0.206422***	(0.8922)	(0.9909)	
		(0.0724)			
2		0.167337*	1.425250*	-0.002688	
		(0.0078)	(0.0010)	(0.4842)	
3		-0.038807	0.250856	0.000391	
		(0.4318)	(0.5409)	(0.7827)	

$R^2 = 0.835637$

Note: P-Value is given in parenthesis. *, **, *** indicates that variables are statistically significant at 1%, 5% and 10% level, respectively.

Accordingly, ECT (-1) has a significant negative sign, indicating that there should be an adjustment towards a steady state line with a speed of 16.3 percent one period after the exogenous shocks. LFD is negatively affected by current year INF and previous year LRM (at lag 1). Because remittances provide needed funds, recipients may not require credit from financial institutions, which will have a negative impact on credit market development (Aggarwal, Demirguc-Kunt, and Peria, 2006). In the short run, the previous year's LFD (at lag 1), the current year's LRM, the two-period lag value of LRM, and the previous year's LGDP (at lag 2) have a positive and significant impact on LFD.

Next, check the diagnostics of the selected model. The results are given below:

Table 6. Diagnostic test

Diagnostic	Test Applied	P-Value	Conclusion
Serial correlation	Breusch-Godfrey serial correlation LM test	0.9779	No serial correlation
Normality	Jarque- Bera	0.594245	Error is normal
Heteroscedasticity	White test	0.9711	No heteroscedasticity
Omitted variable	Ramsey RESET test	0.0208	No omitted variables

The diagnostic test results show that the model is correctly specified and the parameters are correctly estimated. Because all of the diagnostics test probability values are greater than the 1% level of significance.

Table 7. The results of Granger Causality Test

Null Hypothesis	Obs	F-Statistics	P-Value
D_LRM does not granger cause D_LFD	41	3.28869**	0.0488
D_LFD does not granger cause D_LRM	41	1.56289	0.2234

Note: ** indicates that variables are statistically significant at 5% level.

Table 7 above shows the results of the Granger causality test. The Granger Causality test results suggest a unidirectional causality that runs from workers' remittances to financial development.

5. CONCLUSION AND POLICY IMPLICATION

The purpose of the study was to investigate the relationship between workers' remittances and financial development. The study employed annual time series data for Sri Lanka from 1977 to 2019, and the ARDL Cointegration technique developed by Pesaran et al. (2001) was used to empirically estimate the dynamic relationship between two variables: workers' remittances and financial development. The model also included gross domestic product and inflation as explanatory variables for better interpretation. The bounds testing technique was used to determine the presence of a cointegrating relationship as well as a long-run relationship between the variables. Once confirmed the cointegrating relationship, the short-run dynamics of parameters and long-run adjustment of the model were estimated by the error correction version of the

ARDL model pertaining to the variables in the equation. The Granger Causality test was used as the final step to determine the causality between the variables.

The findings show that there is a statistically significant and positive relationship between workers' remittances and Sri Lanka's financial development. This means that remittances supplement Sri Lanka's liquid liabilities. Further findings show that gross domestic product has a positive influence on financial development. Inflation has a negative impact on Sri Lanka's financial development. The Granger causality test results indicate a unidirectional causality stemming from workers' remittances to financial development.

Looking at the existing literature, Aslam and Sivarajasingham (2020) investigated the relationship between workers' remittances and financial development and came to similar conclusions about workers' remittances and their impact on financial development. Furthermore, using data from five South Asian economies, including Pakistan, India, Sri Lanka, Bangladesh, and Nepal, Shahzad et al. (2014) concluded that in the case of Sri Lanka, workers' remittances have a positive relationship with financial development. Basnet et al. (2021) investigated the impact of worker remittances on financial growth in Bangladesh, India, Nepal, Pakistan, and Sri Lanka. They confirmed that there is a long-run association between remittances and financial development.

In conclusion, based on the analysis' congruence with theories as well as empirical evidence, it is clear that worker remittances have a positive and significant impact on Sri Lanka's financial development. In the Sri Lankan context, remittances from workers have a unidirectional impact on financial development. Policymakers should be aided in creating and executing suitable policies because remittance inflows are a vital source

of foreign cash for both the internal and external sectors of the economy. This highlights that Sri Lanka's economy should make every effort to increase the remittance inflows.

Promoting financial inclusion to increase access to banking, strengthening competition, and developing financial infrastructure could lower remittance costs and increase remittances while shifting a larger share of remittances from informal to formal channels. Encouraging digital money transfers including online remittance channels, mobile money, and Fintech transfers will also help to lower transaction costs. Due to high transaction costs, large sums of remittances are reported to be routed through informal channels. To limit the use of informal channels, public-private partnerships (PPP) between the government and remittance providers must be established. Lower transaction costs, along with discounts for frequent remittance senders, may encourage migrant workers to transmit money formally and regularly through commercial banks and financial institutions. Governments should also develop and enforce laws that encourage their surplus labor force to seek work in other countries.

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