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## Financial Structure and the Economic Growth in Nepal

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### ABSTRACT

This study investigates the relationship between financial system and the economic growth in the context of Nepal and also studies the relative merits of banking sector vs. capital market in promoting economic growth in Nepal. The empirical results using Johansen's cointegrating vector error correction based on the model developed on the basis of Cobb-Douglas production function by using aggregate annual data from 1993/94 to 2022/23 suggests that the financial structure seems insignificant in explaining Nepal's economic growth and the empirical results suggest that banking sector has relative merits over capital market in promoting economic growth over the long-run in Nepal. The gross fixed capital formation has significant and positive association in explaining the real GDP in the short-run. The results of Granger causality explain the uni-directional causality running from banking sector development to real GDP and the development of capital markets to real GDP. The result is consistent with the earlier findings in some developing economies and it has two important implications. First, the policy should focus on banking sector development by enhancing its quality and outreach as it better promotes economic growth in long run and second, the scope of capital market should be further expanded to real economic activities to channelize its impact on growth.

### **Financial Structure and the Economic Growth in Nepal**

Economic growth is one of the major objectives of macroeconomic policy. It is the means for uplifting the living standards as well as achieving economic development. Economists define economic growth from various perspectives. Some economists view that it is an increase in the national income or the level of production of goods and services by a country over a certain period of time. Here, in the study, the economic growth of a nation has been linked with the financial structure of a same nation. Financial structure is the institutional framework of any financial system which may be either bank based or the capital market based depending upon the different economic and financial indicators (Goldsmith, 1969). The term financial structure is the mixture of financial instruments, markets, and institutions operating in an economy. Financial system, on the other hand, is a set of specialized organizations and institutions dealing with the transfer of payments and mediating the flow of savings and investment (vitlos, 2001).

In bank-based systems, the bulk of financial assets and liabilities consist of bank deposits and direct loans. In market-based systems, securities that are tradable in financial markets are the dominant form of financial asset. Bank-based systems appear to have an advantage in terms of providing a long-term stable financial framework for companies. Market-based systems, in contrast, tend to be more volatile but are better to channel funds to new companies in growth industries (vitlos, 2001). In the bank-based system intermediation plays a key role while in a market-based system, fund is directly created through the market.

In the bank-based systems, banks play a leading role in mobilizing savings, allocating capital, overseeing the investment decisions of corporate managers, and providing the risk management vehicles whereas in the capital market-based systems, the security markets share the center stage with the banks in getting society's savings to the firms, exerting corporate control, and easing risk management. In bank-based systems, the bulk of financial assets and

liabilities consist of bank deposits and direct loans. In market-based systems, securities that are tradable in financial markets are the dominant form of financial asset. Bank-based systems appear to have an advantage in terms of providing a long-term stable financial framework for companies. Market-based systems, in contrast, tend to be more volatile but are better in channeling funds to new companies in growth industries (vitlos, 2001). In the bank-based system intermediation plays a key role while in a market-based system, fund is directly created through the market.

The bank based view highlights the positive role of banks in acquiring information about firms and managers and thereby improving capital allocation and corporate governance and also managing cross-sectional, inter-temporal, and liquidity risk and thereby enhancing investment efficiency and economic growth, and credit creation. Apart from these, banks with close ties to firms may be more effective at exerting pressure on firms to re-pay their debts than the markets. However, the proponents of market-based finance claim that market-based systems will more effectively identify, isolate, and bankrupt truly distressed firms and prevent them from hurting the overall economy than a bank-based system. Market provides the richer set of risk management tools that permit greater customization of risk ameliorating instruments and also the markets help in the mobilization of the fund at lower cost.

In this regard this research work raises the research questions as

- i. What is the relationship between the economic growth and structure of financial market in Nepal?
- ii. Which is more growth enhancing in between banking sector and capital market in Nepal?

## **Review of Literature**

### ***Theoretical Review***

There are four competing approaches explaining the relationship between financial structure and economic growth: bank-based approach, market-based approach, financial services approach and the law and finance approach (Arestis, Demetriades, & Luintel, 2001).

The bank-based view highlights the positive role of banks in mobilizing financial resources, identifying good projects, monitoring managers, and managing risk and, therefore, said to be more growth promoting than market-based system (Levine, 1997). The proponents of bank-based system argue that the banks have comparative more advantages over markets particularly in the countries with weak legal and accounting systems. In such economies, the banks can exert more pressure on the firms to reveal the information and payback their debt which facilitates the long run growth. This is particularly relevant in the early stages of economic development when the institutional background is weak to support market activities (Gerschenkrov, 1992). The bank-based view also stresses the shortcomings of market-based systems. The latter reveal information publicly, which reduces incentives for investors to seek and acquire information. Banks can ease the difficulties originated from the market-based system through forming long-run relationships with firms, and, through monitoring.

