A STUDY ON BANKING EFFICIENCY AND ITS IMPACT ON ECONOMIC GROWTH FOR THE STATE OF SIKKIM

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ABSTRACT

An essential aspect of understanding the role of banks in social development is to examine the relationship between banking and economic growth. Banks play an important role in balancing the economic swing by facilitating loan and deposit services, payment systems, and financial intermediation. Hence, gaining insight into the relationship between bank efficiency and economic growth is crucial for ensuring financial stability and promoting sustainable development. The study examines credit and deposit patterns and their relationship with state economic growth. It identifies a relationship between efficiency and growth and investigates how credit and deposits growth affect economic growth. The study reveals the importance of financial intervention in order to foster sustainable economic growth in the long run. Increase in deposits growth have a positive impact; however, rapid credit expansion shows a dampening effect on economic growth.

Keywords: Banking Efficiency, Credit, Deposit, Economic growth, Credit Deposit Ratio, Gross Domestic Product, Financial Intermediation

INTRODUCTION

The complex relationship between financial institutions, economic activities, and regional development is a significant focus of modern economic analysis. The dynamics of bank lending, deposits, and Gross State Domestic Product (GSDP) are essential drivers that contribute to holistic development and stability. King & Levine (1993) highlights the importance of financial intermediation in economic development; similarly, Galbis (1977) demonstrated the significance of financial intermediation in less developed countries; and Odedokun (1998) signifies that real financial aggregate growth boosts economic growth in developing countries, regardless of their level of development. It is crucial to comprehend the connections, patterns, and influences to create strategies and promote sustainable development, particularly in place like Sikkim, which have distinct economic characteristics. Sikkim, located in the north eastern area of India, offers an intriguing opportunity to analyse the relationship between financial intermediation and regional economic development. Therefore, in this context, the relationship between bank lending, deposits, and GSDP in Sikkim provides unique insights into the economic strength, challenges, and possibilities of an area that is limited by its geography and revenue. The livelihood of Sikkimese heavily depend upon tourism activities and agriculture, and therefore the circulation of money in the local financial market are largely control by these two activities. Now, how did the banking system of the state take initiation in this circulation of money? What are the effective measured contributed by the banking sector in the economic growth of the state?

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Despite, Bank loans and deposits said to be the catalysts of capital formation, consumption, and investment in different sectors. The effective allocation of credit is crucial for productivity and sustainable growth, eventually promoting inclusive development in the region. Estrada et al. (2010) clearly suggest that financial openness has a positive and significant impact on real per capita GDP growth. Additionally, deposits have a significant impact on the liquidity profile and directly affect the lending behaviour of these banks, which in turn affects the speed and direction of economic activity in the region. According to Ogechi (2018), financial deepening has a substantial influence on the overall amount of deposit mobilisation and economic growth. Similarly, Gross State Domestic Product (GSDP) serves as a comprehensive indicator of economic success in Sikkim, representing the monetary value of all commodities and services generated within its geographical boundaries. Sikkim's economy is one of the fastest-growing and has an influence on the Indian economy. Gundimeda (2018) found Sikkim, among the top, to have registered high decadal growth with rich natural capital and comprehensive wealth. Hence, In-depth analysis of the complex relationship between bank credit, deposits, and Gross State Domestic Product (GSDP) will reveal the dynamism of regional economics, and the study will emphasize the interaction between financial intermediation and economic activity. However, several external and internal factors, such as geographical challenges, infrastructure deficiencies, socio-cultural dynamics, environmental sustainability, and regulatory norms, pose obstacles and opportunities for achieving overall development. This study aims to examine the relationship between bank credit, deposits, and the Gross State Domestic Product (GSDP) in Sikkim, considering underlying patterns and influences.

The paper is organised as follows: In section 2, we delve into the literature that focuses on global perspectives, country-specific, sectorial dynamics, and region-specific development related to credit, deposits and economic growth, then followed by the study's objectives. In Section 3, we showcase the data and the methodology employed in the study. In Section 4, we present the findings of the data analysis. In Section 5, we conclude the study.

