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Do Remittances Lead to Financial Instability? Evidence from Selected Asia–Pacific Countries

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Abstract

The Asia–Pacific region is among the top recipients of international remittances globally. This study examines the impact of remittances on financial instability and investigates whether the causal relationship between remittances and financial instability is symmetric or asymmetric in selected remittance-dependent Asia–Pacific countries: Pakistan, the Philippines, and Sri Lanka. Using the frequency domain causality approach and monthly data (Pakistan: 2005m01–2023m08; the Philippines: 1998m10–2023m08; Sri Lanka: 2015m01–2022m12), the results reveal both symmetric and asymmetric unidirectional causality from remittances to financial instability in Sri Lanka. In Pakistan, symmetric and asymmetric causality is observed from financial instability to remittances. No significant symmetric or asymmetric causal relationship is found in the Philippines. These findings suggest that recognizing asymmetric effects is essential for designing targeted policy responses in remittance-dependent economies. In particular, strengthening formal remittance channels, enhancing financial sector resilience, and using foreign exchange interventions in crisis-prone contexts like Sri Lanka can help mitigate remittance-induced instability.

Keywords: remittances; financial instability; frequency domain causality; Asia-Pacific

JEL Classification: F24; G0; C32; N15

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1. Introduction

The sheer scale of international remittances has sparked significant scholarly interest in investigating their effects on recipient countries. Remittances can produce both favorable and unfavorable outcomes (Amuedo-Dorantes & Pozo, 2023). While they are often viewed as vital to the development of receiving economies, concerns about their broader macroeconomic consequences have also gained attention. Empirical studies suggest that international remittances may hinder economic growth (Lartey et al., 2012; Sutradhar, 2020), constrain financial development (Bettin et al., 2017), appreciate the real effective exchange rate (Hien et al., 2020; Oleksiv & Mirzoieva, 2022), reduce labor supply (Azizi et al., 2023; Habib, 2023), fuel inflation (Basnet et al., 2022), increase external debt-to-GDP ratios (Mijiyawa & Oloufade, 2023), exacerbate income inequality (Song et al., 2021; Tokhirov et al., 2021), and contribute to trade deficits (Farzanegan & Hassan, 2020). These findings point to the potentially wide-ranging negative effects of remittances on the economies of recipient nations. However, there remains a gap in the literature concerning how international remittances affect the financial stability of these countries.

Against this backdrop, the present study investigates the impact of international remittances on financial instability in three highly remittance-dependent countries in the Asia-Pacific region: Pakistan, the Philippines, and Sri Lanka. These countries were selected for several reasons. First, all are classified by the World Bank as lower-middle-income economies. Second, the Asia-Pacific region accounts for approximately 30 percent of the global international migrant stock and received \$310 billion in remittances in 2022—roughly 39 percent of the global total (International Organization for Migration [IOM], 2023). Third, these nations are heavily reliant on international remittances. Between 1977 and 2022, average remittance-to-GDP ratios were 5.2 percent for Pakistan, 6.8 percent for the Philippines, and 6.3 percent for Sri Lanka (World Bank, 2024). Lastly, remittances to the region have consistently outpaced official development assistance and foreign direct investment. Figure 1 shows the behavior of remittances as a share of GDP in these three countries over time.

