# Review on the Impact of Market Subject Confidence on Macroeconomic Fluctuations

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**Abstract:** In the complex economic environment, the research on the impact of market subject confidence on macroeconomic fluctuations has been concerned by scholars and policy makers. A considerable amount of academic research has accumulated in this field, suggesting that confidence has a complex multi-dimensional impact on macro-economy. A comprehensive review of the relevant literature will be especially helpful in synthesizing the key research insights and unveiling major research trends in this field. Hence, by reviewing relevant literature, this study intends to reveal the impact of market subject confidence on macro-economy from two perspectives.

## 1. Introduction

Whether confidence can affect macroeconomic fluctuations and how to influence macroeconomic fluctuations has always been a controversial issue. The traditional theory of rational expectation holds that the actor can master all the relevant information of macro-economy, but the confidence can only reflect the basic information of macro-economy, and has no substantial influence on macro-economy. Therefore, people can make a correct expectation of the future economic development trend. The earliest rational expectation theory was put forward by Muth in 1961. However, Muth's rational expectation theory was not applied to macroeconomic theory at first, but only used to analyze the behavior of financial markets. Until 1970s, when the American economy experienced stagflation, Economists can't explain it with traditional Keynesian economic theory. Professor Lucas and Professor Sargent began to gradually introduce rational expected variables into macroeconomic models, which greatly promoted the development of macroeconomic theory. Wallace (1976) added rational expected variables to dynamic econometric model for the first time, Actors can adjust their behaviors and decisions through changes in the economic situation, and this progress has effectively solved the "Lucas critique". Subsequently, the completely rational expectation theory has gradually become the mainstream view of macroeconomic theory, and has been widely used in various economic research fields. However, the rational expectation theory's assumption of reality is too perfect, excluding all uncertainties in the economy, confidence is regarded as a collection of all information in the economy, which is only a reflection of the macroeconomic situation and cannot affect the macro economy. However, with the development of economy, economists gradually find that when the economy is impacted by external factors, people can't rationally judge the development trend of macro-economy. Too much optimism and too much pessimism will often occur, which will lead to market panic. At this point, the influence of confidence on macroeconomic fluctuations has been paid more and more attention by economists.

## 2. Literature Review

### 2.1 Information Perspective

As early as 1927, the famous British economist Arthur Pigou [1] pointed out that the direct cause of industrial fluctuation was the changes expected by businessmen, and nothing else. In addition, economists such as Clark and Beveridge who studied the business cycle in the early stage also emphasized that the expected impact was an important factor that caused the fluctuation of the business

cycle. Subsequently, Carroll, Fuhrer and Wilcox(1994,CFW for short) [2] By using the household consumption expenditure, consumer confidence index and Campbell-Mankiw consumption model compiled by the University of Michigan, we studied the influence of consumer confidence on consumption expenditure, and found that the change of consumer confidence can well predict the change of consumption expenditure, and this prediction function is because consumer confidence can independently influence consumption expenditure. This will lead to macroeconomic fluctuations, not because consumer sentiment is a reflection of the macro-economy. However, William Bryant and Joseph Marci (2001) objected to the conclusion of CFW. They thought that in the study of CFW, only individual variables were considered unilaterally, and many important variables were ignored, which would lead to errors in the estimation results of the model. Therefore, this conclusion is not convincing enough.

In the same period, Acemoglu and Scott (1994) [3] conducted an empirical study on the relationship between the consumer confidence index and consumption expenditure in the UK, and then used the same model to conduct an empirical study on the consumer confidence index and consumption expenditure in Australia, but the results of the two studies were completely opposite. British data show that British consumer confidence index has the ability to predict British consumer spending, while Australian consumer confidence has little influence on the change of consumer spending, and it is almost impossible to predict the change of future consumer spending according to the change of consumer confidence. In addition, Mehra and Martin (2003) [4] use econometric models to study the impact of confidence on macro-economy. It is also found that confidence cannot affect macroeconomic fluctuations. Mehra and Martin believe that the reason why the consumer confidence index can be used to predict consumer spending is mainly because it contains the fundamental information of the economy and can reflect the current economic situation, and that only the current real interest rate level and income level can affect consumer spending. Because after controlling all macroeconomic variables including interest rate, Mehra and Martin were surprised to find that the influence of consumer confidence on consumer spending disappeared, so they thought that consumer confidence could not directly affect consumer spending.

