ISSN: 2091-0460

MANAGEMENT DYNAMICS

A Peer-reviewed Journal of Management and Economics

Published by
Shanker Dev Campus
Tribhuvan University, Nepal

Banking Sector Development and Economic Growth in Nepal: Test of Cointegration

Jhabindra Pokharel
Asst. Professor, Shanker Dev Campus
Faculty of Management, Tribhuvan University, Nepal
E-mail: pokharelj@shankerdevcampus.edu.np

Article Info
Received: 12 Feb. 2021
Revised: 26 Feb. 2021
Accepted: 3 March 2021

DOI: https://doi.org/10.3126/md.v24i1.47540

Keywords:
banking sector, causality, cointegration, economic growth, VECM

ABSTRACT

This paper examined the causal relationship between banking sector development and economic growth in Nepal using annual time series data from 1975 to 2019. The per capita real GDP growth rate is taken as the proxy of economic growth. Private sector credit is used as the indicator of banking sector development and inflation, trade openness, and government spending as control variables. Using the Johansen cointegration test and vector error correction method (VECM) in regression analysis, the study reveals that the development of the banking sector in Nepal is positively contributing to economic growth through efficient allocation of financial resources. The findings from this study conclude that there is a unidirectional causality running from banking sector development to economic growth in the long run, which supports the supply-leading hypothesis. However, this study found no support for causality running from economic growth to banking sector development neither in the long run nor in the short run. Therefore, the findings from this study recommend policies that increase the reach of the banking services to small and medium enterprises (SMEs) and individual investors, even in the rural areas of the country.

1. INTRODUCTION

The basic economic function of the financial system is to channel funds from savers to spenders. By using several means of the financial system, investors with a shortage of funds can access cheaper financing for their projects, increasing their profitability. Therefore, a systematized, efficient, well-structured, and sustainable financial system is necessary for real sector growth (Mishkin & Eakiks, 2018). Many researchers have spent much time in the last few decades examining the role of banking sector development in the economic growth of the country (see Levine et al., 2000; Beck, 2012; Arizala et al., 2013). The banking system supports economic activities through credit to government and businesses, providing liquidity in the market (Gautam, 2015).

One of the most important ways banking helps economic development is by easing credit. When credit becomes costly and scarce, the supply of loanable funds is disturbed. Entrepreneurs cannot invest in the capital assets required to install production facilities in such conditions. Small and medium companies (SMEs) face numerous challenges, particularly in developing economies. The cost and difficulty of evaluating creditworthiness are the key causes of SMEs' lending limitations (Wendel & Harvey, 2006). SMEs contribute to economic growth in developing countries and developed economies. Corporations and SMEs bring innovations, making the economy efficient in producing goods and services. If there are constraints on financial resources, businesses cannot commercialize their innovative ideas. Therefore, the development of financial intermediaries can improve resource allocation, facilitates technological innovation, and spurs economic growth through reinvestment (Boyd & Prescott, 1986; King & Levine, 1993), easing the accumulation of physical and human capital (Townsend & Ueda, 2006), and lowering transaction cost thereby promoting specialization. The financial systems not only support the innovative ideas to be commercialized and finance businesses in recession, but it also reduces the effect of macroeconomic volatility. Financial systems simultaneously shape the economy's innovation, growth, and volatility (Aghion et al., 2014).

While setting macroeconomic policies by concerned authorities, they give more importance to the financial system. The concerns of policy-makers about reducing unemployment, maintaining price stability, and sustainable development are affected by the financial market development. Therefore, the financial market and banking system also serves as the mechanism for implementing monetary and fiscal policies. Ferreiro (2016) believes that economic authorities should adopt measures that rationalize the size of financial markets to promote economic growth, and there should be strict regulation of all financial markets.

Banking institutions are interconnected within the industry, and banking systems are interconnected with other industries such as insurance, capital market, and foreign banking systems. This interconnectedness results in contagion problems that easily transfer from one industry to another. Therefore, both positive and negative events in the banking sector affect the other industries, and the effect can cross the physical border of the country. The necessity of a better understanding of contagion pathways among financial institutions is highlighted

by the recent global financial crisis of 2007-2009 and the transnational transmission of its financial shocks following the fall of Lehman Brothers (Bricco & Xu, 2019). The financial crisis was mainly linked to the money-creation power of banks, which they used to push house prices up and speculate on financial markets (Baker, 2008). Hence, the banking system is also criticized as the agent of fragility in the economy and a source of economic recession.