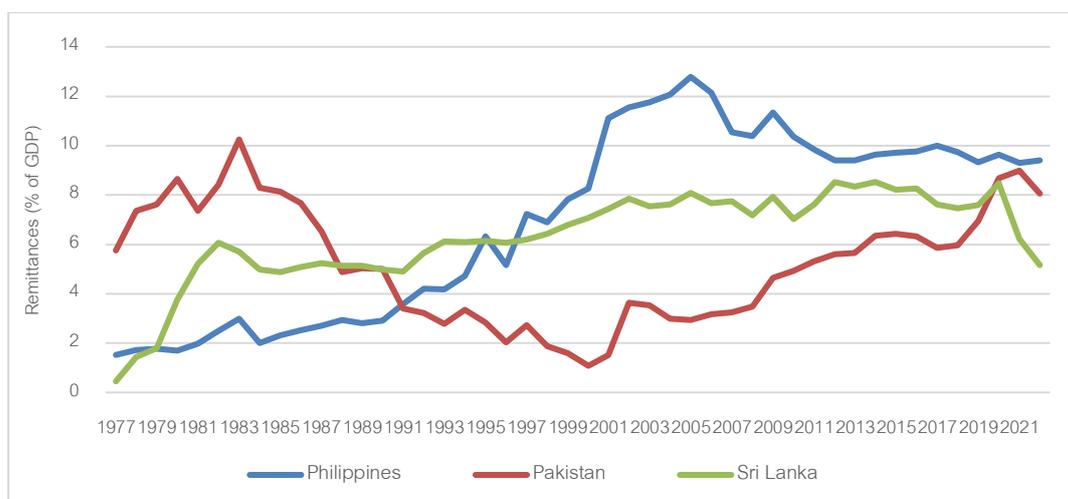


Figure 1: Remittances to sample countries, 1977–2022

Source: World Bank (2024)

Several patterns emerge from Figure 1. In Pakistan, the contribution of remittances to GDP peaked at 10.2 percent in 1983, declined steadily until 2000, and then increased significantly until 2021 before falling due to the COVID-19 pandemic. In the Philippines, remittances rose steadily between 1977 and 2004, peaking at 12.5 percent in 2005, followed by a downward trend culminating in a sharp drop in 2022. Sri Lanka experienced steady remittance inflows from 1985 to 2019, with a peak of 8.5 percent in 2020, followed by a significant decline likely related to the pandemic.

Figures 2–4 present the evolution of the Financial Stress Index (FSI) in each country. In Pakistan, the FSI peaked in February 2009 (during the financial crisis of 2009 in the country) and reached its lowest point in February 2017. In the Philippines, the FSI reached its highest levels in November 1988 and November 2008 and its lowest in June 2007. For Sri Lanka, the FSI peaked in May 2022 (during the sovereign default) and hit its lowest in December 2021.

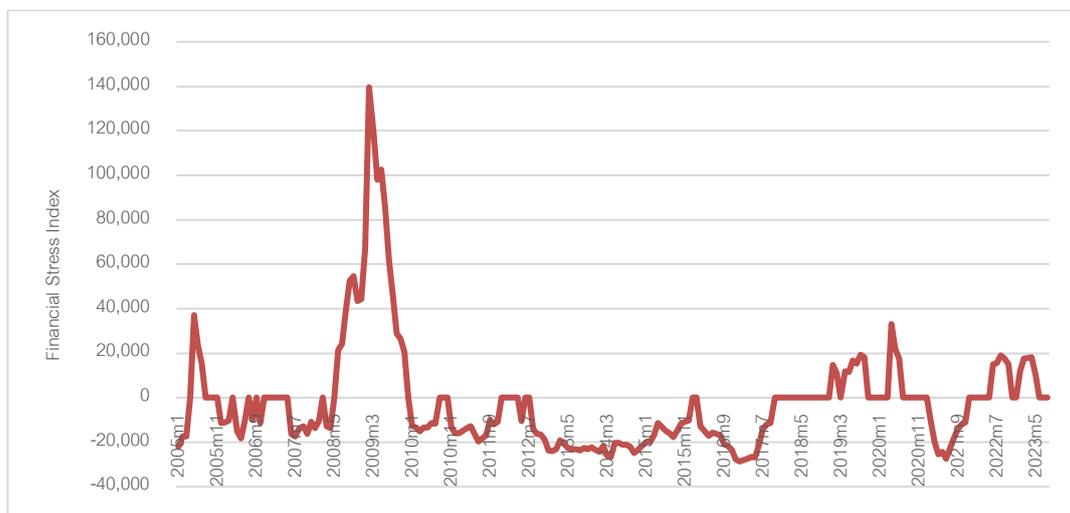


Figure 2: Evolution of FSI in Pakistan, 2005m01–2023m08

Source: Park and Mercado (2014)