On contrast to the bank-based views, the market-based theory highlights the advantages of well-functioning markets, and stresses the problems of bank-based structure. Big, liquid and well-functioning markets foster growth and profit incentives, enhance corporate governance and facilitate risk management (Beck & Levine, 2002). Market based financial systems reduce the inefficiencies associated with banks and are, thus, better in enhancing economic development and growth. An issue of concern, identified by a (World bank, 2001) study in the case of market-based financial systems in developing countries, is

that of asymmetric information. Although progress in technology, accounting, and legal practice has also improved the tools of detection which can balance the asymmetry of information between users and providers of funds but it has not been reduced as much in developing countries as it has been in advanced economies.

The financial services view argues that the bank-based versus market-based debate is of second-order importance. According to this view, the first-order issue is the ability of the financial system to improve information and transaction costs, not whether banks or markets provide these services. Furthermore, banks and markets might act as complements in providing financial services.

The law and finance view emphasize the role of the legal system in determining the level of financial development. The law and finance view holds that distinguishing countries by the efficiency of the legal system in supporting financial transactions is more useful than distinguishing countries by financial structure. This view argues that legal systems that protect outside investors by enforcing contracts effectively boost financial development and thereby facilitate external financing, new firm formation, and efficient capital allocation.

### ***Review of Empirical Literatures***

Levine (2000) studied 'Bank-based or Market-Based financial systems: which is better?' from the period 1980 to 1995 covering the 48 countries and discovered that the financial structure isn't significantly related to economic growth. The results of Levine's study are more consistent with the financial services and the law and finance view implying that the financial structure does not matter and what matters the most is the smooth functioning financial institutions.

Dolar and Meh (2002) studied the nexus between financial structure and economic growth with the conclusion similar to that of the study of Levine, 2000. The researchers

discovered that the financial structure doesn't matter, rather the efficient and sound financial system matters for the long run growth.

Arestis et.al (2004) studied if financial structure matters and discovers that the market-based system is more conducive than the bank-based system for the countries Greece, India, South Korea, and Taiwan whereas the bank –based system seems more growth enhancing than the markets in South Africa. For Philippines, the financial structure is found to be insignificant in explaining the economic growth.

Bolbol et.al (2005) studied the case of Egypt regarding the finance-growth relationship covering the data set of Egypt of almost three decades. As for the estimation, the regression analysis in the study found that the securities markets are more growth enhancing in Egypt than the banks. The researchers are of the view that the dominating number of public banks in Egypt is one of the reasons to have securities markets more growth enhancing than the banks.

Gambacorta et.al (2014) studied the financial structure and growth relationship with the help of panel data of 41 advanced and emerging market economies of Europe in the period 1989-2011. The article follows the regression analysis, and has successfully established the importance of financial structure for economic growth. The study showed that the countries with bank oriented system are three times as severe as in those with market oriented system during recession.

Cull et.al (2013) revealed that in the early stage of development, the bank-based finance is likely to be better growth promoting and they gradually give way to capital markets as the economy develop.

Kharel and Pokhrel (2012) studied the relationship between financial structure and economic growth in Nepal using annual data from 1993/94 to 2010/11 found that the banks to be more growth enhancing than the market.

Timsina (2014) examined the impact of commercial bank credit on economic growth in Nepal using time series data for the period of 1975-2013. Employing Johansen Co-integration Approach and Error Correction Model, the study found positive effects of bank credit to the private sector on the economic growth only in the long run.

**Research Gap:**

In Nepalese context, the earlier studies are confined to the shorter period of time due to the shorter history of capital market development in Nepal. However, this paper aims to update the earlier results by incorporating the longer period of time.

**Research Methodology**

**The Model**

We start specifying the model with the help of Cobb-Douglass production function which states that the output is the function of the labor and capital employed. That is,

$$Y_t = e^{\beta_0} K_t^{\beta_1} L_t^{\beta_2} U_t \dots \dots \dots (i)$$

Where, Y, L and K are the real Gross Domestic Product, labor and capital respectively, t is the time subscription, e is exponential term,  $\beta_0$  is the constant term,  $\alpha$  is the share of capital,  $\beta$  being the share of labour and  $U_t$  is an error term.

