

# Financing Industrial Innovation: Empirical Research on the Impact of Sectoral Bank Credit on Business Development in Cambodia

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## ABSTRACT

This empirical study examines the linkage between bank credit and innovation of sectors as determinants of economic growth in Cambodia for the period from 2009 to 2023. Quantitative approach and secondary data in the form of time series data will be used in the study. The data is sourced from National Bank of Cambodia and International Monetary Fund, and the analysis will involve simple and multiple regressions. Results indicate that while bank credit expansion (reaching 175.01% of GDP by 2023) acts as a powerful force for economic growth, its impact is highly uneven across industries. The findings show that the credit that was designed to aid real estate, agriculture, and media and telecommunications is the one that has made positive impacts on growth, while credit aimed at mining, utility, and hospitality industries has caused negative impacts. This means that current innovation in the industry has been centered on developments in urban settings and information technology, and not capital-intensive industries. According to the findings, for sustainable growth, the government should move from expanding credit to strategically allocating credit in the productive and innovative sectors. This paper addresses the finance-growth literature in developing countries and offers a framework for distributing credit strategically.

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## INTRODUCTION

Cambodia's economy has demonstrated a remarkable resilience and a rapid expansion over the last decade, with the GDP growth averaging between 6% and 7% annually. Even though the major factors contributing to this development have been traditionally recognized as export-oriented garment production, tourism, and construction (World Bank, 2023), the finance behind these industries, more specifically bank lending, continues to be largely unclear. The process of globalization has made the financing sector more globally integrated, whereby bank lending has emerged as one of the key engines of business investments through channeling funds into profitable enterprises while minimizing transaction costs (Estrada et al., 2010). However, the problem of fast credit growth in Cambodia, where there was a rise in the ratio of credit to GDP

from less than 30% during the middle of the decade 2000s to more than 160% in 2022 (IMF, 2024), poses a very intriguing question.

The relationship between finance and growth is explained in recent research showing how banks help spur development through the process of turning deposits into loans, allowing companies to build capital and embrace technology (Levine, 2005; Nguyen & Dang, 2021). In Cambodia, studies undertaken by Phon (2019) and Chanrey et al. (2023) found a positive connection between bank lending activity and economic output. Moreover, studies show that the effects of credit are sector-specific, such that although real estate credit helps drive urban development, there are macroeconomic financial risks involved (Sok & Oum, 2017).

Nevertheless, there is still a lack of evidence on how different credit distribution in various sectors influences the growth of the country's economy. Previous researches mainly cover either general domestic credits or some subsectors such as microcredit (Lashkaripour & Lugovskyy, 2023). However, it remains necessary to understand the most economically profitable sectors for bank credits and identify those that might face negative consequences due to excessive leveraging. Unlike other works that claim the benefits of any credit extension, this paper aims at revealing which sectors of the economy benefit the most from bank credits and which ones might suffer from them.

From this point, the key research questions can be formulated as follows: Is the overall volume of credit extended by banks a critical determinant of economic development in Cambodia? Are there any differences between the impacts of bank credits to individual industrial sectors on the economic growth of Cambodia? The goal is to measure both general and sector-specific impacts of bank credits on GDP during the period from 2009 to 2023. This study distinguishes itself by concentrating only on classified credit in the banking industry by individual industries (18 categories). Measuring the elasticity of economic growth with regard to individual industrial credit will provide an alternative strategy for fostering innovation.

The fundamental notion of this research paper is the Economic Growth, described as the consistent rise in the aggregate production in the economy of a country calculated through the Gross Domestic Product (GDP) metric, which is basically a measure of the total market values of all the final goods and services produced by businesses operating within the boundaries of a certain country (Jones, 2002; BEA, 2023). One of the key drivers of economic growth in the present day economy of any developed or developing country is Bank Credit, which is described as the process where financial intermediaries lend money to individuals under the expectation that they will be repaid with an added amount of interest (Investopedia, 2023; World Bank, 2023). Previous studies on the finance and growth relationship in the developing countries indicate that bank credit helps to alleviate the liquidity problems of SMEs and encourages household spending, hence resulting in a two-way relationship where credit affects and is affected by economic growth (Phon, 2019; Pang et al., 2023). However, current empirical work like the one done by Beck et al. (2004) contends that the effects of credit are not similar across industries since those industries highly dependent on external financing display high growth rates when there is access to credit. By combining these theories, this study seeks to find out how the 18 sectors classified by the National Bank of Cambodia from high growth potential in real estate to capital-intensive manufacturing influence the country's economy through a study of wise use of credit.