It is an old debate on whether economic growth leads to financial development or paves the way for economic growth. This discussion began when Schumpeter (1911) discussed the relationship of financial sector growth with economic growth. He believed that a well-structured financial system should promote economic growth by effectively allocating financial resources to productive investments. This topic gained much importance among researchers after the 1990s; many studies have been carried out since then. While looking at literature, two schools of thought can be found: a supply-leading thought and a demand-following thought. The supply-leading thought argues that the development of the financial system leads to economic growth (see King & Levine, 1993; Arestis et al. 2005; Estrada et al. 2010; Bayar et al. 2014; Nguyen, 2019) and demand-following thought advocates that the economic growth requires the financial market to develop (see Wood, 1993; Shan, 2005; Ho & Odhiambo, 2013, Helhel, 2018).

One of the studies in the 1990s that supported the supply-leading hypothesis includes King and Levine (1993). They conducted a cross-country study of 80 countries and found that the financial system can encourage economic growth. Various measures of the level of financial development used in the study were strongly associated with real per capita GDP growth. Similar was the finding of Ahmed and Ansari (1998) in South-Asian economies, India, Pakistan, and Sri Lanka. Another study by Rousseau and Wachte (1998) also has findings supporting supply-leading hypotheses in the developed economy – the United States, the United Kingdom, Canada, Norway, and Sweden. Ghali (1999) also found similar findings in developing countries, including Tunisia. Recent studies conducted in different countries also have findings supporting supply-leading hypotheses. One of these studies includes Estrada et al. (2010). They studied the link between economic growth and financial development using panel data for 125 countries. They found that financial development significantly positively affects economic growth, especially in developing countries. Similarly, Ferrando & Ruggieri (2018) feel that reducing barriers and limits to external finance would be a good strategy to boost real value-added, productivity, and overall economic growth.

Some of the studies in the finance-growth nexus have findings that support the demand-following hypothesis. Early studies include Wood (1993) and Odhiambo (2004). They studied the causal relationship between economic growth and financial development and concluded that economic growth in South Africa leads to the development of the financial sector. Similar were the findings of Agbetsiafa (2004) in Sub-Saharan African (SSA) countries. Ang and McKibbin (2007) examined whether financial development leads to economic growth or vice versa in the small open economy of Malaysia. The study found a positive relationship between financial depth and economic development, but output growth (economic growth)

led to higher financial depth in the long run. The study to test causality between financial development and economic growth by Helhel (2018) in Fragile five countries (Brazil, India, Indonesia, South Africa, and Turkey) used panel data covering the period of 2002 to 2016. The study has revealed the existence of unidirectional causality running from growth to financial development.

Few studies have found bidirectional relationships between finance and growth that significantly affect each other. These studies include Akinboade (1998), Shan et al. (2001), Shan and Morris (2002), Hondroyiannisa et al. (2005), Deb and Mukharjee (2008), Masod and Hardaker (2012), and Taivan and Nene (2016). However, Kar et al. (2011) found country-specific results in a cross-country study in the fifteen Middle East and North African countries using panel data. Calderon and Liu (2003) also had country-specific findings and concluded that financial deepening contributes more to the causal relationships in developing countries than in industrial countries. On the other hand, Osuala et al. (2013) found no causal relationship between economic growth and financial development in the long run in Nigeria.

The literature mentioned above shows that there are no unanimous findings. Some findings indicate that financial market development leads to economic growth, while other studies indicate the opposite. Furthermore, some studies found bi-directional causality, and some have found no relation. Similarly, some studies indicate country-specific results varying with the country's industrial structure and level of development. Therefore, this study analyzes the relationship between banking system development and economic growth in Nepal. More specifically, this paper examines whether the banking system of Nepal leads to economic growth or economic growth leads to banking development.

2. METHODOLOGY

2.1 Variables and Data

In the literature, GDP is the commonly used measure of economic growth. Some studies have used real GDP, and some have used GDP per capita (Ghali, 1999; Helhel, 2018; Kar et al., 2011). However, few studies have used total factor productivity (TFP) as the indicator of economic growth (see Chanda & Dalgaard, 2008; Estrada et al., 2010; Ilyina & Samaniego, 2011). Following the literature, this study also uses the per capita GDP growth rate as an indicator of economic growth. The commonly used indicator representing the banking sector development is the total private sector credit by banks (e.g., Akinlo & Egbetunde, 2010; Estrada et al., 2010). This study uses private sector credit as a percentage of GDP to represent the banking sector development. Besides this indicator, the study also uses some control variables. The country's export and import, which reflects trade openness, is also major variable affecting economic activities (Bakari, 2016). Therefore, this variable, defined as the sum of export and import as a percentage of GDP, is one of the control variables. Another important variable affecting economic activities is government spending (Alexiou 2009). Similarly, inflation is also an important variable affecting economic activities (Cheng, 2012). Therefore, these two variables, government spending as a percentage of GDP and inflation rate, are also included as control variables.

Macroeconomic data for real GDP per capita, bank credit to the private sector, inflation, government spending, export, and import have been used. The data are collected from various issues of the economic survey by the ministry of finance, data published by the ministry of finance on its official website, and various publications of Nepal Rastra Bank. This study uses annual time-series data from 1975 to 2019.

