

# Research on the impact of consumer credit on economic growth in Guangxi

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**Abstract:** *In recent years, the scale of consumer credit in China has been expanding, which has a good role in stimulating China's economic growth, and there are regional differences in this impact. Consumer credit is an important factor in promoting economic growth. Based on the data of Guangxi from 1998 to 2021, this study selects GDP as the explanatory variable and consumer credit as the explanatory variable, and establishes a VAR model to study the impact of consumer credit on Guangxi's economic growth. The results show that Guangxi's consumer credit has a certain role in stimulating Guangxi's economic growth, but due to the influence of many factors, the effect is not very obvious. Therefore, this study puts forward countermeasures and suggestions to enhance the affordability of Guangxi residents to consumer credit, improve the social security system and enrich credit products.*

**Keywords:** *consumer credit; Economic growth; VAR model*

## 1. Introduction

Consumer credit is a credit method under financial innovation, which is a kind of consumer loan carried out by economic activities for consumption purposes rather than business purposes. As one of the troikas of China's economic growth, consumption is an important engine of national economic growth. Liu Fei and Li Tanjun (2011)<sup>[1]</sup> pointed out that the dynamic mechanism of China's economic modernization is undergoing a transformation, from production-driven modernization to consumption-driven modernization, and the effect of consumption-driven economic growth is gradually significant. Tian Guang, Liu Hongfei and Li Yangkuo (2021)<sup>[2]</sup> pointed out that with the transformation and upgrading of China's consumption structure and the continuous advancement of supply-side structural reform, the fundamental role of consumption in economic development has become increasingly significant. Accelerating the expansion of domestic demand, focusing on demand-side reform, and continuously increasing endogenous consumption will become the main driving force for economic growth. Consumer credit has been developed in Guangxi for more than 20 years, has it played a role in promoting Guangxi's economic growth, and how much has it played a role? This study will study the impact of consumer credit on economic growth in Guangxi from an empirical perspective, and put forward countermeasures and suggestions suitable for the development of consumer credit in Guangxi based on the research conclusions, which is of great practical significance for realizing the economic growth of Guangxi.

The research on the relationship between consumer credit and economic growth by domestic scholars mainly focuses on two aspects: the relationship between consumer credit and economic growth at the national level, and the relationship between consumer credit and economic growth at the regional level. Hu Bingqian, Nie Qiaoping (2020)<sup>[3]</sup> Using China's provincial panel data from 2007 to 2018, this paper constructs a short-panel data model to study the impact of China's consumer credit on economic growth, and concludes that China's consumer credit plays a significant role in driving economic growth. Chen Fang (2021)<sup>[4]</sup> By analyzing the trends of household consumption, consumer credit and economic growth in China, it is concluded that among the influencing factors of China's economic growth, consumption has always played an important role, and consumer credit can promote consumption to a large extent. Gao Zhiren and Zhao Jin (2019)<sup>[5]</sup> studied the relationship between consumer credit and economic growth at the national and regional levels based on provincial panel data, and found that consumer credit has a positive effect on the national and regional economies, but there are regional differences in the degree of impact, and the impact of consumer credit on economic growth in the central region is the largest, followed by the eastern region, and the smallest in the western region. Based on the conclusion, it is proposed to create a favorable market environment according to the degree of economic development in different regions and encourage the development of consumer credit. Chen Mengdi and Duan Jiangjiao

(2021)<sup>[6]</sup> used the time series data of consumer credit balance and GDP in Jiangsu Province from 2015 to 2020 to establish a VAR model to study the impact of consumer credit on economic growth in Jiangsu, and concluded that consumer credit in Jiangsu has a driving effect on economic growth. The research group of Nanning Central Sub-branch of the People's Bank of China and Luo Yuehua (2007)<sup>[7]</sup> On the basis of the sample survey of Guangxi residents' consumer credit, the relevant data were regressed to analyze the relationship between consumer credit, consumer demand and economic growth, and the study found that since the launch of consumer credit business in 1998, the strong growth of consumer credit in Guangxi has a stimulating effect on Guangxi's consumer demand, and high consumption has stimulated high economic growth. Molina (2008)<sup>[8]</sup> collected the data of consumer credit in Guangxi, and used Eviews software to return the relevant data, and found that consumer credit in Guangxi can promote the economic growth of Guangxi, but the role played is not very large, and there is still a big gap between the development of consumer credit and the whole country.

The above scholars' research analyzes the impact of consumer credit on economic growth from both theoretical and empirical perspectives, at the national and regional levels. Consumer credit has the greatest impact on economic growth in the central region, followed by the eastern region and the smallest in the western region. However, since 2008, no scholars have studied the impact of consumer credit on economic growth in Guangxi, which is located in the western part of the motherland. This study will use the VAR model to explore the impact of consumer credit on economic growth in Guangxi from 1998 to 2021.

