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Monetary Indicator and Economic Growth of SAARC Countries

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ABSTRACT

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Monetary indicators are the inflation rate, exchange rate, broad money supply, interest rate and so on. This study aims to investigate the association and effect of monetary indicators on economic growth of SAARC nations. The foreign direct investment is taken as a control variable. There are used descriptive and casual research designs. The investigation is based on panel data over 23-years period from 2000 to 2022 of

selected seven SAARC nations: Nepal, India, Pakistan, Bangladesh, Bhutan, Maldives, and Sri-Lanka. The research used POLS model for data analysis. The study concludes that there is a positive association between monetary indicators (i.e. rate of interest) and economic growth rate whereas a negative association between broad money supply, inflation rate, exchange rate, and economic growth rate. Similarly, the positive effect of interest rate on the economic growth rate but the exchange rate and inflation rate negatively affect economic growth rate. Among the variables exchange rate is the most influencing variable, therefore the SAARC nations should consider maintaining stability of the exchange rate. Despite the remarkable progress monetary indicators have achieved over the years, they are mostly ineffective in achieving their policy objectives because of shortcomings in the tools at their disposal and monetary indicators considerably influence on the economic growth of selected SAARC nations. Consequently, the policy makers and regulators consider monetary policy variables to enhance economic growth in selected South Asian countries.

Keywords: Economic growth, monetary indicators, panel data, POLS

INTRODUCTION

A monetary indicator is a financial metric or measurement used to assess various aspects of money supply and financial stability of a nation. These indicators are crucial for policymakers, economists, and investors to gauge the health and performance of an economy. In developing countries, it is generally accepted that monetary policy has impact on macroeconomic variables like; the creation of jobs, price stability, GDP growth, and the equilibrium of the balance of payments (Anowor & Okorie, 2016).

The GDP growth is also used synonym of economic growth, which is a critical objective for nations worldwide, with various regions employing diverse strategies to enhance their economic performance. The countries of South Asian Association for Regional Cooperation (SAARC) including Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka, are no exception. These countries, despite their varied economic landscapes and developmental stages, share common goals of reducing poverty, improving living standards, and achieving sustainable development. A key factor in this pursuit of growth is the influence of monetary indicators, which encompass metrics like inflation rates, interest rates, money supply, and exchange rates.

The effect of monetary indicators is quite debatable. Its effect depends upon the structure of the economy, political system, financial development of nations as well as regional economy. There is inverse relationship between lending interest rates and the economic growth of the country (Mutinda, 2014; Adeniran et al., 2014). Even in practice, this result is relevant, because as the bank rate declines, the lending rate of banks also declines. It causes an increase in demand for loans as well as investment, production and employment. However, the research conducted by Akalpler and Duhok (2018) shows a contrasting outcome. Akalpler and Duhok examined the connection between monetary policy and economic growth in a developing economy, specifically focusing on Malaysia. The study revealed a positive impact and relationship between economic growth and all chosen monetary tools, including inflation, money supply, and interest rates. Budhathoki et al. (2024) investigated the effect of inflation rate, interest rate, and non-performing loans on economic growth of Nepal. Budhathoki et al. found a positive effect of lending interest and inflation rates on the economic growth rate of Nepal. Moreover, this empirical result did not align with the Credit Channel Theory (CCT) proposed by Bernanke and Gertler (1995). The researchers concluded that monetary policy affects economic growth not only through changes in interest rates but also by altering credit availability. Adopting the tight monetary policy causes higher interest rates and tighten

credit conditions, reduce borrowers' net worth, and limit their access to loans. This constrains investment and consumption, thereby amplifying the negative impact on economic growth. Therefore, the credit channel is essential in transmitting monetary policy to the real economy.

Particularly, in developing nations undervaluation of the currency or a high real foreign exchange rate stimulates economic growth. It is due to the enhancement of the tradeable sector (especially industry) (Rodrik, 2008; Ahmad et al., 2013). There is no consistency in the above empirical findings, because increase in the foreign exchange rate (i.e., depreciation of the domestic currency) can reduce the economic growth rate for several reasons such as an increase in the import cost of raw materials, equipment, foreign skilled manpower and so on (Edwards, 1989), rising debt servicing costs (Krugman, 1988), and higher inflationary pressure (Dornbusch, 1987).

