Relationship Between Money Supply and Economic Growth of Nepal: VECM Approach

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(Received: July 27, 2024; Revised: November 23, 2024)

Abstract

Several theories elucidate the correlation between money supply and gross domestic product (GDP). Money supply refers to the total amount of money in circulation within an economy, encompassing currency, printed notes, funds in deposit accounts, and other liquid assets. Assessing the valuation of money supply assists analysts and policymakers in formulating or adjusting monetary policies, whether to increase or decrease the money supply. This valuation is crucial as it directly influences the business cycle, thus impacting the overall economy. This study delves into the relationship between money supply and economic growth in Nepal from 1975 to 2021 using co-integration, VECM, and causality tests. ADF tests reveal non-stationarity at the level but stationarity at the first difference, affirming long-run equilibrium with a single error correction term. VECM analysis unveils a notable ECT coefficient (-1.095592, p-value: 0.0042), indicating adjustments from past year deviations at a rate of 0.42%. Short-term dynamics demonstrate varying significance levels, with money supply (M2) leading to GDP, GDP leading to private investment (PI), private consumption (PC) leading to GDP, money supply (M2) leading to private investment (PI), money supply (M2) leading to private consumption (PC), and private investment (PI) leading to private consumption (PC), all showing significant unidirectional causal relationships at the 5% level. The study proposes increasing the money supply as a means to attain higher and swifter economic growth in Nepal.

Keywords: *Economic growth, GDP, money supply, causality, co-integration, unit root test.*

1. Introduction

Economic growth, the cornerstone of prosperity, is characterized by the expansion of real output and the adjustment of nominal GDP for inflation, with interest rates playing a crucial role in its fluctuations. As Kuznets (1995) delineates, sustained economic growth reflects an economy's ability to diversify goods and services provision, driven by technological progress and institutional adjustments. GDP or GNP serves as a vital metric for measuring this growth, impacting national income, employment, and living standards positively. Money supply, essential for sustaining economic growth, facilitates the expansion of an economy's productive capacity, resulting in higher output and income (Todaro & Smith, 2020).

In Nepal, the Nepal Rastra Bank (NRB) governs monetary policy, aiming to regulate money's value, supply, and cost strategically. Objectives, including price stability, external payments equilibrium, employment, and sustainable economic development, vary based on economic growth stages, crucial for long-term growth (Anyanwu, 2004). Utilizing tools like interest rates, money stock, credit, and exchange rates, monetary policy influences macroeconomic aggregates like output, employment, and prices. Effective monetary policies are essential for ensuring economic stability and growth. Government economic policy encompasses elements such as taxation, budgets, money supply, interest rates, and labor market regulations, with fiscal and monetary policies as primary tools (Bista, 2016). Maintaining stability in price, exchange rate, interest rate, and financial aspects fosters high investment, savings, and economic growth.

There's a growing focus on the relationship between money supply and GDP. In recent years, analyzing this connection has been a contentious issue drawing attention from economists, researchers, and policymakers. Swamy (1994) observed that in the 1980s, the public sector was expanding excessively and suffering from economic mismanagement. Over time, various theories have emerged regarding the link between monetary policy and economic growth, leading to divergent opinions among different schools of economic thought. This is because achieving high economic growth rates, essential for economic development, necessitates a well-balanced mix of monetary policy variables. Consequently, this topic has garnered significant interest across a spectrum of economic theories, including Classical, neo-Classical, Keynesian, and neo-Keynesian perspectives.

Countries worldwide prioritize achieving sustainable economic growth, with money supply playing a pivotal role. Nepal, as a developing nation, places particular emphasis on economic growth for citizen welfare. Effective monetary policy formulation and implementation are essential for fostering growth. To address the relationship between money supply and economic growth in Nepal, this research employs the Johansen co-integration test and Augmented Dickey-Fuller Test for unit root analysis. Subsequently, the study utilizes the Vector Error Correction Model (VECM) and Granger Causality Test to delve deeper into and quantify this relationship.

