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Analyzing the Impact of Workers' Remittances on Savings and Total Deposits: A Study of Economic Dynamics

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Abstract: ***This study investigates the impact of workers' remittances on savings and total deposits within the context of economic dynamics. Employing quantitative analysis, the research aims to elucidate the intricate relationship between these variables and their. Using data sourced from Nepal Rastra Bank spanning from June 2017 to April 2024, key variables including gross foreign exchange reserves, total trade balance, workers' remittances, and balance of payments deficit are examined. The research employs the Autoregressive Distributed Lag (ARDL) model alongside diagnostic tests to analyze both long-term and short-term relationships among the variables. Results reveal significant long-run relationships between workers' remittances and both savings and total deposits, indicating a positive influence of remittances on financial intermediation and capital accumulation. Granger causality tests suggest predictive causality between savings and workers' remittances, as well as between workers' remittances and total deposits, underscoring the importance of remittance inflows in shaping financial behaviors. However, other causality directions do not show significant effects, suggesting complex interdependencies among these variables. The findings support the main hypothesis that workers' remittances have a significant impact on both savings and total deposits in the long run. This research contributes to a deeper understanding of the economic dynamics driven by workers' remittances and provides valuable insights for policymakers, financial institutions, and stakeholders involved in economic development strategies.***

Keywords: Workers' Remittances, Savings, Total Deposits, Economic Growth, Financial Stability, ARDL Model.

1. INTRODUCTION

In economies around the world, the flow of workers' remittances serves as a vital component, often acting as a significant source of income for households and a stabilizing force for overall

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economic well-being, especially within developing nations. The intricate interplay between workers' remittances, savings behavior, and total deposits forms a dynamic nexus that profoundly influences economic trajectories. In light of this significance, this study delves into the nuanced relationship between workers' remittances, savings patterns, and total deposits, seeking to illuminate their interconnected dynamics and discern their implications for both economic growth and financial stability.

The magnitude and impact of workers' remittances on recipient economies cannot be overstated. These financial inflows not only bolster household incomes but also inject liquidity into local markets, thereby fostering consumption, investment, and ultimately, economic growth. However, the manner in which recipients utilize these remittance funds varies, with a portion typically allocated towards savings and deposits. Understanding the factors driving this allocation and its subsequent effects on overall savings behavior and financial intermediation is paramount for policymakers and economists alike.

Moreover, the relationship between workers' remittances, savings accumulation, and total deposits extends beyond the micro-level dynamics of individual households. At a macroeconomic level, the aggregation of these financial behaviors can significantly influence broader economic indicators, such as savings rates, capital accumulation, and financial sector development. Thus, analyzing this relationship offers insights not only into household financial decision-making but also into the broader economic dynamics shaping national economies.

By scrutinizing the impact of workers' remittances on savings behavior and total deposits, this study seeks to contribute to the existing body of literature on economic development and financial intermediation. Through empirical analysis and theoretical frameworks, it aims to unravel the intricacies of this relationship, shedding light on the mechanisms through which remittance inflows shape economic outcomes. Ultimately, a comprehensive understanding of these dynamics is essential for formulating effective policies that harness the potential of workers' remittances to promote sustainable economic growth and financial resilience.

2. RELATED WORKS

The impact of workers' remittances on savings and total deposits is a significant area of economic research, given the increasing volume of remittances worldwide. This review examines various studies that analyze how remittances affect financial development, particularly savings and deposits in recipient countries.

Workers' remittances have been a focal point of economic research, especially in the context of developing countries. Remittances, defined as the transfer of money by foreign workers to individuals in their home country, play a crucial role in the economic dynamics of recipient nations. These financial inflows have a direct impact on various macroeconomic variables, including savings and total deposits in the banking sector.

Impact on Savings

Several studies have highlighted the positive correlation between remittances and household savings. According to Adams and Cuecuecha (2010), remittances significantly boost household savings, providing a financial buffer that allows families to invest in education, healthcare, and

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small businesses. This is particularly evident in countries where financial markets are underdeveloped, and access to credit is limited (Giuliano & Ruiz-Arranz, 2009).
Furthermore, empirical evidence from a study conducted in Pakistan shows that remittances lead to an increase in national savings rates. Amjad, Irfan, and Arif (2013) found that remittances not only improve the financial well-being of recipient households but also contribute to higher aggregate savings at the national level. This is because a portion of the remittances is typically saved rather than consumed, which is consistent with the life-cycle hypothesis of savings behavior.

