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Financial Development in the SAARC Region: Identifying Influential Factors

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Abstract
The study aims to explore the determinants of financial development in SAARC countries by using the panel data of eight SAARC countries over the time period 1990-2022. The study used the Autoregressive Distributed Lag Model (ARDL) to determine the factors that affect financial development. The study used domestic credit to the private sector as a proxy to measure financial development as a dependent variable while independent variables are GDP per capita growth, trade, lending interest rate, gross domestic saving, GDP deflator, and broad money. The study has also applied Granger Causality analysis to determine the causal relationship between variables. The findings of the study indicate that lending interest rate and GDP deflator have a negative impact on domestic credit and GDP per capita growth, trade, gross domestic saving, and broad money have a positive impact on domestic credit. The study recommended that governments of these countries should promote trade openness, growth, saving and broad money to boost financial development. It is also suggested that policymakers should make policies to reduce the interest rate and inflation to promote financial development in SAARC countries.
Keywords: Broad money, saving, trade, Granger causality, inflation.

1. Introduction

Financial development has been widely recognized as a critical driver of economic growth and development (Levine, 1997). Financial development refers to the process by which financial systems become more advanced, diversified, and efficient, resulting in increased financial intermediation and allocation of resources. In recent years, many countries have undertaken financial sector reforms aimed at promoting financial development and improving access to financial services. However, despite these efforts, financial development remains uneven across countries and regions, with some countries having highly developed financial systems, while others still struggle with low levels of financial development. The determinants of financial development have been the subject of extensive research in economics and finance. The literature has identified several factors that influence financial development, including institutional quality, economic development, financial liberalization, legal systems, and cultural values (Beck and Levine, 2005; King and Levine, 1993; Rajan and Zingales, 2003; Sever, 2019; Ali, 2022; Kallianiotis, 2022). These factors interact in complex ways, making it challenging to identify the specific drivers of financial development in different contexts. Institutional quality is one of the most critical determinants of financial development (Acemoglu et al, 2005; Beck et al., 2008; Zubair & Hayat, 2020; Ali, 2022).

Institutions play a critical role in shaping the incentives and behavior of economic agents, and in providing an enabling environment for financial development. Good governance, rule of law, property rights protection, and a stable macroeconomic environment is essential elements of institutional quality that facilitate financial development (Ahmad and Rehmna, 2019; Ali, 2022; Audi et al., 2024). On the other hand, weak institutions, corruption, political instability, and poor regulatory frameworks hinder financial development by reducing the trust and confidence of investors and borrowers. Economic development is another key determinant of financial development (King and Levine, 1993; Adjasi and Yu, 2021; Ali et al., 2023). As countries become more developed, their financial systems tend to become more sophisticated and diversified, with a wider range of financial instruments and institutions. Economic growth creates more investment opportunities, increases the demand for financial services, and improves the capacity of financial institutions to mobilize savings and allocate resources. Financial liberalization, defined as the removal of government controls on the financial sector, is another factor that can promote financial development (McKinnon and Shaw, 1973). Financial liberalization can increase competition, reduce inefficiencies, and enhance the efficiency of financial intermediation. However, financial liberalization also exposes the financial system to greater risks and vulnerabilities, making it essential to ensure that regulatory frameworks are in place to safeguard financial stability. Legal systems and cultural values are also important determinants of financial development. Legal systems that protect property rights and enforce contracts facilitate financial development by providing a secure environment for financial transactions (Ibrahim and Alagidede, 2018). Cultural values such as trust, social capital, and individualism can also influence financial development by affecting the behavior and attitudes of economic agents towards financial institutions (Guinnane, 2001; Roy and Madheswaran, 2020).

Despite the extensive research on the determinants of financial development, there is still much that is not fully understood. The relationship between financial development and economic growth, for example, remains a subject of debate, with some scholars arguing that financial development is a necessary condition for economic growth, while others suggest that the relationship is more complex and context-specific (Kunt et al., 2008; Levine et al., 2000; Ali and Mohsin, 2023). Therefore, the determinants of financial development are multifaceted and context-specific, and their impact on financial development varies across countries and regions. Understanding the drivers of financial development is essential for policymakers and practitioners seeking to promote financial sector reforms and improve access to financial services.

2. Literature Review

This section provides review of the literature on existing studies. Table 1 shows the summary of literature review on the determinants of financial development.

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Table 1: Summary of the Literature Review on the Determinants of Financial Development