## **METHODS**

This research utilizes a quantitative research design to empirically investigate the relationship between bank credit and economic growth in Cambodia. Quantitative methodology and particularly time series analysis are suitable for the investigation of research problems, as they will enable the accurate measurement of the relationships and causes between financial indicators and GDP growth rates (Phon, 2019). The study will be conducted over a 15-year period, covering 2009-2023, which provides an adequate longitudinal outlook to reflect changes in the economic structure and financial deepening processes in Cambodia's banking industry (IMF, 2024).

This research is focused on the banking sector in Cambodia as a whole that covers 67 licensed firms – 58 commercial and 9 specialized banks – located in the domestic territory (NBC, 2023). Since this research has been carried out at a macro level, the sampling frame involves the entire list of credit activities in this respect instead of individual organizations. The key measures obtained pertain to the GDP for the country at market prices and disaggregated bank credits by 18 industrial sectors including agricultural, manufacturing, IT, and real estate sectors (NBC, 2023; World Bank, 2023).

Data acquisition was done through secondary sources that are reliable on an international and national level in order to guarantee high accuracy and reproducibility of the data. Macroeconomic statistics and output statistics at the national level have been obtained from the International Monetary Fund (IMF, 2024) and World Economic Forum (2023). Credit statistics, such as total banking credits and industry credits, were collected from the database of the National Bank of Cambodia (NBC, 2023). The measurements of all variables are given in nominal terms in USD billion.

For instance, the analysis is based on the application of both simple and multiple regression models in order to prove or disprove the hypotheses put forward in line with the methodological approach presented by Field et al. (2012). The problem with time series such as constantness or difference in scales can be resolved through transforming the variables into natural logarithms. As stated by Gujarati & Porter (2009), application of the logarithmic form to the model allows the regression parameters to be interpreted as elasticities. The first model is an evaluation of the cumulative effect of the total bank credit on economic growth, while the second model involves the use of multiple regression in order to determine the contributions of the different sectors. In order to ensure validity and reliability of the statistical inference, the analyses include tests of multicollinearity, autocorrelation, and heteroscedasticity (Gujarati & Porter, 2009).

## RESULTS AND DISCUSSION

### Results

This section provides the finding results from the empirical analysis of the influence of bank credit on economic growth in Cambodia in the form of descriptive trends, correlations, regressions, and hypothesis testing. Figure 1 shows the consistent increase in Nominal GDP in Cambodia from USD 10.39 billion in 2009 to USD 30.94 billion in 2023. However, what is even more noticeable in the graph below is the rapid growth in total bank credit (TCID\_Bs) in Cambodia from USD 2.54 billion to USD 54.15 billion. It can be easily seen that there is a growing difference between both lines, indicating a much faster growth in credit than in national production.

