Relationship Between Market Confidence Management and Economic Growth-Based on VAR Model

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Abstract. By selecting the data from the National Bureau of Statistics and the People's Bank of China from the first quarter of 2005 to the second quarter of 2020, the VAR model was established, Granger causality test and impulse response function were used to analyze the dynamic relationship between banker confidence, aggregate loan demand index, entrepreneur confidence, consumer confidence and real estate market confidence with macro-economy. The empirical analysis shows that bankers' confidence and the overall loan demand index have a significant influence on the macroeconomy, while entrepreneurs' confidence can influence the economy through the transmission of the loan demand index and bankers' confidence. Consumer expectations have no significant impact on economic fluctuations in the short term. Based on the empirical analysis, attention should be paid to the management of market confidence after the epidemic, especially the improvement of confidence in bank letters. The formulation of various policies should include the confidence of all parties.

Keywords: VAR Model · Granger Causality Test · Confidence Management · Economic Growth

1 Introduction

The sudden outbreak of the epidemic in 2020 had a certain impact on China's economic growth; GDP fell by 1.6% year-on-year in the first half of the year, including a 6.8% decline in the 1st quarter. Many businesses and merchants are struggling to operate, and companies are under pressure to preserve employment. The unemployment rate rose from 3.62% in December 2019 to 6% in April 2020. The sustained and stable economic development of a country cannot be achieved without the confidence and expectations of all parties involved in the market. And during the epidemic, the expected spread of negative sentiment caused various market confidence indices to fall to their lowest point. During the epidemic, the central bank should enhance the regulation of monetary policy and innovate monetary policy tools. The liquidity signals released by the central bank greatly encouraged the confidence of commercial banks anticipating the easing of monetary policy. Also, the confidence of entrepreneurs was boosted by the access

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of enterprises to low-cost financing through lower market interest rates. The need to implement a more active fiscal policy, which has eased the business difficulties of enterprises through continuous tax cuts and fee reductions for small and microenterprises. The accommodative monetary policy and active fiscal policy have greatly stabilized participants on all sides of the market, and with the epidemic effectively under control, China's economy is ahead of the world's recovery, with GDP growth of 3.2% year-on-year in 2Q2020, the only positive growth among the world's major economies. China's companies are leading the way in resuming work and production, with increasing consumption and investment. At the same time, the confidence of all parties in the market has increased, further boosting China's sustained and stable economic growth. The author believes that the confidence index can be measured by using various economic indicators to express people's confidence in the future, because the release of economic indicators is generally slightly earlier than the release of macroeconomic data, and the management of the market confidence index can grasp the cycle and trend of economic operation in advance. Therefore, the main research question of this paper is whether the management of market confidence can have a positive impact on the macroeconomic data in the next quarter.

When there is a downturn in the economic cycle, macroeconomic policies have a key role in inspiring people and promoting economic growth. With the rapid development of behavioural economics, scholars at home and abroad have focused on the fact that the confidence index can promote economic growth to a certain extent.

The term "animal spirits" was first coined by Keynes [1]. Chen Yanbin, Tang Shilai [2] found that animal spirits had significant short-term effects on economic growth, inflation and interest rates. Harrison and Weder [3] argue that fundamental confidence is the confidence that can be explained by the performance of economic fundamentals, while "animal spirits" is the confidence that cannot be explained by fundamentals. Barsky and sims [4] state that consumer confidence has an important role in both prognostic and causal in-macroeconomics. Carroll, Fuhrer and Wilcox [5] take the view that consumer sentiment can forecast household spending. CHAUVET and GUO [6] verify empirically the interrelations between waves of optimism and pessimism and subsequent economic fluctuations. The results from Taylor, K., and McNabb, R [7] indicate that both consumers and business confidence indicators are procyclical and generally play a significant role in predicting downturns.

Akerlof and Shiller [8] find that changes in confidence multipliers can amplify the feedback mechanism of economic fluctuations. Rongzhe Huang and Lina Nong [9, 10] found that the impact between banking firm information and macroeconomic fluctuations is asymmetric after adding banker confidence and entrepreneurial confidence, and the confidence mechanism can be introduced into the government's macroeconomic regulation. Dou Qianbin [11] states that monetary policy will have an impact on real estate prices through market confidence. If the relationship between economic growth and confidence is understood, insight can be gained into the confidence and expectation factors that respond to booms or troughs in the economic cycle, and thus decisions can be made in terms of economic policy. [12] The observation of the prior confidence index can reveal the pattern of economic changes and the fluctuating conditions. With the development of behavioral finance, many scholars have further proposed that market