2.2 The Model

This research estimates the following baseline regression:

$$Y_{i,t} = \alpha + \beta * FD_{i,t} + \lambda * Controls_{i,t} + \varepsilon_{i,} \ldots \ldots (1)$$

where $Y_{i,t}$ indicates the economic growth indicator (per capita GDP growth rate) in year t, $FD_{i,t}$ indicates the financial development indicator, $Controls_{i,t}$ represents the control variables, and $\varepsilon_{i,}$ represents the error term.

The Augmented Dickey-Fuller (ADF) test employing Akaike Information Criterion (AIC) has been used to check whether the data is stationary. ADF takes the following process:

$$\Delta Y_t = \alpha + \gamma Y_{t-1} + \lambda_t + \beta_i \Delta Y_{t-j} + \varepsilon_t \ldots \ldots (2)$$

where t is the time index, α is an intercept constant called a drift, λ is the coefficient on a time trend, γ is the coefficient presenting process root, i.e., the focus of testing, p is the lag order of the first-differences autoregressive process, ε_t is an independent identically distributed residual term. If variables are stationary at the first difference, cointegration may exist among variables. If all variables are stationary at the first difference, Johansen's (1991) cointegration test can be applied to check for integration. This test applies Trace statistic (λ_{trace}), which is specified as follows:

$$\lambda_{trace}(r) = -T \ln(1 - \hat{\lambda}_i) \ldots \ldots (3)$$

where T is the number of usable observations and $\hat{\lambda}i$ is the estimated value of the characteristic roots. Once cointegration is established, the vector error correction method (VECM) can be applied to estimate regression as specified in equation (4).

$$\Delta Y_t = \beta_0 + \beta_i \Delta Y_{t-i} + \theta_i \Delta X_{t-i} + \delta_i \Delta A_{t-i} + \varphi Z_{t-1} + \mu_t \ldots \ldots (4)$$

where Y represents the dependent variable, X represents the independent variable, A represents other control variables, μ_t represents the white noise. Z is the error correction term (ECT), the OLS residuals from the long-run cointegrating regression.

$$Y_t = \beta_0 + \beta_1 X_t + \beta_2 A_t + \varepsilon_t \ldots \ldots (5)$$

3. RESULTS AND DISCUSSION

3.1 Descriptive Statistics

Table 1 presents the descriptive statistics for the variables used in the study. GDP growth rate ranges from a minimum of -15.58 to a maximum of 26.60 percent, indicating that the growth rate was negative in some years. However, the average growth rate is positive. The private sector credit and the trade openness show much fluctuation as their standard deviations are high compared to other variables. The development of the banking sector started after the liberalization in 1990. This sector started to grow rapidly from 2004. Similarly, trade openness increased rapidly from 2000, especially due to increased imports. Therefore, these two variables show higher fluctuation, indicating a low value at the beginning of the study period and a high value at the end.

Table 1

Descriptive Statistics

Variables	GDP	PVTC	GVTS	INF	TO
Mean	5.92	30.04	9.17	8.57	65.75
Median	4.71	23.20	8.97	8.30	65.77
Maximum	26.60	87.02	12.32	21.06	137.52
Minimum	-15.58	3.63	6.70	-0.67	20.80
Std. Dev.	8.41	24.45	1.26	4.49	29.81
Observations	45	45	45	45	45

Note: GDP stands for the annual growth rate of per capita real GDP, PVTC stands for private sector credit by banks as a percentage of GDP, GVTS represents the government spending as a percentage of GDP, INF stands for inflation measured as measured by the annual percentage change in the consumer price index and TO stands for trade openness as measured by the sum of export and import as a percentage of GDP.

As a percentage of GDP, government spending also has a positive mean value and an increasing trend. However, this variable has the least fluctuation compared to other variables included in the model. There was deflation in 1997. Therefore, the minimum value of inflation is negative. The maximum inflation recorded was 21.06 percent in 1993. However, the overall fluctuation of inflation is somehow low as the standard deviation is only 4.49 percent.

3.2 Test of Unit Root

Table 2 shows the result of the test of unit root and stationarity of the variables. All the variables included in the study are not stationary at their level. When the first difference is taken, all variables become stationary. The test or unit root has been performed using the Augmented Dickey-Fuller test, and the information criterion used is Akaike Information Criteria (AIC). The null hypothesis that data contains a unit root of all variables has been rejected at the first difference because the p-value is less than 5 percent. Since all the variables are stationary at the first difference, the vector error correction method has been used to estimate the long-run and short-run causality.

