EFFECT OF MONEY SUPPLY, INFLATION AND CAPITAL EXPENDITURE ON ECONOMIC GROWTH IN NEPAL

MANISHA MAHAT

ABSTRACT

This study aims to examines the effect of money supply, inflation, and capital expenditure on economic growth in Nepal. of tourism on economic growth in Nepal. The data were taken from the period of 2000 to 2020 for the study. The main purpose of the study is to use the ARDL and ECM models to analyze money supply, inflation and capital expenditure has affected Nepal's economic growth. Utilizing secondary data, descriptive and analytical research methods have been applied. Gross Domestic Product (GDP) is taken as dependent variable Broad money supply (M2), Inflation (INF) and Capital Expenditure (CE) are taken as independent variables. The results of the study revealed that there is a negative and insignificant effect of money supply on gross domestic product whereas inflation has positive and significant effect on gross domestic product. Also, capital expenditure has a positive and insignificant effect on gross domestic product.

Keywords: ARDL, ECM, Money Supply, Inflation, Capital Expenditure, Gross Domestic Product and Economic Growth.

I. INTRODUCTION

Money supply and a low inflation rate serve as key indicators of strong economic growth rates, which can lead to employment development, poverty reduction, better per capita income, and a higher standard of life, all of which lead to economic development. The private sector can receive credits to operate enterprises at a cost known as an interest rate through the availability of money. A key monetary policy instrument for fostering a country's economic growth is the availability of money. On the other hand, monetary policy is a crucial tool that central banks of various nations utilize to uphold economic stability and encourage economic progress (Chaitip et al., 2015). According to Balami (2006), inflation is the long-term general rise in the level of prices for a variety of commodities and services. It might be described as a steady rise in prices as measured by an index, such the consumer price index (CPI), or by the implicit price deflator for the Gross National Product (GNP). When there is inflation, the value of the currency falls. A method that may be used to gauge inflation,

which is characterized as a consistent rise in prices, is the CPI, or Gross National Product Implicit Price Deflator. One of the most often discussed macroeconomic topics among national planners, policymakers, central bankers, and macroeconomists is the connection between inflation and economic growth (Barro, 1991).

A business makes capital investments to acquire, pay for the purchase, maintenance, and improvement of physical assets such as real estate, construction equipment, and other tangible resources. In order to expand the scope of their activities or to add some sort of economic advantage, businesses make this kind of financial investment. Government spending is a significant predictor of economic growth. However, the size, spending capability, and effective utilization of capital investment in the development process all influence economic growth. Capital spending in Nepal is unable to affect economic growth and development due to political insecurity, internal incapacity, and a weak governance condition (Sharma, 2012).

Economic growth is one of the government's primary macroeconomic aims, and it has a significant impact on people's living conditions. Economic growth is defined as an increase in per capita income through time as a result of developing technology and altering institutions as well as beliefs to ensure increased productivity (Ahuja, 2017). Money supply, inflation, and capital expenditure, among other issues, are major concerns for policymakers in developing countries, given the need to stimulate internal demand while meeting the government's massive fiscal obligations in order to alleviate poverty and achieve sustained economic growth (Nallari & Griffith, 2011). According to study conducted by Mahara (2021) on association between money supply, inflation, capital expenditure, and economic growth in Nepal. The empirical findings of the study showed that there is a significant long-run positive relationship between money supply, capital expenditure, and growth whereas, insignificant long-run negative relationship between inflation and economic growth.

II. REVIEW OF LITERATURE

2.1 Empirical evidence about the Impact of Money Supply on Economic Growth

Feldstein and Stock (1993) used quarterly time series data on money, production, interest rates, and inflation from 1959 (Q1) through 1992 (Q2). At a 1% level of confidence, the results demonstrated that M2 is a statistically significant predictor of nominal GDP growth. However, the association between these two factors is quite less. Suleiman (2010) examined the impact of money supply on Nigerian economic growth using the ordinary least square method and secondary annual data from 1970 to 2007. The study concluded that money supply has a negative impact on Nigeria's real GDP for the period under consideration. AI-Fawwaz.et al.(2012)

used Johansen cointegration analysis to study the link between money supply and economic development in Jordan from 1991 to 2011. The study discovered no association between money and growth in the short or long run. Koti and Bixho (2016) provided many perspectives and theories concerning money and inflation. Using data from Albania from 1994 to 2015, the research examined the theoretical relationships between money supply and variables such as unemployment, trade and exchange rate, taxes, and salaries. The study employed multiple regression analysis developed under the supervision of money theories. The study's findings revealed a significant connection between the money supply and economic growth. The study investigated effect of money supply on economic growth in Nigeria between 1990 and 2018 states that Broad money supply indicates positivity, yet weak significant to determine the economic growth in Nigeria (Omankhanlen et al., 2022).