Influence on Total Deposits
The influx of remittances also impacts the banking sector, particularly total deposits. When recipients of remittances deposit their funds in banks, it enhances the liquidity of financial institutions, enabling them to extend more credit to the economy (Aggarwal, Demirgüç-Kunt, & Martínez Pería, 2011). This phenomenon has been observed in various countries, including the Philippines, where remittances constitute a significant portion of the national income and have led to a substantial increase in bank deposits (Yang, 2011).
Moreover, Gupta, Pattillo, and Wagh (2009) found that remittances contribute to financial sector development by increasing the deposits and assets of banks. Their study across sub-Saharan African countries indicates that remittances lead to higher levels of bank deposits, which in turn fosters greater financial stability and development.

Macroeconomic Implications
The macroeconomic implications of remittances extend beyond savings and deposits. Remittances can also mitigate the adverse effects of economic shocks. During financial crises, remittance flows tend to be more stable compared to other forms of capital flows, providing a reliable source of foreign exchange that can stabilize the economy (Ratha, 2013). Additionally, remittances can reduce poverty and income inequality by providing a steady income stream to low-income households (Adams & Page, 2005).

Hypothesis
- Workers' remittances have a significant impact on both savings and total deposits in the long run.

3. METHODOLOGY

The research methodology and design provide the blueprint for a systematic investigation into the chosen topic. In this study, a quantitative approach is employed to analyze factors impacting the phenomenon under study. Beginning with a clear problem statement, the research design encompasses a comprehensive literature review, data collection from reliable sources, identification of key variables, and selection of appropriate research methods and techniques.

Data Collection
The data utilized in this analysis were sourced from the Nepal Rastra Bank (NRB) website, spanning the period from June 2017 to April 2024. The primary variables examined include:

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- Gross Foreign Exchange Reserves (in billions of Nepali Rupees)
- Total Trade Balance
- Workers' Remittances
- Balance of Payments (BOP) Deficit

Statistical Analysis

The study employed tests cited in Nepal (2020) to analyze the impact of Workers' Remittances on Savings and Total Deposits. Ensuring data stationarity, the Phillips-Perron test by Phillips and Perron (1988) was utilized. The research utilized the ARDL model introduced by Pesaran et al. (2001), alongside the ARDL bound test and the Error Correction Model (ECM) (Engle & Granger, 1987), to explore both long-term and short-term relationships among the variables. Granger causality (Granger, 1969) was also applied to identify causal links between the variables. Diagnostic tests, including the Jarque-Bera Test (Jarque & Bera, 1987) for normality, Lagrange Multiplier Test (Breusch & Pagan, 1980) for serial correlation, and Breusch-Pagan-Godfrey Test (Godfrey, 1978; Breusch & Pagan, 1979) for heteroskedasticity, were conducted to evaluate the model's performance.

The ARDL model, introduced by Pesaran et al. (2001), integrates I (0) and I (1) variables within the same estimation. It comprises standard least square regressions, incorporating lags of both dependent and explanatory variables as regressors. The model's basic form includes cointegrated coefficients (αi and βj), with p and q representing the number of lags of dependent and explanatory variables, respectively. It is autoregressive, with yt being explained by lagged values of itself, alongside a distributed lag component comprising successive lags of the explanatory variable.

4. RESULTS AND DISCUSSION

In this analysis chapter, we delve into the examination of collected data using EViews 12, aiming to extract meaningful insights and relationships between variables. Utilizing this advanced statistical software, we meticulously explore the dataset, employing various statistical methods and econometric techniques. Through this process, we seek to uncover patterns, trends, and causal relationships, contributing to a deeper understanding of the research topic.

Table 1: Statistical Analysis

Statistic	Workers' Remittances	Saving and Call Deposit	Total Deposits
Mean	497709.6	1485098	3846844
Median	477964.5	1498685	3666617
Maximum	1220560	2123001	6145883
Minimum	51940.2	1029426	2019706
Standard Deviation	284929.9	297609.9	1268545
Skewness	0.332898	0.154151	0.192718
Kurtosis	2.292629	1.762511	1.720013
Jarque-Bera	3.656673	6.302411	6.924345

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Probability	0.160681	0.0428	0.031362
CV	57.24822266	20.03974822	32.97625
Observations	93	93	93

