Financial Statistical Journal 2025, 8(1), 10957.
https://doi.org/10.24294/fsj10957

Article

Can social financing promote economic growth?—Empirical study based on the evidence of Fujian Province, China

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CITATION

Xue J, Li W. Can social financing promote economic growth?—Empirical study based on the evidence of Fujian Province, China. Financial Statistical Journal. 2025; 8(1): 10957. https://doi.org/10.24294/fsj10957

ARTICLE INFO

Received: 18 December 2024
Accepted: 15 January 2025
Available online: 26 February 2025

Abstract: The role of social financing as a catalyst for financial growth, with potential to stimulate economic expansion, is a subject requiring further scrutiny and exploration. This study employs quarterly data from 2014 to 2023, encompassing social financing and economic growth patterns in both China and its Fujian Province. Through the construction of four OLS models and a VAR model, it has been determined that the extent of social financing within Fujian has a notable impact in enhancing regional economic growth, though the direct financing percentage proves to be insignificant. The research suggests that middle-income economies have the potential to increase their social financing scale. Relevant governmental bodies can facilitate economic progression by broadening enterprise financing avenues and altering the ratio of direct financing in social financing as per the actual requirements.

Keywords: VAR model; social financing; economic growth

1. Introduction

The elements that drive economic growth are critical subjects of discussion both publicly and academically. Research shows that economic growth is affected by the quantity of production inputs as well as their efficiency. Factors such as the scale of labor and capital, resource allocation efficiency, economies of scale, advancements in knowledge, and other aspects that influence productivity are vital for economic progress [1]. Developed nations typically leverage trade openness, employment growth rates, industrial composition, and national savings to stimulate economic growth, while middle-income countries rely more on the growth rate of their employed workforce. In contrast, low-income countries are less influenced by structural factors [2].

China exemplifies a middle-income nation where economic growth is primarily driven by consumption, fixed asset investments, exports, and employment levels [3]. Current research largely concentrates on enhancing labor capital in middle-income countries, yet there remains a need for further academic inquiry into the factors and mechanisms influencing economic growth. Notably, the link between financial development and economic growth warrants additional exploration. Yildirim et al [4], Ehigiamusoe and Samsurijan [5], Zhang and Liu [6] all agree that financial development is evident in the expansion and optimization of social financing, which is a key financial metric in China encompassing both the scale and structure of funds available to the real economy. Since 2014, transforming the real economy has been central to China's long-term growth strategy, raising urgent questions about the financial support necessary for that transformation. The Central Economic Work

Conference introduced the concept of social financing scale in December 2013, defining it as the total funds the real economy secures from the financial system over a specified period, including various financial instruments such as bank loans and corporate bonds. Theoretically, increasing social financing should enable businesses to access funds, fostering innovation and investment, particularly during economic restructuring and industrial upgrading; optimal financing allocation can enhance resource utilization. Consequently, the 2016 Government Work Report set a target for a 13% increase in social financing balance, acknowledging its role in economic growth. However, from 2008 to 2020, some scholars like Xu and Huang [7] suggested that China's economy had become overly financialized, with excessive financial activities and an imbalanced financing structure potentially harming the real economy. In 2020, the Central Economic Work Conference and the Outline of the 14th Five-Year Plan adjusted social financing policies to align its growth with that of the nominal economy. Between 2020 and 2023, China undertook various financial rectification measures, the outcomes of which are still undetermined. The development of social financing in China from 2014 to 2023 is a subject that merits academic scrutiny.

Eastern China faces a heightened risk of financialization. It is crucial to assess whether the scale of social financing is appropriate in regions with significant financial development, whether its structure is sound, and if it promotes a positive relationship with the real economy. These questions require empirical investigation. Fujian Province, characterized by its relatively advanced economic development and active financial sector, has recorded an average GDP growth rate of 7.12% from 2014 to 2023, placing it within the high-growth category of middle-income countries, while its social financing scale has consistently ranked 8th to 10th nationally. In recent years, Fujian Province has made significant progress in upgrading key industries such as electronic information, machinery and equipment, petrochemicals, and textiles and garments. Additionally, it has proposed financial strategies aimed at "increasing the share of direct financing within the overall social financing framework". Given its strong economic, social financing, and industrial metrics, this study seeks to examine the influence of social financing scale on economic growth in Fujian Province in recent years. By utilizing Fujian as a case study, this paper intends to investigate the challenges related to social financing in regions with advanced economic and financial development in China, and to identify broader trends in the relationship between social financing and economic growth through a comparative analysis of data from Fujian and the rest of China.

2. Literature review

Emphasizing the link between social financing and economic development, earlier research has looked at it from many angles and levels. It particularly addresses the link between the size of social financing and economic growth, the organization of social financing and economic growth, and the link between social financing and economic growth in particular areas.