LITERATURE REVIEW

Global Perspectives and Country-Specific Studies

Numerous factors, including macro-indicators, bank-specific factors, policy changes, financial development, and sectorial change, influence the dynamic relationship between credit, deposits, and economic growth, as revealed by a large and growing body of literature. Bui (2020) highlights the non-linear influence of domestic credit on economic growth in ASEAN nations, underlining the need for flexible credit policies to sustain development without unfavourable situation. Similarly, Banerjee (2012) identifies changing trends in India, where output increasingly impact credit allocation post-1991, demonstrating the significance of effective macro-prudential and monetary policies. The Cross-country comparisons further enrich the understanding. Akpansung (2011) focuses on Nigeria, showcasing a one-way causal link between private sector credit and economic growth, underscoring the need for enhanced financial market development. Similarly, Ugoani’s (2013) highlights warning against ill-advised financial sector policies in Nigeria, emphasizing the critical role of bank credit in advancing economic and infrastructural development. Furthermore, the studies also delve into specific country contexts, like Pham & Nguyen’s (2020) examination of Vietnam's credit-GDP relationship, revealing a bilateral correlation with implications for sustainable growth. Timsina (2014) sheds light on Nepal's case, where commercial bank credit positively impacts long-term growth, necessitating

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policy focus on modern banking and infrastructure. European experiences, as explored by Sassi & Gasmi (2014), highlight the differential impacts of credit provision to businesses and households on economic growth, urging governments to bolster enterprise credit markets. Armeanu et al. (2015) offer a broader perspective, assessing financial development's role in India's growth using an Index for Financial Development, advocating for empirical investigations into the nexus between development and financial depth. However, the caution is entitled. Cecchetti (2019) warns against unregulated financial sector expansion, citing its adverse effects on productivity, especially for asset-light firms. Escribano & Han (2015) highlights credit diverse impacts across emerging markets, suggesting nuanced policy approaches. Similarly, Manaresi & Pierri (2019) underline credits crucial role in firm productivity, urging measures to ensure accessibility. Additionally Vasconcelos et al. (2021) reaffirm credit's positive correlation with economic growth globally, emphasizing the need for policy enhancements in financial sectors worldwide and Banu (2013) offers insights from Romania's crisis experience, showcasing credit's pivotal role in economic revitalization and the importance of prudent financial regulations. Ananzeh's (2016) study on Jordan's banking industry reveals a strong correlation between bank lending and economic growth, particularly in areas like agriculture and construction, where there is a reciprocal cause-and-effect relationship and this highlights the specific differences in credit distribution among different sectors and the leading effects on economic activity. Okafor & Ugwuegbe (2016) conducted a study on Nigerian financial landscape and emphasised the significant significance of credit provided by deposit money banks in promoting economic growth and highlighted the crucial relevance of financial development in ensuring overall economic stability.

Sectorial Development and Regional Perspectives

Das and Maiti (1998), Sethi and Bajaj (2013), and Sulaiman (2016) conducted research in India that reveals the impact of credit-deposit ratios on economic performance. The studies show that credit-deposit ratios vary between states, which highlights the need for targeted policies to make credit more accessible and boost economic output. Similarly, Goel & Kumar (2016) identified discrepancies in cash-deposit and credit-deposit ratios, which led to interventions for regulatory actions to ensure more equitable ratios. Sahoo & Khundrakpam (2007) highlight the significance of innovation and localised strategies for tackling financial intermediation difficulties in different states of India and emphasise the necessity of using flexible methods to promote financial inclusion and allocate credit in a way that is specifically designed for the unique characteristics of local markets. The various studies underscores credits multidimensional role in shaping economic growth, and further the studies also demonstrate non-linear relationships, changing dynamics over time, and sectoral nuances in credit allocation influenced by several factors and contexts and also emphasizes the need for flexible policy responses to advances the credit potential while managing risks, thereby promoting sustainable and inclusive economic development.

Research Gap

Whilst studies provide valuable insights into specific countries and at national level, there's a lack of comprehensive in-depth analyses within regional contexts and a need for more specific analyses within regional contexts to understand common trends, deviations, and policy implications of banking sector and this study explores the regional economic integration,

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common regulatory frameworks, and shared challenges that influence the relationship between credit, deposit and economic growth. Additionally, and in depth study will highlights best practices and policy intervention that can be applied at the regional level to promote sustainable financial and inclusive growth.