Classical economists mentioned that changes in the money supply have no impact on output and employment levels. Rather, an increase in the money supply results solely in a proportional rise in the price level. However monetary economists stated that the level of output can be changed by changing the money supply via change in rate of interest. The empirical findings of Dhungel (2021) and Awuit (2017) indicate that an increase in the broad money supply and moderate inflation have a positive and significant impact on Gross Domestic Product growth. An increase in the money supply is found to cause inflation, which has detrimental effects on economic growth in both short-run and long-run (Madurapperuma, 2023). Similarly, Fischer (1993) opines that inflation hampers economic growth by diminishing both investment and productivity growth.

The above discussion reveals inconsistencies in the effects of monetary policy on economic growth across different countries. Therefore, this study aims to investigate the effects of monetary indicators along with foreign direct investment as a control variable on the economic growth of SAARC nations.

LITERATURE REVIEW

Theoretical Review

Monetarism, a school of economic thought allied to economists such as Milton Friedman. It highlights the significance of regulating the money supply to ensure stable economic growth and curb inflation (Friedman, 1976). Monetarists opine that changes in the money supply have a direct and forecastable effect on the economy, especially in the long run.

The Credit Channel Theory (CHT), introduced by Bernanke and Gertler (1995),

explains how monetary policy adjustments, specifically changes in interest rates, affect credit availability and demand, subsequently impacting the real economy. The theory emphasizes two main channels; the bank lending channel and the balance sheet channel. According to balance sheet channel, rising interest rates diminish net worth and profitability of borrower, elevate their interest cost, and lower collateral values. This combination adversely influences their investment and spending choices, ultimately affecting real GDP. The bank lending channel explains that higher interest rates increase the costs of deposits and loans for banks, reducing their willingness and ability to lend, while lower interest rates have the opposite effect, encouraging increased lending and credit demand from businesses and individuals.

The Taylor Rule, introduced by economist John Taylor, outlines a formula that helps central banks to decide an appropriate nominal interest rate by factoring in inflation and economic output. The rule advises central banks to increase interest rates when faced with inflation or rapid economic growth and to reduce them in cases of low inflation or weak economic growth (Taylor, 1993).

The Phillips Curve theory proposes an inverse relationship between inflation and unemployment. According to this theory, central banks face a choice between low inflation and low unemployment, as stimulating the economy to reduce unemployment tends to increase inflation (Phillips, 1958). It informs central banks' decisions in managing these competing objectives.

Empirical Review

Broad Money Supply

Nature of money supply in the market determines the economic growth of the country. The monetary policy, represented by money supply, has a positive effect on GDP growth (Onyeiwu, 2012). According to Nouri and Samimi (2011), the growth of money supply and gross domestic product are in a close relationship. Additionally, Twinoburyo and Odhiambo (2017) concluded that the money supply significantly and positively influences economic growth in both short and long run. Based on this, the study proposes the following hypothesis:

H₁: There is a positive effect of money supply on the economic growth of the SAARC nations.

Interest Rate

Here in this study, Bank Rate is taken as the interest rate. Generally, Bank Rate is defined as the rate of interest taken by central bank to BFIs. Nouri and Samimi (2011) observed that interest rates positively influence economic growth in the short run. Kamaan (2014) found the interest rate channel followed by the credit channel to be the most effective channel in

influencing economic growth. Based on this, the study develops the following hypothesis:

H₂: There is a positive effect of Interest rate with the economic growth of SAARC nations.

