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Financial Development and Economic Growth in Nepal: New intuitions from a Time Series Causality Method

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Abstract: Generalized empirical evidences about impact and direction of causality between financial development and economic growth ignoring the differences of structure and other factors seem less effective to understand the contributions of financial as well as real sector development to economic growth by country specific factors in Nepal. This paper has established the short run or long run relationship and the direction of causality between financial and real sector development with economic growth. For the study purpose, time-series data covering the period of 1975 to 2015 were used considering whole financial system in Nepal as population and financial intermediation as sample for the study. E-Views 9 was used to obtain the results of Unit root test, Engle-Granger co-integration test, Error correction model and Granger causality test. Results conclude that although finance-led growth yields positive consequences, real sectors indicator like consumer price index (CPI) has more impact on real gross domestic product (GDP), a proxy of economic growth, than financial development indicators (M2Y, CPY) in Nepal. This study also predicts negative co-integrating relationship between trade openness and GDP.Bidirectional causality between broad money to GDP ratio and real GDP, and unidirectional causality of PIY and CPI with positive role upon GDP suggesting urgent need of contractionary fiscal and monetary policies to induce private sector investment in GDP.

Key words: Economic Growth, Financial Development, Co-Integration and Causality, Nepal

Introduction

Efficient financial system is a potential driver for an economy to enhance the rate of capital accumulation for sustainable and long-run economic growth (Rousseau and Wachtel, 2011). The efficacy of financial system to reduce information and transaction costs plays an important role in determining the rate of savings, investment decisions, technological innovations and hence the rate of economic growth (North, 1987; Arrow and Kruz, 2013). The relationship between financial development and economic growth has been an extensive issue of arguments posed on international literatures at both theoretical and empirical levels (Menyah *et al*., 2014).

The development of endogenous growth theory since late 1980s has been continuously directing the multi-dimensional way for concocting new growth theories and its determinants. Despite its tremendous importance in economic policy formulation and implication, there is a lack of attention given to this subject in Nepal by academicians and policy makers. Thus a scientific endeavor seems mandatory to explore some ideas that will be instrumental to depict importance of financial sector development to economic growth.

Though economic liberalization and structural reforms of early-90s set the track for free trade but due to the inefficiency of the Nepalese economy especially the manufacturing and service sectors' poor performance, Nepal remains unable to foster economic development as compared to rest of the world (Asia, 2014). In this regard, the financial sector which has grown in both quantity and quality can be the engine of finance-led growth that can create investment friendly environment to encourage the investment and growth (Rousseau and Wachtel, 2011; Gautam, 2014).

The economic growth of Nepalese economy for several decades has been sluggish at around 4% average annual growth (Asia, 2014). Though the share of agriculture sector

is diminishing and service sector is growing after the financial liberalization of the 90s, the traditional monsoon-reliant agriculture sector still occupies the major chunk in the economy (Timsina, 2014; Maskay, 2016). Lack of: Capital formation and resource mobilization, investment in productive sector, income equality, formal and feasible financial access has been the major problems that halts the economic growth and prosperity for decades in developing countries (Levine, 1997).

Some literatures conveyed significant positive relation between finance and growth (Thiel and Thiel, 2001; Team and By, 2013; Gautam, 2014) and other recent study in contrast described the weak or insignificant relationship between financial development and economic growth (Samargandi *et al*., 2015). Prior studies commonly generalized the relationship between finance and growth ignoring the differences of structure and other essential factors that may vary country wise. Ergo, it might not be sage to put any outlook regarding the impact of financial sector on economic growth based on such generalized empirical results. Further, it seems mandatory to carry out a study to understand the contributions of financial development to economic growth being country specific by using time series data. However, the impact and direction of causality between finance and growth still ruins an arguable concern in the literature (Jin, 2010).

This paper aims to identify the relationship of financial and real sector development with economic growth in short run and long run. Moreover, an unreached area of researcher about the direction of causality between proxies of financial development and economic growth has explored in this study.