As mentioned above, early economists only studied the influence of confidence on economic fluctuations from qualitative and quantitative perspectives, but did not theoretically describe how confidence is introduced into economic models and how confidence affects macroeconomics. Beaudry and Portier (2004) [5] have made important progress on this issue. They built a three-sector model including durable goods, non-durable goods and final consumer goods, in which the production factors of durable goods and non-durable goods sectors include fixed factors and labor factors, and the production factors of final consumer goods sectors include durable goods and non-durable goods, assuming that durable goods and non-durable goods are obviously complementary, and through model research, it is found that, The information of productivity fluctuation in the non-durable goods sector can affect macroeconomic variables. Although their model has defects, it still provides ideas for later research.

After Beaudry and Portier (2004), the research direction is mainly divided into two aspects: on the one hand, some scholars gradually introduce confidence into the traditional dynamic macroeconomic model to study whether expectations can generate business cycles and how expectations affect business cycles, and emphasize that expected shocks are the main factors leading to the fluctuation of business cycles in the United States. For example, Beaudry and Portier (2007) [6] put forward a unified analysis method that is expected to promote the neoclassical model of business cycle. By analyzing whether various RBC models can or cannot produce positive linkage of total variables depending on the equilibrium structure of the labor market, it is found that the labor market graph is an effective tool to study the linkage of business cycle under the impact of TFP in the future. This provides a simple and intuitive guide for finding a new method to explain the data under the impact of messages. In addition, the relationship between future news and future external uncertainty are also discussed. Goo(2008a) [7] estimated the overall fluctuation caused by news shock by establishing a two-sector viscous price model with only household production and capital adjustment costs. The results show that news shock is an important reason to explain economic fluctuation, and it can explain about 25%

of consumption-output fluctuation and 40% of investment-output fluctuation. Wataru Miyamoto and Thuy Lan Nguyen (2014) [8] think that when information shocks, even if the current fundamentals do not change, the actor will adjust the future expectations, so a dynamic stochastic general equilibrium model including information shocks is constructed by using the expected data. Research shows that the model using the expected data, The impact of information shock on output is about half of the expected data. In addition, information shock has little ability to explain short-term fluctuations, mainly because the expected changes are smaller than the actual output changes. Therefore, when considering the changes of expected data, information shock cannot be considered as the main driving force of the business cycle.

On the other hand, some scholars gradually began to seek empirical experience to prove that expected shock is indeed the main factor of economic cycle fluctuation. For example, Barsky and Sims (2009) [9] thinks that confidence contains information about future economic trends, as well as information about future economic development that people can know, but it is not reflected in lagging variables. Therefore, the confidence shock is similar to the total supply shock. For example, there is an important event that will affect the future development of the economy, so it is difficult for lagging variables to reflect the information contained in this event, but confidence can reflect this information. Barsky and Sims (2012) [10] By constructing a new Keynesian dynamic stochastic general equilibrium model containing animal spirits and information, it is found that whether animal spirits or information play a major role in influencing inflation mechanism is the main driving force behind the relationship between observed confidence and subsequent economic activities. However, the influence of animal spirits on the economy is very limited, which reveals the general equilibrium mechanism that fundamental information produces large economic fluctuations. Blanchard and Lorenzoni (2013) [11] studied the importance of message shock by constructing an RBC model and using the structural maximum likelihood estimation method. The research found that when a positive temporary expected shock was given, Output, time, consumption and investment will all increase, and when a positive and permanent expected shock is given, the time variable will decrease, and the expected technological shock is the source of economic cycle fluctuation. In addition, scholars such as Beaudry and Portier (2006)[12], Beaudry and Lucked (2009) [13] have also done research in this field.