2.2 Empirical evidence about the Impact of Inflation on Economic Growth

Thirwal and Barton (1971) found a positive relationship between inflation and economic growth when the inflation rate is less than 8% per year and is not adjusted for population change, but a negative relationship when the inflation rate exceeds 8%. Bhusal and Silpakar (2012) found that the threshold level of inflation in Nepal is 6%. They used the Granger Causality Test on annual data from 1975 to 2010 to demonstrate the presence of a positive and unidirectional link between inflation and economic growth. Bhatta (2015) also stated that the threshold level of inflation in Nepal was 6 percent. He said that if the inflation rate is less than 6%, economic growth is boosted, but if the rate is higher, it is hampered. Adhikari (2014) used Distributed Lag Models on yearly GDP and Consumer Price Index (CPI) data from 1975 to 2012 to demonstrate that Nepal's current economic production is negatively influenced by current period inflation but strongly affected by past period inflation. Behera (2014) used time series data from 1980 to 2012 to explore the influence of inflation on economic development in six South Asian nations. He used the Error Correction Model and the Granger Causality Test to show a strong positive link between inflation and economic growth. The cointegration test also found a long-run link between Malaysian inflation and economic development.

2.3. Empirical evidence about the Impact of Capital Expenditure on Economic Growth

In a panel analysis of 98 nations from 1960 to 1985, Barro (1991) found that government consumption had a negative influence on economic development. Furthermore, Levine and Renelt (1992) confirmed that the relationship between capital expenditure and economic growth is neutral or ambiguous Using a panel data set

for 43 developing countries, Devaranjan et al. (1996) revealed a negative impact of capital spending and a favorable impact of current expenditure on economic growth. In contrast to Devaranjan et al. (1996), Vu Le and Suruga (2005) discovered a positive influence of capital expenditure and a negative impact of non-capital expenditure on economic growth. In Ghana, Ackah et al. (2014) used the ARDL model with annual data spanning from 1970 to 2010 and found a significant negative correlation between capital and economic growth and a positive correlation between recurrent expenditure and economic growth in both the long-run and short-run periods. Paudel (2023) examined the government expenditure's effects on the economic growth of Nepal using Auto-regressive distributed lag (ARDL) approach to cointegration for the data from 1981 to 2020. The study found that both capital and current expenditures in aggregate forms are not contributors to economic growth unlike the assumption that capital expenditure is more important than current expenditure for economic growth.

III. METHODODLOGY

3.1. Data Source

The objective of the study is to examine the relationship between money supply, inflation, capital expenditure and economic growth in Nepal. For the study, data were collected from the period of 2000-2020. Data of broad money supply (M2), inflation (INF) and economic growth rate (GDP) were retrieved from the world bank site and data of capital expenditure (CE) were retrieved from Ministry of Finance. For this article, it has been used Money supply, inflation and capital expenditure as independent variables and GDP as dependent variable. The model of this article can be written as:

RGDP= $\beta_0 + \beta_1 M2 + \beta_2 INF + \beta_3 CE + \varepsilon$

Where,

RGDP= Real Gross Domestic Product

M2= Broad Money Supply

INF= Inflation

CE= Capital Expenditure

ε= Error term

IV. RESULT AND ANALYSIS

4.1. Unit Root Test

In a stationary process, the mean, variance, and autocorrelation characteristics do not change over time. Testing the stationary property of all variables is essential to avoid spurious regression and to figure out their order of integration. To perform this, we use two formal unit root tests: The Augmented Dickey-Fuller (ADF). The distribution of the ADF test assumes homoscedastic error terms and to resolve any potential problems generated by such assumption.