Table 1 provides summary measures for workers' remittances, savings and call deposits, and total deposits. The mean values indicate average levels of 497,709.6 for remittances, 1,485,098 for savings and call deposits, and 3,846,844 for total deposits. Median values are close to the mean, suggesting a relatively symmetrical distribution for these variables. The maximum and minimum values highlight the range within which these variables fluctuate, showing substantial variability. Standard deviations reveal that workers' remittances and total deposits exhibit significant variability, while savings and call deposits are relatively more stable. Skewness values close to zero suggest slight positive skewness for all variables, indicating that the data tails are slightly longer on the right side. Kurtosis values below 3 suggest a platykurtic distribution, indicating lighter tails than a normal distribution. The Jarque-Bera test statistics and their associated probabilities suggest that the null hypothesis of normal distribution cannot be rejected at a 5% significance level for workers' remittances, but it is rejected for savings and call deposits, and total deposits, indicating non-normality in their distributions. The coefficient of variation (CV) shows that workers' remittances are the most volatile relative to their mean, followed by total deposits and then savings and call deposits. The observations count of 93 indicates the sample size for the analysis.

Table 2: Unit Root Test (Phillips-Perron)

	At Level		**First Difference**	
Variable	Test Statistic	p-Value	Test Statistic	p-Value
Workers' Remittances	-5.197539	0.0002		
Saving and Call Deposit	-1.905968	0.6434	-9.360976	0.0000
Total Deposits	-2.536853	0.3101	-14.81668	0.0000

Table 2 shows the unit root tests assess the stationarity of the time series data. For workers' remittances, the test statistic at level (-5.197539) with a p-value of 0.0002 indicates stationarity. In contrast, savings and call deposits, and total deposits are non-stationary at levels, as indicated by high p-values, but become stationary at first difference, evidenced by their significant test statistics (-9.360976 and -14.81668 respectively) and p-values (0.0000).

Table 3: Results of ARDL.

R-squared	**0.732499**	**F-statistic**	**28.06756**
Adjusted R-squared	0.706401	P value	0
Durbin- Watson statistic	2.356465		
*Significant at 1%			

Table 3 results, with an R-squared value of 0.732499 and an adjusted R-squared of 0.706401, suggest that approximately 73.25% of the variation in the dependent variable is explained by

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the model. The F-statistic of 28.06756 with a p-value of 0 indicates the model's overall significance at the 1% level. The Durbin-Watson statistic of 2.356465 suggests no significant autocorrelation in the residuals.

Table 4: Results of bound test.

Test Statistic	Value	K
F-statistic	11.91859	2
Critical value bounds		
Significance	I0 Bound	I1 Bound
10%	4.19	5.06
5%	4.87	5.85
2.50%	5.79	6.59
1%	6.34	7.52

Table 4 shows F-statistic of 11.91859, which exceeds the critical value bounds at all significance levels (10%, 5%, 2.5%, and 1%). This indicates a long-run relationship among the variables.

Table 5: ARDL Estimate Test Results

A. Long-Run Coefficients				
Variable	**Coefficient**	**Standard Error**	**t-Statistic**	**p-Value**
Constant	182739.4	224700.9	0.813256	0.4184
Workers' Remittances	0.438539	0.073791	-5.943021	0.0000
Saving and Call Deposit	-0.041591	0.165151	-0.251838	0.8018
Total Deposits	0.031537	0.151116	0.208693	0.8352
Trend	1288.808	6479.686	0.198903	0.8428
E$CTt-1$	-0.438539	0.072461	-6.052096	0.0000

Table 5 shows workers' remittances have a significant positive coefficient (0.438539) indicating a positive relationship, while savings and call deposits, and total deposits do not show significant effects. The error correction term (ECTt-1) is significant and negative (-0.438539), indicating that deviations from the long-run equilibrium are corrected by approximately 43.85% each period.

Table 6: Short-Run Coefficients (Dynamic Short-Run)

Variable	Coefficient	Standard Error	t-Statistic	p-Value
D(Workers' Remittances(-1))	0.45239	0.082396	5.490469	0
D(Saving and Call Deposit(-1))	1.306834	0.510248	2.561175	0.0123
D(Total) Deposits	0.658602	0.407818	1.614942	0.1102

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Table 6 statest that in the short run, the lagged values of workers' remittances and savings and call deposits are significant, suggesting their immediate impact on the dependent variable.

