The Relationship between the Entrepreneur Confidence and Economic Fluctuation of China's Cotton-textile Industry

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Abstract

The goal of this paper is to study the relationship between entrepreneur confidence and economic fluctuation of China's cotton-textile industry. The entrepreneur confidence is decomposed into basic faith and animal spirit. By studying on the influence factors of basic faith, we find the gross output growth rate of cotton-textile industry; CPI, interest rate and China cotton index have fundamental influence on confidence of basic faith. With VAR model, the dynamic influence of animal spirit on cotton-textile industry economy is studied and found animal spirit has significant short-term effect on the economic growth of cotton-textile industry, CPI and interest rate. And the influencing mechanism is complying with characteristics of total cotton demand impact.

Keywords: entrepreneur confidence, animal spirit, economic fluctuation of cotton-textile industry, CPI

1. Introduction

Many scholars believe that Confidence is playing an increasingly important role in macroeconomy[1,2,3] (Hufner, Schroder 2002; Mourougane, Moreno 2002; Harrison, Weder 2006;).It is proved that multiple equilibrium exists in economic system by using the dynamic stochastic general equilibrium model. As strategy interdependence exists in economic subjects, psychological change could be self-fulfilled and economy will convert in different equilibrium along with the confidence change of economic subjects. Under the same conditions, the current status and future understanding of different will lead to different choice of the main economic body, resulting in economic equilibrium may also appear in different [4-5](Taylor, McNabb 2007;Yanbin Chen 2009).Therefore, the confidence will affect economic behavior and result in the economic fluctuation through the main decision-making[6-7](Shell Cass, 1983; Farmer, Guo 1994).

It is relevant to focus on information reflected angle and the perspective of behavior. Barsky and Sims(2009) think confidence contains about future economic trend information, positive confidence impact can make the improvement of productivity, it will cause inflation dropped briefly, macroscopical economy rose. Yanbin Chen and Shilei Tang(2009) think the economic fundamentals change can explain the change of psychological state from the self realization, positive

confidence blow to the economy as the main body of behavior optimism degree increased, the expansion of aggregate demand led growth[5]. The articles of faith on the relationship between economic growth and deepen the understanding of related problems, but there is still insufficient.

From theoretical perspective, there are few papers that investigate the impact Chinese cotton textile industry confidence in the reason of economic fluctuation. Barsky and Sims (2009) established in the new Keynes's framework to analysis the confidence and the theory of economic fluctuation, but their analysis focus on the relation of confidence and economic fluctuation[7], While the new Cairns Phillips curve theory or empirical studies have ignored the confidence on the impact of inflation[5,9,12] (Gali and Gertler, 1999; liFei Zeng, 2006; Chen Yanbin, 2008). This article from the confidence (animal-spirits) perspective, analysis of China's cotton economic fluctuation, validation the relationship between confidence and economic fluctuation, so as to provide a theoretical explanation.

The structure of this paper is as follows: Section 1 provides a brief introduction. Section 2 introduces the data and method; OLS is applied for estimating confidence estimation equation containing the constants to get the residual sequence. Multiple line regression model is used for the decomposition of confidence. Section 3 reports and discusses the results of the relationship, research on influence factors of basic faith. Line regression model is constructed by using entrepreneur confidence as interpreted variables while gross output of cotton-textile industry from one lag phase, CPI, exchange rate-R and CCI-China Cotton Index as interpreting variables. And VAR model is constructed for dynamic influence and empirical analysis of animal spirit on cotton-textile industry with impulse response analysis and model

interpretation. Conclusions are provided in Section 4.

2. Data and study idea

2.1. Data Source

In order to study the influence of confidence on economic fluctuation of cotton-textile industry and cotton demand with empirical research, the representative index is needed to measure the confidence of economic subjects. Considering the following two reasons, quarterly data rather than monthly data is chosen. Firstly, entrepreneur confidence index is quarterly data. If it is converted into monthly data, data quality will be influenced. Secondly, monthly data fluctuation extremely leads to estimation instability of measurement model.