confidence can predict macroeconomic trends. Leng Yuan [13] mentions that certain specific indices include macroeconomic advance, synchronized or lagged trends, especially the prior indices have predictive significance for economic growth. Yan Weisheng [14] argues that the real estate boom index and the boom of the banking sector have a mutual predictive role. Rongwu Zhang et al. [15] found that economic cycle fluctuations act on investors' psychology. Jiang Wei and Yan Zhenkun [16] found that consumer confidence has a significant effect on monetary policy and a significant effect on economic growth. The findings from Evans, Olaniyi [17] reveal that there is a bi-directional causality and positive relationship between domestic credit and the economic growth in Nigeria. Zhang and Hua [18] found a stable long-term relationship between seven economic leading indices and macroeconomic growth through their study and found that entrepreneurial confidence has a large impact on economic fluctuations, while consumer confidence has a smaller impact. However, Zhang Yazheng, Cui Yalei, and Sun Renjin [19] found that entrepreneurial confidence has a significant effect on China's economic growth in the short run through ARDL model analysis, while the effect of consumer confidence is only apparent through a long period.

Reviewing the past literature, macroeconomic fluctuations and policies can affect market confidence, while market confidence indices can also affect economic fluctuations. However, there are more studies on a single relationship in the past studies, failing to comprehensively stand at the level of behavioral economics to study the transmission mechanism between several forecast indices and economic growth. Compared with the existing literature, the innovation of this paper lies in the following three aspects: first, two new indicators, bankers' confidence index and overall loan demand index, are introduced to explore the relationship between the new indicators and economic fluctuations. While past literature affirms that entrepreneurial confidence has a significant impact on economic growth, this paper finds that banker confidence and loan demand confidence have a more significant impact on the economy after adding the new variables. Entrepreneurial confidence can influence economic volatility through the transmission mechanism of banker confidence and loan demand confidence indices. Second, although the real estate market is an important component of GDP, it has rarely been included in the management of market confidence in the previous literature. This paper introduces real estate confidence indicators to analyze macroeconomic fluctuations. Finally, based on the empirical results, it is pointed out that the easing monetary policy and active fiscal policy in the first half of 2020 have jointly stimulated the confidence of all market participants while strengthening the confidence management of the market is beneficial to the macroeconomic stability of China.

2 Empirical Analysis

(i) Sample selection and data sources

1. Sample Selection

This paper selects the quarterly data from the 1st quarter of 2005 to the 2nd quarter of 2020 as the sample interval for the empirical study. Gross domestic product, national housing boom index, entrepreneurial confidence index, and consumer confidence index are sourced from the National Bureau of Statistics. On this basis, this paper collects two

confidence indices from the Bankers' Questionnaire Survey published by the People's Bank of China, the Bank Boom Index representing the confidence index of the banking industry as a whole and the Overall Loan Demand Index representing the confidence in loan demand. These two indices are calculated from the data of the quarterly survey conducted by the People's Bank of China and the National Bureau of Statistics in cooperation with the PPS sampling method on more than 3,000 banking institutions nationwide in 2004, and the sample is representative.

2. Design and interpretation of variables

(1) The quarterly values of GDP are used as proxy variables to reflect the economic fluctuations.

(2) The banking industry sentiment index is used to represent the bankers' confidence index (BBI). The banking industry prosperity index researched by the People's Bank of China is a diffusion index that represents the overall confidence of bankers in the future operation of the banking industry by surveying more than 3,000 bank heads to judge the good or bad state of the overall operation of the banking industry in the future.

(3) The overall monetary demand index (ALD) is a survey of bankers' expectations from the People's Bank of China questionnaire. It is important to note that the overall loan demand index is introduced here as a proxy variable for the loan confidence index (ALD). The ALD is defined in the questionnaire as a diffusion index of bankers' demand for future loans. Bankers will plan their overall loan demand based on the business conditions of firms, monetary policy and macroeconomic growth during the quarter. This indicator has not been included in the past literature as a factor in the study of macroeconomic impact, but this paper finds through empirical analysis that the overall loan demand index can significantly contribute to economic growth and is closely linked to bank, business and real estate confidence indices, so this variable is added.

(4) The National Real Estate Climate Index (REC) is used as a proxy variable for the real estate industry confidence index. The National Housing Sentiment Index is a comprehensive index developed and studied by the National Bureau of Statistics in 1997 based on changes and trends in the real estate market.

(5) Consumer Confidence Index (CCI) contains indices of consumer satisfaction and expectation about the future, which combine the consumer's own income and expenditure, confidence in macroeconomics, employment, consumption and savings.