References(s)	Area/ Country	Time Period	Methodology	Results
Jung (1986)	56 Industrial Countries	1966-1980	OLS	The data indicated that financial development has a positive and significant effect on economic growth, providing evidence to support the finance-growth hypothesis. Furthermore, the results indicated that the impact of financial development on economic growth is stronger in developed countries compared to developing countries.
De and Guidotti (1995)	98 developing countries	1960-1985	OLS	Through their econometric analysis, they found strong evidence supporting the positive association between financial development and economic growth.
Demetriades and Luintel (1996)	India	1961-1991	OLS	The results revealed a significant positive association between financial development and economic growth, suggesting that a well-developed financial sector can contribute to overall economic prosperity.
Law and Habibullah (2009)	27 economies	1980-2001	GMM	The results of the dynamic panel data analysis show that the development of the banking industry and the capital markets is statistically significantly influenced by real income per capita and institutional quality. However, trade openness plays a more significant role in fostering the growth of the capital market.
Khalfaoui, 2015	15 developed and 23 developing nations	1997-2013	Fixed Effect	The results collected demonstrate that the degree of economic and human development for both samples, as well as banking and the financial sector, are the primary predictors of financial development. However, the factors pertaining to the legal and institutional framework, as well as economic stability, primarily affect financial development in the industrialised nations.
Cherif and Dreger, 2016	15 MENA Countries	1990-2007	Fixed Effect	One key finding is that, even after accounting for fixed effects and typical macroeconomic causes, institutional circumstances remain significant in both financial categories.
Zainudin and Nordin, 2017	ASEAN nations	1987-2013	POLS and SUR	According to the results, trade openness is the most significant determinant of financial growth only for Malaysia and Singapore, while real income is the most significant determinant of financial development only for Thailand and Singapore.
Ibrahim and Sare, 2018	46 African countries	1980-2015	GMM	Findings indicate that trade openness matters more for private credit than domestic credit, even though human capital has a strong influence on financial development. There is a strong correlation between financial progress and the interaction term of human capital and openness.
Nguena, 2019	49 sub Saharan African countries	1990-2018	ARDL	human capital development, credible monetary policy, infrastructure development, remittances facilitation, urbanization, trade openness and the facilitation of access to domestic credit from the banking sector.
Čižo et al., 2020	EU countries	1995-2017	Pearson correlation	Trade openness, political stability are the main determinants of financial development.
Asratie, 2021	Ethiopia	1980-2019	ARDL	Trade openness, economic development, and the political freedom index all have a favourable long- and short-term impact on the broad money supply model. However, reserve requirements and interest rates have a detrimental impact on it. Real exchange rates, however, have negligible short-term effects and negative long-term effects. On the other hand, trade openness, economic growth, political freedom, and inflation all favour the private sector model of lending. While the reserve requirement, lending interest rate, and foreign debt all have a negative impact on it
Boikos et al., 2022	81 countries	1973-2005	Quantile regression with fixed effect	The results of the study show that the regulation of securities markets and bank supervision are the more crucial elements of financial reforms for economic growth.

In conclusion, the literature review of the study reveals a multifaceted approach to understanding the factors that shape financial development. From the review, it becomes evident that both macroeconomic and microeconomic elements contribute significantly

to the dynamics of financial development. Factors such as political stability, economic policies, legal environment, level of corruption, quality of institutions, and trade openness have been extensively cited as influential macroeconomic determinants.

3. Model Specification, Data and Methodology

This section provides a detailed description of the model specification used in this study. This research is going to analyze the influence of GDP per capita (GDPPC), trade (TRADE), lending interest rate (INT), inflation rate (INF), gross domestic saving (GDS) and broad money (BM) on the credit to private sector(CREDIT) (as a proxy to measure the financial development). The general form of the model is given as:

$$CREDIT = f(GDPPC, TRADE, INT, GDS, INF, BM) \quad (1)$$

The econometric form of the model is given as:

$$CREDIT_{it} = \alpha_0 + \alpha_1 GDPPC_{it} + \alpha_2 TRADE_{it} + \alpha_3 INT_{it} + \beta_4 GDS_{it} + \alpha_5 INF_{it} + \alpha_6 BM_{it} + \varepsilon_{it} \quad (2)$$

Where:
CREDIT= Domestic credit to private sector (% of GDP)
GDPPC= GDP per capita growth (annual %)
TRADE= Trade (% of GDP)
INT= Lending interest rate (%)
GDS= Gross domestic savings (% of GDP)
INF= Inflation, GDP deflator (annual %)
BM= Broad Money (% of GDP)
Table 2 illustrates the description of variables, units of measurement, sources and their predicted signs with the dependent variable.

Table 2: Variables Description, Measurement Unit and Expected Signs

Variables	Description	Unit of Measurement	Expected Signs	Sources
	Dependent Variable			
CREDIT	Domestic Credit to Private Sector	% of GDP		
	Independent Variables			
GDPPC	Gross Domestic Product Per Capita	Annual percentage	+ve	
TRADE	Trade	% of GDP	+ve	WDI
INT	Lending Interest rate	Percentage	-ve	
GDS	Gross Domestic Saving	% of GDP	+ve	
INF	Inflation Rate	Annual %	-ve	
BM	Broad Money	% of GDP	+ve	

The study used ARDL technique to estimate the empirical results. A statistical approach called Autoregressive Distributed Lag (ARDL) cointegration is used to examine the long-term correlations between variables in econometric models. When dealing with non-stationary time series data and checking for cointegration, which is the presence of a consistent long-term link among the variables, it is especially helpful. When a model contains both stationary and non-stationary variables, ARDL is frequently used since the Johansen technique and other classic cointegration tests are ineffective. The ARDL method enables the simultaneous modelling of I(0) and I(1) variables, resulting in robust estimates and trustworthy inference. The ARDL technique, according to Pesaran et al. (2001), permits the estimate of cointegrating connections without necessitating the integration of all variables in the same sequence. It accommodates both short-run dynamics and long-run equilibrium connections in situations where there may be a mix of I(0) and I(1) variables. The ARDL cointegration approach is helpful because it enables the assessment of long-run connections and dynamics among variables, revealing details about the behaviour of equilibrium and the processes of adjustment of the variables under study. To examine the connections between economic variables and test for cointegration, it is frequently used in empirical investigations spanning several disciplines, including economics, finance, and social sciences.