To sum up, economists who analyze from the perspective of information believe that the macro-economy has certain development rules, and the role of confidence is only that the actors make an expectation of the future development of the economy according to the information they get, and then make a judgment according to the expectation. Therefore, confidence is actually just a collection of information. It can reflect the fundamental information in the economic system, but it can't affect the macro-economy, causing the macro-economy to fluctuate. Macro-economic fluctuation is due to exogenous changes in economic fundamentals, which leads to macro-economic fluctuation, and then makes confidence fluctuate.

## 2.2 Animal Spirit Perspective

BP neural network is back propagating, mainly composed of three parts: input layer, middle layer and output layer. The number of nodes in the input and output layers is relatively easy to determine, but the determination of the number of nodes in the hidden layer is a very important and complex problem.

The definition of animal spirit first appeared in Keynes's "General Theory of Money, Employment and Interest" (hereinafter referred to as "General Theory") [14]. Keynes called public sentiment "animal spirit", believed that public sentiment was an unconscious psychological activity, and believed that most decisions made by actors might be due to animal spirit. At this time, the decision-making behavior is not an aimless impulse, but an action from inside and outside, which cannot be measured by the weighted average value obtained by multiplying the probability of occurrence by the number of benefits. In addition, Keynes also believed that according to the theory of motivation, our judgment and decision about things often depend on our emotions, interests and chances. So, Animal spirit is actually the realization of the self-characteristics of the actor's pessimism and optimism in economic behavior, and the actor will be influenced by his own emotions when making decisions, thus affecting

the fluctuation of the economic system. In addition to Keynes's description of public sentiment, Azaria is (1981) [15] also described public sentiment. It is considered that public sentiment is a self-fulfilling process of economic expectation caused by psychological factors, and then Cass and Shell (1983) [16] think that another manifestation of sunspot series is public sentiment. However, whether it is the self-realization feature of Azaria is (1981) or the sunspot impact of Cass and Shell (1983), these two viewpoints actually hold that public mood is an emotional change. And will not be affected by economic fundamental information. After entering the 20th century, this view gradually became popular, and economists began to generally believe that emotional changes are the part of confidence that cannot be explained by macroeconomic fundamental information.

Through Keynes's description in the General Theory, we know that public confidence actually comes from the fact that all actors can't fully and correctly understand the world. Individual actors can only know a small part of this world information system. Due to the limitations of reality, People don't have enough ability and knowledge to construct the distribution function of various impacts, so compared with the cognition of the world, the cognition of individual is limited, which is the so-called individual limited cognition theory. Public emotion theory regards individual limited cognition as one of the most important assumptions. Gabaix et al. (2006) [17] think that under the assumption of individual limited cognition, Actors will use heuristic rule-a simpler rule-to guide their behavior to deal with information and problems, and will not adopt completely rational behavior as some scholars have assumed. Although this heuristic code of conduct is limited by the actor's cognitive level, when the actor's cognitive level of the world is insufficient, Will judge according to their own optimism or pessimism, but this kind of behavior is not irrational. Because, when the actor wants to gain a more rational judgment by increasing his knowledge of the world, according to the law of diminishing marginal utility, the actor needs to pay a higher cost, so this behavior influenced by emotions is a relatively rational behavior. In addition, the theory of individual limited cognition has been widely used in medicine and psychology. For example, Lovallo and Cameron (1999) [18] found that people are always overconfident and overestimate their abilities. Kahneman and Thaler (2006) [19] found that people actually don't know what they like or what utility is, so utility maximization can't be realized at all.

Although the concept of animal spirit was put forward by Keynes as early as 1930s, it was gradually ignored by Keynes School in the later development process, and there are few references to the concept of public sentiment in today's school textbooks. There are two main reasons for this phenomenon. On the one hand, when scholars study the economic theoretical system and the factors that affect the fluctuation of the economic system, in order to make the model conform to the economic paradigm, they all exclude the public emotional factors that only affect the micro-individual behavior, and Lucas and others assume that the actor is completely rational when establishing the neoclassical theoretical model. As a result, scholars gradually ignored the concept of public sentiment. On the other hand, the Keynesian school has gradually ignored Keynes's view that the emotions of actors can influence macroeconomic fluctuations in the General Theory. The first model of Keynesian School was the multiplier model proposed by Hicks in Value and Capital [20]. After that, Samuelson's Economics [21] further explains Keynes's macroeconomic theory: when the supply exceeds demand, the government can make the supply and demand return to equilibrium by adopting monetary policy and fiscal policy, and only this method is feasible. Since then, the idea that confidence shocks can affect macroeconomic fluctuations has completely withdrawn from people's vision.