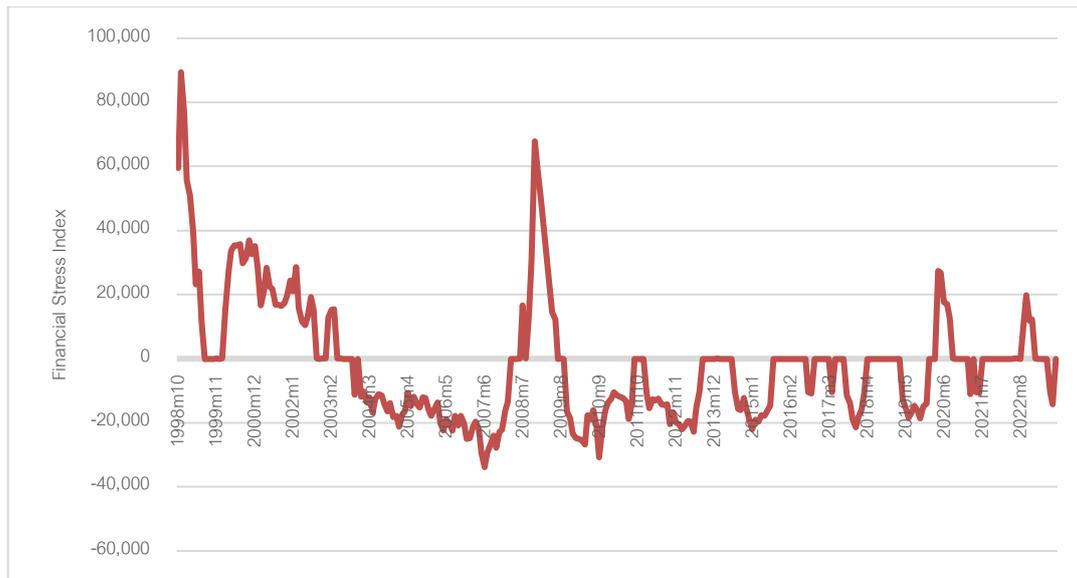


Figure 3: Evolution of FSI in the Philippines, 1998m10–2023m08

Source: Park et al. (2014)

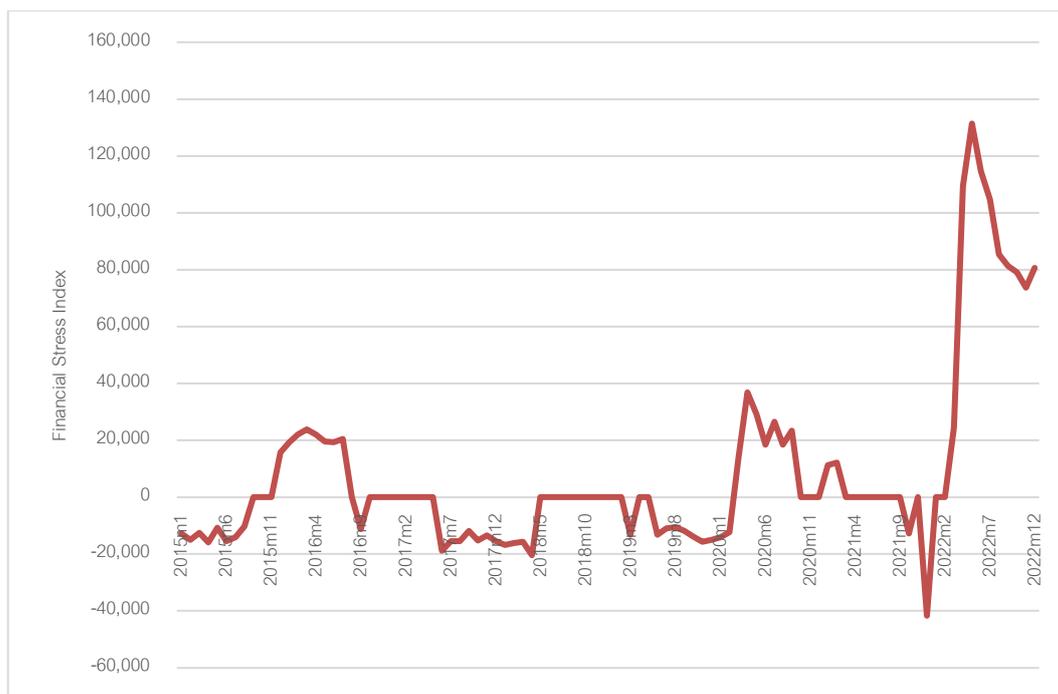


Figure 4: Evolution of FSI in Sri Lanka, 2015m01–2022m12

Source: Park et al. (2014)

The varying dynamics of international remittance inflows suggest that they may affect financial instability asymmetrically. That is, positive and negative shocks in remittance flows may not have uniform effects on financial stress. Accordingly, this study also examines the potential for asymmetric frequency domain causality between international remittances and financial instability in the three countries under investigation.