Table 1

Unit Root Test

Variable	Adj. t-stat (at level)	Adj. t-stat (at first difference)	Conclusion
M2	-3.2274(0.0047)		I(0)
INF	-2.5756(0.1142)	-5.0025(0.0010)	I(1)
CE	-3.7479(0.0114)		I(0)
GDP	-4.4682(0.0029)		I(0)

Source: Output from collected data analysis from E-views 12

From the above table it indicates that INF is stationary at first difference because its p-value at the first difference is less than 5% as well as other variables are also stationary because their level p-value is less than 5%. Hence, there is mixed-order integration case for the variables I(0) and I (1), which supports the ARDL co-integration strategy.

4.2. Bound Test

Table 2

Bound Test

Level of significance	F-statistics	Lower bound	Upper bound
10%	20.1053	2.37	3.2
5%		2.79	3.67
2.50%		3.15	4.08
1%		3.65	4.66

Source: Output from collected data analysis from E-views 12

In table 2 the calculated F-statistics is 20.1053 which is higher than both the lower bound and upper bound values in all levels of significance. This shows that the rejection of null hypothesis that there is long run relationship among the variables. Thus, the concerned variables are co-integrated.

4.3. Autoregressive Distributed Lag (ARDL) Model

Table 3

Autoregressive Distributed Lag (ARDL) Model

Variable	Coefficient	Standard Error	T-statistics	P-Value
M2	-0.2597	0.0922	-2.8170	0.0669
INF	1.1807	0.185	6.3809	0.0077
CE	4.2720	1.8845	2.2669	0.1082
C	14.0171	2.0507	6.8352	0.0064
R2=0.970355	Akaike Info Criterion=2.783734			
Adjusted R2=0.832010	Schwarz Criterion=3.525711			
F- Statistics=7.014036(0.007266)	Durbin-Watson Stat=2.152531			

Note: P-value and any subsequent tests do not account for model selection

Source: Output from collected data analysis from E-views 12

The result of table 3 shows that money supply has a negative and statistically insignificant relationship with economic growth in the long run. Similarly, inflation has a positive and statistically significant relationship with economic growth in the long run. Lastly, capital expenditure has a positive and statistically insignificant relationship with economic growth in the long run.

According to Table 3, the ARDL results indicate that there is a positive correlation between GDP and inflation. The analysis of annual time series shows an R-square of 0.9703, or 97.03%, indicating that the independent variables (M2, INF, CE) explain 97.03% of the model's explanation, with the remaining factors determining for the other variables.

Additionally, adjusted R-square is 0.8320 or 83.20%, which in addition to other independent variables, indicates the goodness of fit. Higher R-square is generally considered good because higher R-square explains more about independent variables and their relationship with dependent variables. Because the prob(F-statistics) is 0.0072 and less than the 0.05 level of significance, the overall model is considered statistically significant.

The M2's coefficient is -0.2597, which is negative also statistically insignificant to GDP. Whereas the coefficient of INF is 1.1807 which is positive and statistically significant, which indicates that 1% change in INF results 1.1807 increases in GDP in long run.

4.4. Error Correction Model Representation for the Selected ARDL Model

Table 4

Error Correction Model Representation for the Selected ARDL Model

Dependent Variable: (GDP)				
Variables	Coefficients	Standard of error	T-value	P-value
D (GDP (-1))	1.0819	0.1448	7.4735	0.005
D (M2 (-2))	0.2598	0.0452	5.7530	0.0104
D (INF (-2))	-1.1808	0.1059	-11.1462	0.0015
D (CE (-2))	-4.2721	0.8452	-5.0545	0.0149
CointEq (-1)	-0.6812	0.2003	-15.3154	0.0006
R-square=0.984739				
Durbin-Watson stat=2.152531				
Adjusted R-square= 0.962938				

Source: Output from collected data analysis from E-views 12

The short run results are illustrated in Table 4. The results suggest that money supply has a positive and significant relationship with economic growth. The results further suggested that inflation and capital expenditure have a negative relationship but significant with economic growth in the short run.

Based on the results illustrated in Table 7, the estimated coefficient of the error correction term is -0.6812. Since the error correction term, cointeq (-1) is negative and significant, this implies that the results support the existence of a long run between the variables. The results indicate that departure from long-term growth path due to a certain shock is adjusted by 68.12% each year.