However, with the emergence of many economic problems, economists found that the traditional Keynesian economic theory could not be used to explain them, and the public sentiment theory began to show its head in the research field of economics gradually. Chauvet and Guo (2003) [22] studied the relationship between macroeconomic fluctuations and public sentiment, and analyzed that sentiment can be regarded as a variable representing sunspots. Sunspots can cause macroeconomic fluctuations, and this effect seems to be random, so it is considered that emotions are confidence components that are not influenced by macroeconomics. Marcelle (2003) made an empirical study on the relationship between optimistic and pessimistic fluctuations and subsequent economic fluctuations by using multiple equilibrium macroeconomic models. Research found: Consumers and entrepreneurs

were pessimistic before the American recession, and sometimes even when the fundamental information was still very strong. The analysis also shows that the pessimistic state of self-realization played an important role in the three American recessions of 1967-1970,1973-1975 and 1981-1982.SharonHarrison and Markweed(2006)[23] used the dynamic general equilibrium model to analyze the emotions of actors during the economic recession, and found that: during the whole economic recession, economic changes can be well explained by the self-realization characteristics of public emotions, and public emotions can reasonably explain the sudden occurrence of the Great Depression. And Taylor McNab (2007) [24] think that there is a strategic dependence among economic agents, so the psychological state of the actors can be changed by themselves, and the change of the psychological state of the economic agents will make the economy transform between different equilibria, which will lead to economic fluctuations. Grauwe and Paul (2011) [25] assumes that the actor's cognition is limited, Usually, simple but biased heuristic criteria are used to predict the future output and inflation. By comparing the dynamics of the model with the stylized DSGE model, it is found that the strict inflation target is not optimal, because it will make people's pessimism and optimism fluctuate greatly, thus leading to the fluctuation of output and inflation. Bidder and Smith (2012) [26] defined animal spirits as the interaction between uncertainty and random fluctuations in the model, and considered that families hold pessimism and this pessimism will change with the fluctuation of the overall economic level, which leads to the greater impact of fluctuations on the economy. In addition, the model was extended by perturbation method and Monte Carlo method. Including the production DSGE model, it is found that when the economy is impacted, the fluctuation of animal spirits leads to the change of economic cycle, and there is a quantitative correlation between the fluctuation of animal spirits and macro fluctuations.

In several economic crises in history, such as the Mexican crisis, the Southeast Asian economic crisis and the American subprime mortgage crisis in 2007, confidence played an important role in them. Akerlof and Shiller (2009) [27] once mentioned in Animal Spirits that actors in economic activities generally choose according to their subjective intuition. During the economic boom, Actors are optimistic about the future economic situation and full of confidence in the future. Because of the self-realization characteristics of confidence, actors' confidence keeps rising, investment and economic output increase, and society becomes more prosperous. In the period of normal economic operation, the confidence level of actors will remain at a high level, and the level of investment and consumption will also remain at a high level. As a result, the bubble in the economy will further become bigger, and if the bubble bursts, the actor will suffer a huge impact, his confidence will drop rapidly, and his expectation for the future will become more pessimistic. In addition, under the influence of herding effect, this pessimism will spread rapidly in the market, leading to pessimism flooding the whole market. So, during the recession, the investment and consumption level of actors will drop rapidly, which will make the whole market environment worse.

## 3. Conclusions

Based on the existing research, this paper summarizes that research on the relationship between confidence and macroeconomics mainly falls into two categories. One is from the perspective of information, which holds that confidence contains the fundamental information of current and future economy, and reflects the judgment made by actors on the future development of economy through the obtained information. Therefore, exogenous changes in economic fundamentals will lead to changes in actors' expectations for the future. Furthermore, it influences the investment decisions of the actors, leading to macroeconomic fluctuations. The other is from the perspective of animal spirit. Keynes believes that "animal spirit" is the self-realization feature of pessimism and optimism expressed by consumers and investors in the economic system. Consumers and investors will make some irrational decisions influenced by public sentiment. Then it affects the investment and output of the whole market, and finally leads to the cyclical fluctuation of the economy.