Following are the reasons of using ARDL technique in the estimation of our model:
(i) It just employs one equation to examine the combined effects of the long run and short run.
(ii) In addition to being valid, the outcomes are objective.
(iii) The serial and endogeneity hazards can be eliminated by employing the ARDL estimate approach.
(iv) The ARDL approach may be useful in small samples, while other estimate strategies may not work well in such circumstances.
(v) The ARDL technique does not mandate that all elements be integrated along the same line.
The ARDL model specification can be expressed as:

$$\begin{aligned}\Delta(CREDIT)_{it} &= \alpha_0 + \alpha_1(GDPPC)_{it-1} + \alpha_2(GDPPC)_{it-1} + \alpha_2(TRADE)_{it-1} + \alpha_3(INT)_{it-1} + \\ &\alpha_4(GDS)_{it-1} + \alpha_5(INF)_{it-1} + \alpha_6(BM)_{it-1} + \sum_{t=1}^{p_1}\delta_1\Delta(CREDIT)_{it-i} + \\ &\sum_{t=0}^{p_2}\delta_2\Delta(GDPPC)_{it-i} + \sum_{t=0}^{p_3}\delta_3\Delta(TRADE)_{it-i} + \sum_{t=1}^{p_1}\delta_4\Delta(INT)_{it-i} + \\ &+\sum_{t=0}^{p_2}\delta_5\Delta(GDS)_{it-i} + \sum_{t=0}^{p_3}\delta_6\Delta(INF)_{it-i} + \sum_{t=0}^{p_3}\delta_7\Delta(BM)_{it-i} + \varepsilon_{it}\end{aligned} \quad (3)$$

The study also used Granger Causality analysis to estimate the casual relationship between key variables. For the explanation of Granger's causality test we will consider an example: Is the X cause Y (X→Y) or is the Y cause X (Y→X), where arrow shows the direction of causality. The general forms of the granger's causality test are as follows:

$$X_{it} = \sum_{i=1}^{k} \theta_i Y_{it-i} + \sum_{j=1}^{n} \vartheta_j X_{it-j} + \varepsilon_{1it} \quad (4)$$

$$Y_{it} = \sum_{i=1}^{s} \chi_i Y_{it-i} + \sum_{j=1}^{p} \omega_j X_{it-j} + \varepsilon_{2it} \quad (5)$$

4. Results and Discussion

4.1. Summary Statistics and Correlation Analysis

The descriptive statistics for the key variables for the years 1990–2022 are shown in Table 3. The variable CREDIT represents the credit to private sector, the amount of money that financial institutions, such as banks and other lenders, provide to private businesses and individuals for investment and consumption purposes. The mean value of credit to private sector is 30.70, with a standard deviation of 14.24. The median is slightly lower at 29.34, indicating that there may be some outliers pulling up the mean. The range of credit to private sector is quite large, with a minimum value of 4.29 and a maximum of 71.40. The distribution's skewness, which is positive at 0.25, suggests that it is somewhat skewed to the right. The distribution appears to be platykurtic, or flatter than a normal distribution, based on the kurtosis of 2.37. The Jarque-Bera statistic tests the hypothesis that the distribution is normal, with a low probability value of 0.17 suggesting that we fail to reject the null hypothesis that the distribution is normal. These statistics suggest that the credit to private sector variable has a wide range of values and a slightly skewed distribution. The variable GDPPC represents the per capita gross domestic product, which is the total output of goods and services produced in the country divided by the population. The mean value of this variable is 3.56, indicating that the average per capita GDP over the observed period is 3.56 units. However, the minimum value of this variable is -34.78, which is a negative value and suggests that there were some observations where the country's GDP was lower than the population. The maximum value of GDP per capita is 16.91, indicating a wide range of variation in the per capita GDP across the observed period. The standard deviation of GDP per capita is 4.51, indicating a relatively high degree of variation around the mean value. The distribution is severely skewed to the left, as indicated by the skewness value of -4.89, and it appears to have a sharp peak and heavy tails, according to the kurtosis value of 42.35. The TRADE variable in the table represents the percentage of gross domestic product (GDP) that a country's international trade, i.e., exports and imports, comprises. The descriptive statistics show that the mean TRADE percentage over the period of 1990-2022 is 56.02% with a standard deviation of 34.68%, indicating a wide variation in the TRADE percentage across the countries. The median TRADE percentage is 43.62%, which is lower than the mean, indicating that the data is skewed to the right (positively skewed). The minimum and maximum trade percentages are 15.51% and 165.98%, respectively, indicating a wide range of values. The skewness of the trade variable is 1.19, which confirms the positive skewness of the data, while the kurtosis of 3.77 indicates that the distribution of the data is leptokurtic (i.e., has a high peak and heavy tails). The Jarque-Bera test shows that the data is not normally distributed as the p-value is less than 0.05.

Table 3: Descriptive Statistics of Key Variables (1990-2022)

	CREDIT	GDPPC	TRADE	INT	GDS	INF	BM
Mean	30.70	3.56	56.02	12.75	23.42	6.82	52.59
Median	29.34	3.98	43.62	12.94	23.81	5.97	51.83
Maximum	71.40	16.91	165.98	18.92	44.58	27.85	100.45
Minimum	4.29	-34.78	15.51	6.96	5.38	-1.25	21.42
Std. Dev.	14.24	4.51	34.68	2.44	9.06	4.16	15.57
Skewness	0.25	-4.89	1.19	0.04	0.01	1.73	0.14
Kurtosis	2.37	42.35	3.77	2.62	2.34	8.38	2.83
Jarque-Bera	3.54	8973.76	34.02	0.82	2.37	223.43	0.60
Probability	0.17	0.00	0.00	0.66	0.31	0.00	0.74