(6) The Entrepreneur Confidence Index (EEI) is released by the China Economic Monitoring Center and is a forecast of entrepreneurs' confidence in future economic trends.

In order to avoid the phenomenon of heteroskedasticity and enhance the stability of the data, the above variables are treated logarithmically in this paper and noted as LNGDP, LNBBI, LNAID, LNCCI, LNREC and LNEEI, and the characteristics of the variables are not affected by the logarithmic treatment.

3. Trend Analysis of Variables

As Fig. 1 depicts the time series trend between various confidence indicators and GDP in China from the 1st quarter of 2005 to the 2nd quarter of 2020 (2015q1–2020q2). The following stages are noticed from Fig. 1: (1) During the first stage (08 financial crisis), there was a slowdown in GDP growth, along with a substantial decline in market confidence, especially entrepreneurial confidence and real estate confidence in a deep

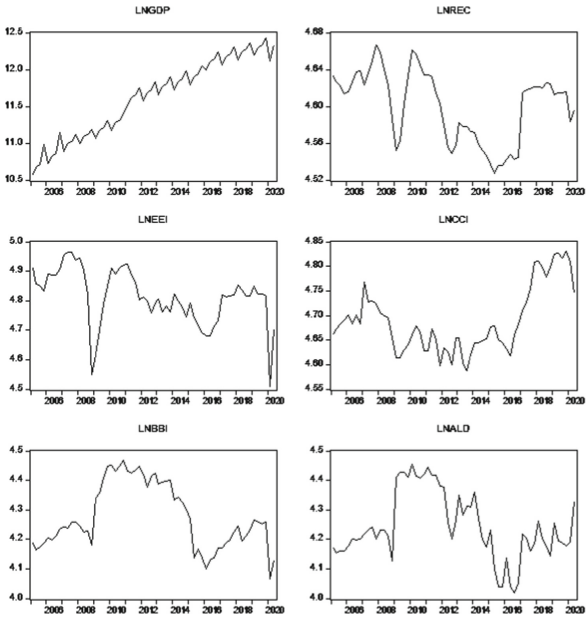

Fig. 1. Time series variation of confidence index and economic growth

V decline with a fracture zone. The reason is that in the face of the '08 financial crisis, many enterprises had difficulties in their operations, the real estate sector experienced depression, and bankers' and consumers' confidence also declined. Subsequently, stimulated by a variety of positive policies, various confidence indicators increased rapidly and some of them exceeded the data before the financial crisis. (2) China's economy faced downward pressure from 2014–2015 as GDP growth slowed significantly due to the impact of the global trade market downturn and China's economy entering a growth rate shift in 2014–2015. Among them, confidence in the real estate industry and loan demand confidence fell the most, in 2014–2015 the real estate industry appeared "inflection point", investment in real estate funds continue to reduce, banks for corporate and personal loan policy tightening. (3) In December 2019–March 2020, due to the impact of the epidemic, the corporate confidence index, bank confidence index, loan demand index and real estate confidence index all experienced a rapid depression. As shown above, the changes in confidence indicators show a close correlation to macroeconomic growth.

(ii) Unit root test

The unit root test for the above variables was conducted by ADF test. Table 1 shows that the T-statistics of the six series of LNGDP, LNREC, LNALD, LNBBI, LNEEI and LNCCI are all greater than the 5% confidence level and do not pass the test of smoothness. The T-statistics of all the variables by first-order difference are less than 5% confidence level, which means that the original hypothesis of "existence of unit root" is rejected.

Table 1. Unit root test (ADF) results

Variables	ADF value	Significant level			P value	Results
		1%	5%	10%		
LNGDP	−1.435425	−3.550396	−2.923549	−2.594521	0.5587	Unstable
LNREC	−2.783923	−4.118444	−3.486509	−3.171541	0.2088	Unstable
LNALD	−2.357882	−3.542079	−2.910019	−2.592645	0.1579	Unstable
LNBBI	−0.201994	−2.603423	−1.946253	−1.613346	0.6094	Unstable
LNEEI	−0.439720	−2.603423	−1.946253	−1.613346	0.5200	Unstable
LNCCI	−1.371381	−3.548008	−2.912631	−2.594027	0.5901	Unstable
DLNGDP	−3.084973	−3.550396	−2.913549	−2.594521	0.0333	stable
DLNREC	−5.307587	−2.604073	−1.946348	−1.613293	0.0000	stable
DLNALD	−2.927400	−2.606163	−1.946654	−1.613122	0.0041	stable
DLNBBI	−8.688908	−2.604073	−1.946348	−1.613293	0.0000	Stable
DLNEEI	−8.190788	−2.604073	−1.946348	−1.613293	0.0000	Stable
DLNCCI	−4.258952	−2.605442	−1.946549	−1.613181	0.0001	Stable