Table 2

Augmented Dickey-Fuller Test (Test of Unit Root)

Variables	Level		1st difference		Order of integration
	t-ratio	*p* value	*t*-ratio	*p* value	
GDP per capita	-1.3459	0.163	-10.211	0.000	*I*(1)
Private sector credit	-0.886	0.947	-6.520	0.000	*I*(1)
GVT spending	-2.185	0.486	-8.502	0.000	*I*(1)
Inflation	-1.587	0.085	-8.582	0.000	*I*(1)
Trade openness	0.059	0.996	-7.331	0.000	*I*(1)

3.3 Test of Cointegration

The results of the cointegration test presented in Table 3 show that there is only one cointegrating equation in each of the three models because the null hypothesis of no cointegration (r = 0) can not be rejected at 5 percent, as p-values are less than 0.05. On the other hand, the null hypothesis of less than one cointegration (r ≤ 1) and less than two cointegration (r ≤ 2) are rejected at 5 percent because p-values are greater than 0.05. Therefore, the variables in the models are cointegrated, and the vector error correction model can be used for regression estimation.

Table 3

Result of Cointegration Rank Test

Models and variables	Hypothesized No. of CE(s)			Identified No. of CE(s)
	None (r = 0)	At most 1 (r ≤ 1)	At most 2 (r ≤ 2)	
Model 1: GDP, PVTC, GVTS	35.366*	11.2673	1.9382	1
	(0.0103)	(0.1956)	(0.1639)	
Model 2: GDP, PVTC, TO	29.8133*	14.0326	3.6707	1
	(0.0498)	(0.0820)	(0.0554)	
Model 3: GDP PVTC, INF	33.9319*	11.5142	2.5296	1
	(0.0158)	(0.1818)	(0.1117)	

Note: Test values are Trace statistics (λ_{Trace}) for three null hypotheses. The null hypothesis of r = 0 means no cointegration between variables included in the model. The null hypothesis of r ≤ 1 and r ≤ 2 indicates less than or equal to one and less than or equal to two cointegrating equations. Values in parenthesis are p-values of Trace statistics.

*Trace test indicates 1 cointegrating equation at the 0.05 level

3.4 Causality from Banking Development to Economic Growth

The upper part of Table 4 shows the coefficients of the long-run relationship between independent variables and GDP. The independent variable for each of these models is private sector credit (PVTC), and three control variables, government spending (GVTS), trade openness (TO), and inflation (INF), are used alternatively in three different models.

Table 4

The long-run Effect of Private Sector Credit on GDP

	Model 1	Model 2	Model 3
PVTC	0.2538***	0.4679*	0.0275
	(2.5131)	(1.655)	(0.1789)
GVTS	-6.1074***		
	(-2.9364)		
TO		-0.4055*	
		(-1.833)	
INF			-1.70***
			(-3.87)
C	54.25	18.68	22.79
R-square	0.6526	0.6091	0.6447
F	9.1226***	7.570***	8.81***
Prob. of F	(0.000)	(0.000)	(0.000)
DW	2.15	2.006	2.23

Note: The dependent variable is the per capita GDP for each equation. Statistics presented are coefficients or elasticities, and values in parenthesis are t-values. *denotes that statistic is significant at 10 percent, **indicates that statistic is significant at 5 percent, and ***denotes that statistic is significant at 1 percent.

The private sector credit has a positive and significant coefficient in model 1 and model 2. In model 3, the relationship is positive but insignificant at 5 percent. These indicate a positive impact of development of financial intermediary on the country's economic growth in the long run. These results also show that increased credit by banks to private businesses leads to increased aggregate investment in the economy and output. When credit becomes easy, many small and medium enterprises get funding for commercializing their innovative ideas. This results in increased output and hence economic growth. This finding is consistent with the finding of Nyasha and Odhiambo (2015), Ahmed & Wahid (2011), Akinlo & Egbetunde (2010), Hussain and Chakraborty (2012), Majid (2008), and King and Levine (1993). However, this finding contradicts the finding of Shan and Morris (2002), who found very little support for financial sector development on economic growth in 19 OECD countries.

All three other variables used as control variables in three models show a negative and significant relationship with GDP. It indicates that the increased size of the government, increased imports, and increased inflation causes a negative impact on economic growth. Increased budget deficit causes inflation to increase, and a high inflation rate creates macroeconomic instability, which negatively affects economic activities (Estrada et al., 2010). This study's findings support Lin (1994) and Mitchell (2005), who suggest reducing government spending to achieve high economic growth in America. This finding contradicts Alexiou (2009), who found a positive contribution of government spending to economic growth in South-Eastern Europe (SEE).

A negative impact of trade openness on economic growth shows that the country is importing more goods than exporting. The import-based economy discourages domestic production. An import-led economy is not a good sign because the purchase of domestic goods and services increases GDP, but the purchase of imported goods and services has no direct impact on the country's GDP (Wolla, 2018). This study's finding contradicts the findings of Bakari (2016), who found no causality from import to the economic growth in Canada; and Li et al. (2010), who also found no clear evidence to prove that there exists long-term stationary causality between import trade and GDP. Similarly, the finding also contradicts Alexiou (2009) and Omri et al. (2015), who found a positive contribution of trade openness to economic growth.