The variable INT represents the lending interest rate. The mean value of lending interest rate is 12.75, indicating that the average interest rate over the period 1990-2022 was 12.75%. The minimum value is 6.96% and the maximum value is 18.92%, indicating a relatively narrow range of interest rates over the period. The standard deviation of 2.44 indicates that the interest rate has relatively low variability around the mean. The skewness of 0.04 indicates that the data is roughly symmetrical, with a slightly longer tail on the left-hand side of the distribution. The kurtosis of 2.62 suggests that the distribution is moderately peaked compared to a normal distribution. The GDS variable refers to Gross Domestic Saving, which represents the difference between a country's gross national income and its consumption. The mean gross domestic is 23.42, indicating that on average, the country is saving approximately 23.42% of its gross national income. The median gross domestic saving is 23.81, which is slightly higher than the mean, indicating that the distribution of the gross domestic saving variable is slightly skewed to the right. The maximum gross domestic saving is 44.58, indicating that the country with the highest saving rate is saving almost half of its gross national income. The minimum gross domestic saving is 5.38, indicating that the country with the lowest saving rate is saving only about 5% of its gross national income. The standard deviation of the gross domestic saving variable is 9.06, indicating that there is a significant variation in saving rates across countries. The skewness of the gross domestic saving variable is close to zero, indicating that the distribution is approximately

symmetric. The kurtosis of the gross domestic saving variable is 2.34, which is slightly higher than the expected value of 2 for a normal distribution, indicating that the distribution has slightly heavier tails than a normal distribution. The Jarque-Bera test statistic for the gross domestic saving variable is 2.37, which is lower than the critical value for a significance level of 0.05, indicating that the gross domestic saving variable is approximately normally distributed.

The variable INF represents the inflation rate. The mean value of inflation rate is 6.82, indicating that the average inflation rate over the period 1990-2022 was 6.82%. The minimum value is -1.25% and the maximum value is 27.85%, indicating a relatively wide range of inflation rates over the period. The standard deviation of 4.16 indicates that the inflation rate has relatively high variability around the mean. The skewness of 1.73 indicates that the data is positively skewed, with a longer tail on the right-hand side of the distribution. The kurtosis of 8.38 suggests that the distribution is highly peaked compared to a normal distribution. The variable BM represent the broad money, which is the total amount of money in an economy that is widely used for transactions and includes physical currency, demand deposits, and other highly liquid assets. The sample's average value of Broad Money, as indicated by the mean of 52.59, is around 52.59 units. Given that the median is less than the mean, the distribution appears to be slightly tilted to the right, as indicated by the median of 51.83. The range of the Broad Money variable is quite wide, with a maximum value of 100.45 and a minimum value of 21.42. This suggests that there may be some extreme values or outliers in the data. The standard deviation of 15.57 indicates that the data is relatively dispersed, with values spread out from the mean. The data is roughly symmetrical but somewhat skewed to the right, according to the skewness of 0.14. The distribution appears to be marginally more peaked than a normal distribution, as indicated by the kurtosis of 2.83. The Jarque-Bera statistic tests whether the data is normally distributed. The low value of 0.60 and the high p-value of 0.74 indicate that we cannot reject the null hypothesis that the data is normally distributed. The Broad Money variable appears to be relatively normally distributed with some slight right-skewness and peakedness. The data is relatively dispersed with a wide range of values and some possible outliers. The number of observations for all variable is 131, indicating that the statistics are based on a relatively large sample size.

Table 4 presents the correlation matrix of key variables from 1990 to 2022. CREDIT has a positive correlation with all variables except INT and INF. CREDIT has week positive correlation with GDPPC, TRADE, and week negative correlation with INF, moderate negative correlation with INT and and moderate positive correlation with GDS, while strong positive correlation with BM.

Table 4: Correlation Matrix of Key Variables (1990-2022)

Correlation	CREDIT	GDPPC	TRADE	INT	GDS	INF	BM
CREDIT	1						
GDPPC	0.11	1					
TRADE	0.11	-0.03	1				
INT	-0.39	0.04	0.14	1			
GDS	0.45	0.14	0.52	-0.09	1		
INF	-0.18	0.02	-0.17	0.27	-0.28	1	
BM	0.77	-0.08	0.12	-0.35	0.41	-0.17	1

4.2. Unit Root Analysis

In this section, a unit root analysis is conducted on the time series data for the key variables. The purpose of this analysis is to determine the stationarity of each variable. Table 5 presents the results of panel unit root tests for each variable in the study. The tests are conducted at level, with intercept, intercept and trend, and none. For each test, the table shows the results of the LLC and IPS tests, as well as the ADF-Fisher Chi Square and PP-Fisher Chi Square tests. The conclusion of the tests is indicated in the last column, with the notation "I(0)" indicating that the variable is stationary at level, and "I(1)" indicating that the variable has a unit root and is non-stationary at level. The results show that GDPPC, GFCF, HCR, and REM are stationary at level, while LFPR and SSE are stationary at first difference.

4.3. Long Run Analysis

In this section, we conduct a long-run analysis to explore the relationship between key economic variables over a period of 31 years (1990-2022). Table 6 presents the results of a long-run panel analysis using the Autoregressive Distributed Lag (ARDL) model to examine the determinants of financial development. The first independent variable is GDP per capita is positively associated with credit to private sector which is highly statistically significant. There are many reasons behind the positive impact of GDP on financial development. Firstly a higher GDP per capita indicates stronger and more stable economies, which lead to greater confidence in the creditworthiness of borrowers. As a result, lenders are more willing to extend credit to individuals and businesses in countries with higher GDP per capita. Higher GDP per capita is typically associated with stronger financial institutions, deeper financial markets, and better access to credit for households and firms (IMF, 2020). Secondly, the countries with higher GDP per capita tend to have lower interest rates on loans, which make credit more accessible and affordable for borrowers (Blackburn and hung, 1998). Thirdly, higher GDP per capital lead to greater investment and innovation, which generate more economic growth and income. This, in turn, improve the ability of borrowers to repay their loans and increase their creditworthiness (Loayza and Ranciere, 2006). The studies by (Calderón and Liu. 2003; De and Guidotti, 1995; Blackburn and hung, 1998; Claessens and Laeven, 2004; Loayza and Ranciere, 2006; Bloch and tang 2003) found the positive impact of GDP (or growth) on financial development.