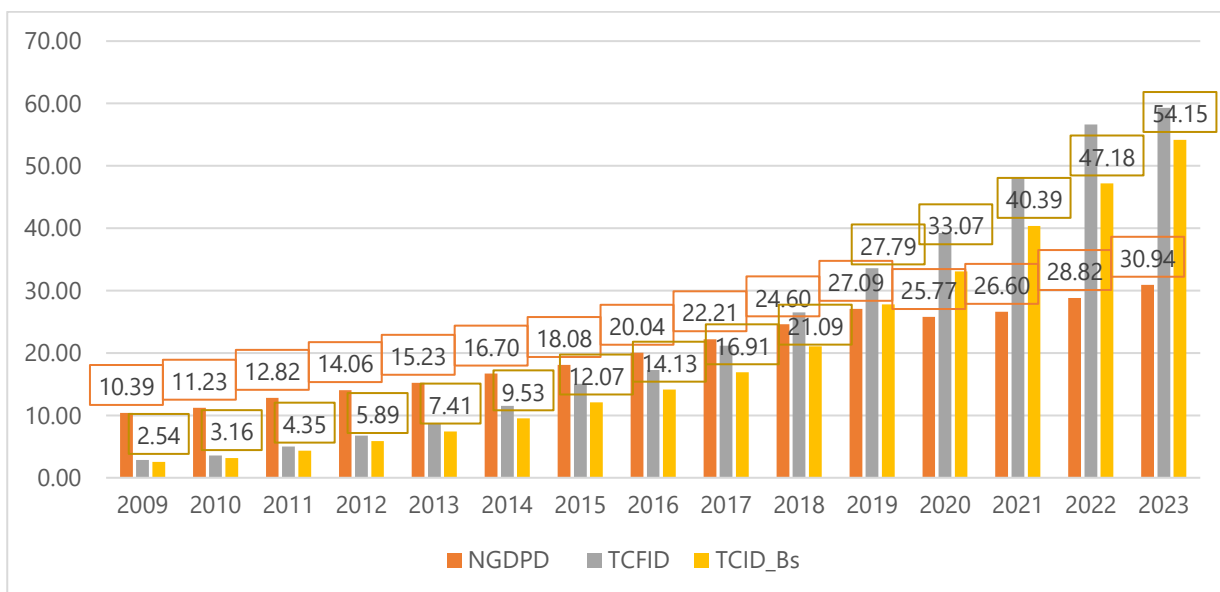
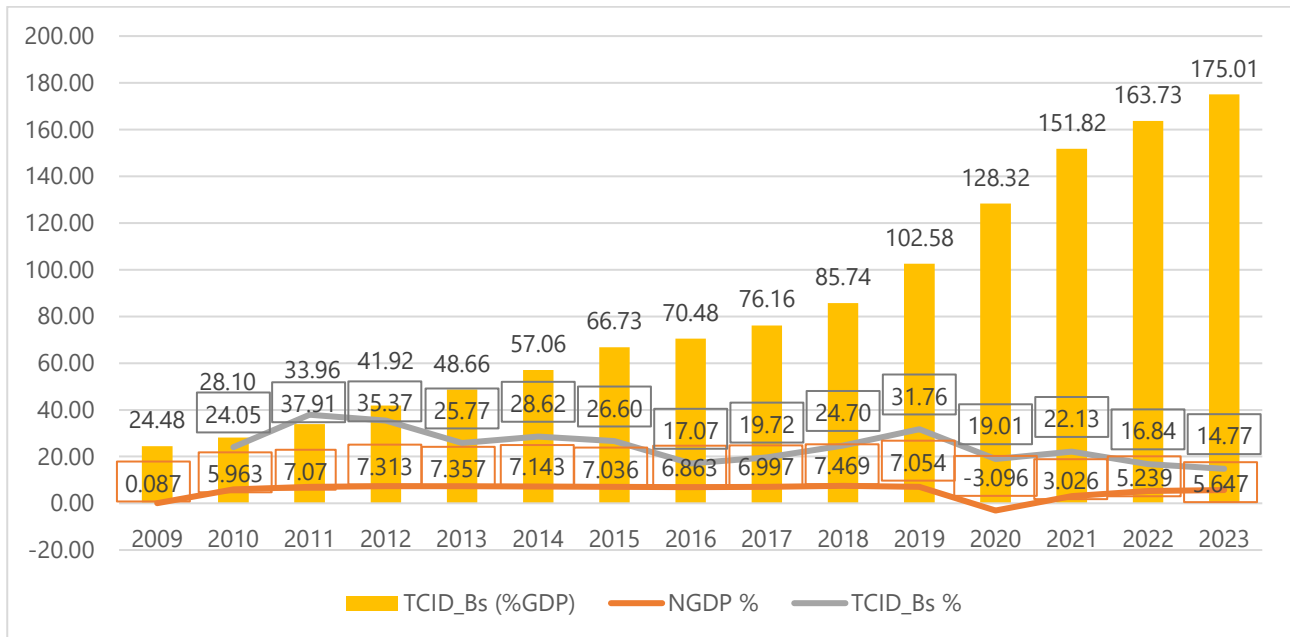