Entrepreneur confidence index (ECI) mainly refers to the industry entrepreneur confidence index that released by national bureau of statistics. Textile industry output growth rate (FZGDP) above scale is accumulated by growth rate data difference of China's cotton-textile industry gross output. CPI is equal to the consumer price index and quarterly data is from WIND database. Real effective exchange rate (REER) is from international settlement bank website, quarterly data is calculated by monthly arithmetic average. China's cotton index (CCI) is gotten by converting monthly data into quarterly data of China cotton yearbook.

2.2. Study Ideas: Confidence Decomposition Method

In theory，confidence is decomposed into basic faith and animal spirit to study how confidence influence the economic fluctuation of cotton-textile industry[3,5](Chen Yanbin,2009;Harrison and Weder 2006).This paper mainly focuses on the relationship between Chinese entrepreneur confidence and economic fluc-

tuation of cotton-textile industry. Namely, to find confidence influences the economy because it contains economic fundamental information or it can directly affect the economic fluctuation of cotton-textile industry by itself. If animal spirit cannot affect the economic fluctuation of cotton-textile industry that means confidence can not influence the economic fluctuation of cotton-textile industry only because it contains economy information. On the contrary, if animal spirit has effect on the economic fluctuation of cotton-textile industry, it means confidence itself leads to the economic fluctuation of cotton-textile industry.

Because confidence can be decomposed into basic faith and animal spirit so as to study how confidence influences the economic fluctuation of cotton-textile industry. The decomposition is shown as the following equation, confidence = basic faith(affected by macroeconomic fundamentals) + animal spirit(irrelevant with macroeconomic fundamentals) = f (macro economic variable 1, macro economic variable 2,……) + animal spirit.

It is common to use OLS estimation equation and define residual sequence as animal spirit to estimate animal spirit (Weder 2006; Choy et a1.2006). By estimating confidence estimation equation contains the constants with OLS, we get residual sequence and decompose confidence with multiple line regression model.

Two problems need to be solved in animal spirit estimation. The first one is which major economic variables affect the basic faith and the second is whether basic faith changes with time. Gross output of cotton-textile industry, CPI, interest rate and China's cotton index are chosen for model formation as representative variables of macroeconomic fundamentals. (Jansen, Nahuis 2003).

The following two questions are taken into consideration in analysis. The First, whether basic faith function changes with

time. At present, the conventional method is model estimation done with all data and model residual is defined as animal spirit. The Second, the choice of variable lag number. In general, AIC or SC criteria is chosen to determine the lag number. However, incorrect judgment may be made with small sample by AIC or SC as indicated by YanBin Chen in 2008.The longer interval time of variables is, the less influence of current confidence will be. Therefore, considering short data, simplicity and practicality, the lag number is chosen as 1.

2.3. Estimation of Confidence Decomposition Equation

On the basis of decomposition equation simulation estimation, the mentioned model and data, entrepreneur confidence as interpreted variable with FZGDP, CPI, R and CCI for explanatory variable, a linear regression equation is constructed. For the convenience of description, the above Equation is defined as reference equation. So the estimation result of model is:

$$LOG(ECI_t) = \underset{(0.000)}{1.5433} + \underset{(0.0272)}{0.00024} \times FZGDP_{t-1} -$$

$$\underset{(0.000)}{0.00407} \times CPI_{t-1} - \underset{(0.000)}{0.00698} \times R_{t-1} + \underset{(0.003)}{0.000237} \times CCI_{t-1}$$

$$(1)$$

In model(1), Numbers in equation bracket stand for the P value of corresponding coefficients, F value of the equation is 22.91and the corresponding P value is 0.000.That shows the equation is significant on the whole. R^2 is 0.712 after the equation adjustment and equation fits better. That suggests entrepreneur confidence change of cotton-textile industry could be explained by macroeconomy's fundamental change of cotton-textile industry as well as entrepreneur confidence is mainly affected by macroeconomy's fundamental. ADF is used for residual stability testing and residual is stable with the probability level of 1%. That means parameters estimation and statistical in-

ference of confidence decomposition equation is reliable.