Similarly, the negative relationship with inflation indicates that inflation hurts economic growth as increased inflation causes the aggregate demand to decrease and business organizations cut their facilities. As a result, the total production also decreases. Similarly, high inflation creates high volatility in the economy, bringing uncertainty about what inflation will be in the future. This also affects economic decisions regarding an individual or a business's savings and investment. This ultimately hurts the capital accumulation function of the banking system (Gokal & Hanif, 2004). The present study's finding contradicts Majumder (2016), who found a positive relationship between inflation and GDP growth in Bangladesh, and Behera (2014), who also found a positive impact of inflation on the GDP of Nepal. However, this finding is consistent with the findings of Gokal and Hanif (2004) and Estrada et al. (2010).

Table 5

Short-run Effect of Private Sector Credit on GDP

	Model 1		Model 2		Model 3	
Panel 1: Regression Coefficients						
Variables	β	p-value	β	p-value	β	p-value
ECT	-0.877***	0.000	-0.803***	0.002	-0.772***	0.000
ΔGDP(-1)	-0.157	0.3849	-0.179	0.3566	-0.252	0.1294
ΔGDP(-2)	-0.161	0.2110	-0.181	0.1989	-0.284**	0.0205
ΔPVTC(-1)	0.198	0.4955	0.049	0.8758	0.311	0.2713
ΔPVTC(-2)	0.602**	0.0489	0.491	0.1175	0.703**	0.0205
ΔGVTS(-1)	2.048	0.2767				
ΔGVTS(-2)	2.556	0.1420				
ΔTO(-1)			0.291	0.3938		
ΔTO(-2)			-0.033	0.9274		
ΔINF(-1)					0.953	0.0029
ΔINF(-2)					0.519	0.0454
C	-1.587	0.2201	-1.347	0.4345	-1.078	0.4056

Panel 2: Residual Diagnostics						
Test	χ^2	p-value	χ^2	p-value	χ^2	p-value
Normality	0.10	0.95	0.65	0.72	0.83	0.66
Autocorrelation	3.59	0.17	3.36	0.19	2.20	0.33
Heteroscedasticity	1.59	0.45	0.20	0.91	0.85	0.65
Panel 3: Wald Test (Chi-square values and p-values in parenthesis)						
GDP to PVTC	F = 0.97		F = 1.88		F = 0.95	
	p = 0.62		p = 0.38		p = 0.62	

Note: Δ is the difference operator, and (-1) and (-2) in the variables denote one-year and two-year lag values, respectively. The test statistics for residual diagnosis are Jarque-Bera for normality, Breusch-Godfrey for autocorrelation, and ARCH for heteroscedasticity. ECT stands for error correction term.

The coefficients of error correction terms in all three models are negative and lie between 0 and -1, satisfying necessary conditions. These coefficients are significant at 1 percent because t-ratios are greater than 2. Coefficients of ECT are the speed of adjustment of any deviation in GDP from long-run equilibrium. Model 1 shows that about 87 percent of deviation from long-run equilibrium is corrected each year by private sector credit and government spending. The speed of adjustment shown in model 2 is about 80 percent, which is 72 percent in model 3. The speed of adjustment varies slightly according to the control variables included in the model.

The short-run impact of lag values of dependent variables and independent variables to change independent variables obtained from regression analysis are presented separately in panel 1 of Table 5 for three models. In model 1, only the two-year lag value of private sector credit is significant at 5 percent. In model 3, both lag values of inflation and two-year lag values of GDP and private sector credit are significant at 5 percent. The sign of the coefficient of the two-year lag of GDP is negative, meaning that this year's GDP is negatively influenced by its two years before value. The sign of other significant variables is positive, meaning that a two-year lag of private sector credit and both lags of inflation influence GDP positively in the short run. All other coefficients are insignificant at 5 percent, meaning that government spending and trade openness have no significant influence on GDP in the short run. However, the actual impact of all lag values of each variable on GDP can be identified by using the Wald test.

The results of the Wald test are presented in panel 3 of Table 5. The results indicate that two lag values of private sector credit jointly cannot cause GDP as F-value in each of the three models is insignificant. It can be concluded that there is no causality running from the banking sector to economic growth in the short run. Similarly, there is no short-run impact of economic growth on banking development as the coefficients in all three models are insignificant. Panel 2 of Table 5 shows the model parameters. The coefficients show no autocorrelation in residuals; residuals follow a normal distribution and are not heteroskedastic.