2.1. Scale of social financing and economic growth

Previous studies such as Song and Xiao [8], have found that the scale of social

financing has an inverted U-shaped nonlinear relationship with economic growth. There are few relevant studies in the West, researchers often use investment to refer to the scale of social financing. Ari and Koc [9] found that a common feedback loop of causality exists in China and the U.S. for sustainable economic growth between public and private investment and the GDP. Jalles and Park [10] argue that in emerging markets and developing countries, including in Asia, investment shocks respond positively to economic growth and are more pronounced in recessionary times and more pronounced in countries with more fiscal space. In China, Sheng [11] pointed out based on China's 2002–2012 data that China's monetary policy can effectively affect the scale of social financing, and the scale of social financing also has a great impact on economic growth, price level, investment, consumption and other real economic indicators. Guo et al. [12] pointed out that the increase in the scale of social financing increased the level of fixed asset investment by 5.2%, which in turn promoted economic growth, based on data analysis from 2004 to 2012 in China. However, there is a certain threshold level for the impact of social financing scale on economic growth, and only when the new financing scale is kept below 11.309 billion yuan will its growth be more conducive to the development of the real economy. Based on China's data from 2008 to 2019, Fang [13] found that when the scale of social financing accounts for more than 46% of GDP, the impact of social financing on China's economic growth will turn negative.

2.2. Social financing structure and economic growth

Though in general acknowledging the direct financing role with stocks, bonds, and funds as the core, there are discrepancies in the conclusions of current studies on the relationship between social financing structure and economic growth. While bill financing has a major negative impact on the development of the real economy, Guo et al. [12] discovered that bank loans and stock financing have a major role in promoting the growth of the real economy; the impact of bond financing is not noteworthy. Through encouraging the upgrading of the industrial structure, the optimization of the financing structure can finally effectively drive the development of the real economy. Liu et al. [14] empirically found that medium- and long-term bank loans, bills, bonds and equity financing all played a role in promoting the upgrading of industrial structure, and the role of stock and bond financing was the most obvious. The scale of bill financing in financially developed areas can also promote the development of the real economy, but the increase in the scale of bill financing in financially underdeveloped areas has an inhibiting effect on the growth of the real economy, indicating that the financially developed group should increase the proportion of bill financing more than the financially underdeveloped group. In addition, financially developed regions should give priority to optimizing the financing structure, and financially underdeveloped regions should give priority to increasing the scale of financing. Zhang and Xiang [15] used China's 2012–2017 data to find that the increase in the scale of social financing is conducive to the rapid and stable growth of the real economy, but this positive promotion effect is mainly generated by direct financing, and indirect financing not only does not produce a promotion effect but produces a certain degree of hindrance, so it is necessary to

continuously accelerate the construction of the direct financing market and provide more and better direct financing services and support for the real economy.

2.3. Social financing and the economic growth of eastern China

The relationship between the scale of social financing, the structure of social financing and economic growth varies differently in different regions of China. Previous studies generally believe that in the eastern region, where the industrial structure is better and the financial resources are more abundant, the positive impact of social financing on economic growth is stronger than that of other regions, and the positive impact of direct financing on economic growth is stronger than that of other regions. Sheng [16] for instance concluded from the regional panel data from 2011 to 2014 that the impact of social financing scale on economic growth showed regional differences and the correlation coefficients between social financing scale and GDP in the eastern, central, and western regions were 0.56, 0.52, and 0.72, respectively. Using the quarterly panel data of 31 provinces in China from 2014 to 2016, Hu and Wang [17] built a threshold regression model and discovered that the scale of social financing in the eastern region has more influence in fostering economic growth than in the central and western regions. The results of the study including the threshold effect analysis show that the eastern region needs to maintain a moderate scale of social financing, and the central and western regions need to pay more attention to the expansion of social financing. For example, Hu and Wang [17] found that there are two thresholds in the eastern region; the scale of social financing smaller or greater than the threshold has no impact on economic growth, and the scale of social financing in this range will have a positive impact on economic growth. There is a threshold value in the central region, less than which will promote economic growth, and greater than this threshold will have no effect. There is a threshold in the western region, and whether it is greater or less than this threshold, the scale of social financing can promote economic growth. Huang [18] used the data of six eastern coastal provinces and cities (Shandong Province, Jiangsu Province, Shanghai Municipality, Zhejiang Province, Fujian Province, and Guangdong Province) from 2013 to 2022 and found that the proportion of social financing in GDP and the growth rate of regional GDP showed an “inverted U-shaped” nonlinear relationship, and the expansion of social financing scale in the eastern coastal areas will negatively affect regional economic growth after the proportion of social financing in GDP exceeds 66.89%. In terms of structure, Wang [19] noted based on national data from 2014 to 2021 that the social financing structure has a promoting effect on the GDP of the eastern and central regions, and the eastern region is more favored than the central region; meanwhile, the western region is constantly and significantly inhibited. Hu and Wang [17] noted that the impact coefficient between direct and indirect financing in the eastern region has not much difference and that both directly and indirectly influence economic growth significantly.

2.4. Summary

From the above data, scholars like Aghion et al. [20] have studied the relationship between social financing scale, social financing structure and economic development

through various empirical analysis methods and found that in areas where the degree of development has reached a certain level, economic growth promotes financial development, and moderate financial development means that the scale of social financing is moderately increased, which can promote economic growth. In most parts of China, the scale of social financing has not yet reached the threshold value that harms economic growth, and the expansion of social financing can effectively promote economic development. The scale of social financing and the structure of social financing in eastern China play a driving role in the economy > with that of the western region > the central region. Regardless of the region, researchers generally believe that the scale of social financing should be expanded within a reasonable range to ensure that the scale of social financing is compatible with economic growth. Though many studies have been carried out, the current research findings have not given enough attention to the particular provinces and regions in eastern China, failing to investigate the changes in economic growth, the scale and structure of social financing, and the relationship between the scale and structure of social financing and economic growth in the new normal stage of economic development. By analyzing the variations in the scale of social financing, the changes in economic growth, and the link between the scale of social financing and economic development in Fujian Province from 2014 to 2023, this paper aims to augment the pertinent knowledge for the current research.