On taking the log and rearranging the terms, we get;

$$\ln(Y_t) = \beta_0 + \beta_1 \ln(K_t) + \beta_2 \ln(L_t) + u_t \dots \dots \dots (ii)$$

This study aims to discover the relationship between the economic growth and structure of financial market in Nepal and to identify whether banking sector or the capital market of Nepal is more growth enhancing. There are several ways of classifying financial system which varies country to country. According to Demircuc-Kunt and Levine (2001), the popular ways is to segregate the overall financial system into bank-based and market-based (non-bank) financial system. In this sense, we further model the equation (ii) as:

$$\ln(Y_t) = \beta_0 + \beta_1 \ln(K_t) + \beta_2 \ln(L_t) + \beta_3 (BS_t) + \beta_4 (NBS_t) + \epsilon_t \dots \dots \dots (iii)$$

Where,  $BS_t$  represents the total domestic credit taken as the proxy for the banking sector development and  $NBS_t$  represents the market capitalization value as an indicator of non-bank financial system.

We employ a cointegrated vector autoregressive model of order  $p$  to estimate equation (iii). In this process, we choose lag order ( $p=1$ ) because we are using time series data and also because our sample size is not big enough to expand the lag size. Furthermore, the Akaike information criteria also has suggested the lag value as 1.

**Presentation and Analysis of Data**

This chapter includes descriptive analysis of the variables, stationary test employing Augmented Dicky Fuller test, Johansen cointegration test, vector error correction model, diagnostic test of the residuals and the Granger-Causality test with econometric software E-views version 12.

**Table 1**

*Descriptive Statistics of the Variables*

Variables	Domestic				
	RGDP (in ten million)	Labour (in number)	credit (in ten million)	Market capitalization (in ten million)	GFCF (in ten million)
Mean	113354.8	6855978	137008.4	77967.15	45668.69
Median	53245.62	6817233	49647.30	34486.59	19474.23
Standard Deviation	85480.12	999515.1	176080.8	105056.1	47599.98
Kurtosis	1.467110	2.355522	4.198327	4.519598	2.264027
Skewness	0.458339	0.336922	1.533611	1.510032	0.908348
Minimum	30911.50	5248728	5841.350	1229.500	4203.200
Maximum	257625.1	8937228	616890.5	401095.8	140380.4
Number of Observations	30	30	30	30	30

*Source:* Author’s calculation through E-Views

**Table 2**

*ADF Test Results*

Variables	Constant		Constant and Trend		Remarks
	t-statistics	p-value	t-statistics	p-value	
Ln (Y)	-0.394162	0.8976	-2.047922	0.5517	Level
Ln (K)	-0.300805	0.9131	-1.633887	0.7532	Level
Ln (L)	-0.995932	0.7370	-2.937176	0.1700	Level
Ln (BS)	0.338170	0.9763	-2.388015	0.3773	Level
Ln (NBS)	-0.511394	0.8751	-3.259417	0.0938*	Level
Δ Ln (Y)	-5.253523	0.0002***	-5.156191	0.0014**	I(1)
Δ Ln (K)	-3.284323	0.0254**	-3.1845	0.01781**	I(1)
Δ Ln (L)	-2.52893	0.0122**	-2.393996	0.0373**	I(1)
Δ Ln (BS)	-3.697283	0.0098**	-3.699427	0.0392**	I(1)
Δ Ln (NBS)	-4.336559	0.0021**	-1.267510	0.04693**	I(1)

Source: Author’s own calculation from E-views

Note: \*/\*\*/\*\* denotes the statistically significant at 10 %, 5 % and 1 % respectively.

The table 4.2 shows the result of the ADF test statistics of concerned variables used in this study. The result of ADF test shows that all variables are stationary at the first difference. So these all variables is called I (1). As all the variables are stationary at the first difference, it gives us the reason to apply the Johansen’s cointegration test between the variables.

The result of trace statistic and max-eigen value statistic confirmed that there are two cointegrating equations which allows us to run VECM. The normalized equation of our model is:

$$\ln(Y_t) = -1.005021\ln(K_t) - 14.446567\ln(L_t) + 3.342329\ln(BS_t) - 0.337475\ln(NBS_t) \dots \dots (iv)$$

This equation implies that the banking sector indicator has positive association with real GDP in the long run whereas other variables are inversely associated.