Research Methodology

Research Design

Both qualitative and quantitative research design are employed on secondary time-series data covering the period of 1975 to 2015 from various reliable sources such as Economic Survey of Ministry of Finance, Banking and Financial Statistics 2015, NRB, National Accounts of Nepal, CBS, GON, Quarterly Economic Bulletin 2016, Monetary Policy 2015, Previous Research, Books, Dissertations and Articles. The whole financial system in Nepal considered the population and financial intermediation as sample for the study. The study is primarily related with the macroeconomic variables like; Gross Domestic Product (GDP), broad money, domestic credit, private sector credit, total assets, deposit and credit of Commercial Banks and other BFIs and NBFIs including indicators of capital market. For the fulfillment for study purpose, E-Views 9 was used to obtain the results of Unit root test, Engle-Granger co-integration test, Error correction model and Granger causality test.

Description of Variables Used

1. **Financial Development Indicators (FD)**: It represents the independent variables used in the model. The ratios of FD indicators are deflated into real term and then converted into natural logarithmic form:
   - i) **Broad money stock to GDP (M2Y)**: It is the leading indicator of monetization in the economy and shows the real size of the financial sector in the country (De Gregorio and Guidotti, 1995). The liquid liabilities/broad money to GDP ratio (M2Y) is used as a measure of financial depth and overall size of the financial intermediaries (King and Levine, 1993)
   - ii) **Private sector credit to GDP (CPY):** The flow accurately represents the actual volume of funds channeled into private sector from banks and financial institutions and indicates actual financial intermediation in the country. The ratio of credit to the private sector to GDP (CPY) is used as a measure of financial depth and banking development. It reflects the activity of the financial sector (Levine and Zervos, 1996)
2. **Economic Growth Variables (GDP):** As dependent variable in the model we have used the growth in GDP that indicates real sector growth in constant prices
3. **Real Sector Growth Variables (X):** As independent variables we have also used set of real sector growth indicators to capture the common determinants of economic growth. All control variables are used in a ratio form except CPI:
   - **i) Private Investment to GDP (PIY):** It is the ratio of private gross fixed capital formation to GDP
   - **ii) Trade Openness to GDP (TOY):** It is defined as the ratio of the sum of total exports plus imports to GDP
   - **iii) Consumer Price Index (CPI):** The model included inflation rate to control for price distortions during the study period. Here, inflation is measured as the annual percentage change in the CPI

Model Specification

A multivariate regression model seemed preferable to test the significance of financial development and economic growth. The following specification has postulated to explain possible association between financial development and economic growth in Nepal:

$$RGDP = f\left(M2Y,\ CPY,\ PIY, TOY,\ CPI\right) \quad \text{(i)}$$

Where:
RGDP: Real gross domestic product
M2Y: Ratio of broad money to GDP ratio
CPY: Private credit to GDP ratio
PIY: Ratio of private investment to GDP
TOY: Ratio of trade openness to GDP
CPI: Annual average consumer price index

Similarly, the econometric multivariate regression model from Equation (i) in natural logarithmic form becomes:

$$LNRGDP_t = \alpha_0 + \beta_1 LNM2Y_t + \beta_2 LNCPY_t + \beta_3 LNPIY_t + \beta_4 LNTOY_t + \beta_5 LNCPI_t + \varepsilon_t \quad \text{(ii)}$$

Where:
α_0 = Comstant (intercept)
β_i = Cofficient of explanatory variable
ε_t = Error term at same t (*havezero mean and independent across time period*)
$LNRGDP_t$ = Natural logarithm of RGDP at t (depentent variable)
$LNM2Y_t$ = Natural logarithm ratio of broad money to GDP at t
$LNCPY_t$ = Natural logarithm ratio of claims on private sector to GDP at t
$LNPIY_t$ = Natural logarithm ratio of private investment to GDP at t
$LNTOY_t$ = Natural logarithm ratio of trade openness to GDP at t
$LNCPI_t$ = Natural logarithm of annual average consumer price index at t

Precisely, an implicit form of model (ii) can be expressed as:

$$LNRGDP_t = \alpha_0 + \beta_1 FD_t + \beta_2 X_t + \varepsilon_t \quad \text{(iii)}$$