Table 5: Results of Panel Unit Root Tests

Variable	At Level											Conclusion
	Intercept				Intercept and Trend				None			
	LLC Test	IPS Test	ADF-Fisher Chi Square	PP-Fisher Chi Square	LLC Test	IPS Test	ADF-Fisher Chi Square	PP-Fisher Chi Square	LLC Test	ADF-Fisher Chi Square	PP-Fisher Chi Square	
GDPPC	-3.081 (0.001)	-3.373 (0.000)	33.153 (0.000)	44.930 (0.000)	-2.731 (0.003)	-2.339 (0.009)	24.390 (0.018)	31.586 (0.001)	-6.489 (0.000)	59.398 (0.000)	74.696 (0.000)	I(0)
LFPR	-2.468 (0.006)	0.135 (0.554)	10.353 (0.585)	3.195 (0.994)	-0.459 (0.322)	0.423 (0.664)	8.502 (0.744)	4.705 (0.967)	3.597 (0.999)	0.584 (1.000)	0.176 (1.000)	I(1)
GFCF	-2.116 (0.017)	-1.874 (0.030)	15.620 (0.048)	32.582 (0.000)	-3.448 (0.000)	-2.681 (0.003)	21.513 (0.005)	60.165 (0.000)	-3.830 (0.000)	23.941 (0.002)	40.149 (0.000)	I(0)
SSE	-36.80 (0.000)	-18.53 (0.000)	33.680 (0.000)	11.816 (0.297)	0.319 (0.625)	0.148 (0559)	6.462 (0.373)	1.669 (0.947)	0.304 (0.619)	4.102 (0.942)	4.235 (0.936)	I(1)
HCR	-3.118 (0.000)	-4.586 (0.000)	43.378 (0.000)	88.772 (0.000)	-2.251 (0.012)	-3.588 (0.000)	35.053 (0.000)	77.635 (0.000)	-1.851 (0.032)	19.593 (0.075)	34.309 (0.000)	I(0)
REM	-3.301 (0.000)	-4.176 (0.000)	41.895 (0.000)	41.135 (0.000)	-1.729 (0.041)	-2.352 (0.009)	28.448 (0.004)	41.707 (0.000)	-3.157 (0.000)	29.463 (0.003)	39.746 (0.001)	I(0)
CREDIT	-0.483 (0.668)	0.548 (0.435)	0.336 (0.540)	0.154 (0.461)	-0.579 (0.322)	0.089 (0.437)	0.534 (0.370)	1.890 (0.921)	1.976 (0.876)	1. 424 (0.281)	0.990 (0.853)	I(1)

The second factor is trade as a percentage of GDP is positively associated with change in credit to private sector which is highly statistically significant. The possible reson behind the positive association is that trade openness has a positive impact on credit to the private sector, which attributed to the increase in export revenues and the resulting higher foreign exchange reserves of a country (Raza et al., 2014). Trade diversifies economic activity and allows for a more stable and diversified production structure. This diversification increases the creditworthiness of a country and allows for greater access to credit markets (Lapavitsas and Munoz, 2019). Trade liberalization boost economic growth, which in turn improves creditworthiness and access to credit markets. This occurs because increased trade leads to greater competition, innovation, and specialization, all of which drive economic growth (Takyi and Obeng, 2013). Countries that are more open to trade tend to have higher credit ratings, which allows them to access credit markets at lower interest rates (Khalfaoui, 2015). Trade also promote financial sector development and improve access to financial services, which enhance a country's creditworthiness and expand its borrowing options. The other studies by Do and Levchenko, 2004; Huang and Temple, 2005; Raza et al., 2014; Kumar et al., 2015; Haldar and Sethi, 2022; Zhang et al., 2015; Lapavitsas and Munoz, 2018; Takyi and Obeng, 2013; Khalfaoui, 2015) also found the positive association between trade and financial development.

Table 6: Long-Run Panel ARDL Estimates of Determinants of Financial Development Model

Dependent Variable: D(CREDIT)

Selected Model: ARDL (1, 0, 1, 1,0,1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPPC	8.5960	3.5414	2.4273	0.0169
TRADE	0.1849	0.0585	3.1622	0.0021
INT	-3.2962	0.8879	-3.7124	0.0003
GDS	0.3249	0.1341	2.4233	0.0171
INF	-0.2799	0.0490	-5.7092	0.0000
BM	0.2590	0.0908	2.8527	0.0049
C	0.2592	0.0475	5.4571	0.0000

The third variable is (INT) lending interest rate. The lending interest rate is negatively associated with credit which is highly statistically significant. High interest rates escalate the expenses associated with borrowing, hence complicating loan repayment for borrowers and raising the possibility of defaults or delinquencies (Zhang and Chen, 2017). High lending interest rates deter potential borrowers from seeking credit, particularly those with lower incomes or credit scores, which limit their access to credit and hinder their ability to build credit histories (Gross and Souleles, 2002). High lending interest rates lead to a reduction in overall economic activity, as individuals and businesses are less likely to invest or spend money if borrowing costs are too high (Bernanke et al., 1990). High lending interest rates also exacerbate income inequality, as higher rates disproportionately affect those with lower incomes who already have difficulty accessing credit (Chakravarty and Pal, 2013). Our study is in line with (Zhang and Chen, 2017; Gross and Souleles, 2002; Bernanke et al., 1989; Chakravarty and Pal, 2013; De and Guidotti, 1995).