Exchange Rate

Ahmad et al. (2013) analyzed the effect of inflation, nominal exchange rate, FDI, and capital stock on economic growth of Pakistan by using time series data for the period of 1975 to 2011. The researchers found that the exchange rate negatively affects the economic growth. However, Thapa (2002) found in his research that for a small economy like Nepal, there is a significant positive relationship between the Real Exchange Rate and economic activities within the country. The exchange rate can be seen as a key factor in influencing the direction of development. Based on this, the study proposes the following hypothesis:

H₃: There is a positive effect of the Exchange rate on the economic growth of SAARC nations.

Inflation Rate

Precious and Palesa (2014) revealed that the inflation is significant monetary policy instrument that drive the economic growth. Inflation plays a positive role in the overall sustainable growth of the nation. Dhungel, (2021) performed an analysis in Nepal and his research found that broad money and Inflation rate are positively related to the GDP of Nepal. However, Ahmad et al. (2013) argued there is a negative effect of inflation on economic growth. Based on it, this study develops the following hypothesis.

H₄: There is a positive effect of Inflation rate on the economic growth of SAARC nations.

Foreign direct investment

In the latest research, much consideration has been dedicated to the effect of FDI on financial development in nations. Hypothetically, FDI in the neoclassical development model advances financial development by expanding the volume of speculation and additionally its proficiency. Borensztein et al. (1998) found that the foreign direct investment (FDI) plays a significant role in technology transfer and contributes significantly more to growth than domestic investment. But only in cases when the host nation possesses a minimum threshold stock of human capital does the increased productivity of FDI hold true. As a result, FDI only helps the host economy expand economically when it has the advanced technology it needs to absorb them. As summed up in Balasubramanyam et al. (1996) and De Mello (1999), FDI is a composite heap of capital stock, expertise, and innovation, and can expand the current supply of information in the beneficiary economy through work preparation, expertise obtaining, and dispersion, and the presentation of elective administration rehearses and hierarchical plan. Younsi and Nafla

(2017) examined the relationship between financial stability, Monetary policy and Economic growth in 40 developed and developing countries. They explained that trade openness, capital account openness, and foreign direct investment positively influence economic growth, with a strong effect in developed countries.

H₅: There is a positive effect of foreign direct investment on economic growth of SAARC nations.

METHODS AND MATERIALS

This section includes the research methodological part as;

Research Design

There is used descriptive and casual research design. The data of different seven nations as Nepal, India, Pakistan, Bangladesh, Bhutan, Maldives, and Sri Lanka were used. Data were collected from the various publications of the central bank of different nations, International Monetary Fund, and World Bank data portal for time period of 2000-2022 AD. Due to the inconvenience of the data for Afghanistan, it has been dropped from the sample. Data were analyzed by using descriptive statistical table, correlation matrix, Breusch- Pagan Lagrange Multiplier Test, Pooled OLS, correlation matrix, and multiple regression as statistical tools. The data arrangement has done using Ms. Excel and performed analytical overview by using E- Views software for the analysis.

Model Specification

The model proposed in this study will assume that Economic Growth as change in Gross Domestic Product (GDP) depends on different variables like Broad Money Supply(M₂), Interest Rate (IR), Exchange Rate (ER), and Inflation Rate (INF).

The model will be structured the following format:

$$GDP_{it} = \alpha_0 + \beta_1 M_{2it} + \beta_2 IR_{it} + \beta_3 ER_{it} + \beta_4 INF_{it} + \beta_5 FDI_{it} + \mu_{it}$$

GDP= Gross Domestic Products

M_{2it} = Broad Money Supply

IR_{it} = Interest Rate

ER_{it} = Exchange rate

INF_{it} = Inflation Rate

FDI_{it} = Foreign Direct Investment

μ_{it} = Error term

RESULTS

This section includes the analysis of collected data and the interpretation of obtained findings. The results of different statistical tools are presented below;

Descriptive Statistics

Table 1 reports the descriptive statistics for dependent and independent variable. The table presents various observations, measures of central tendency, dispersion (standard deviation), minimum and maximum values, along with the Jarque-Bera statistics.