Objectives

- To study the movement of bank credits and bank deposits in comparison with GSDP in Sikkim.
- To examine the relationship between banking intermediation and economic growth in Sikkim

DATA AND METHODOLOGY

The study is descriptive and employs quantitative methodology to investigate the complex relationship among credit, deposits, and economic growth. The study assesses the movements and uses, correlation, and linear regression techniques to thoroughly examine the relationship between credit, deposits and economic growth. At first, comparing the long-term patterns and changes in both credit and deposits, as well as economic growth, and then assessing the credit and deposit intensity. Secondly, correlation analysis is performed to reveal the magnitude and direction of the link among these variables, offering initial insights into their relationships. Lastly linear regression is used to further analyse this relationship, modelling to measure the effect of credit and deposits on economic growth while accounting, inflation as control variable; therefore, by employing, correlation, and linear regression, we derive an elaborated understanding of the complex relationship between credit, deposits and Gross Domestic Product (GSDP).

Data

The data utilised for the study is sourced from annual reports published under the Handbook of Indian States, Banking, Reserve Bank of India, which encompass banking variables such as credit, deposit, and credit deposit ratio, as well as economic variables like gross domestic product (GSDP) and inflation, spanning from 2006 to 2023.

Model Specification

To investigate the relationship between credit, deposit and economic growth, a regression analysis is conducted. Considering Gross State Domestic Product (GSDP) as the dependent variable and banking intermediation (credit & deposit) as independent variables, and Inflation rate is used as control variable.

Thus, the equation formulated for the present study is shown below:

$$GSDP_t = \beta 0 + \beta 1 \times Credit_{t-1} + \beta 2 \times Deposit_{t-1} + \beta 3 \times Inflation_{t-1} + \epsilon_t$$

Where:

- $GSDP_t$ represents the Gross State Domestic Product at time t_t.
- $Credit_{t-1}$ $Deposit_{t-1,}$ and $Inflation_{t-1}$ denote the lagged values of Credit, Deposit, and Inflation respectively, addressing autocorrelation concerns.
- $\beta 0$ is the intercept term.

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- $\beta 1$, $\beta 2$, and $\beta 3$ are the coefficients associated with the lagged Credit, Deposit, and Inflation variables respectively, representing their impact on GSDP.
- ϵ_t represents the error term at time t_t.

By incorporating lagged variables, the model adjusts for autocorrelation issues and provides a more accurate representation of the relationship between bank intervention (Credit and Deposit) and economic growth (GSDP) while controlling for inflation.

Data Analysis: Movement of Credit, Deposit and GSDP

Table 1
ANNUAL GROWTH RATE AND INTENSITY (%)

Annual Growth rate			Intensity		
Year	**Credit growth rate**	**Deposit growth rate**	**GSDP growth rate.**	**Credit to GSDP**	**Deposit to GSDP**
2006	50	0	9.8	31.4	68.1
2007	33.3	23.1	6	39.5	79.1
2008	25	31.3	7.6	45.9	96.4
2009	0	19	16.4	39.4	98.6
2010	20	24	73.6	27.3	70.4
2011	0	6.5	8.7	25.1	69
2012	8.3	21.2	133.4	11.6	35.8
2013	0	22.5	2.3	11.4	42.9
2014	7.7	6.1	6.1	11.6	42.9
2015	7.1	9.6	7.9	11.5	43.6
2016	13.3	10.5	9.9	11.8	43.8
2017	12.1	10.4	7.2	12.4	45.2
2018	20.7	22.2	14.8	13	48.1
2019	27	13.3	5.4	15.7	51.7
2020	10.1	5.2	4.7	16.5	52
2021	19.6	4.7	0.3	19.7	54.2
2022	34.7	17	6	25	59.9
2023	13.6	9.2	6.8	26.6	61.2

Source: Author compilation

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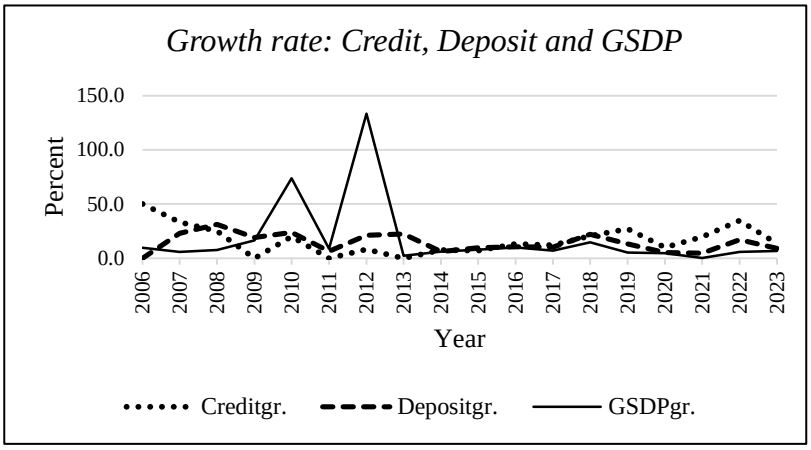

FIGURE 1
COMPARISON OF CREDIT, DEPOSIT, AND GSDP GROWTH RATE
Source: Annual Reports RBI.