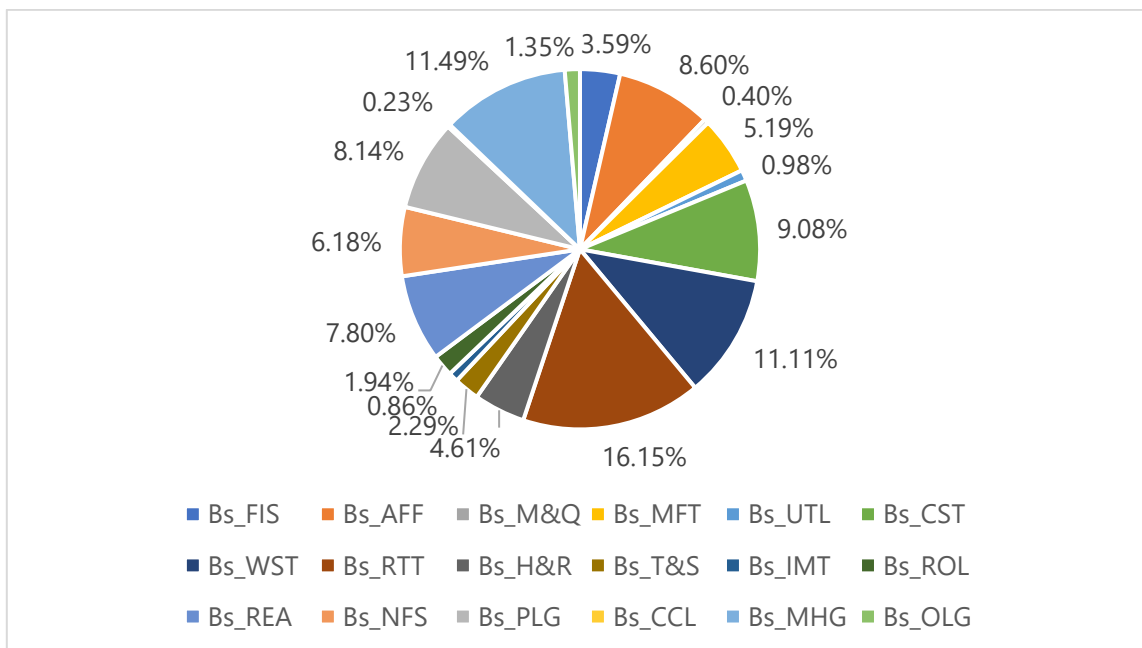
Figure 1. Nominal GDP and Credits (USD Billion)

The graph below, Figure 2, presents the annual growth percentages. Even though there was not much fluctuation in the GDP growth percentage (NGDP%), which was consistently around 7% (except for 2020 during the pandemic), the trend is quite different when it comes to the total credit to the private sector in relation to the GDP (TCID\_Bs %GDP). This has grown immensely from 24.48% in 2009 to 175.01% in 2023.



**Figure 2.** GDP and Bank Credit's Growth Rates (%)

The diagram shown in Figure 3 represents the breakdown of financial allocation among the 18 industries in terms of percentage. The top three industries, namely, Retail Trade (16.15%), Mortgages (11.49%), and Wholesale Trade (11.11%) have been identified as the major sectors that receive the largest amount of financing from banks. On the other hand, the least shares have been assigned to innovation-intensive industries, such as Information Media & Telecommunications (0.86%) and Mining (0.40%).



**Figure 3.** Credits Market Share by Industry (%)

Indeed, the Pearson correlation graph in Table 1 demonstrates a near-perfect relationship between the country's total credit volume and its GDP. This signifies an intrinsic connection between financial deepening in

general and macroeconomic performance. At the sectoral level, the correlation is strong enough, particularly in such industries, which are associated with consumption and urban development, namely Construction (Bs\_CST), Retail Trade (Bs\_RTT), Wholesale Trade (Bs\_WST), and Mortgages (Bs\_MHG), with high correlation coefficients. While the relationship between the GDP and the credit volume in Information Media and Telecommunications (Bs\_IMT) sector, which turns out to be relatively strong (.820), is the least compared to other leading sectors, some capital-intensive sectors, for example, Manufacturing (Bs\_MFT) and Hotels and Restaurants (Bs\_H & R), maintain high relationships (.950).