## 2. Model building and data sources

The most critical aspect of the vector autoregressive model (VAR) is impulse response analysis and variance decomposition, which needs to be tested by the unit root test to see if the data is stationary, the cointegration test to check whether there is a cointegration relationship between variables, and the Granger causality test to detect the predictive relationship between variables. After passing the above tests, the impulse response analysis and variance decomposition are meaningful.

In the existing research on the impact of consumer credit on economic growth, Feng Zien (2015)<sup>[9]</sup> used the GDP of Guangdong Province as the research variable of economic growth, and the balance of RMB personal consumption credit in Guangdong Province as the research variable of consumer credit in Guangdong Province, and established a VAR model to explore the impact of consumer credit on economic growth in Guangdong Province. Huang Tingting (2021)<sup>[10]</sup> used the time series data of Qinghai Province from 1995 to 2018, and constructed a VAR model with the GDP representing the economic development level of Qinghai Province as the dependent variable and the consumer credit balance representing the development status of consumer credit in Qinghai Province as the independent variable, and explored the impact of consumer credit on economic growth in Qinghai Province. Referring to previous studies, this study also selects GDP to represent the level of economic development, expressed by GDP, and uses the regional consumer credit balance to measure the development of consumer credit in Guangxi, which is expressed by xd.

The data used in this article are from the Guangxi Statistical Yearbook, the Nanning Central Branch of the People's Bank of China and the National Bureau of Statistics. Since Guangxi's consumer credit has been developing since 1998, and the existing statistics are only updated to 2021, this paper selects relevant data from Guangxi for a total of 24 years from 1998 to 2021.

## 3. An Empirical Test of the Impact of Consumer Credit on Economic Growth in Guangxi

### 3.1. ADF unit root test

Stationarity is important for time series, and if it is not stationary, it can lead to a false correlation or regression between two independent samples, rendering a subsequent series of tests meaningless. Therefore, it is necessary to use the unit root to test whether the time series data is stationary, and if so, a vector autoregressive model can be constructed. If it is not stationary, make a difference.

Table 1: Unit root test results of first-order differential ADF

variable	t-statistic	probability	1% cut-off	5% cut-off	10% cut-off	conclusion
D(gdp)	-4.584377	0.0074	-4.440739	-3.632896	-3.254671	smooth
D(xd)	-3.786706	0.0407	-4.532598	-3.673616	-3.277364	smooth

The unit root test is carried out in the original sequences of GDP and xd, and it is found that the p values are greater than 0.05, which does not reject the null hypothesis, so there are unit roots in the original sequences of GDP and xd. Next, the unit root test of the first-order difference series of GDP and xd is done, the test results are shown in Table 1, in the first-order difference series of GDP, the test results are -4.584377, the corresponding probability is 0.0074, less than 0.05, and the unit root test is passed at the significance level of 5%, indicating that the GDP series are all first-order single integer variables. Similarly, in the first-order difference series of xd, the test results that the t value is -3.786706, and the corresponding probability is 0.0407, which is less than 0.05, and passes the unit root test at the significance level of 5%, indicating that the xd series are all first-order single integer variables. Next, a cointegration test can be done.

**3.2. Cointegration test**

There are two methods of cointegration test, and considering that the Johansen cointegration test is a multivariate equation technique, the Johansen cointegration test can be used to make the test less restrictive. Therefore, the cointegration test method used in this paper is the Johansen cointegration test. All the results are shown in Table 2.

*Table 2: Trace statistical test table*

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.580894	24.25221	15.49471	0.0019
At most 1 *	0.207641	5.120303	3.8414666	0.0236

*Table 3: Statistical test table of maximum eigenvalues*

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.580894	19.13190	14.26460	0.0079
At most 1 *	0.207641	5.120303	3.841466	0.0236

According to the trace statistical test in Table 3 and the maximum eigenvalue statistical test in Table 4, when it is lower than the 5% critical value, the probability of the trace statistic and the maximum eigenvalue statistic is less than 0.05, and the null hypothesis of "at most one" is accepted, indicating that there is at least one cointegration equation between xd and GDP, and there is a long-term equilibrium relationship.

**3.3. Granger causality test**

The GDP and xd sequences are homogeneous and homogeneous, so the Grange causality test is performed by using the differential single integer sequence. However, the Grange causality test needs to consider the lag order, so before the Grange causality test, it is necessary to establish a VAR model, and then use the AIC criterion to determine the optimal order.