3.5 Causality from Economic Growth to Banking Development

To check whether economic growth leads to banking development, the same models presented in Table 4 and Table 5 have been estimated using private sector credit as dependent and GDP as independent variables and control variables. The results have been presented in Table 6. Although some of the coefficients in Table 6 are significant, the models are insignificant, and the R-square values are very low. This indicates that model variables cannot explain the dependent variable (PVTC). It can be inferred from the result that there is no long-run causality from economic growth to banking development in Nepal.

Table 6

The Long-run Effect of GDP on Private Sector Credit

	Model 4	Model 5	Model 6
GDP	0.2538***	27.45***	38.11***
	(2.5131)	(5.498)	(5.44)
GVTS	-3.94***		
	(-3.93)		
TO		0775*	
		(0.659)	
INF			47.81***
			(3.99)
C	213.47	171.82	582.77
R-square	0.078	0.162	0.074
F	0.412	0.936	0.392
Prob. of F	(0.888)	(0.492)	(0.900)
DW	1.97	1.93	1.98

Note: The dependent variable is each equation's private sector credit (PVTC). Statistics presented are coefficients or elasticities, and values in parenthesis are t-values. *denotes that statistic is significant at 10 percent, **indicates that statistic is significant at 5 percent, and ***denotes that statistic is significant at 1 percent.

The short-run impact of economic growth on banking development has been tested from models 4, 5, and 6, and the results are presented in Table 7. None of the coefficients in panel A of Table 7 is significant, meaning that lag values of private sector credit, GDP, and other control variables cannot cause private sector credit in the short run. It is also proved by the Wald test presented in panel 3 of Table 7 as F-values in all three models are not significant. Panel 2 of Table 7 shows the model diagnostics and that models suffer from normality in residuals. Therefore, it can be concluded that there is no short-run causality running from economic growth to banking development.

Table 7

Short-run Effect of GDP on Private Sector Credit

	Model 4		Model 5		Model 6	
Panel 1: Regression Results						
Variables	β	p-value	β	p-value	β	p-value
ECT	-0.005	0.884	-0.104	0.107	-0.0004	0.946
ΔPVTC(-1)	0.070	0.704	0.194	0.275	0.100	0.568
ΔPVTC(-2)	0.057	0.759	0.124	0.476	0.067	0.711
ΔGDP(-1)	0.091	0.419	-0.022	0.839	0.103	0.314
ΔGDP(-2)	0.009	0.912	-0.053	0.503	0.200	0.790
ΔGVTS(-1)	0.523	0.655				
ΔGVTS(-2)	0.157	0.884				
ΔTO(-1)			-0.253	0.190		
ΔTO(-2)			-0.201	0.332		
ΔINF(-1)					0.011	0.953
ΔINF(-2)					0.068	0.660
C	1.601	0.052	2.482	0.014	1.611	0.051
Panel 2: Residual Diagnostics						
Test	χ^2	p-value	χ^2	p-value	χ^2	p-value
Normality	33.49	0.00	46.65	0.000	0.83	0.66
Autocorrelation	0.59	0.59	1.12	0.338	2.20	0.33
Heteroscedasticity	0.05	0.95	0.069	0.93	0.85	0.65
Panel 3: Wald Test (Chi-square values and p-values in parenthesis)						
GDP to PVTC	F = 0.487		F = 0.000		F = 0.595	
	p = 0.62		p = 0.999		p = 0.557	

Note: Δ is the difference operator, and (-1) and (-2) in the variables denote one-year and two-year lag values, respectively. The test statistics for residual diagnosis are Jarque-Bera for normality, Breusch-Godfrey for autocorrelation, and ARCH for heteroscedasticity. ECT stands for error correction term.

4. CONCLUSION AND IMPLICATIONS

The development of financial intermediaries has a significant positive influence on the economic growth of Nepal in the long run. This implies that the activities of banking institutions are essential to make the availability of financial resources necessary for the investment in fixed assets that are required to increase production facilities. The investment required by the business sector is made available by Nepal's banking sector, which increases the country's aggregate production. Nepal's banking sector development eases the credit constraints and provides access to the fund required by small, medium, and large enterprises. The Nepalese banking sector is important in efficiently allocating resources and fostering economic activities by enhancing entrepreneurs' risk-taking capacity in the long run.

Findings from this study suggest that the increased banking activities support the country's economic growth through easing and expanding credit. On the other hand, banking

institutions can play a key role in increasing the financial literacy of their customers and potential customers, especially from marginalized communities, by offering user-friendly technology such as online tutorials to access financial services. Therefore, policy measures to expand banking services to rural areas would support the country's overall economic development. The regulatory and supervisory policies allowing for new financial products, services, and technology to speed up the scope of financial innovation are essential for economic growth.

