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Impact of Worker's Remittance on Financial Development of Nepal

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Abstract

This study analyzes the impact of remittance inflows on financial development of Nepal. Money supply and total bank deposits are selected as the dependent variables while remittance inflow as an increment of GDP, foreign direct investment as an increment of GDP, inflation, per capita income and exchange rate are selected as independent variables.The key sources of data include Quarterly Economic Bulletin published by Nepal Rashtrabank, Economic Survey published by Ministry of Finance and World Development Indicators of World Bank. The study is grounded on the secondary data which are collected for the period of 31 years from 1990 to 2021. The co-integration analysis has been performed to analyze the long run co-integrating relationship between remittance and financial development. It is found that there is long run co-integrating relationship between financial development and remittance inflow in Nepal.

In addition, remittance inflow has long run positive relationship with total deposits. This indicates that higher the remittance inflow, higher would be the total deposits. The findings also show that per capita income, inflation and exchange rate has positive relationship with total deposit and money supply. This indicates that increase per capita income leads to increase in total deposits and money supply in long run. Likewise, the study indicates that higher the inflation in long run, higher would be the total deposits and money supply. The result of Granger Causality shows that there is unidirectional causality from remittance to total deposits and money supply. This indicates that remittance leads to increase in total deposits and the money supply in Nepal.

Keywords*:* Money supply, total bank deposit, remittance inflow, foreign direct investment, inflation, GNI per capita and exchange rate.

Introduction

Remittance is the transfer of money from one place to another or from one country to another. It is the concept of a monetary payment transferred by a customer to a business from one place to another (Mafruhah et.al.2012). According to (Iheke, 2012) Remittance inflows are the addition of migrant remittance inflow and compensation of employees which include current transfers by migrant workers, with wages and salaries earned by non-resident workers. Remittance receivers often have a higher propensity to own a bank account, an essential aspect of leveraging remittance to promote economic development (Adelman & Taylor, 1990).

Additionally, increase in remittance inflow reduces poverty through increased incomes that allow for greater investment in physical assets, education health and

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also enables access to a larger pool of knowledge (Adams, 2011). For certain initial levels of industrialization, remittance inflow can drive industrialization through the financial development mechanism (Efobe et al., 2016). Priori, a positive relationship between remittance inflow and financial development is viewed to work through two channels. First, remittance inflow increases the demand for financial services either during transfer or when they are channeled into savings. Second, remittance inflow provides an alternative option to finance entrepreneurs who do not qualify for credit in mainstreams commercial banks. These entrepreneurs may over time graduate to a "bankable" stage and influence commercial banks to compete for them (Giuliano & Ruiz-Arranz, 2009). Increasing the size of the financial sector in communities with banks present increases the likelihood that remittance inflow is used for productive investment and decreases the likelihood that remittance inflow is used for general consumption (Michael, 2014). It is therefore, crucial to measure the contribution of remittance inflow to financial development in Nepal which has a long history of sending labor to the other countries.

Adams & Page (2005) found that families receiving remittance use those funds more on housing and education and less on food. A reduction in productivity of the households receiving remittance inflow has not been found, nor is it common for households to increase spending on luxury items instead of staples and investments. Likewise, promoting banking sector development, foreign remittance has an immense direct effect on economic development of receiving nations as well (Adelman & Taylor, 1990).Sami (2013) found long term relationship between banking sector development, remittance inflow and financial development and suggested that remittance inflows may not be only important for financial development but also for development of banking sector.

Remittance inflow increases the liquidity of the banks by increasing the available funds to lend small and medium-sized enterprise. However, banks would prefer to buy treasury bonds in spite of financing small private companies (Yaseen, 2012). The thought that remittance inflow can spur financial success in developing countries comes from the idea that money transferred through financial institutions creates an avenue for recipients to gain access to other financial products and services they previously might not has been able to access (Orozco & Fedwa, 2006). Similarly, Agrawal & Horowitz (2002) reveals that remittance inflow may help relax individuals' financing constraints, which may lead to a lower demand for credit and has the opposite effect on the credit market.