*Table 4: Hysteresis order*

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-412.1167	NA	7.67e+13	37.64697	37.74616	37.67034
1	-315.6826	166.5679	1.73e+10	29.24387	29.54143	29.31397
2	-301.8672	21.35117*	7.16e+09*	28.35156*	28.84749*	28.46839*

The "\*" in Table 4 indicates the optimal lag order for the causality of the model under this criterion. According to the LOGL, LR, FPE, AIC, SC, and HQ information guidelines, the lag order of the VAR model can be determined to be 2. Therefore, this study will discuss how to describe the VAR model using a lag 2nd order criterion.

The Granger causality test is a common method used to test causality in time series data, which is designed to test whether one variable has predictive power over another.

*Table 5: Granger causality test*

Null Hypothesis	F-Statistic	Prob.
xd does not Granger Cause gdp	1.09746	0.3576
gdp does not Granger Cause xd	1.74126	0.2069

According to the results of the Granger causality test in Table 5, at a given significance level of 5%, the P value corresponding to the F statistic is greater than and does not reject the null hypothesis that xd is not a Granger cause of GDP. Given a significance level of 5%, the F-statistic corresponds to a P-value greater than 0.05, without rejecting the null hypothesis that GDP is not a Granger cause for xd. Therefore, there is no predictive power between the variable xd and GDP.

**3.4. Impulse response analysis**

The impulse response function describes the impact of one endogenous variable on other endogenous variables in the VAR model.

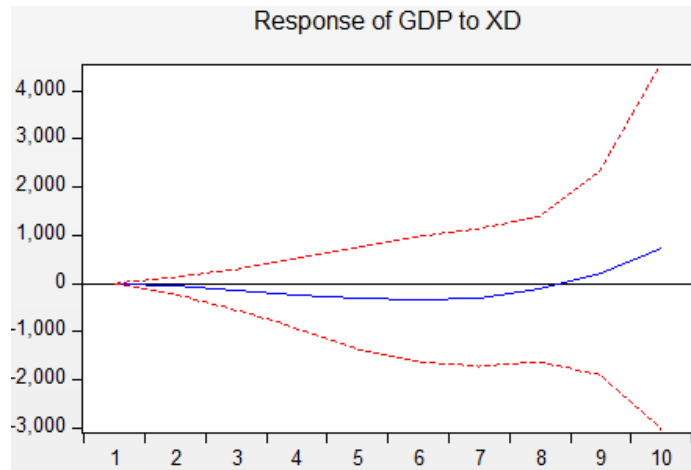


Fig.1: Impulse response diagram

As can be seen from the impulse response diagram in Figure 1, if a positive impact of a standard unit of xd for consumer credit is given, Guangxi's GDP is in a growth trend during the 10-year period. This shows that the increase in consumer credit will have a positive impact on Guangxi's GDP in the long run.

**3.5. Variance decomposition**

Through impulse response analysis, it is found that the development of consumer credit in Guangxi can have a certain role in promoting Guangxi's economic growth, but how big is this effect, this problem will be studied through variance decomposition.

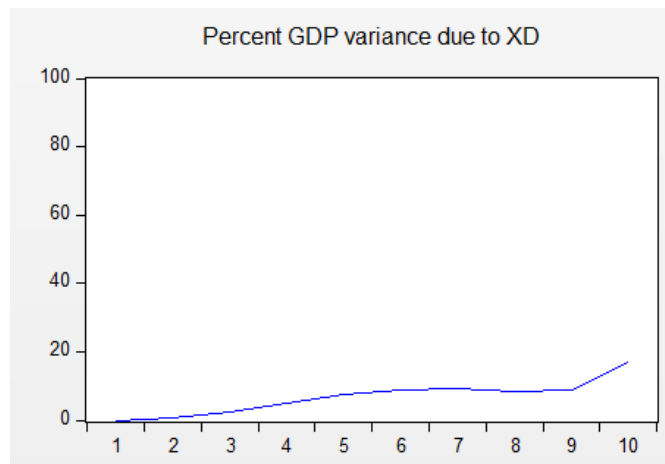


Fig. 2: Variance decomposition results of impact GDP

As can be seen from the variance decomposition results in Figure 2, less than 20% of the expected fluctuations in variable GDP from periods 1 to 10 are explained by the variable fluctuations of variable xd, indicating that the contribution rate of changes in xd to GDP is relatively low. Therefore, on the whole, Guangxi's consumer credit has contributed relatively little to its economic growth.

## 4. Conclusions and countermeasures

### 4.1. Conclusions and reasons for analysis

Based on the time series data of Guangxi's consumer credit balance and GDP from 1998 to 2021, this paper carefully analyzes the VAR model and argues that the development of consumer credit in Guangxi can indeed promote Guangxi's economic development, but the contribution rate is not very large.