Table 2. Johansen co-integration test results

Original hypothesis	Eigen value	Trace value	0.05 Threshold value	P value
None[a]	0.536856	102.1682	95.75366	0.0168
At most 1	0.315587	55.98515	69.81889	0.3786
At most 2	0.249214	33.23350	47.85613	0.5439
At most 3	0.142716	16.03542	29.79707	0.7098
At most 4	0.083371	6.796291	15.49471	0.6015
At most 5	0.025878	1.573128	3.841466	0.2098

[a] indicates rejection of the original hypothesis at the 5% level of significance

(iii) Johansen cointegration test

The results of Johansen cointegration in Table 2 reveal that there is a cointegration relationship among LNGDP, LNBBI, LNALD, LNREC, LNEEI and LNCCI at a 5% level of significance, i.e., there is a long-term stable equilibrium relationship among the variables, and a VAR model can be constructed.

(iv) VAR model regression results and stability test

The choice of variable lag order affects the merit of the VAR model, based on the principle that the lag period determined by the minimum value of both AIC and SI test is the best. When the lag period $K = 1$, then the optimal lag order test results under the optimal lag order is determined to be 1 (as shown in Table 3), and then the VAR model is established. The output results of the model are shown in Table 4, and the R-squared of

Table 3. Determined values of the lag order for establishing the VAR equation

Lag	LogL	LR	FPE	AIC	SC	HQ
0	384.0309	NA	5.52e−14	−13.50111	−13.28410	−13.41697
1	651.8837	468.7424	1.41e−17	−21.78156	−20.26255*	−21.19264*
2	699.0252	72.39588	9.89e−18	−22.17947	−19.35845	−21.08577
3	731.0865	42.36672	1.28e−17	−22.03880	−17.91577	−20.44031
4	788.4722	63.53412*	7.56e−18	−22.80258	−17.37753	−20.69930
5	840.5530	46.50077	6.56e−18*	−23.37689	−16.64983	−20.76883
6	892.2213	35.06062	8.03e−18	−23.93648*	−15.90740	−20.82362

Table 4. Regression results of the VAR model

	LNALD	LNBBI	LNCCI	LNEEI	LNGDP	LNREC
C	−3.333215	−0.404710	−0.267567*	0.778318	4.997011	0.858995**
LNALD(−1)	0.231131	0.035498	−0.075702	0.080682	1.051155	0.056378
LNBBI(−1)	0.733931	0.884702	−0.023366	−0.040021	−1.066586	−0.048279
LNCCI(−1)	0.133176	−0.186807	0.681159	−0.083048	−0.051662	0.054648
LNEEI(−1)	−0.844656	−0.324177	0.083177	0.573735	0.425864	0.039591**
LNGDP(−1)	−0.040463**	−0.008801**	0.030286**	−0.014162**	0.979015**	−0.004766***
LNREC(−1)	1.601670	0.714154	0.311445	0.359413	−1.397091	0.720970
R-squared	0.855729	0.885652	0.866785	0.554456	0.953659	0.823066

Note: *** and ** represent 1% and 5% significant levels, respectively

the six equations are 0.8557, 0.8856, 0.8668, 0.5545, 0.9537 and 0.8261, respectively, which are well fitted.

(v) VAR Granger causality test

Based on the results of the above model (as shown in Table 4), a VAR model is established and the stability of the model is tested. As shown in Fig. 2, all the characteristic roots fall within the unit circle, so it can be judged that the VAR among LNGDP, LNBBI, LNALD, LNEEI, LNCCI, and LNREC is stable. However, the drawback of the VAR model is that it cannot directly respond to the relationship contained between specific variables, so we further conduct the VAR-based Granger causality test to judge the data relationship of the VAR model (Table 5).

At the 5% level of significance (as shown in Fig. 5), loan demand confidence (LNALD) and banker confidence (LNBBI) are Granger causes of economic growth (LNGDP), indicating that the banker confidence index and loan demand confidence index have a significant effect on economic growth. It has been suggested that monetary policymakers should pay attention to bankers' confidence index, and here it is verified that bankers' confidence index has a significant effect on economic growth. The confidence in loan demand is set to include bankers' expectations of the central bank's