Where:
FD_t = FD indicators (explanatory variables) at t
X_t = Real sector growth indicators (control variables) at t

Unit Root Tests

The first step in building dynamic econometric model entails a thorough investigation of the characteristics of individual time series variables involved (Enders, 2014). Assumption for this test is overall FD has positive impact on economic growth or vice-versa. In order to avoid the problem of spurious regression, unit root test, as developed by Nelson and Plosser (1982), is used in examining the stationary of a time series. To this end, Augmented Dickey Fuller test (ADF test) is used:

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \phi Y_{t-i} + \sum \psi \Delta Y_{t-1} + \varepsilon_t \quad \text{(iv)}$$

Where:
Y = The variable under consideration
Δ = The first difference operator, t captures time trend
ε_t = A random error
α_0, α_1, ψ = The parameter to be estimated. Null hypothesis will not be rejected if $\phi = 0$, this concludes the series under consideration has a unit root and is therefore non-stationary

Engle Granger Co-integration Test

Engle and Granger (1987) formulated one of the first tests of co-integration. This test has the advantage that it is intuitive and easy to perform. The first step starts by estimating co-integrating regression of the variables as:

$$LNRGDP_t = \beta_1 + \beta_2 LNRGDP_t + \beta_3 LNM2Y_t + \beta_4 LNCPY_t + \beta_5 LNPIY_t + \beta_6 LNTOY_t + \beta_7 LNCPI_t + u_t \quad \text{(v)}$$

In this regression we assumed that all variables are integrated of order one $I(1)$ and might co-integrate to form a stationary relationship and thus have a stationary residual term as:

$$\hat{u}_t = LNRGDP_t - \beta_1 - \beta_2 LNRGDP_t - \beta_3 LNM2Y_t - \beta_4 LNCPY_t - \beta_5 LNPIY_t - \beta_6 LNTOY_t - \beta_7 LNCPI_t - u_t \quad \text{(vi)}$$

This equation represents the assumed meaningful economic interpretation of steady state or equilibrium relationship among the variables. If the variables are co-integrated, they will show the common trend and also form a stationary relationship in the long run between the variables. Furthermore, under the co-integration approach, due to the properties of super converge, the estimated parameters can be viewed as correct estimates of the long-run steady state parameters and the residual series can be used as an error correction term in an Error Correction Model (ECM). The second step is to do a unit root test of the residual series obtained from the co-integrating regression above. For this purpose, we set up a unit root test i.e., ADF test of residual series as:

$$\Delta\hat{u} = \alpha + \pi\hat{u}_{t-1} + \sum_{i=1}^{k} \gamma_i \Delta\hat{u}_{t-i} + v_t \quad \text{(vii)}$$

where, the constant term α is used to improve the efficiency of the estimated results. Under the assumption of null hypothesis of no co-integration among the variables, the estimated residual is $I(1)$ and all parameters are zero in the long run. Also, finding a significant π implies co-integration between variables. When the dependent variable is integrated along with at

least one regress or of the identical order, then co-integration indicates a stationary $I(0)$ residual. Asymptotically, the test is independent of which variable occurs on the left hand side of the co-integrating regression. Taking one variable on the left hand side the co-integrating vector are assumed be normalized around that variable, indirectly we assume that the normalization relates to some eloquent long-run economic relationship.

Error Correction Model (ECM)

To correct short run disequilibrium with the rate of adjustment and to reveal the short-run relationship among variables, the co-integration term called error correction term is used under ECM framework since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments.

The error term in the co-integrated regression equation is called equilibrium error term. This error term is used to tie the short run behavior of the dependent variable to its long run value. Specifically, the major use of it is for amending disequilibrium and testing for long and short-run causality among co-integrated variables.

In our model if both the variables real GDP and FD are co-integrated then there is a long run relationship between economic growth and financial development. Accordingly, for the short-run relationship between these variables ECM is conducted under the framework of co-integrating relationship.