Table 1

Descriptive statistics for the dependent and independent variables used in the study

Variables	Mean	Median	Min	Max	SD	Jarque-Bera	Prob.	Obvs
LNGDP	1.6917	1.7817	0.307	2.531	0.41	24.91	0.000	161
LN M_2	14.811	15.007	9.637	19.08	2.29	4.082	0.129	161
INFR	6.4729	6.2176	2.007	15.84	7.34	0.025	0.025	161
EXR	78.941	70.420	41.35	178.7	29.3	32.52	0.000	161
IR	10.299	10.750	0.312	18.89	3.56	15.59	0.000	161
FDI	1.0002	0.8213	-0.675	3.620	0.75	35.51	0.000	161

Note. All the data has been calculated on the basis of information provided on World Bank data indicator

The Table 1 presents the results of descriptive statistics for all the variables, including LNGDP, LN M_2 , INFR, EXR, FDI and IR all of which exhibit positive mean and median values. The findings reveal that the average broad money supply is 14.811 percent, with a minimum value of 9.637 percent, and a maximum value of 19.082 percent. The standard deviation of 2.29 percent indicates the level of variability in the broad money supply across SAARC countries. Similarly, the mean values for LNGDP, INFR, EXR, FDI, and IR are 1.6917, 6.472, 78.941, 1.0002, and 10.299 percent respectively, with corresponding standard deviations of 0.411, 2.863, 29.32, 0.753 and 3.700 percent. Lastly, Table 1 also depicts the value of Jarque-Bera, which reflects the nature of the distribution of variables analyzed in the study.

Correlation matrix

Table 2

Correlation matrix of variables

Correlation	LNGDP	LN2M	IR	INF	FDI	EXR
LNGDP	1.0000					
					
LN2M	-0.0092	1.0000				
	(0.9180)				
IR	0.2196**	-0.3437*	1.0000			
	(0.0138)	(0.0001)			
INF	-0.0611	0.0964	0.0473	1.0000		
	(0.4981)	(0.2848)	(0.6001)		
FDI	0.2674*	0.2751*	0.0459	0.2872**	1.0000	
	(0.0026)	(0.0019)	(0.6108)	(0.0012)	
EXR	-0.3706*	0.2051**	-0.0695	0.0539	-0.1681	1.0000
	(0.0000)	(0.0217)	(0.4411)	(0.5500)	(0.0608)

*indicates that the correlation is significant at 1% level, Similarly, **denotes significance at 5% level. The numbers in the parentheses indicate p-value

Note. Output of E-views 12 from the data in Appendix

Table 2 shows the correlation matrix and multi-collinearity diagnostics for economic growth measurements and monetary indicators variables. Regarding the monetary indicator variables, none of the variables exhibit strong correlation coefficients, with the highest being 0.2872. The results show that IR and FDI have a positive association with GDP, while EXR, LN2M, and INF show a inverse relationship with GDP. Since all the correlation values are below 0.8, there is no evidence of multicollinearity. As a result, the coefficients of the variables are appropriate for regression analysis.

Estimation method

Panel data analysis has used for the study purpose as it is more effective and is the combination of cross-sectional data and time series data. Panel data methodology enables the analysis of longitudinal or cross-sectional data for a number of entities over time. Using multiple linear regression analysis methodology, the setup will allow the analysis of the effect of selected independent variables on economic growth as dependent variable. A single entity, which could be a country, region, or a person, is observed over a time, and data related to the dependent

and independent variables is recorded. There are three main types of panel data models (i.e., estimators) and described briefly below are their formulations.

Pooled OLS model

Pooled Ordinary Least Squares (OLS) is a type of regression model commonly used in the analysis of panel data. Panel data, also known as longitudinal or cross-sectional time-series data, consists of observations on multiple entities over multiple time periods. Pooled OLS treats all the data as if it comes from a single, large cross-section.

Fixed effect Model

In panel data analysis, a Fixed Effects (FE) model is a common approach that accounts for individual-specific effects. The key idea behind Fixed Effects is to include individual-specific intercepts in the model. This helps control for time-invariant individual characteristics that might be correlated with the independent variables.