The fourth variable is gross domestic saving is positively associated with credit to private sector which is highly statistically significant. Gross domestic saving plays a crucial role in determining the availability of credit in an economy. A higher level of saving implies a larger pool of funds that channeled into lending activities, thereby increasing the overall supply of credit in the economy (Elsherif, 2015). Greater domestic saving is associated with a higher level of financial intermediation, as it increases the availability of loanable funds for banks and other financial institutions. This, in turn, leads to a greater volume of credit being extended to households and businesses (Laeven and Valencia, 2013). Higher domestic saving rates enable countries to rely more on domestic resources to finance investment, reducing their reliance on foreign capital and thereby making their economies more resilient to external shocks. This, in turn, leads to greater stability in credit markets and a lower risk of financial crises (Jalilian and Kirkpatrick, 2002). The other studies (Elsherif, 2015; Laeven and Valencia, 2013; Jalilian and Kirkpatrick, 2002; Bayar, 2014; Anwar and Nguyen, 2011; Sahoo and Dash, 2013; Yakubu et al., 2022) also found the positive association between the gross domestic saving and financial development.

The fifth variable inflation rate is negatively associated with credit to private sector which is highly statistically significant. As inflation increases, central banks may raise interest rates to control it (Rousseau and Wachtel, 2002). Borrowing becomes more expensive with higher interest rates, which reduces the demand for the supply of credit. Inflation has an adverse effect on credit availability and the interest rates that borrowers face (Honohan, 2004). Over time, inflation reduces the actual worth of money, which means that loan repayments have less purchasing power. Due to this, borrowers may find it more difficult to repay their debts, which may result in default and a decline in credit score (Rousseau and Yilmazkuday, 2009). Inflation has a negative effect on the creditworthiness of borrowers since it reduces the real value of their repayments (Khezri et al., 2021). Inflation create uncertainty in the economy, making it difficult for lenders to accurately assess the risk of lending. This leads to lenders being more cautious and lending less, which reduce credit availability (Hung, 2003). Inflation leads to uncertainty and risk in the economy, which in turn reduces the amount of credit that is available (Acemoglu et al., 2005). The other studies (Rousseau and Wachtel, 2002; Honohan, 2004; Rousseau and Yilmazkuday, 2009; Khezri et al., 2021; Hung, 2003; Acemoglu et al., 2005; Bittencourt, 2011; Kim and Lin, 2010; Almalki and Batayneh, 2015; Ozturk and Karagoz, 2012) also found the adverse affect of inflation rate on financial development.

The last variable broad money is positively linked with credit to private sector which is highly statistically significant. One reason for positive association is that increases in broad money supply lead to lower interest rates, which in turn encourages borrowing and investment by the private sector (Yousif, 2002). Additionally, increases in broad money also raise the bank credit that increase the availability of funds for private sector borrowers (Akhtaruzzaman, 2009). An increase in broad money supply positively affects bank lending to the private sector, as it provides banks with more funds for lending and stimulates demand for credit (Congdon, 1989). An increase in broad money supply reduce the cost of funds for banks, which lead to a reduction in lending rates and an increase in loan demand by the private sector. An increase in broad money supply has a positive and significant impact on credit to the private sector. An increase in broad money supply lead to an increase in deposits, which in turn increases the availability of funds for banks to lend to the private sector (Sehrawat and Giri, 2015). Our results are compatible with (Yousif, 2002; Akhtaruzzaman, 2009; Congdon, 1989; Sehrawat and Giri, 2015; Gehringer, 2014).

4.4. Error Correction Analysis

This section presents an error correction analysis. The error correction estimates is provided in Table 7. The error correct term (ECT) has a negative coefficient of -2.2021, which implies that from the long run equilibrium towards short run shocks deviation can be corrected by more than two years.

Table 7: Error Correction Estimates of Determinants of Financial Development Model

Dependent Variable: D(CREDIT)

Method: ARDL, Included observations: 224

Selected Model: ARDL (1, 0, 1, 1,0,1,1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECT	-2.2021	0.3791	-5.8081	0.0000
D(GDPPC)	1.7859	0.4908	3.6387	0.0004
D(TRADE)	-1.1871	1.8043	-0.6579	0.5116
D(INT)	0.3926	0.2026	1.9377	0.0544
D(GDS)	-0.7988	0.1186	-6.7348	0.0000
D(INF)	0.1365	0.0490	2.7845	0.0060
D(BM)	-0.3933	0.2045	-1.9232	0.0563
C	-1.1370	0.6015	-1.8903	0.0606

4.5. Causality Analysis

This section aims to explore the casual relationship between the key variables in the dataset.

4.5.1. Results of Lag Order

In this section the results of lag order analysis are presented. Table 8 presents the results of lag order selection criteria for a vector autoregression (VAR) model with endogenous variables including CREDIT, GDPPC, TRADE, INT, GDS, INF, and BM, and no exogenous variables. The criteria used to select the optimal lag order include log-likelihood, sequential modified LR test statistic, final prediction error, Akaike information criterion, Schwarz information criterion, and Hannan-Quinn information criterion. The results suggest that a VAR model with four lag order is the best fit for the data.