3. Data and methods

3.1. Indicator selection

The official definition of social financing scale (SR) includes two indicators: The scale of social financing, the stock of social financing, and the increment of social financing scale. This paper examines both indicators in line with the real circumstances. This paper also chooses the above sub-indicators to investigate the social financing structure of Fujian Province since the scope of social financing is essentially composed of RMB loans, foreign currency loans, entrusted loans, trust loans, undiscounted bank acceptance bills, corporate bonds, and domestic stock financing of non-financial enterprises. This paper divides the scale of social financing into two categories: Direct financing and indirect financing, with corporate bonds and domestic stock financing of non-financial enterprises being set as direct financing (excluding government bonds) and RMB loans, foreign currency loans, entrusted loans, trust loans, undiscounted bank acceptance bills, and other financing as indirect financing. Due to the limited availability of data, this paper uses the increment of social financing as a measurement indicator when analyzing the scale of social financing.

Gross domestic product (GDP) is the most often used statistic of economic development. The GDP is the whole value of newly generated wealth in the current period and shows the outcome of all production activities of all resident units and individuals in a country or a region. This paper thus measures economic development using the absolute value of GDP.

The selection of control variables is mainly based on the research of Xia [21], Xie [22], Hu and Wang [17]. The three control variables are the social consumer goods retail index (SC), the fixed assets investment index (INV) and the public financial expenditure index (FE).

3.2. Data sorting

The paper aims to study the performance of the relationship mechanism between the scale of social financing, the structure of social financing, and economic growth in Fujian Province. Focusing on this goal, this paper uses stata17 software to find the quarterly data of social financing and economic growth analysis in Fujian Province from 2014 to 2023 from the National Bureau of Statistics, Guotaian, Fujian Provincial Bureau of Statistics, etc. We conduct empirical research through descriptive statistics, correlation analysis of sub-samples, and establishment of VAR models. To eliminate the influence of heteroskedasticity, all indicators are taken in the natural logarithm in this paper.

3.3. Theory models

This article first conducted a correlation test. By establishing a multiple regression linear model, analyze the correlation between social financing scale, direct financing proportion, and regional GDP under the control of SC, INV and FE indicators and time effects. The corresponding mathematical model is:

$$GDP_t = \alpha + \beta \times SR_t + \gamma \times SC_t + \delta \times INV_t + \varphi \times FE_t + \varepsilon_t \quad (1)$$

Among them, α is the intercept term, and ε is the random perturbation term. This model is the mainstream correlation analysis model.

This article also uses the Granger causality test. Granger causality reveals the causal relationship between independent and dependent variables in time series data. Shojaie [23] reviewed the research progress of Granger causality test. It believes that if the past information of one time series X can significantly improve the predictive ability of another time series Y, then X is considered the Granger cause of Y. The corresponding mathematical model is:

$$GDP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \, GDP_{t-i} + \varepsilon_t \quad (2)$$

$$GDP_t = \beta_0 + \sum_{i=1}^{p} \beta_i \, GDP_{t-i} + \sum_{i=1}^{p} \gamma_i \, SR_{t-i} + \eta_t \quad (3)$$

By comparing the sum of squared residuals of models (2) and (3), hypothesis testing can be conducted to determine whether SR is a Granger cause of GDP. It is worth noting that if the time series is non-stationary, differential or other transformations need to be performed to make it stationary, or cointegration tests need to be performed. In addition, the test results are very sensitive to the choice of lag period, and different lag periods may lead to vastly different results. Therefore, the optimal lag length is usually selected using the Akaike Information Criterion (AIC) or Schwartz Criterion (SC).

Finally, this article uses the VAR model to analyze the specific relationship between SR and GDP. The mathematical basis of the VAR model used in this paper is as follows:

Then:

$$GDP_t = \emptyset_1 GDP_{t-1} + \emptyset_2 GDP_{t-2} + \cdots + \emptyset_p GDP_{t-p} + \varepsilon_t \quad (4)$$

$$\varepsilon_t \sim \text{i. i. d. N}\ (0, \Omega), \text{t} = (1\text{t}, 2\text{t}, \ldots \text{nt})$$

t is the n × 1st order random error column vector, Ω is the n × n order covariance matrix, and p is the maximum lag order of the model.

4. Data description

4.1. Situation of social financing scale

Figure 1 reports the comparison of the scale and stock of social financing between China and Fujian Province from 2014 to 2023 and the proportion of social financing stock in Fujian Province in the country. **Figure 1** shows that from 2014 to 2023, the scale of social financing in Fujian Province maintained an upward trend, accounting for a higher proportion of the total scale of social financing than the national average. This shows that Fujian Province is relatively rich in financial resources and its financial system is developing steadily. In terms of growth rate, from 2014 to 2023, the stock of social financing scale in the country increased from 122.86 trillion yuan to 378.09 trillion yuan, with an average growth rate of 6.75%, and the stock of social financing scale in Fujian Province increased from 7.37 trillion yuan to 19.39 trillion yuan, with an average growth rate of 6.20%, which was lower than the national average. This shows that the growth rate of social financing in Fujian Province has slowed down relatively and has not expanded in a disorderly manner, and more new social financing has been added in other parts of the country from 2014 to 2023.