Random effect model

In panel data analysis, a Random Effects (RE) model is another commonly used approach that accounts for both time-invariant and time-varying individual-specific effects. The key idea behind Random Effects is to treat the individual-specific effects as random variables, assuming they are uncorrelated with the independent variable.

The Fixed and random effect model are beneficial compared to pooled ordinary least square model as it is unable to capture panel character of dataset. For deciding between the fixed and random model we can use Hausman test where the null hypothesis is that the random effect model is appropriate than fixed effect model and the alternative hypothesis is that the fixed effect model is appropriate than the random effect model.

Breusch- Pagan Lagrange Multiplier Test

Initially, the Breusch- Pagan LM test was conducted to determine the appropriate method for analyzing the dataset. The objective of regression analysis is to predict and assess the impact of independent variables on dependent variables.

Table 3

Breusch- Pagan Lagrange Multiplier Test

	Cross Section	Time	Both
Breusch-Pagan	0.000250	0.2374	0.2376
P- Value	0.9874	0.626	0.6259

Note. Output of E-views 12 from the data in Appendix.

Table 3 depicts that the p- value is 0.9874, exceeding 0.05, leading to the acceptance of the POLS model.

Pooled OLS

Table 4

Pooled OLS method

Variables	coefficient	Sd Error	t-Statistic	Prob.
LNLM2	0.015925	0.016692	0.954012	0.3420
INFR	-0.017731	0.012100	-1.465335	0.1455
EXR	-0.004640	0.001190	-3.897855	0.0002
IR	0.024803	0.009617	2.579104	0.0111
FDI	0.116020	0.049457	2.345871	0.0206
C	5.166449	0.423791	12.19104	0.0000

Model Summary

R- Squared	0.23
Adjusted R-squared	0.20
S.E of regression	0.36
F- statistic	16.02
Prob (F- Statistic)	0.00
<u>Durbin- Watson statistic</u>	<u>1.65</u>

Note. Output of E-views 12 from the data in appendix

Table 4 depicts that monetary indicators Exchange rate, Interest rate, and Foreign direct investment are found to have a statistically significant impact on economic growth rate (LNGDP), whereas the Inflation rate and broad money supply is found to have a statistically insignificant impact on the economic growth rate from 161 observation of seven countries from 2000 to 2022, as elucidated in the pooled OLS model in the above table 4.

The exchange rate has a negative impact on economic growth (GDP) at 5% level of significance, with a p-value of 0.0002 (<0.05). The coefficient value is -0.0046, which indicates that a one-unit increase in the exchange rate leads to a decline in the economic growth rate by 0.0046%. Similarly, the interest rate has a positive effect on economic growth (GDP) at 5% level of significance, with a p-value of 0.011 (< 0.05). The value of coefficient is 0.024, implying that a one-unit increase in the interest rate results in a 0.024% increase in the economic growth rate.

Foreign Direct Investment (FDI) also positively impacts economic growth (GDP) at

the 5% level of significance, with a p-value of 0.020 (<0.05). The coefficient value of 0.011 indicates that a one-unit increase in FDI leads to a 0.011% increase in the economic growth rate (GDP).

In contrast, the inflation rate negatively impacts economic growth (GDP), but the effect is not statistically significant at the 5% level, as the p-value is 0.145 (>0.05). The coefficient value is -0.017, suggesting that a one-unit increase in the inflation rate would reduce the economic growth rate by 0.017%. Similarly, the broad money supply positively impacts economic growth (GDP), but this effect is also statistically insignificant. The coefficient value of 0.015 indicates that a one-unit increase in the broad money supply would increase GDP by 0.015%.

The R-squared value for the regression is 0.235, indicating that 23.5% of the variation in economic growth (LNGDP) is explained by the explanatory variables in the study, while the remaining 76.5% is explained by other factors. Moreover, the p-value of model is 0.0000 (<0.05), indicating high statistical significance and enhancing the validity and reliability of the study.

Summary of Hypothesis

The effect of independent variables on the dependent variables has been examined, and the results of the hypothesis testing have been determined. They are summarized and elucidated below.