Why is the contribution rate of consumer credit to economic growth in Guangxi relatively low? Yang Junrui (2021)<sup>[11]</sup> collected the data of consumer credit and consumer expenditure in China from 2003 to 2019 and established a fixed-effect model, and conducted an empirical study on the impact of consumer credit on consumption. Therefore, this study analyzes that the reason for the relatively low contribution rate of consumer credit to economic growth in Guangxi may be that there are some constraints in the income level of Guangxi residents, traditional consumption concepts, consumer credit products, etc., which limit the development of the scale of consumer credit in Guangxi, resulting in the fact that the role of consumer credit in Guangxi in promoting economic growth in Guangxi is not obvious.

#### 4.1.1. Guangxi residents have a low tolerance for consumer credit

According to the theories of economists such as Keynes and Friedman, whether a household has the economic affordability to consume mainly depends on the income level, especially the foreseeable and lasting income in the future. The per capita disposable income of urban residents in Guangxi is lower than that of the whole country. The gap between the per capita disposable income of rural residents in Guangxi and the per capita disposable income of rural residents in China has gradually widened. The income level of Guangxi residents is still low compared with the average income level of the whole country, and whether the households have the economic ability to consume mainly depends on the income level, especially the foreseeable and long-lasting income in the future, which leads to the low ability of Guangxi residents to bear loans.

#### 4.1.2. The influence of the traditional consumption concept of Guangxi residents

In China's many years of historical civilization, there is the habit of thrift and thrift, and it is not advocated to consume in advance. In people's eyes, early consumption is beyond their ability to consume, this is a kind of loser behavior, people are more rejecting this kind of behavior, they think that they should earn as much as they want, otherwise they will only make themselves in debt, and finally lead to a bad ending. Moreover, generally speaking, the higher the degree of international openness of large cities, the more avant-garde the concept of consumption, and the higher the level of acceptance of consumer credit. Guangxi's international openness is not very high, and the economy is not developed enough, and people's acceptance of consumer credit is still relatively low.

#### 4.1.3. Housing loans in Guangxi account for a significant proportion of consumer credit

At present, Guangxi's consumer credit products are relatively simple, mainly conventional housing loans and car purchase loans. In addition, Guangxi's housing loans account for a large proportion of consumer loans, which has a crowding out effect on residents' consumption. On the one hand, residents use the consumer credit they obtain for housing, which to a certain extent drags down residents' consumption expenditure in other areas. On the other hand, this makes it difficult for social funds to concentrate in the real estate industry, making it difficult for entities to obtain financing, and crowding out the entities to them.

## 4.2. Countermeasures and suggestions

The above factors are not conducive to the development of consumer credit and economic growth in Guangxi, and in order to achieve better development of consumer credit in Guangxi and promote economic growth, this study puts forward several countermeasures and suggestions.

### 4.2.1. Enhance the ability of Guangxi residents to bear consumer credit

Stimulating domestic demand is now a very effective measure to deal with external shocks, and in order to increase the contribution of consumption to GDP, it is necessary to take measures to increase residents' willingness and ability to spend. Expanding consumer demand is the fundamental driving force for the development of consumer credit. Consumption is a function of income, and if you want to increase the level of consumption, you have to raise the level of income. Guangxi is located in the southern Xinjiang of the motherland, with unique natural scenery and special national culture. Guangxi can

promote the development of its characteristic industries based on such historical conditions and resources. At the same time, Guangxi should also pay attention to the development of human resources, so that Guangxi's characteristic industries can achieve sustainable development.

#### **4.2.2. Improve the social security system**

Risk is an important factor that inhibits consumption, and residents tend to keep a certain amount of precautionary savings according to the level of risk they face in their consumption decisions. Generally speaking, the higher the level of risk, the larger the amount of precautionary savings and the more spending power is crowded. The social security system can ensure the basic survival and living needs of members of society, especially the special needs of citizens in the event of old age, illness, disability, unemployment, childbirth, death, disasters, and life difficulties. Moreover, it is easier for Guangxi residents to establish a new concept of consumption under the premise of guarantee. Therefore, by improving the social insurance system, Guangxi residents can be encouraged to establish a new concept of consumption, improve the level of acceptance of consumer credit by Guangxi residents, and expand the consumption potential of Guangxi residents, so as to boost consumption at the macro level.

#### **4.2.3. Abundant credit products**

Banks have strengthened innovative models of financial services, increased the provision of consumer credit, actively supported the upgrading of Guangxi's residents' consumption, and enhanced the role of consumption in promoting economic development. It actively expand the scope of business and increase the popularization and promotion of new varieties of consumer credit, conform to the actual situation of changes in the consumption needs of the masses, continuously extend the service field and broaden the product system, effectively meet the new consumer demand and accelerate the release of the potential of goods and services consumption.

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