The pattern in Figure 1 demonstrates that, from 2006 to 2009, banks in Sikkim experienced variations in credit growth, particularly a significant decrease during the 2008 period. This decline reflected the overall pattern as banks became more cautious in response to the 2008 financial crisis's economic downturn. However, during the period from 2010 to 2012, banks in Sikkim experienced notable credit growth, which coincided with national efforts to recover from the crisis. Therefore, it is likely that increased lending played a role in supporting infrastructure projects and economic development initiatives in the state and during the period from 2013 to 2016, there is a moderate growth in credit, indicating a stable banking sector in Sikkim. Nevertheless, there are continued fluctuations in the later years, suggesting that local and national economic factors continued to impact credit penetration.

The deposit growth trends in Sikkim from 2006 to 2009 closely followed the fluctuations in credit growth, suggesting changes in saving patterns among residents. However, during the period from 2010 to 2012, there is a notable growth in deposits, which matched with national's initiatives to encourage financial inclusion and savings mobilisation and such initiatives had an influence on the expansion of banking services and the promotion of saving habits among the population. In the following years, there was a steady increase in deposits.

The GSDP growth rates have shown fluctuations over time, influenced by both local factors and broader national economic trends, during the period from 2008 to 2009, the state's economy experienced a significant slowdown in GSDP growth due to the global financial crisis and this demonstrated a range of challenges for the state to address and during the period from 2010 to 2012, Sikkim witnessed notable increases in GSDP growth, these increases may reflects due to by investments made in sectors such as tourism, agriculture, and hydropower and these investments played a significant role in driving economic growth during the period. However, in the subsequent years, there is a consistent and steady growth in GSDP, which highlights a long-term economic development that was supported by investments in infrastructure and initiatives to encourage tourism and agricultural practices. The above analysis shows clear and noticeable relation between credit growth, from March 2010 to March 2012, and corresponding increases in GSDP growth. There appears to be a robust link between credit expansion and economic output. Investments driven by an increase in lending activity have resulted in significant economic growth across various sectors, leading to higher GSDP growth rates. On the other hand, when

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credit growth is low, the growth of GSDP decelerate and this is because restricted access to credit hampers economic activities and investment, which in lead to slowdown in the overall output. In contrast, deposit growth, reflects the pace at which savings are being accumulated within the banking system. It indicates patterns in saving behaviour, the amount of available cash, and overall economic confidence. Just like credit growth, deposit growth is anticipated to have a positive correlation with GSDP growth and increased deposit growth shows a rise in savings and liquidity within the economy and this can potentially stimulate investment and consumption, ultimately promoting economic growth.

The above result highlights the patterns, there is a clear relation between the rise in deposit growth, specifically between 2010 and 2012, and the surge in GSDP growth. It observes that the increased mobilisation of savings has played a role in driving up investments and economic expansion in Sikkim, resulting in higher output levels. On the other hand, when deposit growth is low, it may align with slower GSDP growth and this suggests that savings and liquidity in the economy are reduced, which could limit investment and consumption, ultimately affecting overall economic performance.

Credit and Deposit Intensity

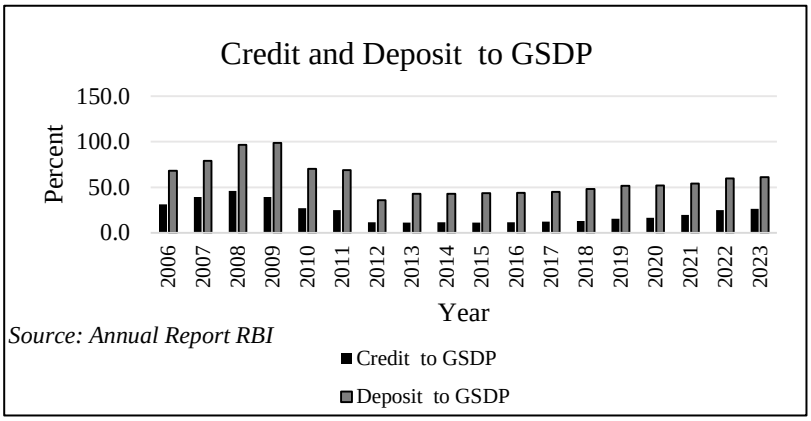

FIGURE 2
RELATIVE SHARE OF CREDIT AND DEPOSIT TO GSDP

Source: Annual Report RBI.