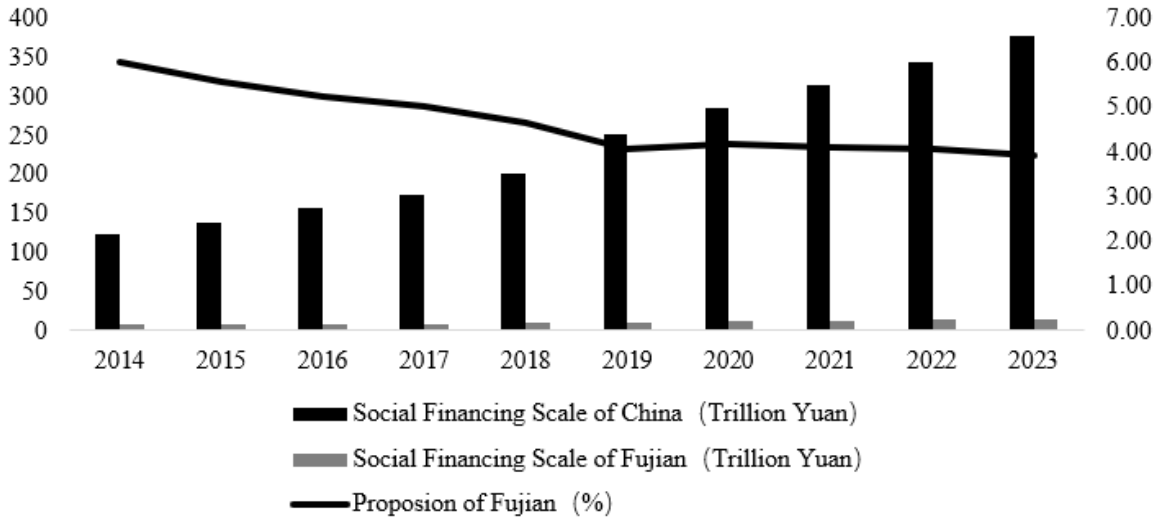

Figure 1. The stock of social financing scale in China and the stock of social financing scale in Fujian Province (2014–2023).

4.2. Situation of social financing structure

Figure 2 reports information on the structure of social financing in Fujian Province. (Excluding government bonds) As can be seen from **Figure 2**, from 2014 to

2023, the proportion of new direct financing in Fujian Province was overall higher than the national level, indicating that the strategy of "increasing the proportion of direct financing in social financing" proposed by Fujian Province has achieved phased results. However, the proportion of direct financing in new social financing in Fujian Province is between 5.1% and 27.69%, and indirect financing with RMB loans as the core is still the main mode of social financing in Fujian Province. This is in line with the overall situation in China.

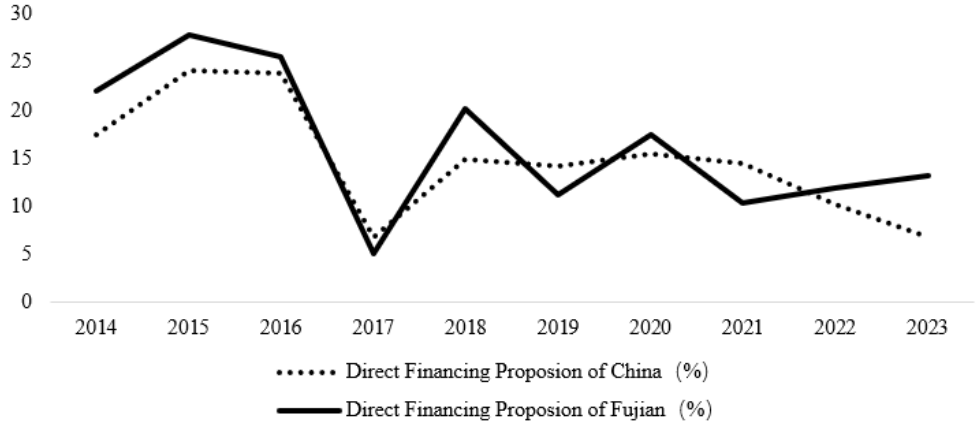

Figure 2. The proportion of direct financing in China and the proportion of direct financing in Fujian Province from 2014 to 2023.

4.3. Situation of economic growth

Figure 3 reports the national GDP, Fujian GDP and the proportion of Fujian GDP from 2014 to 2023. According to the data, from 2014 to 2023, the GDP of Fujian Province increased from 2.41 trillion yuan in 2014 to 5.44 trillion yuan in 2023, an increase of more than 2 times. The per capita GDP of Fujian reached more than 18,410 dollars in 2023, close to the level of developed countries. Overall, Fujian Province is playing an increasingly important role in China's economy.