Remittance inflows are found to be a less volatile source of external finance than FDI and ODA that are counter-cyclical and stabilizing. Khathlan (2012) studied the link between remittance inflow and financial development in Pakistan. The result showed positive and significant relationship between remittance inflow and financial development in both the long-run and short-run. Wagh & Patillo (2007) found that remittance has a direct poverty mitigating effect on financial development. These findings hold even after factoring in the reverse causality between remittances, poverty and

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financial development.

The entry of banks reduces the fees and increases the level of remittances, allows an optimal consumption smoothing and improves the welfare of migrants and their families (Alberola & Salvado, 2006). Freud & Saptafora (2005) found that remittance flow varies from the number of migrants and transaction costs. The study also revealed that an increase in the number of people migrating in Organization for Economic Co-operation and Development (OECD) countries was associated with an increase in the remittance flow. Kayode & Adeleye (2016) found that remittance and bank development are co-integrated, indicating a long run equilibrium relationship. In the same way, Oke et al. (2011) found that remittance inflow positively and signifincantly influences the financial development in Nigeria.

Shahbaz et al. (2007) investigated the impact of remittance inflow in financial sectors performace in Pakistan and suggested that remittance inflow promote financial sector performance in the long run. Similarly, Giuliano & Ruiz-Arranz (2009) examined the relationship between remittance inflow and the financial sector and concluded that remittance can enhance financial sector development especially in developing economies. Further, remittance inflow has investment potential through a compensatory role for a bad financial system. Jayaraman et al. (2010) found that remittance inflow receipt through banking channels promote financial intermediation. The findings further suggest that well developed financial institutions may encourage increased inflow of remittances.

A study on impact of worker's remitance on the private sector investment shows that remittance has a significant contemporaneous positive impact on private investment across the sampled countries (Okodua, 2013). Remittance inflow and banking sector development influence per capita income in all four South Asian nations. It is shown that banking sector development as measured by the private sector credit disbursement is significantly affected by both remittance flow and GDP (Noman & Uddin 2012).

In context of Nepal, Malekoo (2015) found that total remittance inflow has positive and significant effect on gross domestic product and total deposit of commercial banks. Likewise, Dahal (2014) found mixed results, (both positive and negative) impact of remittances on financial development of Nepal. Panta (2008) reveals that significant decline in receipts from remittance inflow could disturb the structure of the economy from the macro level. Similarly, Pradhan et al. (2008) found the positive impact of remittance on economic growth. Kafle (2014) examined the impact of remittance on financial development and the study found that remittance has positive relationship with GDP per capita.

Likewise, Gaudel (2006) revealed that remittance income and grants appear to be the most relevant variables to raise nominal GDP in Nepal. Pradhan et al. (2008) found that remittance inflow has a small, positive impact on growth.Sharma (2016) also found positive relationship of remittance inflow with finacial development.The

previous discussion showed that the findings of various research have no consistency dealing with remittance inflow and financial development. That's why, this research had been performed to examine the impact of remittance inflow on financial development of Nepal.Further,it determined co-integrating relationship of remittance inflow as a percent of GDP, foreign direct investment as a percent of GDP, inflation, per capita income and exchange rate with the financial development of Nepal. This paper is systemized for the study as follows: Section two explains the sample, data and methodology. Section three shows the empirical results and the final section draw conclusion and discuss the implication of the findings.

Methodology

The research is based on the secondary data that were gathered for the period of 31 years from 1990 to 2021. The key sources of data are Quarterly Economic Bulletin published by Nepal Rastra Bak, Economic Survey Published by Ministry of Finance and World Development Indicators of World Bank. Thus, the sample size was 31 years.

The Model

The Auto Regressive Distributed Lag (ARDL)model (p, q, r…m) has been estimated for the long run rapport between macroeconomic variables and economic growth. The ARDL takes the following forms:

$$\Delta TD_t = \alpha + \beta_1 TD_{t-1} + \beta_2 REM_{t-1} + \beta_3 FDI_{t-1} + \beta_4 INF_{t-1} + \beta_5 PCI_{t-1} + \beta_6 EXR_{t-1+1i} \Delta TD_{t-i} + {}_{2j}\Delta REM_{t-j} + {}_{3k}\Delta FDI_{t-k} + {}_{4l}\Delta INF_{t-l} + {}_{5u}\Delta PCI_{t-u} + {}_{6v}\Delta EXR_{t-v} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

$$\Delta MS_t = \alpha + \beta_1 MS_{t-1} + \beta_2 REM_{t-1} + \beta_3 FDI_{t-1} + \beta_4 INF_{t-1} + \beta_5 PCI_{t-1} + \beta_6 EXR_{t-1+1i} \Delta MS_{t-i} + {}_{2j}\Delta REM_{t-j} + {}_{3j}\Delta FDI_{t-k} + {}_{4j}\Delta INF_{t-l} + {}_{5j}\Delta PCI_{t-u} + {}_{6j}\Delta EXR_{t-v} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (2).$$