The results of trace statistic, max-eigen value statistic and normalized cointegrating coefficients are kept at appendix section.

The system of equation for VECM is:

$$D(Y) = C(1)*\{ \ln Y(-1) + 10.8621131054*\ln L(-1) - 1.70593767759*\ln BS(-1) + 0.023514327383*\ln NBS(-1) - 163.721579424 \} + C(2)*\{ \ln K(-1) + 3.56654597906*\ln L(-1) -$$

$$1.62821614161*\ln BS(-1) + 0.312392219076*\ln NBS(-1) - 51.460465298\} + C(3)*D(\ln Y(-1)) + C(4)*D(\ln K(-1)) + C(5)*D(\ln L(-1)) + C(6)*D(\ln BS(-1)) + C(7)*D(\ln NBS(-1)) + C(8).....(v)$$

Where, C(1) and C(2) are the coefficients of error correcting terms and C(3) to C(7) are the short run coefficients whereas C(8) is the constant term.

The first error correcting coefficient C(1) is found to be -0.896448 and the second error correcting coefficient C(2) is -0.628028 meaning that deviations from the long-run equilibrium defined by the first cointegrating equation are corrected at a speed of approximately 89.64% per period and deviations from the long-run equilibrium defined by the second cointegrating equation are corrected at a speed of approximately 62.80% per period. Both of these coefficients are statistically significant at the level of 5% with respective p- values as 0.0043 and 0.0021.

Coefficient C(3) is -0.224058 with p-value 0.1776 meaning that the past changes in real GDP negatively impact current changes in real GDP but is statistically insignificant. C(4) being 1.434777 with p-value 0.0204 indicates that the past changes in gross fixed capital formation has positive and significant impact over real GDP. C(5) is the coefficient of labour which is -7.544519 and is statistically significant with p-value 0.0373 at 5% level. This shows that the changes in labour and the changes in real GDP are inversely associated.

C(6) is the coefficient of banking sector indicator influencing the real GDP whose value is -0.383598 meaning that these two variables are inversely associated in short run and C(7) is the coefficient of non-banking sector to define real GDP and it is equal to 0.130048 implying a positive association between the dependent and independent variables in the short-run but both of these coefficients are found to be statistically insignificant at 5% level of significance. C(8) is a constant term being 0.087 and is found to be statistically insignificant. The value of R-squared is 0.793080 meaning that 79.31% of the variability in the dependent variable is explained by the model. The probability value of F-statistic is 0.000012 which less than 1 percent that implying the overall significance of short run model. However, the residual diagnostics has been carried out which has been discussed below. The summary table of the equation....(v) is placed at the appendix section.

Breusch-Godfrey Serial Correlation LM test shows that the observed R-squared value is 3.089257 with probability Chi-Square value 0.0788. This probability value is more than 5 percent so we cannot reject the null hypothesis that there is no serial correlation. Thus, the model is free from autocorrelation. Similarly, Breusch-Pagan-Godfrey test of homoskedasticity shows that the observed R-squared statistics as 15.74771 and corresponding probability is 0.1071. Here, the probability value of observed R-squared is greater than 5 percent so we cannot reject the null hypothesis that there is homoscedasticity and finally, Jarque-Bera (J-B) test confirms the residuals are normally distributed having Jarque-Bera statistic 0.620246 with probability value of 73.33 percent. The probability value is greater than 5 percent so the null hypothesis that residuals are normally distributed cannot be rejected. The cumulative sum (CUSUM) curve lying within the critical value bounds indicates that the short run coefficients are stable. Each of these discussed tests are placed at the appendix section.

This study has adopted the Granger causality test between real GDP and the banking sector indicator and in between real GDP and non-bank indicator to discover the direction of causality. The result of this test has been discussed below:

**Table 3**

*Pairwise Granger Causality between lnY and lnBS*

Null Hypothesis:	bs	O	F-Statistic	P rob.
lnBS does not Granger Cause lnY	9	2	38891	.0179
lnY does not Granger Cause lnBS			45022	.5081

Source: Author’s Calculation through E-views

**Table 4**

*Pair wise Granger Causality between lnY and lnNBS*

Null Hypothesis:	bs	O	F-Statistic	P rob.
lnNBS does not Granger Cause lnY	9	2	46004	.0445
lnY does not Granger Cause lnNBS			97401	.3328

*Source:* Author's Calculation through E-views

The result of the table 4.3 suggests that there is uni-directional causality between real GDP and domestic credit, an indicator of banking sector. The hypothesis that  $\ln BS$  does not Granger cause  $\ln Y$  is rejected at 5 percent level of significance. However, we cannot reject the hypothesis that  $\ln Y$  doesn't granger cause  $\ln BS$ . Similarly, the result of the table 4.4 shows that there is uni-directional causal relationship between the variables. The hypothesis that  $\ln NBS$  does not Granger cause  $\ln Y$  is rejected at 5 percent level of significance. However, the converse doesn't seem true.