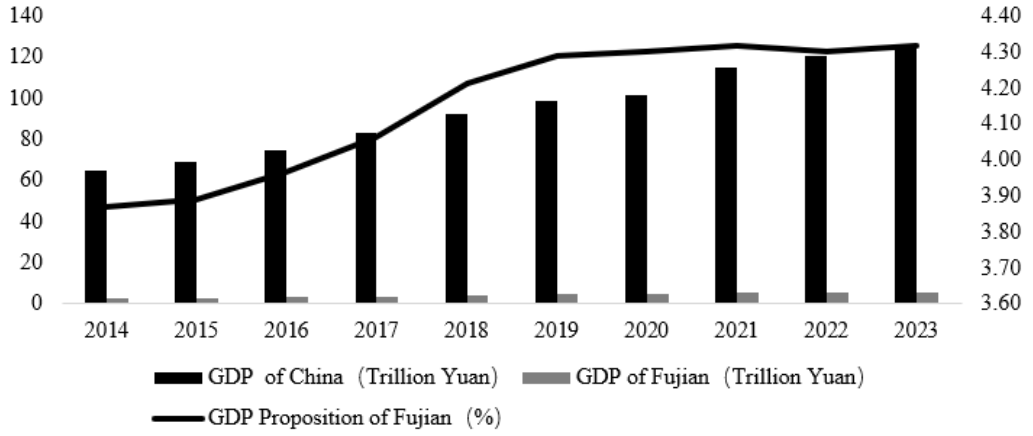

Figure 3. GDP of China and GDP of Fujian (2014–2023).

5. Results

5.1. Correlation analysis

Table 1 reports the correlation test results between the quarterly increment of social financing scale, the quarterly increment of direct financing scale and the quarterly GDP of Fujian Province. The results of Pearson's test show that from 2014 to 2023, the scale of social financing in Fujian Province was strongly correlated with economic growth, but the impact of social financing structure on economic growth was not significant. This correlation is consistent with the national data, and the impact of social financing on GDP in Fujian Province is higher than the national level. The above data indicates that although the growth rate of social financing scale in Fujian from 2014 to 2023 is lower than the national average, its GDP conversion efficiency is higher than the national level.

Table 1. Correlation analysis between social financing, direct financing and GDP.

Indicator Name	GDP of Fujian	GDP of China	Controls	*t*
Regional Social Financing Scale	0.987*** (0.093)	0.282*** (0.057)	Controlled	40
Regional Direct Financing percent	0.084 (0.225)	−0.134 (0.098)	Controlled	40

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

5.2. Stationarity test results

Table 2 shows the results of stationarity test. After conducting the unit root test, we reached the following conclusions: For the GDP variable, the test statistic is −5.882, which is far below the critical values at the 1%, 5%, and 10% levels. Additionally, the *p*-value is 0.0000, indicating that we can reject the null hypothesis at any conventional significance level, suggesting that the GDP variable is stationary. For the SR variable, the test statistic is −3.977, which is less than the critical values at the 5% and 10% levels but slightly above the 1% critical value. The *p*-value is 0.0015, meaning that at the 5% significance level, we can reject the null hypothesis, suggesting that the SR variable is stationary.

Table 2. Unit root test.

Indicators	obs	Test statistic	1%	5%	10%	MacKinnon *p*-value
GDP	40	−5.882	−3.628	−2.950	−2.608	0.0000
SR	40	−3.977	−3.628	−2.950	−2.608	0.0015

5.3. Cointegration test results

Table 3 shows the cointegration test results. It indicates that there exists at least one long-term equilibrium relationship among the time series data analyzed. Specifically, when the rank is 0, the trace statistic is 93.8259, which is far above the 5% critical value of 68.52, suggesting that we can reject the hypothesis of no cointegration relationship. When the rank increases to 1, the trace statistic is 34.4593; although it is below the 5% critical value of 47.21, it still supports the view that there is at least one cointegration relationship. As the rank increases further, the trace statistic gradually decreases. When the rank is 2, the trace statistic is 18.9969, which is below the 5% critical value of 29.68, indicating that we cannot reject the hypothesis of not having two cointegration relationships. For ranks 3 and 4, the trace statistics are

8.9024 and 3.5932, respectively, both of which are below the corresponding 5% critical values of 15.41 and 3.76, further confirming the absence of three or four cointegration relationships. The rank of 5 does not provide a trace statistic and critical value, but based on the previous results, we can infer that there are no five cointegration relationships. In summary, there is one cointegration relationship among these time series data, which means that although the individual time series may be non-stationary, there exists at least one long-term equilibrium relationship among them, providing a basis for constructing an error correction model (ECM).

Table 3. Johansen cointegration test results.

rank	Params	LL	Eigenvalue	Trace statistic	Critical value 5%
0	30	1.9889815		93.8259	68.52
1	39	27.694339	0.75671	34.4593*	47.21
2	46	35.425501	0.30799	18.9969	29.68
3	51	40.472748	0.21364	8.9024	15.41
4	54	43.127388	0.11875	3.5932	3.76
5	55	44.923967	0.08199		

Note: * Indicates rejection of the null hypothesis at a significance level of 5%.

5.4. Confirmation of optimal lag order

Table 4 presents a performance comparison of the time series models at different lag lengths to determine the optimal lag length. The analysis shows that as the lag length increases, the log-likelihood value (LL) gradually rises, indicating an improvement in the model's fit. At lag lengths of 1, 2, and 3, the *p*-values of the likelihood ratio test (LR) are all 0.000, which means that adding lag terms at these points significantly improves the model. The final prediction error (FPE) reaches its lowest point at a lag length of 3, at 1.6×10^{-7}, indicating that the model's predictive performance is best at this point. In terms of information criteria, the Akaike information criterion (AIC) and the Hannan-Quinn information criterion (HQIC) both achieve their minimum values at a lag length of 3, with values of −1.66788 and −0.446585, respectively, suggesting that lag length 3 is the optimal choice according to these two criteria. Meanwhile, the Schwarz Bayesian information criterion (SBIC) is lowest at a lag length of 4, at −1.26139, which may indicate that considering model complexity, a lag length of 4 is a reasonable choice.