**Table 1.** Results of Correlation Matrix

	NGDPD	Bs_FIS	Bs_AFF	Bs_M&Q	Bs_MFT	Bs_UTL	Bs_CST	Bs_WST	Bs_RTT	Bs_H&R	Bs_T&S	Bs_IMT	Bs_ROL	Bs_REA	Bs_NFS	Bs_PLG	Bs_CCL	Bs_MHG	Bs_OLG
NGDPD	1																		
Bs_FIS	0.9860162	1																	
Bs_AFF	0.9851224	0.97283	1																
Bs_M&Q	0.9098266	0.8979737	0.93427	1															
Bs_MFT	0.9585846	0.94231	0.98856	0.9394	1														
Bs_UTL	0.9615677	0.9822338	0.97026	0.88281	0.94838	1													
Bs_CST	0.9923414	0.9898722	0.98498	0.91814	0.9602	0.9754	1												
Bs_WST	0.9676198	0.9586758	0.98867	0.95543	0.99013	0.95562	0.96646	1											
Bs_RTT	0.9910789	0.9871759	0.98459	0.92058	0.95811	0.97647	0.99772	0.96481	1										
Bs_H&R	0.9678279	0.9752405	0.95551	0.907	0.9314	0.95826	0.98598	0.94066	0.9867	1									
Bs_T&S	0.975464	0.9795923	0.95773	0.90547	0.92411	0.96733	0.98959	0.93614	0.98887	0.99194	0.98887	1							
Bs_IMT	0.8162847	0.8582875	0.80057	0.74679	0.75161	0.86388	0.82724	0.76504	0.83089	0.80589	0.84805	1							
Bs_ROL	0.9719391	0.9588207	0.96358	0.86451	0.93474	0.94217	0.94974	0.95322	0.94696	0.89999	0.92028	0.79862	1						
Bs_REA	0.9737587	0.9770161	0.94718	0.89115	0.91124	0.94839	0.98645	0.92494	0.98555	0.99288	0.99173	0.80997	0.90737	1					
Bs_NFS	0.9839509	0.973119	0.99617	0.94872	0.99012	0.96674	0.98154	0.9957	0.98059	0.95454	0.95591	0.80194	0.96428	0.94414	1				
Bs_PLG	0.9815525	0.9830619	0.95558	0.88562	0.91479	0.95834	0.99011	0.92865	0.98925	0.98685	0.9931	0.8363	0.92974	0.99617	0.95052	1			
Bs_CCL	0.9852783	0.9758595	0.97592	0.91639	0.95044	0.96379	0.99041	0.95225	0.99621	0.98451	0.98942	0.83258	0.93016	0.98228	0.97192	0.98422	1		
Bs_MHG	0.9914009	0.9946203	0.98552	0.90699	0.95874	0.98652	0.99626	0.96749	0.99557	0.97841	0.98583	0.84933	0.96372	0.97689	0.98275	0.98509	0.98687	1	
Bs_OLG	0.9074896	0.8958521	0.95002	0.91837	0.97118	0.91482	0.89808	0.97044	0.90208	0.86195	0.85896	0.74034	0.91762	0.82953	0.96191	0.83948	0.89346	0.91077	1

Further analysis is done through the regression modeling shown in Table 2, where Model 1 (Aggregate level) shows that 98.390% variations in GDP can be attributed to aggregate bank credit, such that there is a .360% increase in GDP for every 1% increase in credit (p = .000). In Model 2 (Sectoral level), a multiple regression analysis, the exact elasticities of different industries are shown. The industry with the highest positive elasticity is the Real Estate Activities (Bs\_REA) such that there is a .340% increase in GDP for every 1% increase in credit. Positive elasticity is also shown by the Agriculture (.120%) and ICT (.040%). However, there are negative impacts in some industries, where credit increases cause GDP to fall. These industries include Hotels and Restaurants (-.320%), Utilities (-.110%), and Mining (-.050%).

**Table 2.** Summary of Regression Analysis

<i>* p &lt; .05</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
<b>Model 1 (Aggregate)</b>				
Intercept	2.020	.035	57.194	.000
TCID_Bs	.359	.013	28.161	.000
<b>Model 2 (Sectoral)</b>				
Intercept	2.889	.032	91.475	.000
Bs_AFF	.123	.019	6.554	.001
Bs_M&Q	-.050	.007	-7.737	.000
Bs_UTL	-.107	.012	-8.947	.000
Bs_H&R	-.319	.051	-6.225	.001
Bs_IMT	.045	.010	4.620	.004
Bs_ROL	.036	.009	3.900	.008
Bs_REA	.342	.030	11.598	.000
Bs_OLG	.126	.015	8.165	.000

The hypothesis testing measures the significance of the connection between bank credit and economic growth. The null hypotheses (H<sub>0</sub>) for Models 1 (Aggregate) and Model 2 (Sectoral) were compared to the alternative hypotheses (H<sub>1</sub>). The findings indicate that the Significance F value is .000 for both models, which is significantly less than the alpha value (.050). Therefore, the null hypotheses can be rejected because there is

enough empirical evidence that bank credit, whether aggregate or sectoral, is one of the key drivers of Cambodia's economic growth.