Review of Literature: This study provides a comprehensive analysis of the connection between money supply and economic growth in Nepal. It uniquely evaluates the impact of monetary policy on GDP growth, introducing distinct variables.

Theoretical Review: Theoretical perspectives on money supply, private investment, private consumption, and economic growth are thoroughly explored.Top of Form

Classical monetary theory, a collective effort by economists like Adam Smith (Smith, 1776) and David Ricardo (Ricardo, 1817), views money solely as a medium of exchange, lacking store value. It emphasizes the neutrality of money, affecting only the price level, with a dichotomy between the real and monetary sectors. According to the quantity theory of money, represented as MV=PT, changes in money supply do not impact real variables like employment or economic growth, as the classical economy is believed to operate at full employment equilibrium (Bhattarai, 2013).

Monetarists advocate for a lag effect of money supply, suggesting it takes 6 months to 2 years to manifest fully in the economy. They propose the constant growth rule of money supply, aligning its increase with GDP growth, inflation, and other macroeconomic factors (Ahuja, 2011). Milton Friedman (1968), a prominent monetarist, introduced the neutrality theory of money, asserting that consumers' price rise expectations allow them time to make adjustments in the future.

The New Classical theory, emerging in the 1970s amidst the failure of Keynesian and monetarist policies to address stagflation, asserts that money is irrelevant in both the short and long run. Advocates argue that demand management policies falter due to rational expectations among economic agents, emphasizing profit maximization for producers and utility maximization for consumers. New-classical economists argue that monetary policy lacks efficacy in regulating aggregate demand due to rational expectations, as unanticipated increases in money supply lead to a positive impact on aggregate demand without affecting output (Paudel, 2072 B.S.).

Empirical Review: This section observes the perspectives of both national and international researchers. Luo and Mansson (2013) investigated money supply dynamics in BRICS nations from 1982 to 2012, utilizing diverse econometric methods. They found that Brazil, China, Russia (2004-2012), and South Africa (1982-1993) exhibited endogenous money supply, suggesting bidirectional causality with bank loans. Conversely, India and earlier Russia (1982-2003) showed exogenous money supply, highlighting changes in money supply affecting bank loans. The study concluded that, in the short run, most countries align with the monetarist view, treating money supply as exogenous.

Singh, Das, and Baig (2015) found that in India, Narrow Money is a more effective policy variable than Broad or Reserve Money for understanding money, output, and price dynamics, emphasizing food inflation's unique characteristics. Koti and Bixho (2016) discovered a negative correlation between money supply and inflation in Albania, attributed to the economy's absorption of money without triggering inflation. Dilshad, Mohammad, and Ghani (2016) identified long-term positive effects of money supply and exchange rate on Pakistan's economic growth, recommending stable exchange rate policies and investor-friendly monetary measures.

Njimanted, Akume, and Mukete (2016) found that in the CEMAC zone, lending and inflation rates significantly impact economic growth, suggesting the need for growth-friendly monetary policies and Central Bank autonomy. Kutu, Nzimande, and Msomi (2017) demonstrated that China's industrial sector growth is significantly influenced by monetary policy, especially in the short run, despite a slowdown since 2014. Obeid and

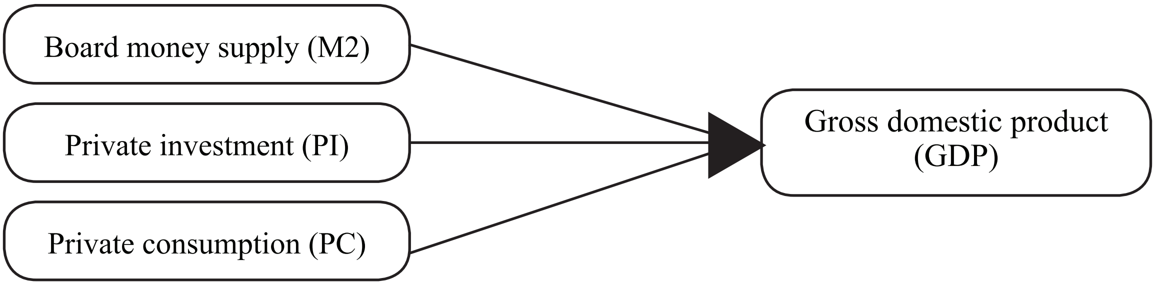
Awad (2017) revealed that Jordan's monetary policy instruments positively affect real GDP growth in both the long and short term, highlighting the inverse relationship between the rediscount rate and economic growth.