Table 8: Lag Order Selection Criteria for a Vector Autoregression (VAR) Model

Endogenous variables: CREDIT GDPPC TRADE INT GDS INF BM

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2268.369	NA	9.12e+11	47.40351	47.59049	47.47909
1	-1573.938	43.86267	32300159	37.01954	42.44207	39.21142
2	-1645.382	56.22395	16505877	36.46630	39.27106	37.60003
3	-1605.362	61.69810	20712301	36.65337	40.76702	38.31618
4	-1678.700	1081.058*	11724147*	36.13959*	37.63546*	36.74424*
5	-1528.765	56.46605	39957846	37.09927	43.83069	39.82022

* indicates lag order selected by the criterion

4.5.2. Granger Causality Results

This section presents the Granger causality analysis results for the variables under study. Table 9 shows the results of the Granger causality test for each variable pair. The Granger causality test is used to determine whether one variable can be used to predict another variable. In the GDPPC and CREDIT, there exist a bivariate causality at lag 2, and at lag 3 and 4 GDPPC cause CREDIT but CREDIT doesn't cause DGPPC. In the TRADE and CREDIT, there exist bivariate causality at log 2, 3 and 4. In the INT and CREDIT, there exist bivariate causality at log 3, and at lag 2 and 4 CREDIT cause INT but INT doesn't cause CREDIT. In GDS and CREDIT, there is no existence of causality at lag 2, 3 and 4. In INF and CREDIT, there exist bivariate casuality at lag 3 and 4, and at lag 2 CREDIT doesn't cause INF. In BM and Credit, there is no existence of causality at lag 2 and 3, and at lag 4 BM cause CREDIT but CREDIT doesn't cause BM. At lag 2, 3 and 4 in TRADE and GDPPC, GDPPC cause CREDIT but CREDIT doesn't

cause GDPPC. At lag 2 and 4, there is no existence of casuality between INT and GDPPC, at lag 3 INT cause GDPPC but GDPPC doesn't cause INT. At lag 2 and 3 there is no existence of causality between GDS and GDPPC, at lag 4 GDPPC cause GDS but GDS doesn't cause GDPPC. There is no existence of causality between INF and GDPPC at lag 2,3 and 4. There is no existence of causality between BM and GDPPC at lag 2,3 and 4.

Table 9: Results of Paired Granger Causality Test

H_0	Lag	F-Statistics	Lag	F-Statistics	Lag	F-Statistics
GDPPC↛Credit	2	5.97707 (0.0031)	3	3.70597 (0.0128)	4	1.80116 (0.1310)
Credit↛GDPPC	2	2.96368 (0.0541)	3	0.78587 (0.5033)	4	0.66375 (0.6180)
TRADE↛CREDIT	2	3.20979 (0.0429)	3	3.00259 (0.0323)	4	2.78633 (0.0287)
CREDIT↛TRADE	2	3.84986 (0.0232)	3	3.15122 (0.0267)	4	2.42521 (0.0507)
INT↛CREDIT	2	1.47108 (0.2335)	3	2.10808 (0.1027)	4	1.12551 (0.3481)
CREDIT↛INT	2	7.45533 (0.0009)	3	3.68153 (0.0140)	4	2.77053 (0.0306)
GDS↛CREDIT	2	0.75434 (0.4719)	3	0.46828 (0.7048)	4	0.37883 (0.8235)
CREDIT↛GDS	2	1.08482 (0.3403)	3	0.97421 (0.4065)	4	0.80369 (0.5247)
INF↛CREDIT	2	3.09941 (0.0475)	3	2.05959 (0.1074)	4	1.88248 (0.1159)
CREDIT↛INF	2	1.46099 (0.2347)	3	1.89743 (0.1318)	4	1.53106 (0.1955)
BM↛CREDIT	2	1.61966 (0.2008)	3	1.22385 (0.3026)	4	1.82443 (0.1265)
CREDIT↛BM	2	0.76021 (0.4690)	3	0.70609 (0.5496)	4	0.68285 (0.6048)
TRADE↛GDPPC	2	0.18193 (0.8338)	3	0.23983 (0.8685)	4	0.29830 (0.8787)
GDPPC↛CREDIT	2	12.0273 (1.E-05)	3	6.38872 (0.0004)	4	4.71333 (0.0013)
INT↛GDPPC	2	1.31775 (0.2710)	3	1.66783 (0.1770)	4	1.67900 (0.1589)
GDPPC↛INT	2	0.60281 (0.5487)	3	0.30462 (0.8220)	4	0.24372 (0.9130)
GDS↛GDPPC	2	1.39971 (0.2494)	3	1.09732 (0.3519)	4	1.66010 (0.1621)
GDPCC↛GDS	2	1.24444 (0.2907)	3	1.32907 (0.2668)	4	3.38207 (0.0110)
INF↛GDPPC	2	0.74269 (0.4771)	3	0.92929 (0.4277)	4	1.33723 (0.2578)
GDPPC↛INF	2	0.13374 (0.8749)	3	0.14340 (0.9338)	4	0.10616 (0.9803)
BM↛GDPPC	2	0.55460 (0.5752)	3	0.68146 (0.5644)	4	0.30650 (0.8733)
GDPPC↛BM	2	1.49422 (0.2270)	3	1.08418 (0.3571)	4	1.16348 (0.3287)
INT↛TRADE	2	2.65561 (0.0745)	3	2.03706 (0.1130)	4	1.39014 (0.2429)
TRADE↛INT	2	4.50353 (0.0131)	3	2.03632 (0.1131)	4	2.32009 (0.0621)
GDS↛TRADE	2	0.44618 (0.6408)	3	0.48354 (0.6942)	4	0.38063 (0.8222)
TRADE↛GDS	2	2.07746 (0.1283)	3	2.20006 (0.0900)	4	1.86557 (0.1193)
INF↛TRADE	2	0.23002 (0.7948)	3	0.47695 (0.6988)	4	0.45250 (0.7705)
TRADE↛INF	2	1.75793	3	0.78702	4	0.66938