In our model, according to Engle and Granger (1987), the ECM can be specified as follows in case of two pairs of test variables:

$$\Delta LNRGDP_t = \omega_1 Z_{t-1} + \alpha_1 \Delta FD_t + \alpha_2 \Delta X_t + U_{1t} \quad \text{(viii)}$$

$$\Delta FD_t = \omega_2 Z_{t-1} + \beta_1 \Delta LNRGDP + \alpha_2 \Delta X_t + U_{2t} \quad \text{(ix)}$$

Interpretations

- Statistical significance tests are conducted on each of the lagged Z_t term in Equations viii and ix
- The coefficient of Z_t reflect the short run disequilibrium in the model
- The parameters ω_1 and ω_2 are the speed of adjustment parameters in Equation viii and ix when there is a discrepancy from long-run equilibrium

Alternatively, the ECM used in this study can be specified explicitly as follows:

$$\begin{aligned}\Delta LNRGDP_t &= \alpha_0 + \sum_{i=0}^{m} \beta_{1i} \Delta LNRGDP_{t-i} \\ &+ \sum_{i=0}^{n} \beta_{2i} \Delta LNM2Y_{t-i} + \sum_{i=0}^{q} \beta_{3i} \Delta LNCPY_{t-i} \\ &+ \sum_{i=0}^{q} \beta_{4i} \Delta PIY_{t-i} + \sum_{i=0}^{q} \beta_{5i} \Delta TOY_{t-i} \\ &+ \sum_{i=0}^{q} \beta_{6i} \Delta CPI_{t-i} + \omega \varepsilon_{t-1}\end{aligned} \quad \text{(x)}$$

where, β_1, β_2 and β_3 are the coefficients of the lagged first difference variables providing the short run dynamics of the model. ω is the speed of adjustment parameter of (ε_{t-1}) ECM which shows the divergence/convergence towards the long run equilibrium. Positive value of ω indicates divergence and negative value (desirable) indicates convergence.

Granger Causality Test

According to Granger, if a past value of X improves the prediction of Y with statistical significance, then we can conclude that X "Granger Causes" Y (Engle and Granger, 1987). In our case, if X_t only causes Y_t with no reciprocal effect from Y_t, then there is unidirectional causality. If the causality runs both ways there is bidirectional causality i.e., $X_t \rightarrow Y_t$ and $Y_t \rightarrow X_t$. Latter Engle and Granger developed the concept of co-integration stating that if two variables are co-integrated, there is the certainty of causal relation at least in one direction.

Interpretations

- If the coefficient of α_{1i} is statistically significant but β_{1i} is not statistically significant, then LNRGDP is said to have been caused by FD (unidirectional causality)
- Reverse causality – holds if coefficients of β_{2i} are statistically significant while α_{2i} is not. [i.e., $FD = f(LNRGDP_t)$]
- But if both β_{2i} and α_{2i} are statistically significant, the causality runs both ways (bi-directional causality)

Results

Table 1 shows that LNRGDP in level form accept the null hypothesis of unit root since test-statistic is lower than its critical value and p-value greater than 5%. After first differencing, null hypothesis of unit root is rejected with greater critical value −6.046 (trend) and −5.842 (trend and intercept) with significant p-value at 1%, meaning that LNRGDP is stationary in first difference being integrated of order one i.e., I(1). Likewise, LNM2Y, LNCPY, LNTOY, LNPIY and LNCPI also have a unit root in level but all these variables are significant at 1% and integrated of order one in the first differenced form. Therefore, we can apply Engle-Granger Co-integration test to study the co-integrating relationship among these variables.

Unit Root Test of OLS

One of the FD indicator, CPY is positively associated with real GDP for long run being statistically significant at 1% level while another variable M2Y is not

statistically significant. Meanwhile, remaining independent variables of the real sector economy (CPI and PIY have positive association with GDP for the long run but TOY has inverse relationship with GDP) shows very small p-values (0.000) depicting the statistical significance of regression coefficients at less than 1% level. As all the independent variables except M2Y shows statistically significant results with higher R^2 (0.998) and relevant D-W test value (1.613) and also the residual diagnostic tests showing: No autocorrelation (from Correlogram test with the acceptance of null hypothesis having insignificant p-values), normal distribution (as Normality test gives Jarque-Bera 3.69 with p-value 0.15), no serial correlation (as LM test shows F-stat 1.26 having p-value 0.26) and no heteroscedasticity (as Breush-Pagan-Godfrey test shows F-stat 1.10 having 0.37 p-value), the study accepts present model as it satisfied the OLS properties.