4.5. Diagnostic Test

Table 5

Diagnostic Test

| Diagnostic test	Obs.R-square	P-value	Decision rule
Breusch-Godfrey Serial	7.5423	0.7622	No serial correlation
Correlation LM Test			
Heteroskedasticity	8.2458	0.9897	No heteroskedasticity autocorrelation
Jarque-Bera Test	1.4016	0.4962	Residuals are normally distributed

Source: Output from collected data analysis from E-views 12

The diagnostic tests against serial correlation (Breusch-Godfrey test), heteroscedasticity (White), and normality of errors (Jarque-Bera test) showed the insignificant at 5% level which revealed that there is no serial correlation; free from heteroscedasticity and autocorrelation; and normally distributed residuals. These results confirmed that the regression model was fit to predict the relationship between government expenditure and economic growth.

4.6. Normality Test

Figure 1

Normality Test
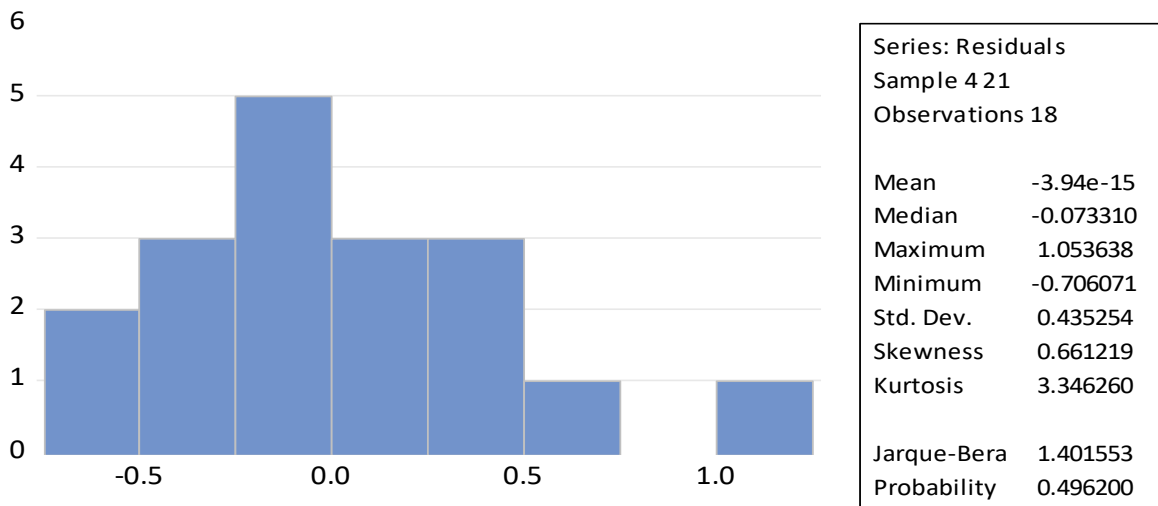
Source: Output from collected data analysis from E-views 12

The above figure 1 illustrates that the residuals were normally distributed. In the above figure value is 0.4962 which is less than p-value that is 0.05% which indicates that the alternative hypothesis is accepted whereas null hypothesis is rejected.

V. DISCUSSION

This paper examines the relationship between money supply, inflation, capital expenditure and economic growth in Nepal from 2000-2020. ARDL model results show evidence of the long run relationship between broad money, inflation, capital expenditure and economic growth of Nepal. Based on the findings of the study it determines that money supply has a negative and insignificant relationship with economic growth. This is supported by the result of Suleiman (2010); AI-Fawwaz.et al.(2012). Whereas, contradicts with the result of Koti and Bixho (2016); Mahara (2021) which states that money supply has positive and significant relationship with economic growth. Similarly, inflation has a positive and significant relationship with economic growth. The result is supported by the result of Thirwal and Barton (1971); Behera (2014), which shows a strong positive link between inflation and economic growth and contradicts with the result of Mahara (2021). Capital expenditure has a positive and insignificant relationship with economic growth. This result is supported by the

result of Barro (1991); Paudel (2023) and contradicts with the result of Ackah et al. (2014) which shows negative and significant relationship with economic growth.