This research contributes to the literature in several ways. First, it explores international remittances as a

potential source of financial instability in recipient countries—a relatively underexplored topic. Second, it offers empirical evidence on the symmetric and asymmetric effects of remittances on financial instability. The remainder of the paper is structured as follows: Section 2 reviews the theoretical framework and literature; Section 3 outlines the empirical strategy and data; Section 4 presents and discusses the results; and Section 5 concludes with policy implications, limitations, and directions for future research.

2. Remittances and Financial Instability: Theory and Literature

Can international remittances lead to financial instability in recipient countries? From a theoretical perspective, remittances and financial instability are indeed interlinked. On the one hand, according to the altruism hypothesis, adverse economic conditions in migrants' home countries may motivate them to remit more money as a form of financial support for their families. Therefore, financial instability in the home country can stimulate higher remittance inflows (Lucas & Stark, 1985). For example, Akçay and Karasoy (2019) showed that macroeconomic instability encourages remittance inflows in Egypt. Similarly, in the case of Pakistan, de Padua et al. (2024) found that domestic inflation—used as a proxy for macroeconomic instability—promotes remittance inflows.

On the other hand, while international remittances can serve as a financial buffer during macroeconomic downturns, particularly in countries with underdeveloped financial systems, they may also contribute to financial instability through several mechanisms.

First, remittances may inflate asset values and increase inflation by boosting central bank reserves and liquidity in the recipient economy (Ball et al., 2013). Chami et al. (2008) found that economies receiving large remittance inflows experienced higher output volatility and increased average inflation rates, with a particularly strong link between remittances and business cycle volatility.

Second, since remittances often enter the economy through the central bank's balance sheet, they can expand the money supply and liquidity. Excess liquidity may lead to soaring asset prices and create credit bubbles. Rising credit and asset prices are early warning signs of financial stress (Sufi & Taylor, 2021).

Third, remittance flows may ease lending constraints in the financial sector by increasing available credit. While this may seem beneficial, cheap and abundant credit can foster economic bubbles and pose risks to the banking sector.

Fourth, a surge in remittances may trigger the Dutch Disease effect. This occurs when the tradable goods sector, particularly resource or manufacturing industries, contracts as labor and investment shift toward the non-tradable sector, including services and consumption-driven activities (Uddin & Murshed, 2017). The increased demand for non-tradable goods can push up their prices and lead to real exchange rate appreciation (World Bank, 2006). Although such appreciation can reduce the cost of imported intermediate goods and encourage domestic production in net-importing countries, it can also generate macroeconomic imbalances and reduce economic resilience.

Fifth, remittances may contribute to a higher external debt-to-GDP ratio. In a study of 50 low- and middle-income countries, Mijiyawa and Oloufade (2023) found a positive association between international remittances and external debt accumulation.

Finally, remittances sent via informal channels may contribute to foreign exchange (FX) liquidity crises. Samarakoon (2024) illustrates this with the case of Sri Lanka, where informal remittance inflows exacerbated FX shortages.

Despite the theoretical plausibility of these linkages, relatively few empirical studies directly examine the relationship between international remittances and financial instability in remittance-dependent countries. Kim (2013), analyzing 12 developing and emerging economies, found that remittances help reduce financial constraints and support financial stability. Using GMM estimation over the 1975–2018 period, Miao and Qamruzzaman (2021) concluded that remittances foster financial stability in 40 least developed countries (LDCs). Hordofa (2024) similarly observed a positive relationship between remittances and financial stability in Ethiopia.

However, evidence is more nuanced in broader samples. Oliva and Khinashvili (2024), using data from 157 emerging and developing economies between 2000 and 2022, found no significant effect of remittances on financial stability—measured by regulatory capital ratios and net open FX positions—across the full sample. They did find, however, that remittances improved financial stability in Eastern European and Asian countries, albeit with a lag.