Unit Root Test of Residual Series

The residual series (ε_t) in our OLS model is found stationary at level from the result in above Table 2 so it further validated the stationary of the model. Hence, we can accept the model as there is long-run equilibrium relationship between dependent and independent variables in our long-run model. To show this, in the second step of Engle-Granger co-integration test the unit root test is applied on the residuals series obtained from the regression. Table 3 reveals that the residual series (ε_t) is stationary at level as it rejects the null hypothesis of unit root in level form with a significant p-values 0.000 at 1% level. Similarly, at level form the test statistic -5.733 in intercept and -5.706 in trend and intercept is greater than the Engle-Granger critical values -5.240 in intercept and -5.512 in trend and intercept at 1% level. Thus, the residual term is integrated of order zero I(0) showing the existence of co-integration among the variables.

Error Correction Model

ECM estimation result in Table 4 shows that the coefficient of the one term lagged error correction term (ε_{t-1}) with −0.559 implying 55.9% of the shock/change in the rate of GDP is adjusted annually. This rapid speed of adjustment process is also evidenced from the significant p-value of the coefficient which satisfied the statistical significance of adjustment coefficient (ε_{t-1}) in our model. Since, statistically significant CPY proves short run positive impact on RGDP. Meanwhile, the coefficients of M2Y, PIY, TOY and CPI in the error correction suffered from the problem of statistical insignificance.

Table 1: Augmented dickey fuller test results

	Level		First difference		
Variables	Intercept	Trend and intercept	Intercept	Trend and intercept	Order of integration
LNRGDP	−0.429 (0.893)	−1.268 (0.880)	−6.046* (0.000)	−5.842* (0.000)	I(1)
LNM2Y	0.569 (0.986)	−2.253 (0.448)	−5.123* (0.000)	−4.860* (0.001)	I(1)
LNCPY	−0.163 (0.934)	−2.670 (0.254)	−5.375* (0.000)	−5.295*(0.000)	I(1)
LNTOY	−1.564 (0.490)	−1.742 (0.712)	−4.870* (0.000)	−4.844* (0.001)	I(1)
LNPIY	−0.701 (0.834)	−3.226 (0.093)	−7.565* (0.000)	−7.556*(0.000)	I(1)
LNCPI	−1.207 (0.661)	−1.391 (0.847)	−4.966* (0.000)	−5.016*(0.001)	I(1)

H0: Has a unit root (non-stationary)
H1: Does not has a unit root (stationary)
*denotes rejection of the hypothesis at the 1% level. The values in the table are t-statistic and the values inside the parenthesis are probabilities

Table 2: OLS regression result

Variable	Coefficient	Std. error	*t*-Statistic	Probability
LNCPY	0.109	0.040	2.670	0.001
LNM2Y	−0.074	0.007	−1.054	0.299
LNPIY	0.129	0.035	3.652	0.000
LNTOY	−0.017	0.033	−5.078	0.000
LNCPI	0.518	0.029	17.817	0.000
C	11.078	0.390	28.371	0.000
R-squared	0.998			
Adjusted R-squared	0.997			
Prob. (F-stat)	0.000			
Durbin-watson test	1.613			

Dependent variable: LNRGDP
Method: Ordinary Least Square
Number of observations: 40 after adjustments

Table 3: ADF test of residual series

	Level form		
Variable	Intercept	Trend and intercept	Order of integration
ε_t	−5.733* (0.000)	−5.706* (0.000)	I(0)

Engle-Granger critical values for $n = 50$, $k = 6$ are −5.24, −4.70, −4.42 and −5.51, −4.97, −4.69 for intercept, trend and intercept at 1, 5 and 10% level respectively