Where, Δ is difference operator. The coefficient ($\lambda 1 - \lambda 6$) denotes the short-term coefficients whereas ($\beta 1 - \beta 6$) are the long run coefficients. The values (p, q, r, s, m, n) are the nominated numbers of lags for the co-integrating equation. Similarly, the short run relationship has been measured by using following error correction model (ECM):

$$\Delta TDt = \alpha + TD_{t-i} + {}_1\Delta REM_{t-i} + {}_2\Delta FDI_{t-i} + {}_3\Delta INF_{t-i} + {}_4\Delta PCI_{t-i} + {}_5\Delta EXR_{t-I+} \gamma_1 ECT_{t-1} + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

$$\Delta MSt = \alpha + \Delta MS_{t-i} + {}_1\Delta REM_{t-i} + {}_2\Delta FDI_{t-i} + {}_3\Delta INF_{t-i} + {}_4\Delta PCI_{t-i} + {}_5\Delta EXR_{t-I+} \gamma_2 ECT_{t-1} + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

Where,

TD = Total deposit defined as ratio of GDP, in percentage

MS = Money supply defined as ratio of GDP, in percentage.

REM = remittance inflow defined as ratio of GDP, in percentage.

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FDI=foreign direct investment defined as ratio of GDP, in percentage

INF =inflation defined as percentage change in consumer price index

PCI = per capita income, in U.S. Dollar

EXR = exchange rate defined as Nepalese Rupees per US Dollar.

ECT_{t-1} = lagged error correction term, which further validates the established long-run rapport between variables. The coefficient of lagged of error correction term γ_1 and γ_2 shows the speed of adjustment.

Dependent variable : Money supply

Money supply is the most inclusive definition instruments of money supply. It is not only circulation of money in the economy. Ogumuyiwa & Ekone (2010) examined the relationship between money supply and financial development in Nigeria and result showed that financial development is influenced by the level of supply in the economy. Arestis and Demetriade (1997) investigated that financial development is only achievable if there is appropriate level of money supply and credit. According to Adesoye described that there is relationship between money supply and financial development (2012).

Total deposit

Deposit is keeping money in safe with interest or without interest into a bank and financial institution. Deposit can be formed as saving accounts, checking accounts and money market accounts. Mccaig and Stengos (2005) studied whether financial development influences growth using several instruments. The research found a positive effect on growth when financial intermediation is measured by total deposit. The link between the ratio of commercial to central bank assets and growth is considerably weaker.

Independent variables : Remittance inflow

According to Stahl(2008), remittance is the concept of a monetary payment transferred by a custmer to a business. Anzoategui et al.(2011) found that remittance inflow don't has a significant effect on credit. In relation to private capital flows, remittance inflows trend to be stable and increase during periods of economic downtowns and natural disasters. However, remittance inflows used to finance basic consumption have an effect on poverty though the effect on growth is negligible. Almalki 7 batayneh (2015) found a long run relationship between inflation and financail development in Saudi Arabia. Based on it, the study develops the following hypothesis.

$H_{1:}$ Remittance inflow is positively related to money supply and toatl bank deposit
Foreign direct investment

Foreign direct investment is the sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross- border investment associated with a resident in one economy having control or significant degree of influence on the management of an enterprise.Foreign investment plays positive and significant role

for private sector development of the country having weak financial sector (Rajan& Zingales, 2003). Hanson (2001) argued that there is weak evidence that FDI generates positive relation for the financial sector development which increases the bank credit to GDP ratio. Considering this, the study formulates following hypothesis

H_2: *foreign direct investment is positively related to money supply and total bank deposit*

Inflation

Inflation refers to increase in the general price level of goods and services in an economy over the period that decline the purchasing power and degrading quality of living standards of fix income group. Likewise, inflation rates have been dominating to compare with growth rates in virtually many years (Madhukar & Nagarjuna, 2011) and relationship between inflation and the financial development continued to be one of the most macroeconomic problems. Marbuah (2010) found threshold effect of inflation on financial development. Based on it, the study develops the following hypothesis.