VI. CONCLUSION

From the study we got the result that money supply has negative relationship and insignificant effect on economic growth. Also, capital expenditure has positive relationship and insignificant effect on economic growth in Nepal. Thus, it can be concluded that authorities in Nepal should come up with monetary policy strategies that will help drive the economy better and such policies should consider broad money supply more as their contributions are necessary for economic expansion that lead to more output and employment. Also, the country must focus on increasing the mobilization of capital expenditure for the expansion of development activities.

REFERENCE

Ackah, I., Adu, F., & Ohene-Manu, J. (2014). Government Expenditure and Economic Growth Dynamics in Ghana. *International Journal of Economics and Emperical Research*, *180–198*.

Adhikari, R. (2014). Whether Inflation Hampers Economic Growth in Nepal. *IOSR Journal of Economics and Finance*, *5*(6), 52–56.

Ahuja, H. L. (2017). *Macroeconomics theory and policy. New Delhi:* S. Chand and Company Ltd.

AI-Fawwaz., T.M., AI-Sawai'e, & K.M. (2012). Output, Money, and Prices: The Case of Jordan. *International Journal of Business Research*, *5*(12), 223.

Balami, D. H. (2006). *Macroeconomic Theory and Practice. Salawe prints, Off Leventies, Wulari, Maiduguri.*

Barro, R. J. (1991). Economic Growth in a Cross Section of Countries. *The Quarterly Journal of Economics*, *106*(2), 407–443.

Behera, J. (2014). Inflation and its Impact on Economic Growth: Evidence from Six South Asian Countries. *Issn*, *5*(7), 2222–1700.

Bhatta, S. R. (2015). *Optimal Rate of Inflation for Nepal: An Emperical Investigation. 2nd International Conference on Economics and Finance. Kathmandu.*

Bhusal, T. P., & Silpakar, S. (2012). Growth and Inflation Estimation of a Threshold Point for Nepal. *Economic Journal of Development Issues*, *13*, 131–138.

Chaitip, P., Chokethaworn, K., Chaiboonsri, C., & Khounkhalax, M. (2015). Money Supply Influencing on Economic Growth-wide Phenomena of AEC Open Region. *Procedia Economics and Finance*, *24*(July), 108–115.

Devaranjan, S., Swaroop, V., & Zou, H.-F. (1996). The Composition of Public Expenditure and Economic Growth. *Journal of Monetary Economics*, *37*(2), 313–344.

Feldstein, M., & Stock, J. (1993). *The Use of Monetary Aggregate to Target Nominal GDP*. https://doi.org/doi: 10.3386/w4304

Koti, C. S., & Bixho., T. (2016). Theories of Money Supply: The Relationship of Money Supply in a Period of Time T-1 and Inflation in Period T- Emperical Evidence from Albania. *European Journal of Multidiscipline Studies*, *1*(1).

Levine, R., & Renelt, D. (1992). A sensitivity Analysis of Cross-Country Growth Regression. *The American Economic Review*, *82*(4), 942–963.

Mahara, T. S. (2021). An Empirical Investigation Between Money Supply, Inflation, Capital Expenditure and Economic Growth in Nepal. *Quest Journal of Management and Social Sciences*, *3*(1), 23–39.

Nallari, J., & Griffith, B. (2011). Understanding Growth and Poverty. *In Understading Growth and Poverty.*

Omankhanlen, A.E, Samuell-Hope, D.C, & Ehikioya, B. . (2022). The Impact of Money Supply on Economic Growth: Theory, Experience, Modelling. *Handbook on Economics, Finance and Management Outlooks*, *25*(S4), 1–14.

Paudel, R. C. (2023). Capital expenditure and economic growth: A disaggregated analysis for Nepal. *Cogent Economics and Finance*, *11*(1).

Sharma, B. (2012). Government Expenditure and Economic Growth in Nepal: A Minute Analysis. *Basic Research Journal of Management and Accounts*, *1*(4).

Suleiman, D. M. (2010). The Impact of Money Supply on Economic Growth in Nigeria (1970-2007). *European Journal of Scientific Research*, *41*(2), 314–122.

Thirwal, A., & Barton, C. (1971). Inflation and Growth: The International Evidence. *PSL Quarterly Review*, *24*(98).

Vu Le, M., & Suruga, T. (2005). Foreign Direct Investment, Public Expenditure and Economic Growth: The Emperical Evidence for the Period 1970-2001. *Applied Economics Letter*, *12*(1), 45–49.