### **Conclusion**

The main objective of this study is to examine the relationship between financial system and economic growth in Nepal, and to investigate whether the banking sector or the non-banking sector better promotes the economic growth. This study focuses on the long-standing debate regarding the relative merits of bank vs. capital market-based financial system in promoting economic growth and examines this particular issue in the Nepalese context with the dataset of 29 years over periods 1994 - 2023. This study concludes that the financial structure is insignificant in the context of Nepal as in many other countries and in particular, the banking sector seems to be more growth enhancing than the capital market in Nepal over the long-run. The results are consistent with the views of law and finance view and financial services view that focuses on the overall development and smooth functioning of financial system and the policy should focus on the overall development of the financial institutions. The issue here is the ability of the financial system to improve information and transaction costs, not whether banks or markets provide these services. Furthermore, banks and markets might act as complements in providing financial services. The Johansen cointegration test and the VECM results imply that the banks seem to have more impact on the economic growth over the long run and the impact is converse in the case of short run. So, the policy should focus on banking sector development as it better promotes long run economic growth compared to capital market. The banking sector development does not necessarily mean the increment of number of banks and financial institutions, but it is the expansion in the outreach of their financial services and product in terms of quality as well as quantity and, the policy makers and researchers can focus their study on

the further expansion of the capital market to real economic activities so as to channelize its impact on the long run economic growth.

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**Appendices**

**Appendix-I: Trace Statistic Result for Johansen Cointegration Test**

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Unrestricted Cointegration Rank Test (Trace)

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Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.790352	101.0965	69.81889	0.0000
At most 1 *	0.710740	57.35134	47.85613	0.0050
At most 2	0.395067	22.61934	29.79707	0.2653
At most 3	0.263020	8.545502	15.49471	0.4091
At most 4	1.76E-06	4.92E-05	3.841465	0.9968

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Trace test indicates 2 cointegrating eqn(s) at the 0.05 level  
 \* denotes rejection of the hypothesis at the 0.05 level  
 \*\*MacKinnon-Haug-Michelis (1999) p-values

Source: Authors' calculation using E-Views

**Appendix-II: Max- Eigen Statistic Result for Johansen Cointegration Test**

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Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

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Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.790352	43.74511	33.87687	0.0024
At most 1 *	0.710740	34.73200	27.58434	0.0051
At most 2	0.395067	14.07384	21.13162	0.3590
At most 3	0.263020	8.545453	14.26460	0.3259
At most 4	1.76E-06	4.92E-05	3.841465	0.9968

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Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level  
 \* denotes rejection of the hypothesis at the 0.05 level  
 \*\*MacKinnon-Haug-Michelis (1999) p-values

Source: Authors' calculation using E-Views

**Appendix-III: Normalized Cointegrating Coefficients**

Normalized cointegrating coefficients (standard error in parentheses)

LNRGDP	LNGFCF	LN L	LNBS	LNNBS
1.000000	1.005021	14.44657	-3.342329	0.337475
	(0.21807)	(1.37871)	(0.31882)	(0.05691)

Source: Authors' calculation using E-Views

**Appendix-IV: Results of VECM**

$$D(LNRGDP) = C(1)*(LNRGDP(-1) + 10.8621131054*LN\_L(-1) - 1.70593767759*LNBS(-1) + 0.023514327383*LNNBS(-1) - 163.721579424) + C(2)*(LNGFCF(-1) + 3.56654597906*LN\_L(-1) - 1.62821614161*LNBS(-1) + 0.312392219076*LNNBS(-1) - 51.460465298) + C(3)*D(LNRGDP(-1)) + C(4)*D(LNGFCF(-1)) + C(5)*D(LN\_L(-1)) + C(6)*D(LNBS(-1)) + C(7)*D(LNNBS(-1)) + C(8)$$