**References**

[1] Pigou. Industrial Fluctuations [M]. MacMillan, London.1927.

[2] Carroll, Fuhrer, Wilcox. Does consumer sentiment forecast household spending? If so, why? [J]. The American Economic Review, 1994, 84(5): 1397-1408.

[3] Acemoglu D, Scott A. Consumer confidence and rational expectations: are agents' beliefs consistent with the theory? [J]. The Economic Journal, 1994: 1-19.

[4] Mehra Y, Martin E. Why does consumer sentiment predict household spending? [J]. FRB Richmond Economic Quarterly, 2003, 89(4): 51-67.

[5] Beaudry and Portier. An Exploration into Pigou's Theory of Cycles [J]. Journal of Monetary Economics, 2004, 51(6): 1183-1216.

[6] Beaudry and Portier. When can changes in expectations cause business cycle fluctuations in neo-classical settings? [J]. Journal of Economic Theory, 2007, 135, 458-477.

[7] Guo. News shocks expectation driven business cycles and financial market frictions [J]. Manuscript, Concordia University.

[8] Wataru Miyamoto and Thuy Lan Nguyen. News Shocks and Business Cycles: Evidence from Forecast Data [J]. Social Science Electronic Publishing, July 10, 2014.

[9] Barsky, Sims. News Shocks [R]. National Bureau of Economic Research, 2009.

[10] Barsky, Robert, Eric Sims. Information, Animal Spirits, and the Meaning of Innovations in Consumer Confidence [J]. American Economic Review, 2012, 102(4):1343-1377.

[11] Blanchard, and Lorenzoni. News, noise, and actuations: An empirical exploration [J]. American Economic Review, 2013, 103(7): 3045-3070.

[12] Beaudry, Portier. Stock prices, news and economic fluctuations [J]. American Economic Review, 2006, 96, 1293-1307.

[13] Beaudry, Lucke. Letting different views about business cycles compete[M]. NBER Macroecnomics Annual, 2009.

[14] John Maynard Keynes. The General Theory of Employment, Interest and Money [M]. Palgrave Macmillan, 2007.

[15] Azariadis. Self-fulfilling prophecies [J]. Journal of Economic Theory, 1981, 25(3): 380-396.

[16] Cass, Shell. Do sunspots matter? [J]. The Journal of Political Economy, 1983: 193-227.

[17] Gabaix, Laibson, Moloche. Costly information acquisition: Experimental analysis of a boundedly rational model [J]. The American Economic Review, 2006: 1043-1068.

[18] Camerer, Lovallo. Overconfidence and excess entry: An experimental approach [J]. The American Economic Review, 1999, 89(1): 306-318.

[19] Kahneman D, Thaler R H. Anomalies: Utility maximization and experienced utility [J]. The Journal of Economic Perspectives, 2006, 20(1): 221-234.

[20] Hicks Value and capital [M] Commercial Press, 1962

[21] Sanuelson Economics [M] Commercial Press, 2012

[22] Chauvet, Guo. Sunspots, animal spirits, and economic fluctuations [J]. Macroeconomic Dynamics, 2003, 7(1): 140-169.

[23] Harrison, Weder. Did sunspot forces cause the Great Depression? [J]. Journal of monetary Economics, 2006, 53(7): 1327-1339.

[24] Taylor, McNabb. Business Cycles and the Role of Confidence: Evidence for Europe [J]. Oxford

Bulletin of Economics and Statistics, 2007, 69(2): 185-208.

[25] Grauwe, Paul. Animal Spirits and Monetary Policy [J]. Economic Theory, 2011, 47(2–3):423–457.

[26] Bidder, Smith. Robust animal spirits [J]. Journal of Monetary Economics, 2012, 59 (8): 738-750.

[27] Akerlof. The missing motivation in macroeconomics [J]. The American Economic Re view, 2007, 97(1): 3-36.