$H_{3:}$ Inflation is negatively related to money supply and total bank deposit.

Per capita income

Per capita income is total income of the country by total number of populations. In other words, per capita income is measure of the amount of money that is being earned per person in a certain area in a specified year.Income per capita can apply to the average per-person income for a city, region or country and is used as a means of evaluating the quality of life. Kayode & Adeleye (2016) found that there exists very strong relationship between per capita income growth and financial development. Based on it, the study develops the following hypothesis.

$H_{4:}$ Per capita income is positively related to money supply and total bank deposits

Exchange rate

Exchange rate is price of a particular country currency in relation to another country that is largely depends on strength of countries' economy. Exchange rate is included as the measure of external sector distortions which affects the nominal value of the remittance. The study includes value of U.S. dollar at different point of time. Babatunde et al. (2011) found the positive relationship between the exchange rate and financial development in Nigeria. Similarly, Kayode (2016) revealed that there exist a strong long-run relationship between remittance inflow and banking sector development in Nigeria through the interaction of inflation, per capital income, openness and exchange rate. Based on it, the study develops the following hypothesis.

$H_{5:}$*exchange rate is positively related to money supply and total bank deposit*

Results and Discussion

Descriptive Statistics

The descriptive statistics of economic growth variables and macroeconomic variables are presented in the Table 1.This table presents the descriptive statistics of the variables

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used in this study. The MS(money supply is defined as total broad money supply divided by GDP, in percentage) and TD (total deposit defined as total bank deposits divided by GDP, in percentage) are the dependent variables and REM (remittance inflowdefined as total remittance inflow divided by GDP, in percentage), FDI (foreign direct investment defined as net foreign direct investment divided by GDP, in percentage). INF (inflation rate is defined as the change in consumer price index, in percentage), PCI (per capita income is defined as the GNI per capita in US Dollar) and EXR (exchange rate is defined as exchangerate of Nepalese Rupees per US Dollar).

Table 1: Descriptive statistics

Variables	Mean	Minimum	Maximum	Std. Dev.
MS	47.27	18.29	95.66	23.77
TD	42.58	21.20	96	17.64
REM	18.77	9.8	34.16	6.73
FDI	0.202	-0.10	0.54	0.185
INF	8.24	1.43	20.23	3.65
PCI	374.07	190	760	205.28
EXR	68.90	25.60	111.90	21.86

The table shows that money supply ranges from minimum of 18.29 percent to the maximum of 8.22 percent with the average of 47.27 percent. The average total deposit is 42.58 percent throughout the study period. The total deposit ranges from minimum of 18.29 percent to the maximum of 96 percent. The indicators of macroeconomic variables show that an average remittance inflow as a percent of GDP is 30.77 percent, foreign direct investment as a percent of GDP is 0.202 percent, inflation rate is 8.24 percent, per capita income is 374 US Dollar and exchange rate is Rupees 68.90. Remittance inflow is observed to be the minimum of 9.8 percent to a maximum of 34.34 percent of GDP. Similarly, foreign direct investment ranges from a minimum of negative 0.10 percent to a maximum of 0.54 percent of GDP. Likewise, inflation is observed to be the minimum of 1.43 percent to a maximum of 20.23 percent, the per capita income ranges from minimum of 190 US Dollar to the maximum of 760 US dollar and the exchange rate with US Dollar ranges from a minimum of 25.60 Nepali Rupees to the maximum of 111.90 Nepali Rupees.

Test of stationary

Augmented Dickey Fuller (ADF) unit root test has been performed to test the stationarity of the variables and results are presented in Table 2.Table presents the results of Augmented Dickey Fuller unit root test.The MS (money supply is defined as total broad money supply divided by GDP, in percentage) and TD (total deposit defined as total bank deposits divided by GDP, in percentage) are the dependent variables and REM (remittance inflow defined as total remittance inflow divided by GDP, in percentage), FDI (foreign direct investment defined as net foreign direct investment divided by GDP, in percentage). INF (inflation rate is defined as the change in consumer price index, in percentage), PCI (per capita income is defined as the GNI per capita in US Dollar) and EXR (exchange rate is defined as exchange rate of Nepalese Rupees per US Dollar).