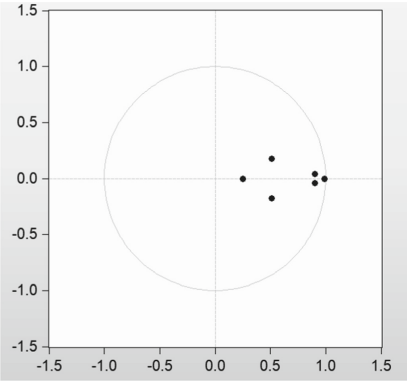

Fig. 2. Stability test results of VAR model

monetary policy and judgments on business conditions, and this part of expectations has a significant impact on the macroeconomy. It should be noted that after the bulk conversion of mortgage loans to the floating mechanism of LPR from August 15, 2020, the future market loan interest rate quotes will be averaged by the common quotes of 18 commercial banks, and the bank confidence index and loan demand index will be more significant for economic growth. At a significant level of 10%, real estate confidence (LNREC) is also a Granger cause of economic growth (LNGDP), and real estate confidence can pre-empt economic growth.

Entrepreneurial confidence (LNEEI) and real estate confidence (LNREC) are Granger causes of bank confidence (LNBBI) at the 5% level of significance. The good or bad business conditions of firms affect bankers' confidence in the future. Entrepreneurial confidence affects the growth of the economy through the bankers' confidence transmission mechanism. Real estate confidence (LNREC) is also the Granger cause of bank confidence (LNBBI), so real estate confidence also influences macroeconomics through the transmission mechanism of bankers' confidence. The real estate boom is closely related to the expansion of bank credit, which affects the level of bankers' confidence through the level of credit.

At the 5% level of significance. Bank confidence (LNBBI), entrepreneurial confidence (LNEEI), real estate confidence (LNREC), and economic growth (LNGDP) are Granger causes of loan demand confidence (LNALD). For the loan demand index, it is a predictive index of bankers' expectations of monetary policy, entrepreneurs' loan demand, and loan demand in the real estate market, which has a significant impact on GDP. Bankers' confidence and loan demand are closely linked, when bankers are optimistic about the future economic conditions for continued stable growth, subconscious optimism will transmit bankers' increased demand for loans in the future market. Likewise, when companies are in good economic condition and need to expand their plants and purchase more raw materials, they need to apply for more funds from banks. The growth of the economy has a significant impact on the confidence of the loan demand policy. When the economy is overheated it recovers the amount of money in the market,

Table 5. Results of Granger regression analysis of confidence index and economic growth

The null hypothesis	Observations	Chi-square	P value
LNBBI does not Granger Cause LNALD	61	27.16727	0.0000
LNALD does not Granger Cause LNBBI	61	0.111658	0.7383
LNCCI does not Granger Cause LNALD	61	0.642495	0.4228
LNALD does not Granger Cause LNCCI	61	1.185936	0.2762
LNEEI does not Granger Cause LNALD	61	59.68996	0.0000
LNALD does not Granger Cause LNEEI	61	0.207059	0.6491
LNREC does not Granger Cause LNALD	61	24.93974	0.0000
LNALD does not Granger Cause LNREC	61	1.496068	0.2213
LNGDP does not Granger Cause LNALD	61	4.873580	0.0273
LNALD does not Granger Cause LNGDP	61	11.07023	0.0009
LNBBI does not Granger Cause LNCCI	61	0.111658	0.7383
LNCCI does not Granger Cause LNBBI	61	0.087332	0.7676
LNBBI does not Granger Cause LNEEI	61	11.94017	0.0005
LNEEI does not Granger Cause LNBBI	61	0.039380	0.8427
LNBBI does not Granger Cause LNREC	61	6.733430	0.0095
LNREC does not Granger Cause LNBBI	61	0.847992	0.3571
LNBBI does not Granger Cause LNGDP	61	0.313151	0.0030
LNGDP does not Granger Cause LNBBI	61	8.809916	0.5758
LNCCI does not Granger Cause LNEEI	61	0.121800	0.7271
LNEEI does not Granger Cause CCI	61	1.835759	0.1754
LNCCI does not Granger Cause LNREC	61	0.780387	0.3770
LNREC does not Granger Cause LNCCI	61	2.990714	0.0837
LNCCI does not Granger Cause LNGDP	61	0.014846	0.9030
LNGDP does not Granger Cause LNCCI	61	8.659300	0.0033
LN REC does not Granger Cause LNEEI	61	0.612207	0.4340
LNEEI does not Granger Cause LNREC	61	0.945998	0.3307
LNGDP does not Granger Cause LNEEI	61	0.291052	0.5895
LNEEI does not Granger Cause LNGDP	61	2.329843	0.1269
LNGDP does not Granger Cause LNREC	61	0.487644	0.4850
LNREC does not Granger Cause LNGDP	61	2.913666	0.0878

by means of strict credit policy, raising the reserve ratio, raising the market interest rate, etc. And when the economy is depressed, the central bank influences loan demand by releasing liquidity. Confidence in the real estate market is also a Granger cause of confidence in loan demand. Part of the bank's profit comes from the spread between deposits