In a recent study, Addi et al. (2025) examined both linear and nonlinear effects of remittances on financial instability in Pakistan using monthly data from 2008 to 2021. While the linear analysis indicated a stabilizing role of remittances, the nonlinear analysis revealed that excessive dependence on remittances can lead to financial instability.

3. Data and Empirical Strategy

3.1 Data

This study uses monthly data covering the periods 2005m01–2023m08 for Pakistan, 1998m10–2023m08 for the Philippines, and 2015m01–2022m12 for Sri Lanka. These countries and periods were selected based on data availability. Following Baxa et al. (2013), Apostolakis and Papadopoulos (2014), Malega and Horváth (2017), Elsayed et al. (2024), and Apostolakis and Giannellis (2024), financial instability is measured using the Financial Stress Index (FSI) developed by Park et al. (2014). This index defines financial stress as “episodes when the financial system is under strain and its ability to intermediate is impaired.” It captures the degree of financial stress by incorporating indicators from four key financial markets: the banking sector, the foreign exchange market, the equities market (returns and volatility), and the debt market. Positive values of the index indicate higher stress levels, while negative values reflect lower financial stress. Extremely high positive values are typically associated with financial crises. For methodological details, see Park et al. (2014).

International remittances are measured as monthly personal remittance inflows in millions of US dollars,

and the data are sourced from the respective central banks of the sample countries.

Table 1 presents descriptive statistics for the variables in each country. Among the three, Sri Lanka's FSI has the highest mean and displays greater volatility, indicating relatively elevated financial stress. For all countries, the FSI series exhibit kurtosis values exceeding 3, indicating leptokurtic distributions. The negative skewness observed in remittances (REM) across all countries suggests left-tailed distributions. According to the Jarque-Bera test statistic, the REM and FSI series deviate significantly from normality at the 1% significance level in all countries, implying nonlinearity in the data.

Table 1: Descriptive Statistics

	Mean	Std. Dev.	Max	Min	Skewness	Kurtosis	Jarque-Bera
Pakistan							
REM	7.069	0.5788	8.046	5.733	-0.515	2.225	14.685***
FSI	-2.276	24.558	139.592	-28.691	2.744	13.073	1162.622***
Philippines							
REM	7.222	0.596	8.058	5.926	-0.574	1.943	30.375***
FSI	-1.717	18.828	89.405	-33.850	1.487	6.214	238.931***
Sri Lanka							
REM	6.253	0.270	6.700	5.322	-1.444	4.536	42.836***
FSI	7.855	31.809	131.398	-41.634	2.152	7.382	150.956***

Source: Author's calculation.

Notes: REM is expressed in natural logarithms. *** denotes significance at the 1% level.

3.2 Empirical Strategy

To examine the causal relationship between remittances and financial instability, this study employs the frequency domain causality test developed by Breitung and Candelon (2006). A key strength of this method is its ability to distinguish between short-, medium-, and long-term causal relationships across different frequencies. It is also effective in dealing with seasonal patterns and nonlinear time series, as emphasized by Xie et al. (2022).

The framework is based on applying linear restrictions to the coefficients of a stationary VAR(p) model, specified as follows:

$$\begin{bmatrix} x_t \\ y_t \end{bmatrix} = \begin{bmatrix} \lambda_1 \\ \lambda_2 \end{bmatrix} + \begin{bmatrix} \phi_{1,1} & \phi_{1,2} \\ \phi_{2,1} & \phi_{2,2} \end{bmatrix} \begin{bmatrix} x_{t-1} \\ y_{t-1} \end{bmatrix} + \dots + \begin{bmatrix} \phi_{1,p} & \phi_{1,2,p} \\ \phi_{2,1,p} & \phi_{2,2,p} \end{bmatrix} \begin{bmatrix} x_{t-p} \\ y_{t-p} \end{bmatrix} + \begin{bmatrix} \omega_t \\ \psi_t \end{bmatrix} \quad (1)$$

where $t=1, \dots, T$, and $[\omega_t, \psi_t]' \sim \text{iid}(0, \Sigma)$, Σ is a positive-definite.