The estimation results of reference model shows economic variables have an obvious effect on confidence. Gross output growth of cotton-textile industry has positive significant influence on confidence; As general production grows 1%, the numerical value of entrepreneur confidence index improves 0.00024.CPI has negative effect on entrepreneur confidence. For CPI increases l %, the numerical value of entrepreneur confidence index decreases 0.00407.Exchange rate has negative effect on entrepreneur confidence. Real interest rate each increase 1%, the numerical value of entrepreneur confidence index decreases 0.00698. And CCI has positive effect on entrepreneur confidence. CCI rises 1%, the numerical value of entrepreneur confidence index increases 0.000237.

The residual of confidence equation is defined as animal spirit (A-SPIRIT). The sequence is not confidence change interpreted by economic fundamentals change of cotton-textile industry. The change is probably caused by mental state change of economic behavior subjects. In animal spirit sequence, a positive value indicates entrepreneurs are optimistic while a negative value indicates entrepreneurs are pessimistic.
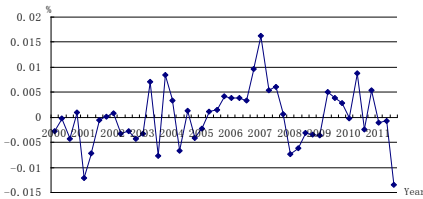

Fig. 1: animal spirit sequence

As shown in figure 1, animal spirit sequence decreases obviously in the second quarter of 2003, the fourth quarter of 2008 and the first quarter of 2009.Especially in the fourth quarter of 2011, animal spirit reached its lowest lev-

el for nearly ten years. In the fourth quarter of 2003, as "SARS" event caused social panic and affected economic activities. Uncertainty of future greatly stroked entrepreneur confidence of cotton-textile industry (Yanbin Chen, 2010).The rapid decline during the period of the fourth quarter in 2008 and the first quarter of 2009 is mainly caused by that entrepreneurs realized the global financial crisis could greatly influence China's economy. The entrepreneurs came to realize the influence of crisis on the economy of cotton-textile industry and confidence was greatly impacted as clothing export sharply reduced in the third and the fourth quarter of 2008.Though national economic operation is better in the first quarter in 2009 and animal spirit value is better compared with that of the fourth quarter in 2008, entrepreneurs are still pessimistic about economic prospect in future.

3. The Relationship between Animal Spirit and Cotton-textile Industry Economy Fluctuation

The research about influence of animal spirit on cotton-textile industry economy could be well done with VAR model. Animal spirit, gross output growth rate of cotton-textile industry, CPI and cotton price index are included in model as endogenous variables. VAR(1) model is established with lag phase as 1 according to the principle of model simplicity and limited samples.

3.1. VAR Model Estimation

The result of VAR model estimation is shown in Table 1.As animal spirit is not confidence change explained by macroeconomic variables, there is less correlation in adjusted animal spirit equation).R^2 of other equations are bigger after adjusted and the correlation coefficient of the smallest equation FZGDP reaches

0.677.That shows effect has been achieved in model.

Table Ⅰ   The result of VAR model estimation

Explanatory variable / Variable being explained	A-SPIRT	FZGDP	CPI	R	CCI
A-SPIRT(-1)	0.326609	208.3012	161.6435	-1.986039	700.3434
	(0.14962)	(182.996)	(19.9262)	(1.87319)	(275.395)
	[2.18299]	[1.13828]	[8.11211]	[-1.06025]	[2.54305]
FZGDP(-1)	-1.31E-06	0.686823	0.001700	0.000229	0.114717
	(9.8E-05)	(0.11936)	(0.01300)	(0.00122)	(0.17962)
	[-0.01345]	[5.75442]	[0.13084]	[0.18755]	[0.63866]
CPI(-1)	-0.000191	0.465472	0.901941	-0.015823	-1.884524
	(0.00042)	(0.50868)	(0.05539)	(0.00521)	(0.76553)
	[-0.45924]	[0.91505]	[16.2835]	[-3.03889]	[-2.46173]
R(-1)	0.000344	3.636750	0.050434	1.007332	-3.829851
	(0.00186)	(2.27752)	(0.24800)	(0.02331)	(3.42749)
	[0.18456]	[1.59681]	[0.20336]	[43.2088]	[-1.11739]
CCI(-1)	0.000168	0.072856	0.030118	-3.92E-05	0.338265
	(7.0E-05)	(0.08564)	(0.00932)	(0.00088)	(0.12888)
	[2.40018]	[0.85074]	[3.22986]	[-0.04475]	[2.62469]
C	0.016513	-69.66721	9.627825	1.514778	220.8703
	(0.05154)	(63.0337)	(6.86365)	(0.64523)	(94.8608)
	[0.32041]	[-1.10524]	[1.40273]	[2.34767]	[2.32836]
Adjust R^2	0.118169	0.677119	0.920986	0.990684	0.730530
F statistic	2.232839	20.29348	108.2356	979.3787	24.587193