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.896448	0.278145	-3.222955	0.0043
C(2)	-0.628028	0.177495	-3.538288	0.0021
C(3)	-0.224058	0.160331	-1.397470	0.1776
C(4)	1.434777	0.569740	2.518300	0.0204
C(5)	-7.544519	3.381883	-2.230863	0.0373
C(6)	-0.383598	0.909674	-0.421687	0.6778
C(7)	0.130048	0.079484	1.636145	0.1174
C(8)	0.087053	0.110045	0.791065	0.4382
R-squared	0.793080	Mean dependent var		0.074670
Adjusted R-squared	0.720658	S.D. dependent var		0.185407
S.E. of regression	0.097993	Akaike info criterion		-1.572890
Sum squared resid	0.192052	Schwarz criterion		-1.192261
Log likelihood	30.02047	Hannan-Quinn criter.		-1.456528
F-statistic	10.95081	Durbin-Watson stat		2.291448
Prob(F-statistic)	0.000012			

Source: Authors' calculation using E-Views

**Appendix-V: Breusch-Godfrey Serial Correlation LM Test**

Breusch-Godfrey Serial Correlation LM Test:  
Null hypothesis: No serial correlation at up to 1 lag

F-statistic	2.356248	Prob. F(1,19)	0.1413
Obs*R-squared	3.089257	Prob. Chi-Square(1)	0.0788

Source: Authors' calculation using E-Views

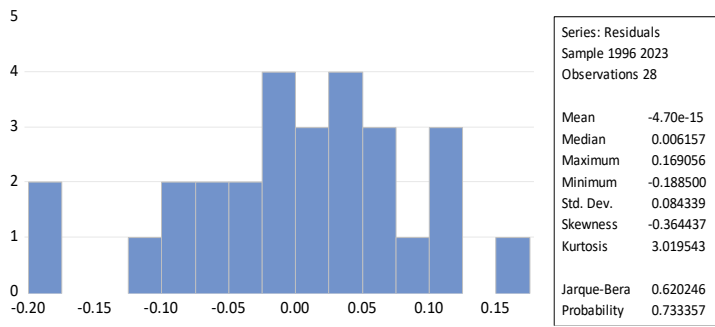
**Appendix-VI: Breusch-Pagan-Godfrey test of Homoskedasticity**

Heteroskedasticity Test: Breusch-Pagan-Godfrey  
Null hypothesis: Homoskedasticity

F-statistic	2.184988	Prob. F(10,17)	0.0750
Obs*R-squared	15.74771	Prob. Chi-Square(10)	0.1071
Scaled explained SS	8.113057	Prob. Chi-Square(10)	0.6178

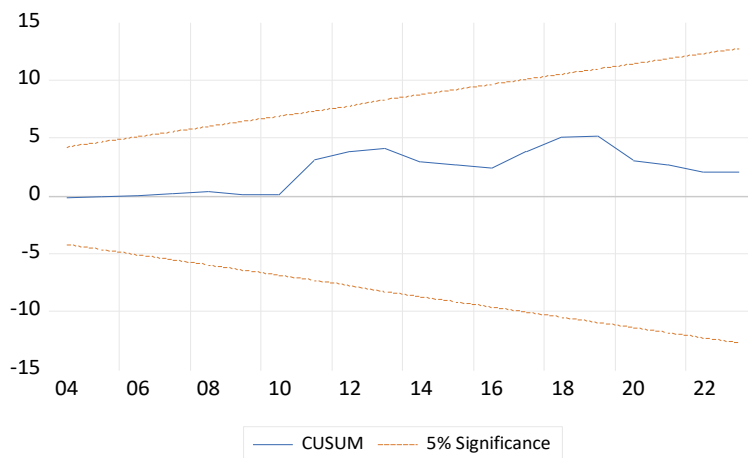
Source: Authors' calculation using E-Views

**Appendix-VII: Jarque-Bera (J-B) test of Normality**



Source: Authors' calculation using E-Views

**Appendix-VIII: CUSUM Test**



Source: Authors' calculation using E-Views

**Appendix-IX: Sources of Data, Measurement and Definition of Variables**

<b>Variables</b>	<b>Definition</b>	<b>Data Sources</b>	<b>Measurement</b>
Y	Gross Domestic Product (GDP) at constant price	Dash Board of Ministry of Finance	Rs. in ten million
K	Gross Fixed Capital Formation (GFCF)	Dash Board of Ministry of Finance	Rs. in ten million
L	Total Labour Force	Data Base of World Bank	number
BS	Total Domestic Credit	Dash Board of Ministry of Finance	Rs. in ten million
NBS	Market Capitalization	Economic Surveys	Rs. in ten million