Assume that $[\phi_{1,2,1}, \dots, \phi_{1,2,p}]'$, with a linear restriction on the VAR coefficients, the null hypothesis (H_0) of no causality from y (REM) to x (FSI) at frequency ω_0 can be written as follows:

$$H_0 : R\beta = 0$$

where

$$R = \begin{bmatrix} \cos(\omega) & \cos(2\omega) & \dots & \cos(p\omega) \\ \sin(\omega) & \sin(2\omega) & \dots & \sin(p\omega) \end{bmatrix} \in R^{2 \times p} \quad (2)$$

Notice that when $R = I_p$ the above hypothesis is equivalent to the H_0 of the traditional Granger causality test.

Let $x = [x_{p+1}, \dots, x_T]'$ and $Z_i = [z_{i,p+1}, \dots, z_{i,T}]'$ for $i=1,2$ with $z'_{1,t} = [x_{t-1}, \dots, x_{t-p}]$, $z'_{2,t} = [y_{t-1}, \dots, y_{t-p}]$. The following Wald test statistics can be used to test H_0 , same as in the traditional Granger causality test.

$$W = (R\hat{\beta})' [\hat{\sigma}^2 R(Z'_2 Q Z_2)^{-1} R']^{-1} R\hat{\beta} \quad (3)$$

The Wald test statistic (W) is asymptotically distributed as $\chi^2(2)$ for $\omega_0 \in (0, \pi)$, just like the traditional causality test. Note that the formula $T = 2\pi/\omega$ can be used to identify the causality episodes of T using the frequency parameter (ω).

We partition remittances and financial stress shocks into positive and negative shocks by equations (4), (5), (6), and (7), respectively, as Shin et al. (2014) did, to identify possible shock transmission asymmetries.

$$REM_p_t = \sum_{j=1}^t \Delta REM_p_j = \sum_{j=1}^t \max(\Delta REM_j, 0) \quad (4)$$

$$REM_n_t = \sum_{j=1}^t \Delta REM_n_j = \sum_{j=1}^t \min(\Delta REM_j, 0) \quad (5)$$

$$FSI_p_t = \sum_{j=1}^t \Delta FSI_p_j = \sum_{j=1}^t \max(\Delta FSI_j, 0) \quad (6)$$

$$FSI_n_t = \sum_{j=1}^t \Delta FSI_n_j = \sum_{j=1}^t \min(\Delta FSI_j, 0) \quad (7)$$

4. Results and Discussion

We begin the analysis with preliminary tests, including assessments of stationarity and nonlinearity. First, the Zivot and Andrews (2002) unit root test is employed to determine the integration order of the series and to identify structural breakpoints. As reported in Table 2, the FSI is integrated of order one [I(1)] for Pakistan and Sri Lanka, while it is stationary [I(0)] for the Philippines. For remittances (REM), the series is I(0) for Pakistan, and I(1) for Sri Lanka and the Philippines. Structural breaks in Pakistan's FSI and REM occurred in 2009m03 and 2010m03, respectively—likely due to the financial crisis of 2009 in the country. In the Philippines, structural breaks in FSI and REM were identified in 2003m04 and 2003m01, coinciding with the 2003 coup d'état. For Sri Lanka, breaks were found in 2021m10 and 2021m01, aligning with the prolonged economic crisis (2019–2024). Since the Breitung and Candelon (2006) frequency domain causality test requires stationary data, the first

differences of the I(1) series are used in subsequent analysis. To test for nonlinearity, we apply the Brock et al. (1996) BDS test. Table 3 provides significant evidence of nonlinearity in all series.

Table 2: Zivot-Andrews Unit root test results

Variable	Level	Break date	1 st Dif.	Break date	Outcome
ZA test for Pakistan					
FSI	-4.181 (1)	2009m07	-13.389*** (1)	2009m03	I(1)
REM	-5.637*** (2)	2010m03	-	-	I(0)
ZA test for the Philippines					
FSI	-6.147*** (1)	2003m04	-	-	I(0)
REM	-4.365 (4)	2004m12	-12.003*** (4)	2003m01	I(1)
ZA test for Sri Lanka					
FSI	-3.048 (0)	2021m10	-5.836*** (3)	2021m10	I(1)
REM	-4.338 (1)	2021m04	-14.011*** (0)	2021m01	I(1)

Source: Author's calculation.

Notes: Lag lengths are in parentheses. *** $p < 0.01$. The positive and negative components of FSI and REM are I(0) for all countries (not shown).