Table 4. Confirmation of optimal lag order.

Lag	LL	LR	df	*p*	FPE	AIC	HQIC	SBIC
0	65.0832				0.00002	3.50416	3.58049	3.71527
1	9.70214	149.57	25	0.000	1.9×10^{-6}	1.01489	1.47288	2.28155
2	42.6923	65.98	25	0.000	1.4×10^{-6}	0.615387	1.45502	2.9376
3	113.358	141.33	25	0.000	1.6×10^{-7}	−1.66788	−0.4466	1.70988
4	218.894	211.07*	25	0.000	4.1×10^{-9}*	−5.6947*	−4.092*	−1.261*

Note: * Represents the optimal lag order selected according to the corresponding criteria.

5.5. Parameter analysis

Using stata17 software, a fourth-order LAG VAR model is established, and the model estimation results are shown in **Table 5**. The GDP coefficient is −0.503, which may indicate the existence of an economic adjustment mechanism, where GDP growth in the previous period may partially reverse in the next period to return to long-term equilibrium levels. This may be related to fluctuations in the economic cycle, where there may be a cooling trend after the economy overheats, or a recovery trend after an economic recession. The SR coefficient is 0.438, indicating that an increase in the scale of social financing may promote GDP growth. This may be due to the higher scale of social financing stimulating economic growth by increasing investment. However, this may also reflect the inverse relationship between the scale of social financing and GDP; that is, during economic expansion, the scale of social financing increases correspondingly to cope with inflation, while GDP also grows.

Table 5. VAR model results.

Indicators	Coef.	Std.err	z	$p > \|Z\|$	95% conf. interval
GDP	−0.503	0.194	−2.590	0.010	[−0.883, −0.122]
SR	0.438	0.179	2.440	0.015	[0.087, 0.790]
FE	1.871	0.642	2.920	0.004	[0.614, 3.129]
SC	0.289	0.401	0.720	0.471	[−0.497, 1.075]
INV	0.044	0.117	0.380	0.706	[−0.185, 0.273]
cons	−1.225	4.333	−0.280	0.777	[−9.718, 7.267]

5.6. Granger causality tests

Table 6 provides the results of Granger causality tests on different economic indicators, with the aim of determining whether these indicators can lead to Granger effects on GDP. For the economic indicator SR, with a *p*-value of 0.015, we reject the null hypothesis that SR Granger leads to GDP.

Table 6. Granger causality tests.

Indicators	chi2	df	Prob > chi2	Conclusion
SR	5.9745	1	0.000	Refuse
FE	10.576	1	0.001	Refuse
SC	0.01091	1	0.917	Accept
INV	3.2163	1	0.073	Refuse
ALL	22.37	4	0.000	Refuse

5.7. Robustness test results

In **Figure 4**, the horizontal axis represents the real part (Real) and the vertical axis represents the imaginary part (Imaginary). The blue dots in the figure represent the eigenvalues of the matrix. All eigenvalues are located within the unit circle, which usually means that the system is stable because the magnitude of the eigenvalues is less than 1, indicating that the system can return to equilibrium after being disturbed. The distribution of eigenvalues can provide insights into the dynamic characteristics

of the system. In this figure, the eigenvalues are mainly concentrated on the real axis and are very close to 1, indicating that the system may be approaching the critical steady state. This means that the system may have slower responses or significant overshoot for certain types of inputs. If the eigenvalues are closer to the origin, the system may stabilize faster but may be more sensitive to disturbances. This indicates that the VAR model constructed above is robust.