		(0.1754)		(0.5028)		(0.6142)
BM↛TRADE	2	1.98636 (0.1404)	3	1.25370 (0.2923)	4	1.05093 (0.3831)
TRADE↛BM	2	0.47076 (0.6253)	3	1.27873 (0.2836)	4	1.29721 (0.2738)
GDS↛INT	2	0.24236 (0.7852)	3	0.22854 (0.8764)	4	0.17552 (0.9505)
INT↛GDS	2	0.22488 (0.7990)	3	0.24348 (0.8658)	4	0.35121 (0.8426)
INF↛INT	2	0.11578 (0.8908)	3	0.09636 (0.9619)	4	1.12894 (0.3459)
INT↛INF	2	0.38099 (0.6839)	3	0.22527 (0.8787)	4	1.00972 (0.4051)
BM↛INT	2	1.21828 (0.2989)	3	0.43408 (0.7290)	4	0.21480 (0.9298)
INT↛BM	2	0.08773 (0.9161)	3	0.09038 (0.9652)	4	0.34157 (0.8494)
INF↛GDS	2	0.68785 (0.5040)	3	0.66117 (0.5771)	4	0.80744 (0.5222)
GDS↛INF	2	5.29190 (0.0059)	3	2.69171 (0.0480)	4	2.00706 (0.0962)
BM↛GDS	2	0.29771 (0.7429)	3	1.60374 (0.1908)	4	0.56519 (0.6883)
GDS↛BM	2	1.44084 (0.2397)	3	1.11779 (0.3437)	4	0.62577 (0.6449)
BM↛INF	2	0.17655 (0.8383)	3	0.39481 (0.7569)	4	2.88214 (0.0242)
INF↛BM	2	1.20230 (0.3028)	3	0.82933 (0.4793)	4	1.19755 (0.3137)

In INT and TRADE there exist bivariate casuality at lag 2 and 3, TRADE cause INT but INT doesn't cause TRADE at lag 4. There is no existence of causality between GDS and TRADE at lag 2 and 3, TRADE cause GDS but GDS doesn't cause TRADE at lag 4. There is no existence of causality between INF and TRADE at lag 2,3 and 4. There is no existence of causality between BM and TRADE at lag 2,3 and 4. There is no existence of causality between GDS and INT at lag 2,3 and 4. There is no existence of causality between INT and INF at lag 2,3 and 4. There is no existence of causality between INT and BM at lag 2,3 and 4. GDS cause INF but INF doesn't cause GDS at lag 2 and 4. There is no existence of causality between INF and GDS at 4. BM cause GDS but GDS doesn't cause BM at lag 3, there is no existence of causality between BM and GDS at lag 2 and 4. BM cause INF but INF doesn't cause BM at lag 4, there is no existence of causality between INF and BM at lag 2 and 3.

5. Conclusions and Policy Implications

The study aims to investigate the determinants of financial development in SARCC countries using data spanning from 1990 to 2022. The study employed the autoregressive distributed lag (ARDL) method to examine the relationship between the dependent variable, credit to the private sector, and several independent variables including GDP per capita, trade, GDP, lending interest rate, gross domestic saving, inflation rate, and broad money. The results indicate that GDP per capita, trade, gross domestic saving, and broad money have a positive and statistically significant relationship with credit to the private sector. The positive association between GDP per capita and credit to the private sector suggests that higher levels of per capita income facilitate greater access to credit, enabling individuals and businesses to invest in productive activities. Similarly, trade positively influences credit to the private sector, indicating that countries with more open and diversified economies tend to have greater access to credit. This underscores the role of international trade in stimulating economic activity and financial development. Gross domestic saving also exhibits a positive link with credit to the private sector, indicating that higher levels of domestic saving contribute to a larger pool of funds available for lending, thereby fueling credit growth. This finding emphasizes the importance of savings mobilization and the development of robust financial intermediation channels to facilitate the efficient allocation of savings towards productive investments. Additionally, the study highlights the positive relationship between broad money and credit to the private sector, suggesting that a well-functioning monetary system and adequate liquidity in the economy are conducive to expanding credit provision. The availability of broad money, which includes currency in circulation and various forms of deposits, enables financial institutions to meet the credit demand of the private sector, supporting investment and economic growth. Conversely, the study findings reveal a negative relationship between lending interest rate and credit to the private sector. This implies that higher lending interest rates tend to constrain access to credit for the private sector, potentially hindering financial development. Higher interest rates may increase the cost of borrowing, discourage investment, and bound the availability of credit for SMEs and individuals. This finding highlights the importance of implementing policies that promote affordable credit conditions and ensure a conducive interest rate environment to encourage private sector credit growth. Similarly, the study indicates a negative association between inflation rate and credit to the private sector. Higher inflation rates can erode the value of loan repayments, increasing credit risk and

discouraging lenders from extending credit. This finding emphasizes the importance of maintaining price stability and controlling inflation as a means to foster a stable and predictable credit environment that supports financial development.

It is crucial to make recommendations for economic measures that would enhance financial development. So based on the results, the policy recommendations are given as:

- Government may implement a policy that aims GDP per capita in order to increase credit accessibility to the private sector in SAARC countries.
- The government should encourage the trade openness to enhance the accessibility of credit to private sector in SAARC countries.
- The government may have to stimulate credit flow to the private sector by implementing policies that reduce lending interest rates in SAARC countries.
- To bolster credit accessibility to the private sector relative to gross domestic savings, the government may have to implement policies that promote financial inclusion, streamline lending procedures, and incentivize savings in SAARC countries.
- In order to improve credit to the private sector while considering the inflation rate, the government may have to implement policies that promote a stable and predictable monetary environment. This may be achieved by adopting measures such as maintaining a moderate inflation target, implementing prudent fiscal policies, and enhancing the regulatory framework to ensure a conducive business environment for lenders and borrowers alike.
- The government aims to implement policies that facilitate increased credit flow to the private sector relative to broad money. This will be achieved through measures such as streamlining regulatory frameworks, encouraging financial inclusion, and promoting a conducive business environment to stimulate lending activities and support economic growth.

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