**Table 3.** Hypothesis Results

Regression	Hypothesis	Significance F
Model 1 (Aggregate)	H <sub>0</sub> is rejected.	.000
Model 2 (Sectoral)	H <sub>0</sub> is rejected.	.000

### Discussion

Empirical evidence further demonstrates that banking credits have played an important role in driving Cambodia's economy forward, thus providing support for the theoretical perspective of the finance-growth paradigm. Indeed, with the almost linear relation between bank credits and GDP and a positive elasticity of .360, there is enough evidence in favor of the Schumpeterian argument regarding the role of financial institutions as a driver of development through savings mobilization and their transformation into investments (Levine, 2005; Phon, 2019). However, a sudden rise in the credit-to-GDP ratio to 175.010% in 2023 clearly suggests that the economy of Cambodia has entered the stage of financial deepening. Financial deepening accelerates economic growth, but at present, the degree of financial deepening in the country raises concerns regarding macroeconomic instability, as per emerging market studies (Arcand et al., 2015).

A critical finding of this study is the structural misallocation of credit across industrial sectors. It is noteworthy that in addition to the volume of credit distribution, the "quality" of such distribution proves to be equally significant. The activity associated with real estate turned out to have the strongest influence on GDP ( $\beta = .340$ ), which indicates the importance of such economic activities for Cambodia's urbanization processes. However, an excessive share of credits directed to cyclically dependent activities such as real estate and commerce (38.750% overall share) becomes a source of concern from the perspective of sustainability.

On the other hand, the research highlights an important "innovation gap" concerning credit allocation. Even though these industries have a strong capability to ensure sustainability, they account for less than 1% of overall credit provided by banks. Furthermore, negative beta coefficients in certain industries, such as that observed in the case of Hotels and Restaurants ( $\beta = -.320$ ) and Mining ( $\beta = -.050$ ), indicate improper credit usage that can result in either borrowing money to repay the debt or making losses. Such differences clearly show that Cambodia has become highly dependent on consumption and development of urban areas in the country instead of advanced industrial production. For ensuring sustainability, it is crucial that the policymakers shift towards a smart credit policy that would facilitate industrialization (Lashkaripour & Lugovskyy, 2023).

### CONCLUSION

Indeed, the findings from the empirical study have validated the role of bank credit in acting as a major source of economic development for the country, as stipulated in the theoretical concept of the finance-growth relationship. Through the current study, it can be observed that financial intermediation stimulates economic development through the process of converting savings to investments. Nevertheless, the steeply increasing credit to GDP ratio indicates that the country is undergoing a period of rapid financial deepening. Although this contributes to growth, high levels of leverage indicate a significant transformation towards a credit-based economy.

The important finding in this study is that there is a structural imbalance in credit allocation among different industry sectors. It has been found from the analysis that the quality of credit distribution is as important as the quantity of the credit. The allocation of credit towards urbanization and construction has helped greatly in transforming the country, but at the same time, a huge amount of money invested in these sectors may not prove sustainable in the long run due to their cyclical nature. On the other hand, there is an "innovation gap," wherein technologically advanced sectors such as telecommunications and technology receive very little allocation of funds despite their huge potential for growth.

The use of aggregate secondary data in this research poses a risk as it could ignore the individual bank efficiencies or terms for lending. Moreover, the timeframe considered during this study is unique with respect to the country's post-conflict reconstruction as well as an unusually liquid international market, both of which might not be easily replicated in other economic conditions. Considering the use of nominal values in the analysis, the potential inflationary effect resulting from excessive credit creation has been ignored.

Based on the findings of the analysis, it is recommended that the regulatory authorities in the finance sector shift their focus from quantity to a Strategic Allocation model in terms of developing their strategies. The government should ensure that the credit market becomes more appealing to the manufacturing sector and digital technology companies, thereby reducing the risk of economic fluctuations associated with the real estate market. Further research should be conducted using firm-level or primary data in order to determine the reasons for inefficiency in the utilization of credit by capital-intensive firms.