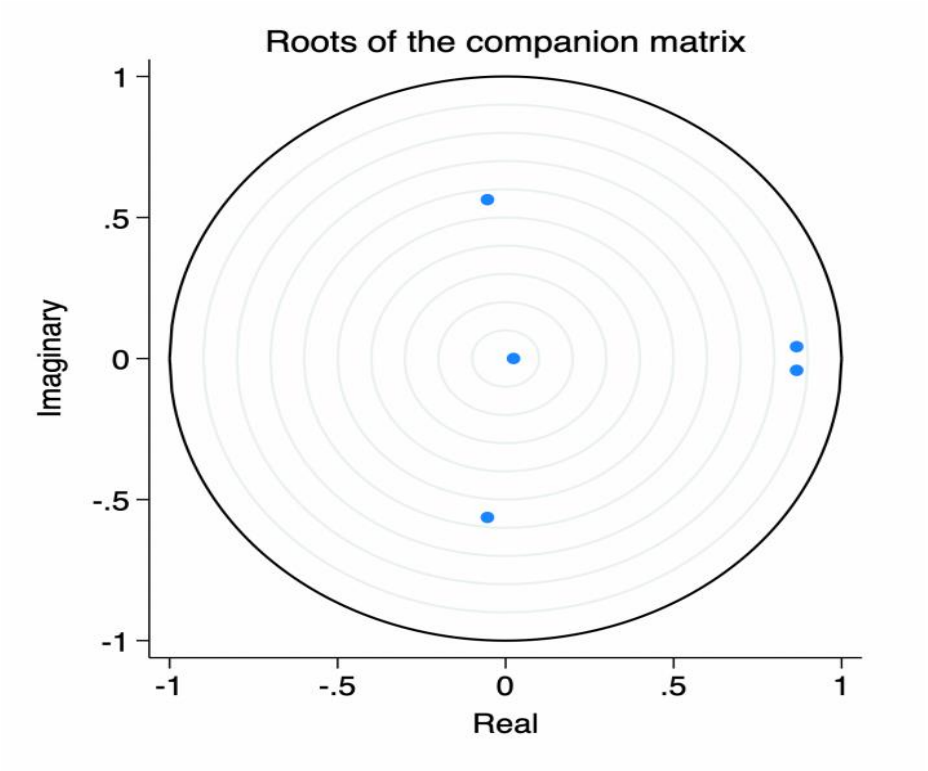

Figure 4. Robust test chart.

5.8. Pulse effect analysis

This section comprehensively analyzes the impulse response function (IRF) of independent and control variables on GDP to explore the dynamic response of each variable to its own or other variable shocks. **Figure 5** illustrates the results. Specifically, the positive impact of SR on GDP is relatively small, gradually decreasing after the initial positive response, with limited long-term effects, approaching zero by step 10. These impulse response function diagrams reveal the interactions between different economic variables. In the short term, the response of various variables to shocks is significant, but in the long run, most of these effects tend to stabilize or disappear.

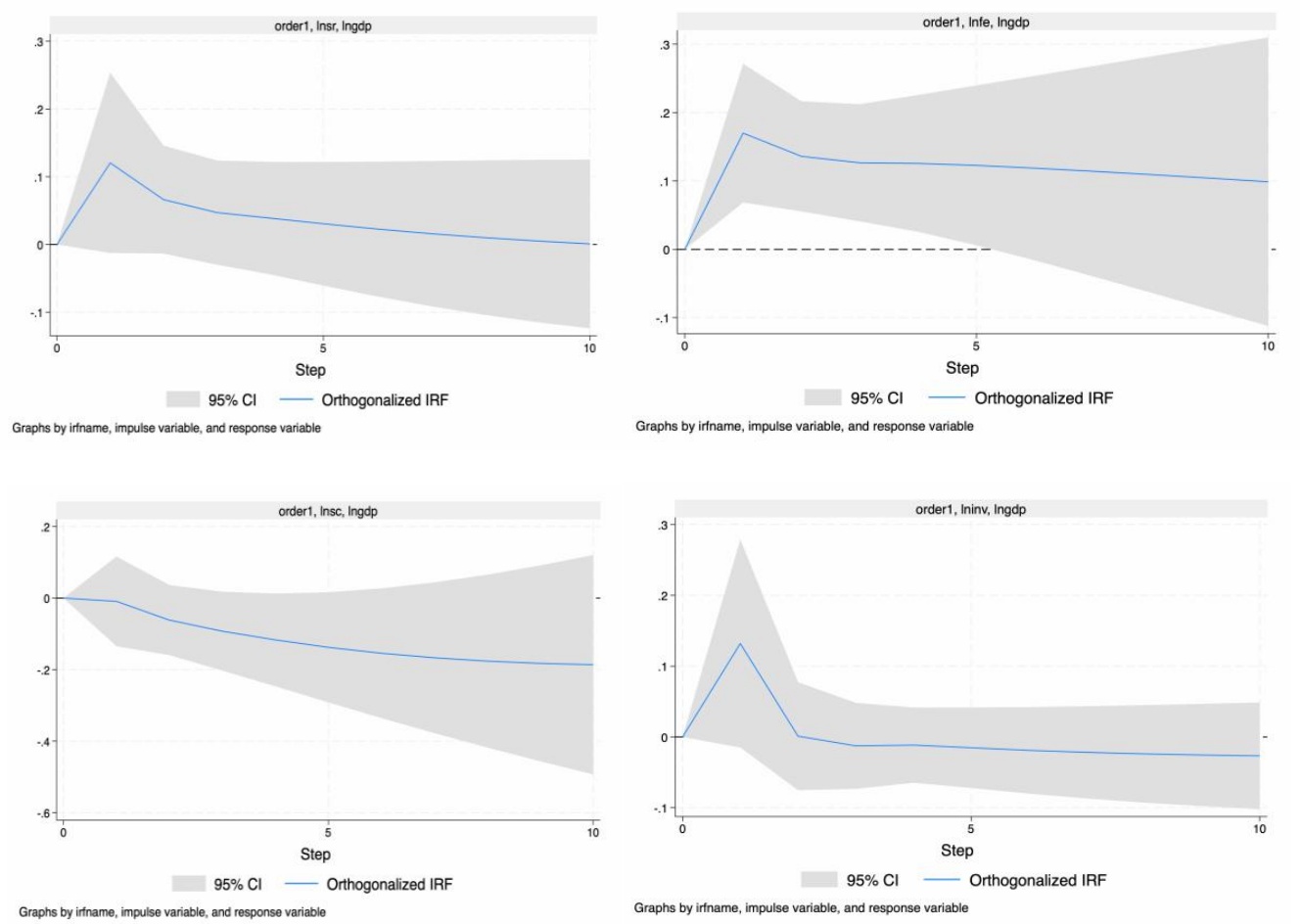

Figure 5. Pulse response diagram. **(a)** The impact of SR on GDP; **(b)** The impact of FE on GDP; **(c)** The impact of SC on GDP; **(d)** The impact of INV on GDP.