Note: ( ) for the standard error, [ ] for t statistic; ***，**、* respectively, indicating that the coefficient estimates in 1%，5% and 10% levels.

3.2. Impulse Response Analysis

As chart 2 Impulse Response Function Chart of economic variables to animal spirit, in which the influence of standard difference impact of animal spirit on macroeconomic variables at present as well as in future. Solid line stands for impulse response value and dashed line stands for double standard error band of impulse response value. Generalized impulse response function is used to avoid the influence of model variables sequence on impulse response value.

It is found animal spirit has remarkable effect on macroeconomic variables except CCI of cotton-textile industry in impulse response function. Animal spirit impact has significant influence on economic growth of cotton-textile industry in phaseⅠ and phase Ⅱ.Animal spirit change makes growth rate reach -0.43% in phaseⅠ, boost to 0.46% in phase Ⅱ, gradually increase to 0.96% in phase Ⅳ and attenuate till unremarkable.

Response of FZGDP to ASPIRIT

Response of CPI to ASPIRIT

Response of R to ASPIRIT
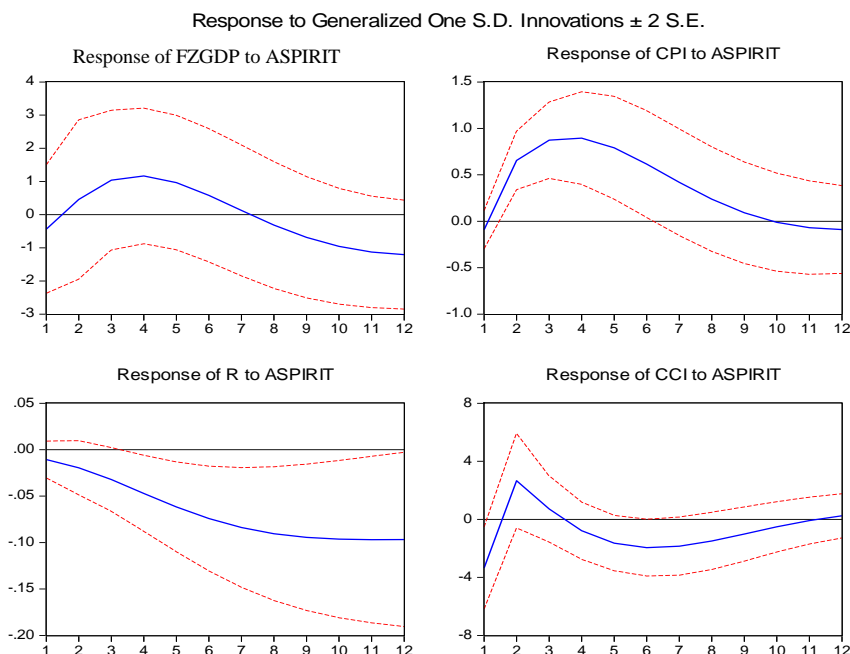
Response of CCI to ASPIRIT

Chart 2: Impulse Response Function Chart of Economic Variables to Animal Spirit Impact of Cotton-textile Industry.