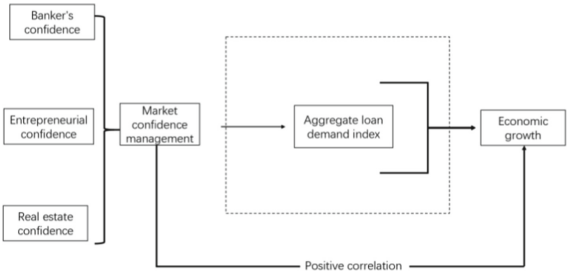

Fig. 3. Transmission mechanism of confidence index and economic growth

and loans, and when the real estate market is booming it helps to increase the demand for loans, thus increasing the bank's profit.

For the variable LNCCI, economic growth (LNGDP) is the Granger cause of consumer confidence (LNCCI) at the 5% level of significance. For the consumer confidence index, economic growth and increase in income have a significant effect on the consumer confidence index. The variable real estate confidence index (LNREC) is the Granger cause of economic growth (LNCCI) at the 10% level of significance. The real estate confidence index represents expectations about the future business conditions of the real estate industry, and when the real estate market is depressed, low consumer confidence about home purchase also affects the consumer confidence index.

According to Fig. 3, the above reasons are summarized and summarized as the transmission mechanism of confidence. The confidence indices that most directly affect economic fluctuations are the bank confidence index, the overall loan demand index, followed by the real estate confidence index. It is not difficult to find that from the earliest tulip bubble in human financial history to the financial crisis in 1929 to the subprime crisis in '08 the emergence of systemic risk in the banking sector, real estate industry crisis, etc. are related to the lack of confidence and the spread of panic. Through the above transmission mechanism, it can be seen that the formulation of stimulus macro policy firstly needs to quickly revive the confidence of the banking sector and the real estate sector, and secondly needs the central bank to inject confidence into other sectors by releasing water-like monetary liquidity. The entrepreneurial confidence index is more indirectly influencing economic growth by way of bank confidence index and loan demand confidence index, which takes some time to pass, so we need to pay attention to the lending policy loosening and tightening mechanism and the continuing impact of entrepreneurial confidence in time. Second, real estate confidence in addition to the direct role in economic growth also through the bank's confidence role in economic growth. In addition to this, macroeconomic fluctuations and the overall demand for loans confidence between each other as Granger causes. The growth of loan demand confidence includes the tripartite effect of business, real estate market and bankers' confidence, and the growth of loan quantity can promote "investment" and "consumption" in the troika to drive economic growth, while the sustained and stable economic growth can The growth in the number of loans can promote the "investment" and "consumption" of the troika, thus driving economic growth, while the sustained and stable economic growth

can stimulate confidence in the implementation of sustainable policies. Finally, economic volatility most directly affects consumer confidence and real estate confidence, and consumer confidence does not directly contribute to economic growth in the short run. This is consistent with the findings mentioned by Chen, Yanbin and Tang, Shilei [2] that Chinese consumers are more inclined to savings and precautionary motives, factors that may lead to inconsistency between consumer confidence and consumption.

(vii) Impulse test

The impulse response function is the response of other economic variables to a positive shock in the standard deviation of some of these variables. Based on the VAR model, the impulse response function analysis is performed on the correlations derived from the Granger causality test, and the lag period is chosen to be 10 periods.

As shown in Figs. 4 and 5, the economic growth rate LNGDP responds strongly to its own perturbation in period 1, with LNGDP improving by about 0.099463. Loan demand confidence does not respond to the perturbation in economic growth in period 1 and gradually decreases from period 2 to −0.003331 in period 10. The shock response of LNGDP to LNALD responds rapidly from period 1 to period 2 and then converges to the axis. This illustrates the asymmetric mechanism of influence between money demand confidence and economic growth, where economic growth shocks are large for loan demand confidence in the early period, while loan demand confidence performs more prominently for economic growth shocks in the later period. Monetary policy formulation needs to pay attention to the sustainability of loan policy in the late stage.