5.9. Variance decomposition analysis

Table 7 reveals the explanatory power of different economic variables on GDP variance in a first-order vector autoregression (VAR) model. Analysis shows that in the model, the explanation of GDP for its own variance reaches 100% after the shock occurs (step 1) and then gradually decreases. By step 10, the explanation of GDP for its own variance decreases to about 47.82%. Other variables, such as social financing scale (SR), public financial expenditure (FE), total social retail (SC) and fixed assets investment (INV), show different dynamic changes in the interpretation of GDP variance over time. The contribution of SR to GDP variance was relatively small in the initial stage but gradually increased, reaching 3.65% at step 10. FE and SC contribute more significantly to GDP variance in the long term, reaching 21.51% and 24.04% respectively in step 10. In contrast, the contribution of INV to GDP variance is relatively small and drops to 2.98% in step 10. These results reveal the relative importance of various economic variables on GDP fluctuations at different time steps, providing insights for economic policymakers on which factors may have a significant impact on economic stability.

Table 7. Variance decomposition analysis.

Step	GDP-GDP	SR-GDP	FE-GDP	SC-GDP	INV-GDP
0	0	0	0	0	0
1	1	0	0	0	0
2	0.834457	0.039438	0.078527	0.00023	0.047348
3	0.778012	0.047896	0.120115	0.009832	0.044144
4	0.729005	0.049951	0.150003	0.029465	0.041576
5	0.679972	0.049706	0.174004	0.057417	0.0389
6	0.632409	0.047883	0.191618	0.091629	0.03646
7	0.587782	0.045198	0.203411	0.129262	0.034346
8	0.546975	0.042206	0.210529	0.167738	0.032552
9	0.51042	0.039246	0.214104	0.205172	0.031057
10	0.478178	0.036507	0.215119	0.240365	0.029831

6. Conclusion

This article utilizes the scale of social financing in China and Fujian Province from Q1 2014 to Q4 2023, including direct financing percent, GDP, social consumer goods, fixed assets investment, and public finance expenditure. Conduct descriptive analysis on quarterly time series data of major variables, establish a VAR model, and empirically study the impact of social financing scale and financing structure on economic growth through methods such as unit root test, Johansen cointegration test, impulse response, and variance decomposition. Through descriptive analysis, this paper finds that from 2014 to 2023, the scale of social financing in Fujian Province was at the leading level in China, but the growth rate was relatively slow. The strategy of "increasing the proportion of direct financing in the social financing structure" has been implemented, but it is still disproportionate to indirect financing methods such as RMB loans. Through correlation analysis, it is found that the scale of social financing has a significant positive impact on economic growth both in China and Fujian, but the scale of direct financing (stocks and corporate bonds) does not significantly affect the GDP of Fujian Province or even China. Social financing has better GDP promotion ability in Fujian Province rather than China. The VAR model shows that from 2014 to 2023, the scale of social financing affects the GDP of Fujian Province, and for every unit increase in the scale of social financing, the GDP will increase by 0.438 units. But compared to public finance expenditure, social financing scale in Fujian Province has less effect on GDP.

Based on the conclusions of the existing research, this paper draws the following policy implications: First, after China's economic development has entered the new normal, there are traces of the positive impact of the expansion of social financing on economic growth. The case of Fujian Province proves that when the economic growth rate is in the middle and high stage, financial development can promote local economic growth. This means that most parts of middle-income countries need to further promote financial development and expand the scale of social financing; Second, based on enhancing the financial system's ability to resist risks, all localities in China should pay attention to optimizing the financial structure, broadening financing

channels, and forming a diversified financing system. According to the data on the structure of social financing, Fujian Province mainly relies on indirect financing based on RMB loans, and the proportion of direct financing is tiny, and it has not effectively driven economic growth. This may be due to statistical inadequacies, but also to the fact that direct financing mechanisms are ineffective, even in eastern China. China should pay attention to encouraging and guiding the development of private capital, expanding multi-level financing channels, further optimizing the financing structure, and forming a multi-level financing pattern with a wide range of sources, complementary advantages, risk diversification and win-win cooperation, while ensuring the smooth flow of traditional financing channels such as loans, stocks and bonds.

In general, the case of Fujian Province and China once again shows that in middle-income areas in the medium- and high-speed development stage, financial development and social financing can effectively promote economic growth. However, since the scale of social financing is quarterly data, and the funds that are difficult to be counted, such as private investment, have not yet been included in the statistical caliber of social financing, the accuracy of the data used in this paper is limited. With the improvement of measurement methods, more advanced empirical methods can be introduced in the future to conduct more effective and in-depth research.

Author contributions: Conceptualization, JX and WL; methodology, JX; software, JX; validation, JX and WL; formal analysis, WL; investigation, JX; resources, JX; data curation, WL; writing—original draft preparation, JX; writing—review and editing, WL; visualization, JX; supervision, WL; project administration, WL; funding acquisition, WL. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

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