Table 2: ADF unit root test

Variables	Constant				Constant and trend			
	Level		1st difference		Level		1st difference	
	T-stat	P value	T-stat	P value	T-stat	P value	T-stat	P value
REM	-0.602	0.8536	-4.712	0.0010**	-2.132	0.504	-5.206	0.001***
FDI	-2.650	0.0963	-6.346	0.000***	-2.67	0.253	-6.206	0.000***
INF	-3.183	0.032**			-3.089	.1295	-4.974	0.002***
PCI	-1.692	0.960	-4.169	0.004***	-1.999	0.573	-4.062	0.021**
EXR	-0.659	0.839	-4.589	0.001***	-2.365	0.385	-4.487	0.007***

Note: The asterisk signs (***) and (**)indicate that coefficients are significant at 1 percent and 5 percent respectively

The result shows that remittance, foreign direct investment, per capita income and exchange rate are not stationary at level. However, the first difference of remittance, foreign direct investment, per capita income and exchange rate is stationary at first difference. Likewise, the result shows that inflation is stationary at level.

ARDL Bound test for co-integration

Table 3 presents the result of bound testing approach for money supply and total deposit. This table presents the results of bound testing for the existence of the co-integrating relationship. Money supply and total bank deposit has been taken as dependent variable to test the co-integration with the selected macroeconomic variables. F-statistics is compared with the lower and upper bound value.

Table 3: Bound test analysis

Dependent variable (MS) ARDL (1,0,0,0,0,0)		
Significance level	Lower bound value	Upper bound value
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15
F-statistic		8.788
Dependent variable TD ARDL (2, 0, 1, 0, 2, 0)		
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15
F-statistic		28.55

Table 5 shows the result of bound test. The table reveals that F-statistics (8.788 and 28.55) are above the upper bound critical value (4.15)at 1 percent level of significance. This indicates that there is cointegrating relationship between financial development and macroeconomic variables.

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Estimation of long run coefficients using ARDL approach

After confirming the long run cointegrating relationship, Table 4 presents the long run coefficients for financial development and remittance inflow. The table presents the estimated long-run coefficients using the ARDL (1, 0, 0, 0, 0, 0) and (2, 0, 1, 0, 2, 0) selected based on Schwarz Bayesian Criterion (SBC). The estimated equationsare: $MS_t = \alpha + \beta_1 TD_t + \beta_2 REM_t + \beta_3 FDI_t + \beta_4 INF_t + \beta_5 PCI_t + \beta_6 EXR_t + e_t$and $TD_t = \alpha + \beta_1 TD_t + \beta_2 REM_t + \beta_3 FDI_t + \beta_4 INF_t + \beta_5 PCI_t + \beta_6 EXR_t + e_t$. Where, The MS (money supply is defined as total broad money supply divided by GDP, in percentage) and TD (total deposit defined as total bank deposits divided by GDP, in percentage) are the dependent variables and REM (remittance inflow defined as total remittance inflow divided by GDP, in percentage), FDI (foreign direct investment defined as net foreign direct investment divided by GDP, in percentage). INF (inflation rate is defined as the change in consumer price index, in percentage), PCI (per capita income is defined as the GNI per capita in US Dollar) and EXR (exchange rate is defined as exchange rate of Nepalese Rupees per US Dollar). Values in the parenthesis are p-values).

The table 4 shows that the long run coefficients for the selected macroeconomic variables on total deposit and money supply. The result shows that remittance inflows, inflation rate, per capita income and exchange rate have a positive impact on total deposit in the long run. On the other hand, foreign direct investment has negative impact on total deposit in long run. This indicates that higher the remittance inflow to the country, higher would be the broad money supply. This finding is similar to the findings of Ogunmuyiwa and Ekone (2010). Similarly, the result shows that FDI has negative impact on money supply and total deposits. However, coefficients are significant only with total deposit. This indicates that FDI does not explain the financial development in Nepal.