The shock of LNGDP for a positive standard deviation LNBBI reaches a maximum of 0.0369 in period 1, then declines to negative from period 2, and then converges to the axis. While the shock of LNBBI to GDP does not respond in period 1, the positive value of 0.000442 responds very little in period 2, and the negative impact gradually increases from period 3 onwards. It shows that when faced with unanticipated economic

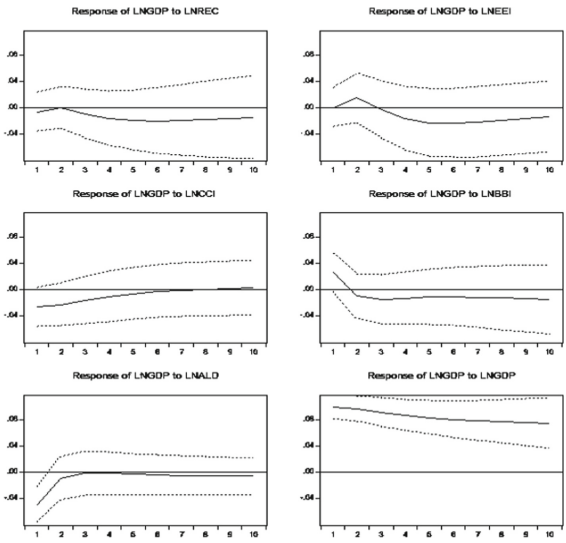

Fig. 4. LNGDP response to LNBBI, LNEEI, LNALD, LNCCI, LNREC and LNGDP shocks

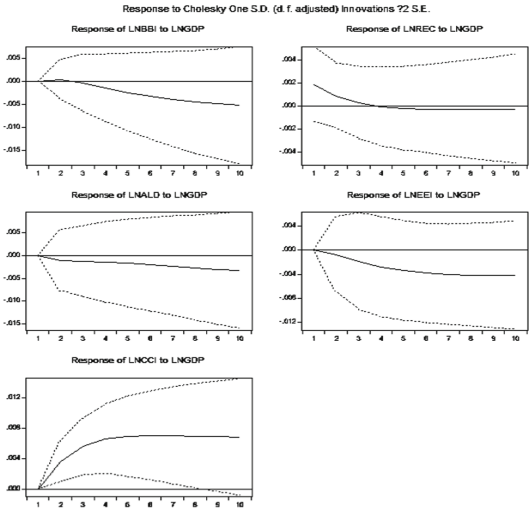

Fig. 5. Response of LNBBI, LNEEI, LNALD, LNCCI, LNREC to LNGDP shocks

changes, the first reaction from the bank's perspective is to observe and pay attention to controlling risks first, so the response is not obvious in the first 3 periods, and the impact on economic growth starts to play in the later period. The impact of banker confidence and economic growth is also asymmetric, as banker confidence is able to hit the economy quickly in the first 3 periods, while economic growth plays a role in bank confidence only after the 3rd period. This suggests that incentivizing banker confidence requires attention to the appropriateness of monetary policy in the first period and its sustainability in the second period.

For a one standard deviation LNEEI, the response of the LNGDP is 0.012422 in period 1 and grows rapidly to 0.0245 in period 2 and reaches a maximum value in period 3 before it starts to fall and break the axis to become negative. For a standard deviation LNGDP, the LNEEI does not respond in period 1, from −0.000746 in period 2 to −0.004191 in period 10, indicating that entrepreneurial confidence can act quickly on economic growth and reach its maximum value, and that the negative value in the later period is an absorption of the earlier policy and confidence. Unanticipated GDP shocks do not act on entrepreneurial confidence at the beginning, but start to act in the later stages as time grows.

For a standard deviation LNCCI, LNGDP gradually rises towards the axis after a minimum value of −0.20649 in period 1 to −0.00476 in period 10. The LNCCI does not respond to the GDP shock in period 1, rises rapidly from period 2 and converges to the axis after reaching a maximum in period 4. Faced with mutual shocks, the trends of consumer confidence and GDP are largely consistent, with GDP being more prominent for consumer confidence. Therefore, sustained and stable economic growth can convey confidence in consumer purchasing power.

LNGDP declines slowly after reaching a peak in period 2 in the face of a shock to the standard deviation of LNREC, and LNREC declines rapidly from period 1 to break through the axis in period 4 in the face of a shock to LNGDP. In the short run, the real