Table 3: BDS test results

m	2	3	4	5	6
BDS test for Pakistan					
FSI	0.151***	0.249***	0.309***	0.341***	0.355***
REM	0.174***	0.299***	0.387***	0.447***	0.488***
BDS test for the Philippines					
FSI	0.158***	0.263***	0.329***	0.368***	0.389***
REM	0.184***	0.319***	0.416***	0.483***	0.531***
BDS test for Sri Lanka					
FSI	0.151***	0.249***	0.309***	0.341***	0.355***
REM	0.179***	0.309***	0.401***	0.465***	0.509***

Source: Author's calculation.

Notes: m denotes embedding dimension. The lags for the VAR models are based on the Schwarz information criterion (SIC). *** denotes significance at the 1% level.

Table 4 presents the symmetric frequency domain causality results between remittances and financial instability. For Pakistan, we find unidirectional causality from financial instability to remittances in the short and medium runs. This suggests that adverse economic conditions in Pakistan encourage migrants to send more money home, supporting the altruism hypothesis. This result aligns with Akçay and Karasoy (2019), who report

that macroeconomic instability increases remittance inflows.

For the Philippines, no causal relationship is detected between remittances and financial instability. Several factors may explain this finding. First, long-standing reliance on remittances has led to the establishment of a sophisticated infrastructure for managing remittances (Orbeta, 2008). Second, the Philippines has made considerable improvements in financial institutions and markets, particularly following the 2008 global financial crisis (Armas & De Guzman, 2024). A robust financial system may help absorb remittance inflows without destabilizing effects. Third, the Philippines may effectively channel remittances into productive uses, such as education and family-owned businesses, thereby promoting stability (Rivera & Tullao, 2020).

In Sri Lanka, we find persistent causality from remittances to financial instability across all time horizons. This suggests that Sri Lanka's small and fragile financial sector is highly susceptible to volatility induced by remittance flows. These results support Addi et al.'s (2025) nonlinear findings but contrast with studies such as Hordofa (2024), Kim (2013), Miao and Qamruzzaman (2021), and Oliva and Khinashvili (2024), who find remittances promote financial stability.

Table 5 shows the results of asymmetric frequency domain causality analysis. In Pakistan, positive remittance shocks are found to cause financial instability in the short run, aligning with Addi et al.'s (2025) finding that excessive remittance inflows can destabilize financial systems. Meanwhile, a reduction in financial stress leads to lower remittance inflows in the short and long runs—further supporting the altruism hypothesis.

For the Philippines, no evidence of asymmetric causality is found. In Sri Lanka, however, positive shocks in remittances increase financial instability across all horizons, and alleviate it only in the short run. Additionally, negative remittance shocks exacerbate financial instability in the medium and long term. This underscores the vulnerability of Sri Lanka's financial system to abrupt remittance declines—such as those resulting from oil price shocks or job losses in the Gulf Cooperation Council (GCC), where most Sri Lankan migrants are employed.

Table 4: BC test: Symmetric results

	$\omega=0.5$	$\omega=1.5$	$\omega=2.5$
Pakistan			
REM \rightarrow FSI	x	x	x
FSI \rightarrow REM	x	\checkmark^{**}	\checkmark^{**}
Philippines			
REM \rightarrow FSI	x	x	x
FSI \rightarrow REM	x	x	x
Sri Lanka			
REM \rightarrow FSI	\checkmark^{**}	\checkmark^{**}	\checkmark^{**}
FSI \rightarrow REM	x	x	x

Source: Author's calculation.

Notes: ω indicates frequency. $\omega=0.5$, $\omega=1.5$, and $\omega=2.5$ show long-, medium-, and short- runs causality. While X denotes noncausality, \checkmark represents causality. ** p<0.05.