Table 7: Diagnostic Tests

	Statistic	**p-Value**
Jarque-Bera Test (Normality)	JB=7.405629	0.024654
Breusch-Godfrey LM Test (Auto-correlation)	F=4.281036	0.0171
Breusch-Pagan-Godfrey Test (Heteroscedasticity)	F=4.707983	0.0001

Table 7 represents diagnostic tests which indicate some issues with normality (Jarque-Bera p-value = 0.024654) and autocorrelation (Breusch-Godfrey LM test p-value = 0.0171). The Breusch-Pagan-Godfrey test indicates heteroscedasticity (p-value = 0.0001), suggesting variability in the error term.

Table 8: Causality Test (Granger Causality)

Null Hypothesis	**F-Statistic**	**p-Value**
Workers' Remittances do not Granger-cause Savings and Call Deposits.	0.82597	0.4413
Savings and Call Deposits do not Granger-cause Workers' Remittances.	10.6576	0.00007
Workers' Remittances do not Granger-cause Total Deposits.	33.7562	0
Total Deposits do not Granger-cause Workers' Remittances.	0.92522	0.4004
Savings and Call Deposits do not Granger-cause Total Deposits.	0.88508	0.4164
Total Deposits do not Granger-cause Savings and Call Deposits.	1.50668	0.2274

Table 8 represents granger causality tests which reveal that savings and call deposits Granger-cause workers' remittances, and workers' remittances Granger-cause total deposits. This suggests predictive causality in these relationships. However, other causality directions are not significant.

Stability Test Graph

For the CUSUM test, if the plotted values remain within the critical bounds at a 5% significance level, it indicates stability in the model over time. Values exceeding the bounds suggest potential structural changes or instability.

In the case of the CUSUMSQ test, values within the critical bounds signify stability in the model's error variance over time. Exceeding the bounds may imply fluctuations in error variance, indicating potential model instability or inadequacy.

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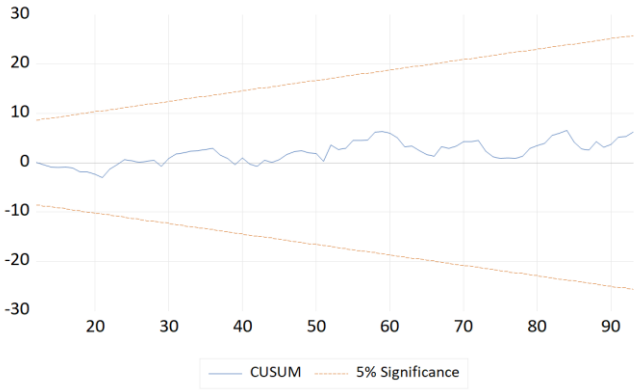

Fig 1: Cusum test

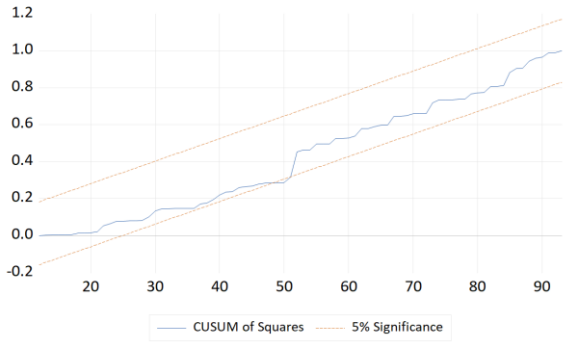

Fig 2: Cusum Square test

Discussion

The analysis reveals significant long-run relationships between workers' remittances and both savings and total deposits. Workers' remittances positively influence savings and total deposits, indicating their role in enhancing financial intermediation and capital accumulation. The Granger causality tests suggest predictive causality between savings and workers' remittances, as well as between workers' remittances and total deposits, emphasizing the importance of remittances in driving financial behaviors. However, other causality directions do not show significant effects, suggesting complex interdependencies among these variables.

5. CONCLUSION

This study highlights the crucial role of workers' remittances in shaping saving and deposit behaviors, thereby influencing overall financial stability and economic growth. The findings support the main hypothesis that workers' remittances have a significant impact on both savings and total deposits in the long run. The results also underscore the need for policymakers to recognize the importance of remittance inflows in fostering domestic savings and mobilizing financial resources. Overall, this research contributes to a deeper understanding of the economic dynamics driven by workers' remittances and provides valuable insights for

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policymakers, financial institutions, and stakeholders involved in economic development strategies.

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