Table 4: Estimated long run coefficients of MS and TD

Variables	MS	TD
REM	3.783 (0.858)	0.404** (0.000)
FDI	-39.656 (0.856)	-9.767** (0.001)
INF	18.596 (.850)	0.566** (0.000)
PCI	0.217 (0.893)	0.037** (0.000)
EXR	6.191 (0.843)	0.470** (0.000)
Adj. R-squared	0.517	0.926
F-stat	8.788 (0.000)	28.55** (0.000)
Jarque-Bera Test (JB)	2.395 (0.300)	1.416 (0.492)
Lagrange Multiplier test (LM)	2.786 (0.112)	0.828 (0.461)
Ramsey test	1.84 (0.190)	10.33** (0.006)

Note: The asterisk signs (**) and (*) indicate that coefficients are significant at 1 percent and 5 percent levels respectively.

Similarly, the results show that long run beta coefficients are positive for inflation. This indicates that higher the inflation, higher would be the money supply and total deposit in long run. This finding is similar to the findings of Babatunde et al. (2016). Likewise, the beta coefficient is positive and significant for remittance with total deposit. This indicates that more the remittance inflow in the economy, higher would be the total deposit. This finding is similar to the findings of Orozco & Fedwa (2006).The findings also shows positive beta coffecient for per capita income and exchange rate on total deposit. This indicates that increase in per capita income and exchange rate leads to increase in total deposit in financial system. This finding is similar to the findings of Kayode & Adeleye (2016).

Error correction representation

ARDL short-run coefficients for financial development and macroeconomic variables are presented in Table 5.This table presents the estimated short-run error correction estimates selected based on Schwarz Bayesian Criterion (SBC) with money supply and total deposit as the financial development indicator. ECM_1 = MS- (3.7833*REM - 39.56FDI + 18.597INF - 0.217PCI + 6.191EXR – 393.4319) and ECM_2 = TD – (0.404REM – 9.767FDI + 0.566INF + 0.037PCI + 0.470EXR – 11.615). Where, The MS (money supply is defined as total broad money supply divided by GDP, in percentage) and TD (total deposit defined as total bank deposits divided by GDP, in percentage) are the dependent variables and REM (remittance inflow defined as total remittance inflow divided by GDP, in percentage), FDI (foreign direct investment defined as net foreign direct investment divided by GDP, in percentage). INF (inflation rate is defined as the change in consumer price index, in percentage), PCI (per capita income is defined as the GNI per capita in US Dollar) and EXR (exchange rate is defined as exchange rate of Nepalese Rupees per US Dollar).Values in the parenthesis are p-values.

Table 5: Estimation of short term impact of REM, FDI, INF, PCI and EXR on MS and TD

Variables	MS	TD
ΔREM	0.094 (0.496)	0.494** (0.000)
ΔFDI	-0.991 (0.769)	-6.737** (0.000)
ΔINF	0.465* (0.036)	0.692** (0.000)
ΔPCI	-0.005 (0.693)	0.058** (0.009)
ΔEXR	0.154* (0.042)	0.575** (0.000)
ECM (-1)	-0.025*** (0.000)	-1.222** (0.000)

Note: The asterisk signs (**) and (*) indicate that coefficients are significant at 1 percent and 5 percent levels respectively.

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The table 5 presents that the short-run coefficients for the selected macroeconomics variables on total deposit and money supply. The finding explained that remittance inflows, inflation rate, and exchange rate have a positive impact on the total deposit in the short run. In contrast, foreign direct investment and per capital income have negative impact on the total deposit. This finding is similar to the findings of Ogunmuyiwa and Ekone (2010). Similarly, the result shows that FDI has negative impact on money supply and total deposit.

However, coefficients are significant only with total deposit. This article find out that FDI does not support in the financial development in Nepal Similarly, the results show that short run beta coefficients are positive and significant for inflation. This indicates that higher the inflation, higher would be the money supply and total deposit in short run. This finding is similar to the findings of Babatunde et al. (2016). The coefficients of ECM (-1) is negative and statistically significant, indicating that there is short run association among the variables. The coefficient of ECM (-1) is negative 0.025. This indicates that the adjustment towards the equilibrium is about 2.5 percent in each year if disequilibrium occurs in the model.