Since government spending has a negative impact on economic growth, budgetary restraint should be viewed as an opportunity to make an economic virtue out of fiscal necessity. The government policies that prioritize the import-substituting industries and encourage them with financial and other support help reduce the negative impact of international trade through increased domestic production and import substitution. Attracting foreign direct investment and strengthening the domestic banking system to ensure capital availability also helps increase domestic production, which substitutes the import and promotes the export. Another implication from this study is that monetary and fiscal policy should focus on reducing inflation and maintaining economic stability because inflation harms economic growth. Similarly, further researchers can extend this study by examining the role of other financial market sectors like capital market development and insurance sector development on economic growth.

REFERENCES

Agbetsiafa, D. (2004). The finance growth nexus: Evidence from sub-Saharan Africa. *Savings and Development, 28*(3), 271-288.

Aghion, P., Hemous, D., & Kharroubi, E. (2014). Cyclical fiscal policy, credit constraints, and industry growth. *Journal of Monetary Economics*, *62*, 41-58.

Ahmed, A. D., & Wahid, A. N. (2011). Financial structure and economic growth link in African countries: A panel cointegration analysis. *Journal of Economic Studies*, *38*(3), 331-357.

Ahmed, S. M., & Ansari, M. I. (1998). Financial sector development and economic growth: The South-Asian experience. *Journal of Asian Economics, 9*(3), 503-517.

Akinboade, O. A. (1998). Financial development and economic growth in Botswana, a test for causality. *Savings and Development, 3*(22), 331-348.

Akinlo, A. E., & Egbetunde, T. (2010). Financial development and economic growth: The experience of 10 sub-Saharan African countries revisited. *The review of Finance and Banking*, *2*(1), 17-28.

Alexiou, C. (2009). Government spending and economic growth: Econometric evidence from South-Eastern Europe (SEE*). Journal of Economic and social research, 11*(1), 1-16.

Ang, J. B., & McKibbin, W. J. (2007). Financial liberalization, financial sector development and growth: Evidence from Malaysia. *Journal of Development Economics, 84*(1), 215-233.

Arestis, P., Luintel, A. D., & Luintel, K. B. (2005). Financial structure and economic growth. (Working paper No. 06). University of Cambridge.

Arizala, F., Cavallo, E., & Galindo, A. (2013). Financial development and TFP growth: cross-country and industry-level evidence. *Applied Financial Economics, 23*(6), 433-448.

Bakari, S. (2016). Impact of exports and imports on economic growth in Canada: an empirical analysis based on causality (MPRA Working Paper No. 75910). Munich Personal RePEc.

Baker, D. (2008). The housing bubble and the financial crisis. *Real-world Economics Review, 46*(20), 73-81.

Bayar, Y., Kaya, A., & Yildirim, M. (2014). Effects of stock market development on economic growth: Evidence from Turkey. *International Journal of Financial Research, 5*(1), 93-100.

Beck, T. (2012). *The econometrics of finance and growth* (Policy research working paper No. 4608). Development Research Group, The World Bank.

Boyd, J. H., & Prescott, E. C. (1986). Financial intermediary-coalitions. *Journal of Economic theory, 38(2), 211-232.*

Bricco, M. J., & Xu, M. T. (2019). *Interconnectedness and contagion analysis: a practical framework*. International Monetary Fund.

Calderon, C., & Liu, L. (2003). The direction of causality between financial development and economic growth. *Journal of development economics, 72*(1), 321-334.

Chanda, A., & Dalgaard, C. J. (2008). Dual economies and international total factor productivity differences: Channelling the impact from institutions, trade, and geography. *Economica, 75*(300), 629-661.

Cheng, S. Y. (2012). Substitution or complementary effects between banking and stock markets: Evidence from financial openness in Taiwan. *Journal of International Financial Markets, Institutions and Money, 22*(3), 508-520.

Deb, S. G., & Mukherjee, J. (2008). Does stock market development cause economic growth? A time-series analysis for the Indian economy. *International Research Journal of Finance and Economics, 21*(3), 142-149.

Estrada, G. B., Park, D., & Ramayandi, A. (2010). *Financial development and economic growth in developing Asia* (ADB Working paper, 233). Asian Development Bank.

Ferrando, A., & Ruggieri, A. (2018). Financial constraints and productivity: evidence from euro area companies. *International Journal of Finance & Economics, 23*(3), 257-282.

Ferreiro, J. (2016). *Macroeconomic and financial sector policies to better serve the economy and society* (Working paper No. 165). Federal Reserve Bank of St. Louis.

Gautam, B. P. (2015). *Financial development and economic growth in Nepal* (NRB Working paper No. 25/2014). Nepal Rastra Bank.

Ghali, K. H. (1999). Financial development and economic growth: The Tunisian experience. Review of Development Economics, 3(3), 310-322.

Gokal, V., & Hanif, S. (2004*). Relationship between inflation and economic growth* (Working paper No. 2004/04). Reserve Bank of Fiji.