Table 5: BC test: Asymmetric results

	$\omega=0.5$	$\omega=1.5$	$\omega=2.5$
Pakistan			
REM_p \rightarrow FSI_p	x	x	\checkmark^{**}
REM_n \rightarrow FSI_n	x	x	x
REM_n \rightarrow FSI_p	x	x	x
REM_p \rightarrow FSI_n	x	x	x
FSI_p \rightarrow REM_p	x	x	x
FSI_n \rightarrow REM_n	\checkmark^{**}	x	\checkmark^{**}
FSI_n \rightarrow REM_p	x	x	x
FSI_p \rightarrow REM_n	x	x	x
Philippines			
REM_p \rightarrow FSI_p	x	x	x
REM_n \rightarrow FSI_n	x	x	x
REM_n \rightarrow FSI_p	x	x	x
REM_p \rightarrow FSI_n	x	x	x
FSI_p \rightarrow REM_p	x	x	x
FSI_n \rightarrow REM_n	x	x	x
FSI_n \rightarrow REM_p	x	x	x
FSI_p \rightarrow REM_n	x	x	x
Sri Lanka			
REM_p \rightarrow FSI_p	\checkmark^{**}	\checkmark^{**}	\checkmark^{**}
REM_n \rightarrow FSI_n	x	\checkmark^{**}	x
REM_n \rightarrow FSI_p	\checkmark^{**}	\checkmark^{**}	x
REM_p \rightarrow FSI_n	x	x	\checkmark^{**}
FSI_p \rightarrow REM_p	x	x	x
FSI_n \rightarrow REM_n	x	x	x
FSI_n \rightarrow REM_p	x	x	x
FSI_p \rightarrow REM_n	x	x	x

Source: Author's calculation.

Notes: ω indicates frequency. $\omega=0.5$, $\omega=1.5$, and $\omega=2.5$ show long-run, medium-run, and short-run causality. While x denotes noncausality, \checkmark represents causality. ** p<0.05.

5. Conclusions

Whether remittances are a boon or a bane for recipient countries remains a critical question in the literature. This study applies the frequency domain causality approach to examine the symmetric and asymmetric causal relationship between financial instability and remittances in Pakistan, the Philippines, and Sri Lanka. The results reveal symmetric unidirectional causality from remittances to financial instability only in Sri Lanka. As for asymmetric causality, the findings indicate that: (i) reduced financial instability decreases

remittance inflows in Pakistan; (ii) both positive and negative remittance shocks intensify financial instability in Sri Lanka; and (iii) no asymmetric causality relationship exists in the Philippines.

What do these findings imply for policymakers? First, given the destabilizing effect of remittance inflows in Sri Lanka, the Central Bank of Sri Lanka should closely monitor remittance trends to assess their macroeconomic implications. As a short-term strategy, foreign exchange (FX) interventions could be used to cushion the effects of remittance volatility on the local currency and the external sector (International Monetary Fund [IMF], 2023). Maintaining adequate FX reserves is essential to ensure exchange rate stability and fulfill external obligations. However, Sri Lanka currently faces a critical FX liquidity crisis and defaulted on its external debt in April 2022. According to Samarakoon (2024), informal remittance channels such as Hawala and Undiyal—which bypass the formal banking system—have significantly contributed to this crisis. Similarly, Withers (2024) highlights that sudden shifts from formal to informal channels have played a key role in Sri Lanka's recent macroeconomic instability.

Therefore, as a long-term strategy, the Sri Lankan authorities should implement structural reforms to reduce regulatory burdens that encourage the use of informal remittance channels. The launch of the cost-effective national remittance mobile application Lanka Remit by the Central Bank in 2022 is a positive step toward curbing informal transfers. To enhance its effectiveness, authorities should increase the number of participating banks and actively promote the application within the Sri Lankan diaspora. Additionally, strengthening the financial sector's resilience and transparency would help optimize the use of remittances and reduce vulnerability to external shocks.

This study is limited by data availability and focuses exclusively on highly remittance-dependent countries in the Asia-Pacific region. Nonetheless, it provides valuable insights into the nexus between remittances and financial instability. Several directions are suggested for future research. First, expanding the analysis to include other remittance-dependent countries in Africa, Latin America, and Central Asia would help test the generalizability of these findings. Second, future studies could explore the subcomponents of the financial stress index or use alternative proxies for financial instability. Third, analyzing the impact of remittance outflows on financial stability in major sending countries—particularly in the Gulf Cooperation Council (GCC)—would offer a novel contribution. Lastly, employing advanced causality techniques, such as time-varying, quantile-based, wavelet, or Fourier approaches, could yield further insights into the dynamic and heterogeneous nature of remittance effects.

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