Table 4: Error Correction Model (ECM)

Variable	Coefficient	Std. error	t-statistic	Prob.
D(LNCPY)	0.109	0.054	1.996	0.054
D(LNM2Y)	−0.098	0.086	−1.135	0.264
D(LNPIY)	0.041	0.034	1.178	0.247
D(LNTOY)	0.006	0.053	0.112	0.911
D(LNCPI)	0.072	0.109	0.660	0.513
C	0.035	0.012	2.903	0.006
ε_{t-1}	−0.559	0.147	−3.785	0.000
R-squared	0.381			
Adjusted R-squared	0.265			
Durbin-watson stat	1.615			

Dependent variable: D(LNRGDP)
Method: Ordinary Least Square
Number of observation: 39 after adjustment

Table 5: Granger causality tests

Null hypothesis	Lag 1	Lag 2	Lag 3	Remarks
DLNCPY does not granger	0.01	0.22	1.80	No causality
Cause DLNRGDP	(0.92)	(0.79)	(0.16)	
DLNRGDP does not granger	2.72	10.66*	6.26*	GDP → CPY
Cause DLNCPY	(0.10)	(0.00)	(0.00)	
DLNM2Y does not granger	2.59	0.61	4.39**	M2Y→ GDP
Cause DLNRGDP	(0.11)	(0.54)	(0.01)	
DLNRGDP does not granger	3.15***	9.98*	5.63*	GDP → M2Y
Cause DLNM2Y	(0.08)	(0.00)	(0.00)	
LNPIY does not granger	1.15	0.69	0.60	No causality
Cause LNRGDP	(0.29)	(0.50)	(0.61)	
LNRGDP does not granger	9.96*	3.76**	4.78*	GDP → PIY
Cause LNPIY	(0.00)	(0.03)	(0.00)	
LNTOY does not granger	0.00	0.02	0.05	No causality
Cause LNRGDP	(0.98)	(0.97)	(0.98)	
LNRGDP does not granger	0.31	0.54	0.56	No causality
Cause LNTOY	(0.57)	(0.58)	(0.64)	
LNCPI does not granger	7.45*	3.53**	2.55***	CPI → GDP
Cause LNRGDP	(0.00)	(0.04)	(0.07)	

Causality Test Between EG and FD Indicators – Granger Causality Test

From the Table 5 it is observed that there is no causality in case of causal relationship between CPY and real GDP, whereas, causality runs in the opposite direction from real GDP to CPY when taking lags 2 and 3 having F-stats and corresponding p-values 10.66 (0.00) and 6.26 (0.00) but no causality in case of lag 1. F-stats and their respective p-values at third lag shows causality running from M2Y to real GDP. Meanwhile, the causality from real GDP to M2Y is bi-directional. In the case of real sector variables, no causality is observed between PIY and real GDP, whereas, causality runs in the opposite direction from real GDP to PIY when taking lags 1, 2 and 3 while referring F-stats and corresponding p-values. The study observed trade openness to GDP ratio has no causal relationship with real GDP. In the contrary, consumer price index and real GDP both have a significant causality between each other.

Discussion

The result of unit root test shows that RGDP, M2Y, CPY, TOY, PIY and CPI all are stationary at first difference. The results of the OLS model shows that

there is weak long-run relationship of M2Y on RGDP while other independent variables CPY, PIY, TOY and CPI have significant long-run association with RGDP with only having negative relationship of M2Y and TOY with RGDP. Similarly, the results of unit root test of residual series ε_t is stationary in level form with t-stats and corresponding p-values −5.73(0.00), −5.70(0.00) in intercept, trend and intercept are significant at less than 1%. The model predicts existence of co-integration among the variables GDP, CPY, M2Y, PIY, TOY and CPI. In addition, the ECM results conclude that there is only a significant and positive relationship between CPY and RGDP in the short-run depicting 0.10% change in RGDP with a 1% increase in CPY. The ECM estimation of lagged error correction term (ε_{t-1}) also reveals that 55.9% of the annual disequilibrium adjustment, relatively a higher speed of adjustment depicting convergence in the model. Similarly, Granger causality test shows that M2Y and CPI have bi-directional causality with RGDP while CPY and PIY have unidirectional relation with feedback effect running from economic growth to private credit and private investment. But, TOY and RGDP have no causality.