Olufemi and Abiodun (2017) found that Nigeria's monetary policy is countercyclical, significantly affecting economic growth both directly and through industrial output. Amiri and Gang (2018) showed that in the U.S., monetary policy positively impacts economic growth across short, medium, and long terms, with varying effects from interest rates and a generally positive impact from inflation. Khatiwada (1994) identified a unidirectional causality from money-to-money income and from money to prices in Nepal. NRB (2001) found a delayed yet significant long-term impact of money supply on prices in Nepal, with M1 having a stronger influence than M2, and no structural shift observed in the money-price relationship from 1975 to 1999.

Gyanwaly (2012) found that in Asian countries, including Nepal, money supply is endogenous, influencing prices and income variably, with unidirectional causality from narrow and broad money to prices and bidirectional causality between broad money and GDP in Nepal. Shrestha (2013) analyzed Nepal's money supply from 1965/66 to 2009/10, finding that high-powered money impacts monetary aggregates significantly, with ineffective control from CRR and Bank Rate, and OMO showing some significance. Timsina (2014) determined that bank credit to the private sector positively affects Nepal's long-term economic growth, suggesting the need for robust banking and financial markets. Dhungana (2016) revealed that open market operations and cash reserve ratio negatively impact bank lending in Nepal, while bank rate has a positive effect, recommending adjustments in these areas to stabilize lending rates and control inflation.

Koirala (2018) found a positive relationship between the real effective exchange rate (REER) and Nepal's economic growth, recommending the inclusion of REER in macroeconomic policies. Oli (2018) revealed that microfinance institutions positively impact economic growth, though inflation negatively affects it. Acharya (2019) identified bidirectional long-run causality between money supply (M1 and M2) and real income, and unidirectional causality from narrow money to consumer prices, suggesting steady broad money supply growth for economic stability. Dhakal and Timsina (2020) assessed monetary policy targets, advocating for strengthened Open Market Operations to manage interbank rates effectively. This study builds on previous research, validating and expanding upon findings using advanced econometric methodologies. This study examines the relationship between government expenditure and economic growth in Nepal from 1990/1991 to 2020/2021, finding significant impacts of government expenditure on economic growth but highlighting inefficiencies and the need for more accountable capital expenditure. Most variables are significant at the 1% level, with a positive relationship to economic growth, except for EA and EH.

Conceptual framework: In developing countries like Nepal, the broad money supply (M2) serves as a crucial determinant of economic growth. As M2 expands, it typically signals increased liquidity in the economy, fostering conditions conducive to private investment (PI) and private consumption (PC). Private investment contributes to capital formation and productivity enhancements, driving long-term economic growth. Likewise, increased private consumption reflects rising consumer confidence and purchasing power, further stimulating economic activity. Thus, the conceptual relationship between M2, PI, and PC underscores their collective role in fueling economic growth trajectories in developing nations like Nepal.



(Source: Macroeconomics by N. Gregory Mankiw-2009)

2. Model Specification

To ascertain the functional relationship between the dependent variable and explanatory variables, the study formulates the following relationships with gross domestic product, broad money, private investment, and private consumption.