Figure 2 shows the ratios of credit to Gross State Domestic Product (GSDP) and deposit to GSDP. These ratios provide insights into an economic strength, and the significant Credit to GSDP ratios show a great utilisation of credit, which promotes investment and growth. Similarly, favourable Deposit to GSDP ratios reflect better saving habits and financial stability, and deviations from anticipated proportions can indicate financial hazards or inefficient use of resources, requiring corrective actions. Therefore, these ratios are important indices of economic well-being, financial inclusiveness, and banking efficacy in regional economies. The analysis showcases variations in credit and deposit in relation to GSDP throughout the years. Between 2006 and 2008, there is a notable increase in credit and deposit ratios to gross domestic products suggesting strong economic activity and financial intermediation. However, from 2010 to 2013, there is a gradual decline in both ratios, indicating a period of economic challenges and changing financial behaviours. Furthermore, in 2014, there has been a consistent increase in credit to

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GSDP and deposit to GSDP ratios, demonstrating a positive trend in the economy. The data reveals a persistent excess of deposits over credit, indicating a preference for saving over borrowing among citizens and businesses. Hence the increasing disparity between the ratio of deposits to Gross State Domestic Product (GSDP) and the ratio of credit to GSDP highlights this pattern, indicating a cautious attitude towards borrowing among the people. Moreover, the inclination towards saving can be influenced by a variety of factors, such as cultural norms, financial literacy, and economic stability. The analysis highlights the effectiveness of the regions financial landscape, suggesting that promoting credit to marginalized sectors like SMEs and agriculture could boost economic growth. Furthermore, creating a favourable atmosphere for saving and investing can improve long-term financial resilience and stability. However, despite the variations, the general pattern in credit and deposit suggests a favourable economic environment and the current upward trend indicates the ability to recover and the possibility of further expansion, as long as cautious strategies are implemented Table 2.

Relationship between Performance and Economic Growth

Table 2
CORRELATION FOR STUDY VARIABLES

		Credit growth rate	Deposit growth rate	GSDP growth rate	Inflation rate
Credit growth rate	Pearson Correlation	1			
	sig.				
Deposit growth rate	Pearson Correlation	0.597	1		
	sig.	-0.089			
GSDP growth rate	Pearson Correlation	-0.061	.740*	1	
	sig.	-0.875	-0.023		
Inflation rate	Pearson Correlation	-0.281	-0.398	-0.111	1
	sig.	-0.465	-0.288	-0.776	

Table 2 showcases the correlation between credit growth rate, deposit growth rate, GSDP growth rate, and inflation rate. The correlation coefficient between credit growth rate and deposit growth rate is 0.597, demonstrating a moderately positive relationship that indicates that as deposit increases, credit tends to increase as well. However, p-value shows 0.089, which not significant at 0.05 level, confirming that the relationship is not significant. The correlation between GSDP growth rate and deposit growth rate is 0.740 with a p-value of 0.023, showing a strong positive and significant relationship, and this implies that higher deposit growth is associated with higher economic growth. Conversely, the correlation between credit growth rate and GSDP growth rate is -0.061 with a p-value of 0.875, indicating a very weak negative relationship that is not statistically significant. This indicates that changes in credit growth affect GSDP growth. The inflation rate demonstrates a weak and insignificant relationship with all the variables. The correlation between the inflation rate and credit growth is -0.281 (p-value of 0.465), -0.398 with deposit growth (p-value of 0.288), and -0.111 with GSDP growth (p-value of 0.776). These suggest a negative relationship and indicate that inflation does not have a strong influence on credit growth, deposit growth, and GSDP growth.