The impulse response of CPI to animal spirit is remarkable from phase Ⅰ to phase Ⅳ.Animal spirit change makes CPI increase 0.09% in phase Ⅰ and 0.89% in phase Ⅳ.Then it wears off till unremarkable. The impulse response of R to animal spirit in phase Ⅰ and phase Ⅱ is remarkable as animal spirit change makes real interest rate reduce to 0.01% in phase Ⅰ. And the negative influence continuously increases then reduce to unremarkable in phase Ⅴ.There is no significant response of CCI to animal spirit impact. So the influence of animal spirit on economy of cotton-textile industry conforms to the characteristic of total demand instead of total supply. Suppose other factors fixed, the positive impact of total demand will result in out-shift of total demand curve, price increase and production increase in short term. Be-

cause total supply decides economic situation, the impact of total demand won't have long-term influence on production and cotton price. The positive impact of animal spirit results in temporary increase not long-term influence on CPI and economy of cotton-textile industry. That reflects the influence model of total demand impact on economy of cotton-textile industry. So it is clear animal spirit influences economy of cotton-textile industry mainly by influencing demand of economic behavior subjects and relatively less influencing the supply level.

3.3. Model Interpretation

According to the above analysis, economic growth of cotton-textile industry, CPI, interest rate and CCI together influence entrepreneur confidence by influencing fundamental confidence. Economic growth increases entrepreneur confidence

when entrepreneurs are optimistic in good economic situation while pessimistic in bad situation.

When economic growth goes up, entrepreneurs tend to believe the uptrend will continue and increase demand of raw cotton as well as profits, So they are optimistic about it. On the contrary, entrepreneurs tend to believe economic inversion only achieved with economic adjustment when economic growth goes down. They are pessimistic because economic downturn and adjustment will reduce product demand of cotton-textile industry and decrease their profits.

CPI has a remarkably negative influence on entrepreneur confidence. There are two explanations; One is deflation is accompanied by restrictive policy, which lead to economic contraction. Therefore, there will be in decline in entrepreneur confidence. The other one is, as and outcome of economic growth, CPI usually appears at the end of economic advancing stage. At this time, overall price level goes up because of supply bottlenecks including water, electricity and coal of energy industry. However, there still is a downturn in economy in a decline in entrepreneur confidence as total supply level exceeds total demand level.

Interest rate has significantly negative effect on entrepreneur confidence, which can be explained from the following two aspects. Firstly, interest rate rise means increase of capital operation cost. That naturally leads to decline in entrepreneur confidence. Secondly, interest rate rise reflects tight policy is or will be taken by the government, by which the entrepreneur confidence is stricken.

CCI has significantly positive effect on entrepreneur confidence. Firstly, CCI increase stands for better economic situation that will enhance entrepreneur confidence. Meanwhile CCI increase means cost increase that also cause anxiety of entrepreneurs.

As a kind of mental state, animal spirit mainly influence macroeconomic variables by influencing entrepreneurs' decision of cotton-textile industry instead of influencing variables directly.

4. Conclusion

On the basis of quarterly data from the first quarter of 2000 to the fourth quarter of 2011 in China, the relationship between entrepreneur confidence and economic fluctuation is studied. And the conclusions are as follows:

The first, economic growth of cotton-textile industry, inflation, real interest rate and CCI of one lag stage are included as main macroeconomic influencing factors on entrepreneur confidence. With entrepreneur confidence as interpreting variable and interpreted variables including economic growth, CPI, real interest rate and CCI, we find the influence of economic growth on entrepreneur confidence is remarkably positive, the influence of inflation on entrepreneur confidence is remarkably negative, the influence of real interest rate on entrepreneur confidence is remarkably negative while the influence of CCI on entrepreneur confidence is unremarkable. Nearly 70% confidence fluctuation could be explained by economic fundamental. That means the decisive factor of confidence is economic fundamental.

The second, with VAR model, we find animal spirit has remarkable effect on economic growth, CPI and real interest rate except CCI. Animal spirit change leads to temporary rise of growth and CPI, which continues then becomes unremarkable. The influence model complies with total demand impact. The reason animal spirit leads to short-term decline in real interest possibly is that central bank focuses on steady growth and expects the short-term influence of animal spirit.

5. Acknowledgment

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