GDP=f (M2 PI, PC) …………………………… (1)

Where,

GDP= gross domestic product,

M2 = Broad money

PI= Private investment

PC= Private consumption

Based on the theoretical framework, the empirical model is depicted in equation (2). The variables are logarithmically transformed to leverage the favorable time series properties, facilitating the direct computation of elasticity. Consequently, the estimation model is formulated as follows:

LNGDP = f (LNM2, LNPI, LNPC) ……………………... (2)

3 . Data Analysis and Result

Analyzing time series data from 1975 to 2021, this study investigates the relationship between broad money, private investment, and private consumption with GDP through logarithmic transformation. The 47-year dataset is analyzed using unit root tests, co-integration tests, and Vector Error Correction Model techniques to explore relationships.

3.1 Unit Root Test

The Augmented Dickey-Fuller (ADF) test is employed to assess the stationarity of the time series data, with results detailed in Table 1. Confirming stationarity is essential before analyzing the data, ensuring time-invariant mean and variance. The absence of a unit root, verified by the ADF test, indicates stationary series (Table 1).

Table 1: ADF Test Result

Null Hypotheses:	t-Statistic	Prob.
LNGDP has a unit root	-0.248297	0.9244
D(LNGDP) has a unit root	-6.712851	0.0000
LNM2 has a unit root	-0.820247	0.8038
D(LNM2) has a unit root	-5.187429	0.0001
LNPI has a unit root	-0.039060	0.9497
D(LNPI) has a unit root	-6.864992	0.0000
LNPC has a unit root	0.024447	0.9559
D(LNPC) has a unit root	-3.976335	0.0035

Source: Researcher's Estimation using EViews 12

The ADF test outcomes indicate that all variables are non-stationary at the level, while the series exhibit stationarity at the first difference (at a 0.01 level of significance). This confirmation implies that all the series possess an order of integration of I(1).

After conducting unit root tests, it was found that all variables become stationary after being converted to first differences, indicating they are integrated of the same order. Subsequently, the Johansen Test of Cointegration was applied to verify if the variables are cointegrated, which is necessary for running the Vector Error Correction Model (VECM). However, before utilizing the VECM, three steps need to be satisfied: conducting the Johansen Test of Cointegration, selecting appropriate lags, and implementing the VECM itself.

3.2 Co-integration Test

The ADF test indicates that all-time series data are integrated at the first order, suggesting potential
co-integration. The Johansen co-integration test, with a significance criterion of 0.05, is utilized to examine co-integration among variables, as shown in Table 2.

Table 2: Johansen Co-integration Test Results

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.520607	57.15504	47.85613	0.0053
At most 1	0.283073	25.53996	29.79707	0.1430
At most 2	0.229713	11.23034	15.49471	0.1977
At most 3	0.000178	0.007664	3.841465	0.9298

Trace test indicates 1 co-integrating equation at the 0.05 level.

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.520607	31.61507	27.58434	0.0143
At most 1	0.283073	14.30962	21.13162	0.3401
At most 2	0.229713	11.22268	14.26460	0.1434
At most 3	0.000178	0.007664	3.841465	0.9298

Max-Eigen value test indicates 1 co-integrating equation at the 0.05 level

E-Views analysis yields significant results at the 0.05 level, indicating one co-integrating equation with a corresponding error correction term (ECT). This suggests a long-run equilibrium among variables, deserving exploration through the vector error correction model (VECM).

3.3 Vector Error Correction Model

If non-stationary but I(1) time series exhibit co-integration, it is possible to employ the Vector Error Correction Model (VECM) to investigate both the short-run and long-run dynamics of the series. The conventional Error Correction Model (ECM) for co-integrated series is expressed as:

$\Delta LNGDP=b0+b1t\text{-}1+b2LNPIt\text{-}1 + b3LNPCt\text{-}1 + \lambda ECTt\text{-}1 +\epsilon t$----(3)

Where ϵt is stochastic error term.

ECT is the error correction term and is the OLS residual from the following long run co integrating regression:

$GDP= b0 + b1\ M2 + b2\ PI + b3\ PC+ + \epsilon t$ ---------------------------(4)

and is characterized by

ECT t-1= GDP t-1- (bo + b1M2t-1 + b2 PIt-1 +b3 PCt-1) -------- (5)

The error correction term (ECT) scales the short-term response of the dependent variable, like GDP, to deviations from long-run equilibrium. Its coefficient indicates the speed at which equilibrium is restored. Determining the maximum lag length (k) is pivotal to avoid multicollinearity or specification errors; this study utilizes E-Views for lag selection.