Table 6. LNGDP variance decomposition results

LNGDP:							
Period	S.E.	LNALD	LNBBI	LNCCI	LNEEI	LNGDP	LNREC
1	0.065685	1.497936	14.27238	5.496819	3.930542	74.80232	0.000000
2	0.077402	10.95195	10.39563	10.18553	8.234464	56.95421	3.278217
3	0.084159	14.79638	9.661416	11.07193	10.30590	51.39139	2.772984
4	0.093267	13.03039	13.11979	15.92088	12.12993	43.47499	2.324019
5	0.109085	9.528409	10.66189	18.11547	8.945778	50.97969	1.768763
6	0.118226	12.05993	9.076883	18.36514	13.01708	45.89940	1.581566
7	0.121120	11.96389	9.494601	18.25071	13.49212	45.17558	1.623098
8	0.124094	11.96230	9.889083	18.79643	14.24906	43.47155	1.631569
9	0.132360	10.89253	9.086452	18.72952	12.62565	47.15849	1.507350
10	0.135772	11.28391	8.640010	19.42929	12.36376	46.82074	1.462297

estate boom promotes the increase of GDP, but in the long run, the bubble generated by the excessive real estate boom is not conducive to stable and healthy economic growth.

(viii) Variance decomposition

This paper uses variance decomposition to analyze the contribution of variable changes in the VAR model to other variables. From the results of the decomposition in Table 6, the market confidence transmission can influence the macroeconomic fluctuations. The contribution of GDP itself reaches a maximum value of 74.8% in period 1, then rapidly declines to a minimum value of 43.5% in period 4, and then fluctuates in the range of 43%–47%. Consumer confidence is the most important element of explanatory power besides the contribution of GDP itself. Although the contribution of consumer confidence to GDP is only 5.50% in period 1, it grows rapidly after the beginning of period 2 and reaches a maximum of 19.4% in period 10. In the Granger causality test, there is no prior trend effect of consumer confidence on GDP, and from the contribution rate here, consumer confidence will not act directly on GDP growth in the short run, but in the long run, consumer confidence will have a great impact on GDP growth. The bank confidence index reaches a maximum value of 14.27% of GDP in period 1. This indicates that the tightening or easing of monetary policy in macroeconomic policy can quickly affect bankers' confidence and have an effect in the short term, and then the bank confidence index starts to decrease. The loan demand confidence index has only 1.50% contribution in period 1, verifying the transmission mechanism of loan demand confidence in the Granger causality test, which generates a contribution to GDP after being transmitted by business confidence and bank confidence in period 1, and decreases rapidly after reaching a maximum value of 14.80% in period 3. Macroeconomic policies need to pay attention to the feedback of confidence in the banking sector in the short term. Entrepreneurial confidence index has only 3.93% contribution in period 1. As time increases, the contribution of entrepreneurial confidence to GDP reaches a maximum value of 14.24% in period 8 and then begins to decline. The stimulation of entrepreneurial

confidence by the government's macro policies needs to pay attention to continuity and continuity so that entrepreneurial confidence will have a positive impact on economic growth in the later periods. The contribution of real estate confidence to GDP in the variance decomposition is not particularly significant.

3 Conclusion and Discussion

By selecting five indices, namely, bank confidence index, loan demand confidence index, entrepreneur confidence index, consumer confidence index, and real estate confidence index, to represent the expectations and confidence indices. By selecting GDP as a proxy for economic growth for the analysis, the following conclusions can be drawn.

First, there is a correlation and transmission mechanism between various prior indices and macroeconomic fluctuations. This indicates that the confidence and expectations of the market and groups represented by the indicators of the questionnaire or the statistical composite indicators are able to predict the trend of economic fluctuations and the sample is representative.

Second, there is an asymmetric mechanism of influence between the prior indices of market parties and economic growth. When focusing on confidence indices, more attention should be paid to the early warning role of bankers' confidence and loan demand confidence, followed by entrepreneurs' confidence and real estate confidence, and consumer confidence indices should not be overly concerned in the short term. Entrepreneurial confidence influences macroeconomic fluctuations through the transmission mechanism to loan demand confidence index and banker confidence. Therefore, when designing monetary policy, researchers should pay more attention to the changes in commercial banks' confidence in the feedback from interest rate changes, deposit reserve changes and open market business operations in monetary policy regulation, because commercial banks' lending policies have a direct impact on the real estate industry and corporate financing costs, so by improving the confidence of the banking sector can widely influence the confidence of all parties in the market and act on Macroeconomic growth. The impact of consumer price index on economic growth is not obvious in the short term but significant in the long term.

Third, the basic determinant of confidence remains macroeconomic fundamentals. Loose monetary policy and active fiscal policy act quickly on bankers' confidence, loan demand confidence and entrepreneurs' confidence, thus contributing to economic growth. Macroeconomic policies boosted the confidence of all parties in the market and the Chinese economy rebounded rapidly after the epidemic stabilized. This proves that the Chinese government has the ability to iron out economic fluctuations and promote sustained and stable economic growth through the design and implementation of fiscal and monetary policies that boost market confidence when shocks are encountered in the course of economic development.

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