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Effect of Credit and Deposit on Gross Domestic Product (GSDP)

Table 3
MULTIPLE REGRESSION ESTIMATION

Coefficients								
Variables	**Intercept**		**SE**	**Standardized β**	**t**	**Sig.**	**Tolerance**	**VIF**
(Constant)	39976.86		12093.49		3.306	0.03		
DIFF(Deposit,1)	1.646		0.171	1.425	9.623	0.001	0.467	2.141
DIFF(Credit,1)	-1.712		0.225	-1.121	-7.606	0.002	0.472	2.118
DIFF(Inflation,1)	3403.11		2127.102	0.163	1.6	0.185	0.983	1.017
Note: Significant at 5 percent level								
R Square %		96%						
F		31.192						
Sig.		0.003						
Durbin-Watson		2.003						
Source: Author Computation								

The analysis in table 3 shows that the coefficient for the first difference of Deposits (DIFF(Deposit,1)) is statistically significant (β = 1.646, SE = 0.171, t = 9.62, p <.001), and this infers that there is a positive relationship between a growth in deposits and an increase in GSDP. The estimated magnitude of this relationship is 1.646 lakh, and this demonstrates the strengthening impact that higher levels of deposits can have on economic output, which stimulates the expansion of the gross domestic product of the state, thus encouraging investment and consumption, which ultimately promotes overall economic growth. Conversely, the coefficient for the first difference of Credit (DIFF(Credit,1)) showcase negative and statistically significant (β = -1.712, SE = 0.225, t = -7.61, p < .002) and this reflects an inverse relationship between Credit and GSDP growth in Sikkim, implying that a lakh increase in Credit, is associated with a decrease in GSDP, with an estimated decrease of 1.712 lakh and this result highlights that while credit availability is substantive for economic activity, an excessive expansion of credit might lead to inefficiencies, dampening overall economic growth. The existence of this adverse relationship could be attributed to various factors, as it can be argue that, when there huge increase in the amount of credit available, which leads to over borrowing and causing financial instability, this can have a detrimental effect on the overall growth of the economy. Moreover, it may indicate a scenario in which credit is not efficiently distributed to sectors that generate productivity, resulting in the inefficient utilisation of resources. Whilst credit expansion is crucial for economic activity, however, an excessively credit expansion strategy may not necessarily result in corresponding economic growth. In addition, the coefficient for the first difference of Inflation (DIFF(Inflation,1)) is positive but not statistically significant (β = 3403.11, SE = 2127.102, t = 1.60, p = .185). Although the lack of statistical significance is present, the coefficient's magnitude implies that an increase in the inflation rate is linked to a growth in GSDP. This suggests that although inflation may have some effect on

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economic output, its influence is comparatively less significant in the context of Sikkim's. Additionally, the model shows an R-square value of 0.96 and this indicates that about 96% of the variation in the first difference of GSDP can be explained by the independent variables. In addition, the Durbin-Watson value shows 2.003, indicating the absence of autocorrelation in the residuals, which strengthens the dependability of the model results. This analysis offers useful insights of banking intermediation towards sustainable economic growth and stability for the region.

CONCLUSION

The yearly growth rates of credit, deposit, and gross state domestic product (GSDP) exhibit varying patterns in the data from 2006 to 2023. Credit and deposit growth rates increased in tandem with notable GSDP growth in 2010 and 2012. However, in 2021, the rates of increase in credit and deposits, as well as GSDP growth, both significantly declined. Additionally, there have been variations in credit and deposits to the Gross State Domestic Product (GSDP), wherein both the credit and the deposit increased steadily between 2006 and 2008, then started to fall until about 2013. However, there has been a steady increase in 2014, suggesting a rebound in banking activities. However, by 2023, both credit and deposits make a sizable share to the GSDP, emphasising the importance of banking services towards economic growth. The correlation analysis shows a significant positive relationship between deposit growth and GSDP growth, suggesting that increased deposits are associated with economic growth. The relationships between credit growth and inflation are weak and statistically insignificant, suggesting a limited influence on economic growth, extending these relationships, the regression model provided more detailed understanding of the variables affecting the rate of growth of the GSDP. The model explained, with R-square value of 96%, that variations in GSDP growth are mostly influences by changes in, Credit, Deposit and Inflation. More precisely, credit expansion dampens the growth rate of the GSDP, and increases in deposits and inflation have a positive impact, which highlights the need of utilization of loans wisely and allocating credit equitably to promote long-term economic growth. Lastly, the compressive investigation reveals the complex interactions among growth dynamics, economic factors, and bank intervention and these informed relationships can be utilized to develop strategies and promote economic growth while ensuring resilience and financial stability.

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