Likewise, the beta coefficient is positive and significant for remittance on total deposit. This indicates that more the remittance inflow in the economy, higher would be the total deposit. This finding is similar to the findings of Orozco & Fedwa (2006). The findings also shows positive beta coffecient for per capita rate and exchange rate on total deposit which indicates that increase in per capita income and exchange rate leads to increase in total deposit in financial system. This finding is similar to the findings of Kayode & Adeleye (2016). The coefficient of the ECM (-1) is negative -1.222. This indicates that the adjustment toward equilibrium is about 122 percent in each year if disequilibrium occurs in the model.

Table 6 shows the outcomes of granger causality between remittance and financial development. This table presents the result of Granger Causality test. Where, The MS (money supply is defined as total broad money supply divided by GDP, in percentage) and TD (total deposit defined as total bank deposits divided by GDP, in percentage) are the dependent variables and REM (remittance inflow defined as total remittance inflow divided by GDP, in percentage), FDI (foreign direct investment defined as net foreign direct investment divided by GDP, in percentage). INF (inflation rate is defined as the change in consumer price index, in percentage), PCI (per capita income is defined as the GNI per capita in US Dollar) and EXR (exchange rate is defined as exchange rate of Nepalese Rupees per US Dollar).

Table 6: Granger causality

	F-value	P-value	Result
REM does not Granger Cause MS does not Granger Cause REM	4.351 0.040	0.027 0.960	**Unidirectional**
REM does not Granger Cause TD TD does not Granger Cause REM	4.541 0.024	0.023 0.976	**Unidirectional**
FDI does not Granger Cause MS MS does not Granger Cause FDI	1.059 0.370	0.365 0.695	**No granger cause**
FDI does not Granger Cause TD TD does not Granger Cause FDI	2.585 0.058	0.100 0.943	**No granger cause**
INF does not Granger Cause MS MS does not Granger Cause INF	0.020 0.205	0.887 0.654	**No granger cause**
INF does not Granger Cause TD TD does not Granger Cause INF	0.274 1.263	0.763 0.304	**No granger cause**
PCI does not Granger Cause MS MS does not Granger Cause PCI	2.212 2.810	0.315 0.070	**No granger cause**
PCI does not Granger Cause TD TD does not Granger Cause PCI	2.959 2.148	0.074 0.142	**No granger cause**
EXR does not Granger Cause MS MS does not Granger Cause FDI	0.716 1.902	0.500 0.175	**No granger cause**
EXR does not Granger Cause TD TD does not Granger Cause EXR	0.799 3.104	0.463 0.066	**No granger cause**

Table 6 depicts the result of granger causality test. The result shows that there exists unidirectional causality from remittance inflow to board money supply. Above outcome can be interpreted that an increase in remittance inflows leads to increase in broad money supply. Furthermore, findings shows that there is no causal relationship between foreign direct investment and money supply, inflation and board money supply, per capita income and broad money supply and exchange rate and broad money supply. The outcome depicts that remittance inflow and total deposit has exit unidirectional causality. This means, when remittance inflow increases then total deposit also increases. In additional, there us no causal relationship between FDI and total deposit, inflation and total deposit, per capita income and total deposit and exchange rate and total deposit.

Conclusion

The article has conducted to analyze the impact of remittance inflows on financial development of Nepal. The key source of data collection is quarterly economic bulletin published by Nepal Rashtrabank; economic survey published by Ministry of Finance. This article took 31 years study period from 1990 to 2021. This paper depicts that financial development and remittance inflow has long run co-integrating relationship in Nepal. Similarly, remittance inflow and financial development has long term positive relationship exist in Nepal. This means that higher the remittance inflow, higher would be the total deposit. The major finding also shows that per capita income has positive relationship with total deposit and money supply. This displays that increase per capita income leads to increase in total deposit and money supply in long run. Likewise, the

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study discloses that inflation is positively related to total deposit and money supply. Additionally, the findings describes that there is positive relationship of exchange rate with total deposit and money supply. The estimate error correction model shows that beta coefficient is positive for remittance, inflation and exchange rate in contrast the beta coefficient is negative for FDI. Furthermore, coefficient is significant only for inflation and exchange rate at 5 % level of significance.

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