Table 3: Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	70.38375	NA	5.36e-07	-3.087616	-2.923784	-3.0272
1	256.4065	328.7843	1.98e-10*	-10.99565	-10.17649*	-10.69357*
2	269.4700	20.65861	2.32e-10	-10.85907	-9.384576	-10.31532
3	289.3249	27.70448*	2.04e-10	-11.03837*	-8.908543	-10.25295
4	294.6188	6.402004	3.73e-10	-10.54041	-7.755257	-9.513332

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

The criteria for lag selection consistently suggest choosing a lag order of k = 2. The estimation of the Vector Error Correction Model (VECM) is presented in Table 4, employing a maximum lag length of 2. While the LR and AIC criteria indicate a lag order of 3, the SC and HQ criteria favor a lag order of 1. Given this discrepancy, a lag order of 2 is selected to strike a balance between the different criteria.

Table 4: Estimation of VECM Parameters (Long Run Dynamics)

1 co integrating Equation (1) log likelihood 278.0697. Normalized Co integrating Coefficients. Standard errors in ( ) and t –statistic in [ ].

LNGDP	LNM2	LNPI	LNPC
1	0.048862	-0.241492	-0.78248
	0.0522	-0.04533	-0.07278
	[0.93601]	[-5.32711]	[-10.7511]

The VECM estimation reveals one cointegrating equation and a log likelihood value of 278.0697. The coefficients for LNM2, LNPI, and LNPC in the cointegrating equation are 0.048862, -0.241492, and -0.782480 respectively. LNM2's coefficient lacks statistical significance, while LNPI and LNPC's coefficients are highly significant. This suggests that changes in LNPI and LNPC significantly affect the cointegrating equation, implying a long-run equilibrium relationship among LNGDP, LNM2, LNPI, and LNPC.

Table 5: Short Run Dynamics

Dependent Variable: D(LNGDP)				
	Coefficient	Std. Error	t-Statistic	Prob.
CointEq1	-1.095592	(0.35716)	[-3.06748]	0.0042
D(LNGDP(-1))	0.153358	(0.28524)	[0.53765]	0.5943
D(LNGDP(-2))	0.098349	(0.21732)	[0.45256]	0.6537
D(LNM2(-1))	0.170474	(0.14489)	[1.17655]	0.2475
D(LNM2(-2))	0.488759	(0.14768)	[3.30969]	0.0022
D(LNPI(-1))	-0.024710	(0.08556)	[-0.28879]	0.7745
D(LNPI(-2))	-0.253028	(0.08232)	[-3.07371]	0.0041
D(LNPC(-1))	0.215109	(0.22040)	[0.97598]	0.3360
D(LNPC(-2))	0.061803	(0.19386)	[0.31880]	0.7518
C	-0.011529	(0.03784)	[-0.30466]	0.7625

Table 6: Summary Statistics

R-squared	0.523919	Mean dependent var	0.125262
Adjusted R-squared	0.397897	S.D. dependent var	0.063549
S.E. of regression	0.049311	Akaike info criterion	-2.984617
Sum squared residual	0.082674	Schwarz criterion	-2.579119
Log likelihood	75.66157	Hannan-Quinn criteria	-2.834239
F-statistic	4.157373	Durbin-Watson stat	2.278686
Prob(F-statistic)	0.001109		

From the above E – views output if the corresponding coefficients are plugged in into the VECM model presented in equation (3), the equation will be given by;

ΔLNGDP= -0.011529 +0.170474 t-1 -0.024710 LNPIt-1 + 0.215109 LNPEt-1 -1.095592 ECTt-1 +∈t

Where, ECT t-1= (1.000000 GDP t-1 +0.048862 M2t-1-0.241492 PIt-1 -0.782480 PEt-1 -0.925264)

According to the Johansen Normalization equation, LNPI and LNPC exhibit a positive impact on LNGDP in the long run, while LNM1 shows a negative impact on LNGDP. Notably, the signs are reversed when interpreting Johansen Normalized coefficients for the long run. Specifically, a 1% change in LNPI and LNPC corresponds to a 0.24% and 0.78% increase in LNGDP, respectively, whereas a 1% change in LNM2 is associated with a 0.048% decrease in LNGDP.