## REFERENCES

- Arcand, J. L., Berkes, E., & Panizza, U. (2015). *Too much finance?* *Journal of Economic Growth*, 20(2), 105–148. <https://doi.org/10.1007/s10887-015-9115-2>
- Asian Development Bank. (2021). *Asian Development Outlook 2021: Financing a Green and Inclusive Recovery*. ADB.
- Asian Development Bank. (2022). *Asian development outlook 2022: Mobilizing taxes for development*. ADB.
- Beck, T., & Levine, R. (2004). Finance and growth: A synthesis of theoretical and empirical research. *World Bank Economic Review*, 18(2), 247–268.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2003). Financial institutions and economic growth. *Journal of Economic Growth*, 8(4), 445–468.
- Bureau of Economic Analysis. (2023). *Gross Domestic Product (GDP)*. <https://www.bea.gov/data/gdp>
- Chanrey, P., Pisith, H., Mady, S., Sokhom, M., & Chandara, S. (2023). The Impact of Credits on the Economic Growth in Cambodia. *AIB Research Series*, III, 14–31
- Estrada, G., Park, D., & Ramayandi, A. (2010). *Financial Development and Economic Growth in Developing Asia*. ADB Economics Working Paper Series No. 233.
- Field, A. P., Miles, J. N., & Glover, T. F. (2012). *Discovering Statistics Using R*. SAGE Publications Limited.
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). New York, NY: McGraw-Hill.
- International Monetary Fund. (2024). *Cambodia: 2023 Article IV consultation—Press release; staff report; and statement by the executive director for Cambodia*. IMF.
- Investopedia. (2023). *Credit*. <https://www.investopedia.com/terms/c/credit.asp>
- Jones, C. I. (2002). *Introduction to economic growth* (2nd ed.). W.W. Norton & Co.
- Lashkaripour, A., & Lugovskyy, V. (2023). Profits, Scale Economies, and the Gains from Trade and Industrial Policy. *American Economic Review*, 113(10), 2759–2808. <https://doi.org/10.1257/aer.20210419>
- Levine, R. (2005). Finance and growth: Theory and evidence. In P. Aghion & S. Durlauf (Eds.), *Handbook of economic growth* (Vol. 1A, pp. 865–934). Elsevier. [https://doi.org/10.1016/S1574-0684\(05\)01012-9](https://doi.org/10.1016/S1574-0684(05)01012-9)
- National Bank of Cambodia. (2023). *Annual report 2022*. NBC.
- National Bank of Cambodia. (2023). *Economic Research: Banks Reports*. [https://www.nbc.gov.kh/english/economic\\_research/banks\\_reports.php](https://www.nbc.gov.kh/english/economic_research/banks_reports.php)
- National Bank of Cambodia. (2023). *Economic Research: Monetary and Financial Statistics Data*. [https://www.nbc.gov.kh/english/economic\\_research/monetary\\_and\\_financial\\_statistics\\_data.php](https://www.nbc.gov.kh/english/economic_research/monetary_and_financial_statistics_data.php)
- Nguyen, T. H., & Dang, V. D. (2021). Financial development and economic growth: Evidence from ASEAN countries. *Journal of Asian Finance, Economics and Business*, 8(3), 351–360. <https://doi.org/10.13106/jafeb.2021.vol8.no3.0351>
- Pang, R., Ros, S., & Menon, J. (2023). Credit growth, financial inclusion, and economic performance in Cambodia. *Journal of Southeast Asian Economies*, 40(2), 145–167.
- Phon, P. (2019). Financial development and economic growth in Cambodia: Evidence from time-series analysis. *International Journal of Economics and Finance*, 11(7), 1–12. <https://doi.org/10.5539/ijef.v11n7p1>
- Phon, S. (2013). *The effects of microcredit on households' economy in Cambodia*. E-books.

- Sok, S., & Oum, S. (2017). The Role of Financial Development in Cambodia's Economic Growth. ERIA Discussion Paper Series, 2017-05.
- Vathana, R., Dalis, P., Bopharath, S., & Dorina, P. (2016). Credit access, multiple sources of borrowing, and household wellbeing: The case of eleven villages in Cambodia. DFID, IDRC. Final Report for Partnership for Economic Policy (PEP).
- World Bank. (2022). *Cambodia's digital economy and society policy framework*. World Bank.
- World Bank. (2023). Cambodia Economic Update - November 2023. <https://www.worldbank.org/en/country/cambodia/publication/cambodia-economic-monitor-reports>
- World Economic Forum. (2023). Database. <https://www.imf.org/en/Publications/WEO/weo-database/2023/October/weo-report?>