Here, the credit to private sector to GDP ratio does not impact RGDP but instead the causality runs the opposite way supporting the demand following hypothesis of Patrick (1966) while the bidirectional causality between M2Y and RGDP supports both demand following and supply leading hypothesis (Odhiambo, 2007). The study finds both short run and long run association between credit to private sector (FD proxy) and RGDP (EG proxy) which is in agreement with explanation in a book of written by King and Levine (1993) and a study of Nepal (Gautam, 2014). However, broad money to GDP ratio is not found to be co-integrated in either short or long-run with economic growth in Nepalese context which limits the role of financial deepening in economic growth despite bi-directional causality evidenced by Granger causality test being different with the study of Tanjania (Odhiambo, 2011). Similarly, there is also a mixed result of real sector contribution in GDP as evidenced by positive role of PIY and CPI in GDP thus suggesting contractionary fiscal and monetary policies to induce private sector investment in GDP.

Although the role of inflation in economic growth is controversial, particularly this study predicts that mild inflation of 4-6% accelerates the economic growth in a demand-driven economies like Nepal, which is in agreement with a paper based in Nepal (Bhusal and Silpakar, 2005) who found positive relationship between inflation and economic growth in Nepalese context within the threshold value of 6% inflation. In addition, the study also predicts negative co-integrating relationship between trade openness and GDP, contrasting the result of 15 Asian countries (Nasreen and Anwar, 2014). Finance-led growth has some positive implications but the growth itself has more impact on financial development system and the real sectors like CPIwhich has more impact on real GDP than FD indicators (M2Y, CPY) in Nepal which supports the argument of growth led finance of recent studies (Gurley and Shaw, 2011; Ihsan, 2013). Growth therefore generally leads finance because of the increasing demand for financial services induced by economic growthin developing countries. Nevertheless, financial intermediation especially through credit creation helps to boost the short-run economic growth (McCaig and Stengos, 2005) and sustain the long-run growth as evidenced by positive relation between CPY and GDP through ECM. Thus, this study recommends that priority should be driven towards the development of real sector economy with equal focus on the development of FIs as both complement each other which is the mixed implication of Patrick's demand following and supply leading hypothesis (Patrick, 1966).

Through policy perspective, the priority should be given to deepen the financial sectors' accessibility, efficiency and integration with real sector. Meanwhile, the issues of financial governance, stability and regulation still remained a pertinent challenge in Nepalese financial market. It is necessary to undertake apposite measures to enhance the growth in both financial and economic activities considering the existence of bidirectional causality between financial development and economic growth in Nepal. Dependence on annual secondary data with the absence of quarterly data limits the number of observations and wider coverage of the research.

Conclusion

The study examined the relationship among proxies of financial development and real sector growth with economic growth in short run as well as long run and also predicts the direction of causality among these variables. Hence, results conclude that although finance-led growth yields positive consequences but the growth itself affects the financial development system and real sectors like CPI has more impact on real GDP than financial development indicators (M2Y, CPY) in Nepal. This study also predicts negative co-integrating relationship between trade openness and GDP. Bidirectional causality between broad money to GDP ratio and real GDP and unidirectional causality of PIY and CPI with positive role upon GDP suggesting urgent need of contractionary fiscal and monetary policies to induce private sector investment in GDP. So, the priority should be driven towards the development of real sector economy with equal focus on the development of FIs as both complement each other.

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Author's Contributions

Uttam Paudel and Umesh Khatri: Prepared and finalized manuscript.

Satish Chandra Bhatta: Collected and analyze the data.

Ethics

This article is original and contains unpublished material. The corresponding author confirms that all of the other authors have read and approved the manuscript and there are no ethical issues involved.

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