In the VECM analysis, the Error Correction Term (ECT) coefficient is estimated at -1.095592 (p-value: 0.0042), indicating significance at the 5% level. This suggests that deviations from long-run equilibrium in the previous year are corrected at a speed of 0.42 percent in the current year. In terms of short-run dynamics, a 1% change in LM2 corresponds to a 0.17% increase in LNGDP, initially insignificant at the 5% level in lag one but significant in lag two. Conversely, a 1% change in LNPI is associated with a 0.02% decrease in LNGDP, initially insignificant at the 5% level in lag one but significant in lag two. However, the impact of LNPC on LNGDP is statistically insignificant despite its positive association.

3.4 Diagnostics Tests of the Model:

To ensure robustness, efficiency, and reliability, the VECM model fitted above must undergo diagnostic testing.

3.4.1 Goodness of Fit:

To assess the overall significance of the fitted model, a common goodness-of-fit test involves examining the R2. Table 6 reveals that 52.39% of the variation in LNGDP is accounted for by the independent variables. The avoidance of spurious results is evidenced by the Durbin-Watson statistic (2.27) exceeding the R2 value (0.523). Additionally, the p-value of the F-statistic (0.001) confirms the overall adequacy of the model's fit.

3.4.2 Diagnostic Tests:

Goodness of fit serves as the initial assessment for the overall significance of the model. Diagnostic tests, on the other hand, entail internal scrutiny and more thorough investigation into the model's health.

3.4.3 Coefficient Diagnostic Test:

Coefficient diagnostic tests are employed to ascertain the robustness of estimated coefficients. In this study, the Wald test is utilized for diagnosing the coefficients.

The findings of the Wald test are detailed in Table 7.Top of Form

Table 7: Wald Test Result

Wald Test			
Test Statistic	Value	df	Probability
F-statistic	32.13398	(10, 34)	0.000
Chi-square	321.3398	10	0.000

With a Chi-square probability of 0.000, which is less than 0.01, it can be concluded that the estimated coefficients are statistically significant at the 1% level of significance.

3.4.4 Residual Diagnostic Test:

The residual diagnostic test is crucial for assessing the robustness of the model. The presence of autocorrelation among the residuals violates assumptions and can undermine the reliability of the fitted model. Therefore, it is essential to examine whether the residuals exhibit serial correlation. In this study, the serial correlation Lagrange Multiplier (LM) test is utilized for residual diagnostics. The results of the LM test are provided in Table 8.

Table 8: Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
Null Hypothesis: No serial correlation at up to 2 lag			
F-statistic	0.974135	Prob. F(2,32)	0.3884
Obs*R-squared	2.525133	Prob. Chi-Square(2)	0.2829

As the probability value of the Chi-square test statistic (2) is 0.2829, which exceeds 0.05, the null hypothesis cannot be rejected. Hence, it is concluded that there is no evidence of autocorrelation among the residuals.

3.4.5 Causality Test:

According to Engle and Granger (1987), when individual variables are integrated of order 1 (I(1)) and are also cointegrated, it indicates the presence of either unidirectional or bidirectional causality between them. In this study, the variables under examination are I(1), and Johansen cointegration analysis confirms the presence of cointegration. Consequently, there may be causal relationships among these variables. This paper aims to investigate the existence of causality among the macroeconomic variables. The results obtained from E-Views are summarized in Table 9.