Helhel, Y. (2018). Financial development and economic growth relationship: An analysis with credit-based financial index. *Business and Economics Research Journal, 9*(4), 761-771.

Ho, S. Y., & Odhiambo, N. M. (2013). Banking sector development and economic growth in Hong Kong: An empirical investigation. *International Business & Economics Research Journal, 12*(5), 519-532.

Hondroyiannisa, G., Lolos, S., & Papapetrou, E. (2005). Financial markets and economic growth in Greece, 1986e1999. *Journal of International Financial Markets, Institutions and Money, 15*(2), 173-188

Hussain, F., & Chakraborty, D. K. (2012). Causality between financial development and economic growth: Evidence from an Indian state. *The Romanian Economic Journal, 15*(45), 27-48.

Ilyina, A., & Samaniego, R. (2011). Technology and financial development. *Journal of Money, Credit and Banking, 43*(5), 899-921.

Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian Vector Autoregressive Models. *Econometrica, 59*, 1551-80.

Kar, M., Nazlioqlu, S., & Aqir, H. (2011). Financial development and economic growth nexus in the MENA countries: Bootstrap panel granger-causality analysis. *Economic Modelling, 28*(1), 685-693.

King R. G. & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics, 108*(3), 717-7

Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics, 46*(1), 31-77.

Lin, S. A. (1994). Government spending and economic growth. *Applied Economics, 26*(1), 83-94.

Majid, M. S. A. (2008). Does financial development matter for economic growth in Malaysia? An ARDL bounds testing approach. *Journal of Economic Cooperation, 29*(1), 61-82.

Majumder, S. C. (2016). Inflation and its impacts on the economic growth of Bangladesh. *American Journal of Marketing Research, 2*(1), 17-26.

Masoud, N., & Hardaker, G. (2012). The impact of financial development on economic growth. *Studies in Economics and Finance, 29*(3), 148-173.

Mishkin F. S. (2018). *Financial markets and institutions.* New Delhi: Pearson Education.

Mitchell, D. J. (2005). The impact of government spending on economic growth. *The Heritage Foundation, 181*(3), 1-18.

Nguyen, Q. H. (2019). Growth model with financial deepening and productivity heterogeneity. *The Japanese Economic Review, 70*(1), 123-140.

Nyasha, S., & Odhiambo, N. M. (2015). Banks, stock market development and economic growth in South Africa: a multivariate causal linkage. *Applied Economics Letters, 22*(18), 1480-1485.

Odhiambo, N. M. (2004). Is financial development still a spur to economic growth? A causal evidence from South Africa. *Savings and Development*, *38*(1)47-62.

Omri, A., Daly, S., Rault, C., & Chaibi, A. (2015). Financial development, environmental quality, trade and economic growth: What causes what in MENA countries*?, Energy Economics, 48,* 242-252.

Osuala, A. E., Okereke, J. E., & Nwansi, G. U. (2013). Does stock market development promote economic growth in emerging markets? A causality evidence from Nigeria. *World Review of Business Research, 3*(4), 1-13.

Schumpeter, J. A. (1911). *The Theory of Economic Development*. [English translation]. Cambridge, MA: Harvard University Press.

Shan, J. (2005). Does financial development 'lead' economic growth? A vector auto-regression appraisal. *Applied Economics, 37*(12), 1353-1367.

Shan, J. Z., Morris, A. G., & Sun, F. (2001). Financial development and economic growth: An egg and chicken problem? *Review of International Economics, 9*(3), 443-454.

Shan, J., & Morris, A. (2002). Does financial development 'lead' economic growth?. *International Review of Applied Economics, 16*(2), 153-168.

Taivan, A., & Nene, G. (2016). Financial development and economic growth: Evidence from Southern African Development Community countries. *The Journal of Developing Areas*, *50*(4), 81-95.

Townsend, R. M., & Ueda, K. (2006). Financial deepening, inequality, and growth: a model-based quantitative evaluation. *The Review of Economic Studies*, *73*(1), 251-293.

Wendel, B. C. B., & Harvey, M. (2006). SME credit scoring: Key initiatives, opportunities, and issues. *Word Bank Bulletin, 10,* 1-6.

Wolla, S. A. (2018). How do imports affect GDP?. *Journal of Applied Finance and Banking*, *5*(4), 61.

Wood, A. (1993). Financial development and economic growth in Barbados: Causal evidence. *Savings and Development, 17*(4), 379-390.

Li, Y., Chen, Z., & San, C. (2010). Research on the relationship between foreign trade and the GDP growth of East China-empirical analysis based on causality. *Modern Economy, 1*(2), 118.

Behera, J. (2014). Inflation and its impact on economic growth: Evidence from six South Asian countries. *Journal of Economics and Sustainable Development, 5*(7), 145-154.