Table 5

Summary of hypothesis

Hypothesis	P- value	Remarks
<i>H1: There is a positive effect of money supply with the economic growth of the country.</i>	0.3420	Rejected
<i>H2: There is a positive effect of Interest rate with the economic growth of the country.</i>	0.0111	Accepted
<i>H3: There is a positive effect of Exchange rate with the economic growth of the country.</i>	0.0002	Accepted
<i>H4: There is a positive effect of Inflation rate with the economic growth of the country.</i>	0.1455	Rejected
<i>H5: There is a positive effect of Foreign Direct investment with the economic growth of the country.</i>	0.0206	Accepted

DISCUSSION

The beta coefficient of exchange rate is -0.004 with corresponding p-value 0.0002. The study concludes that the exchange rate affects economic growth rate significantly and negatively. The finding goes consistent with Melaku and Tadesse (2019), Fasanya et al. (2013), The outcome conflicts with the findings of Srithilat and Sun (2017), Joshi (2022), Adejare and Omodara (2013) and Ahmad et al. (2016).

Likewise, Inflation rate also has a negative association to GDP with the beta coefficient -0.017 with corresponding p- value 0.145. The outcome is insignificant so there is no more further discussion.

The beta coefficient of Interest rate is positive as shown in the table 4. The beta coefficient of interest rate is 0.024 with corresponding p-value 0.011. The study concludes that the interest rate affect economic growth rate significantly and positively. The finding is consistent with Araujo (2017) and odds with the findings of Srithilat and Sun (2017), Ahmad et al. (2016), and Budhathoki et al. (2024).

According to the finding of the research, the explanatory variable broad money supply has a positive association with the GDP with a beta coefficient of 0.0159. This finding goes in a line with Ahmad et al. (2016), Joshi (2022), Nouri and Samimi (2011), Hameed and Amen (2011), Sulaiman and Migiro (2014), Melaku and Tadesse (2019) and Patricia and Izuchukwu (2016).

Foreign direct investment has a positive association with GDP. The value of beta coefficient is 0.116 with corresponding p value 0.020 The conclusion drawn from this study about foreign direct investment is also in the favor of the research paper of Li & Liu (2005).

CONCLUSION

This study concludes that there is a negative relationship between the broad money supply, inflation rate, exchange rate, and economic growth rate of nations. However, result is statistically insignificant. But, positive relationship between economic growth rate of South Asian nations and foreign direct investment and interest rate. Similarly, it is also found that in terms of monetary indicator variables the exchange rate, interest rate, and foreign direct investment are statistically significant predictors of the GDP growth of a subset of SAARC countries, but inflation and broad money supply are statistically insignificant, meaning it has not discernible effect on GDP growth. The inflation rate and exchange rate negatively affect the economic growth rate, whereas other variables affect positively. Among the different monetary

indicators, the exchange rate is the most influencing variable on the economic growth rate, following the interest rate. Moreover, monetary policy indicators are mostly ineffective in achieving their policy objectives because of shortcomings in the tools at their disposal. As a result, their potential to contribute to economic growth is limited.

IMPLICATIONS

This study aims to close a gap in the corpus of banking literature by presenting fresh empirical data on the monetary factors that influence the economic growth of particular South Asian nations. The present study's findings, which thoroughly analyze and evaluate the economic growth of a subset of South Asian nations, considerably contribute to the body of knowledge. More specifically, this research provides data on the elements that might affect economic growth from the fiscal years 2000 to 2022. It is recommended that policymakers and regulators consider monetary policy variables to enhance the economic growth of the selected South Asian countries. As regulator of monetary and financial system of nation, the central bank should develop a framework that can stabilize the exchange rate. Other professionals need to focus more in order to utilize resources efficiently and contribute positively to the economic development of country. Despite being restricted to particular monetary indicator variables, this study makes a substantial contribution.

In general, decision-making at all levels individual, corporate, and governmental is greatly influenced by monetary indicators. Numerous decisions are influenced by these indicators, which offer perceptions into the strength and stability of an economy.

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