Table 9: Engle and Granger Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
LNM2 does not Granger Cause LNGDP	45	6.14737	0.0047	Unidirectional causal relationship from LM2 to LNGDP
LNGDP does not Granger Cause LNM2		0.70266	0.5013	
LNPI does not Granger Cause LNGDP	45	1.38045	0.2632	

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
LNGDP does not Granger Cause LNPI		10.7881	0.0002	Unidirectional causal relationship from LNGDP to LNPI
LNPC does not Granger Cause LNGDP	45	3.36750	0.0445	Unidirectional causal relationship from LNPC to LNGDP
LNGDP does not Granger Cause LNPC		0.83243	0.4424	
LNPI does not Granger Cause LNM2	45	0.46841	0.6294	
LNM2 does not Granger Cause LNPI		7.48386	0.0017	Unidirectional causal relationship from LNM2 to LNPI
LNPE does not Granger Cause LNM2	45	1.62926	0.2088	
LNM2 does not Granger Cause LNPC		6.78480	0.0029	Unidirectional causal relationship from LNM2 to LNPC
LNPC does not Granger Cause LNPI	45	12.1733	7.00E-05	
LNPI does not Granger Cause LNPC		3.41723	0.0426	Unidirectional causal relationship from LNPI to LNPC

The findings indicate several significant unidirectional causal relationships at the 5% level: LM2 to LNGDP, LNGDP to LNPI, LNPC to LNGDP, LNM2 to LNPI, LNM2 to LNPC, and LNPI to LNPC. Conversely, no causal relationships are detected between other pairs of variables, including LNGDP to LNM2, LNPI to LNGDP, LNGDP to LNPC, LNPI to LNM2, LNPC to LNM2, and LNPC to LNPI.

4. Conclusion

The Augmented Dickey-Fuller (ADF) test results indicate that all variables are non-stationary at the level, but they become stationary at the first difference (at a significance level of 0.01). At the 0.05 significance level, both statistics suggest the presence of one cointegrating equation among the series, implying the existence of one error correction term (ECT). This confirms a long-run equilibrium relationship between the variables.

Specifically, a 1% change in LNPI and LNPC is associated with a 0.24% and 0.78% increase in LNGDP, respectively, while a 1% change in LNM2 is associated with a 0.048% decrease in LNGDP.

In the VECM analysis, the coefficient of the Error Correction Term (ECT), representing the speed of adjustment, is estimated to be -1.095592 (p-value: 0.0042), signifying statistical significance at the 5% level. This suggests that deviations from long-run equilibrium in the previous year are corrected in the current year at a speed of 0.42 percent.

Regarding short-run dynamics, the model suggests that a 1% change in LM2 is associated with a 0.17% increase in LNGDP. However, this relationship is statistically insignificant at the 5% level in lag one but becomes significant in lag two. Similarly, a 1% change in LNPI is linked to a 0.02% decrease in LNGDP in the short run, which is also found to be insignificant at the 5% level in lag one but becomes significant in lag two. Despite showing a positive impact on LNGDP, the relationship between LNPE and LNGDP is statistically insignificant.

The study reveals significant unidirectional causal relationships: money supply (M2) to GDP, GDP to private investment (PI), private consumption (PC) to GDP, money supply (M2) to private investment (PI), money supply (M2) to private consumption (PC), and private investment (PI) to private consumption (PC) at the 5% level, while no causal links are observed between other variables. Recommendations suggest implementing policies to enhance monetary flow towards sectors with higher potential for economic productivity.

Implications:

The findings of this study carry significant implications for policymakers in Nepal, suggesting that a strategic increase in the money supply could stimulate economic growth. The demonstrated unidirectional causal relationships highlight that enhancing the money supply not only directly influences GDP but also indirectly benefits private investment and consumption, both of which are crucial components of economic development. By understanding these dynamics, policymakers can tailor monetary policies to foster a conducive environment for economic expansion. The validation of a long-run equilibrium and the responsiveness of economic variables to changes in money supply underscore the potential of monetary interventions to drive sustainable growth. Therefore, a carefully managed increase in money supply, aligned with broader economic objectives, can serve as a catalyst for achieving higher and more rapid economic growth in Nepal.

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