A Study of the Role of New Media in Market:
A Case Study of the Chinese Real Estate Market

Yun   Li

The University of Shimane

Northeast Asian Research and Development Studies

May 2018

CONTENTS

List of Figures and Tables

A. Figures

B. Tables

INTRODUCTION

1. Background and Significance

In the twenty-first century, the impact of new media on socioeconomic activities has become increasingly significant due to the constant development of media technologies, particularly the wide use of Internet technology. Therefore, scholars began to pay attention to the association between new media and economic activities and attained some fruitful outcomes in the course of research, which established the theoretical foundation for further development on this issue. However, the development and transformation in new media have moved beyond the scope of the research achievements, and as a result, there remains ample room for improvement in the academic field pertaining to this subject, especially in terms of new ways to introduce new media as an economic variable in the framework of economics. Without the explanation from an economic perspective, the influence of new media on economy today is unlikely to undergo thorough exploration. Moreover, China—the country with the largest population and the greatest number of Internet users worldwide—is undergoing a process of economic transition, with media playing a crucial role. More research works are required to understand the impact of new media on the market.

In this context, the author has decided to bridge the mentioned gap in the academic field and mainly focus on the impact of new media on the market—one of the most important venues for all economic activities, particularly the influence of new media in China. A particular market, which is the real estate market, has been selected in order to test the effect of new media in practice.

This work[1] is of great theoretical importance to the market theory, and it is also practically useful for the development of market and economic activities.

---

[1] My book "*Research on the Impact of Media on Economic Crisis.* Fudan University Press, Shanghai, 2018."
presents part of my research findings, so I've included the main theories of this book in my dissertation and developed further on this basis.

(1) Background

This research study pertaining to the relationship between new media and economic activities should be further developed in the contexts presented below.

The first context mainly involves the vital role of new media in society.

1) Modern media, especially the Internet, have gained widespread prevalence and accepted in people's daily lives on a large scale. For instance, the large number of users of Chinese new media, its various forms, and its role in society are extremely impressive.

a) The number of users of modern media has expanded rapidly with the aid of Internet technology. According to the available data, the Chinese began using the Internet in 1987. However, it was only in 1994 that the Chinese had access to fully functional Internet. Internet users in China began to be active from 1996, and the scale has continued to gradually expand every subsequent year. In 2014, the number of Internet users reached 648.75 million, which was about 104432.1% of the number of users in 1996. In 1999, 2002, and 2007, the growth rate reached a local peak—323.81%, 75.37%, and 53.28% respectively (refer to the data collected from China Internet Network Information Center, CNNIC [2015] in Fig. 1).
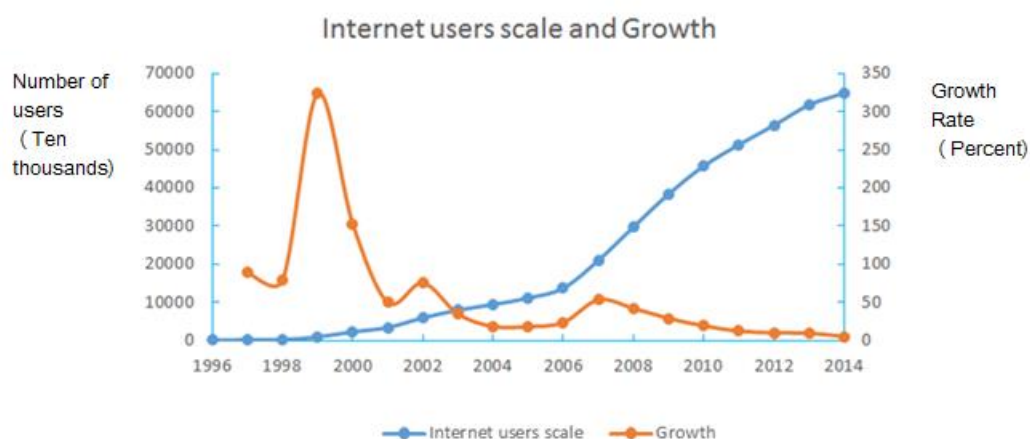
Fig. 1. Internet users and the growth of this population in China. (Source: CNNIC, [January, 2015], *Zhong Guo Hu Lian Wang Fa Zhan Tong Ji Bao Gao [Statistical Report on Internet Development in China]*, Retrieved March 19, 2016 from

https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)

Smartphones, one of the main means of using the Internet, entered the Chinese market in 2000, and domestically manufactured cellphones began to access Internet in 2013. Based on the quarterly data of the scale of mobile Internet users from June 2006 to December 2014[2], it is evident that the number of mobile users was rising by the year. By December 2014, China had 556.78 million mobile Internet users (refer to the data accumulated from China Internet Network Information Center, CNNIC [2015] in Fig. 2).
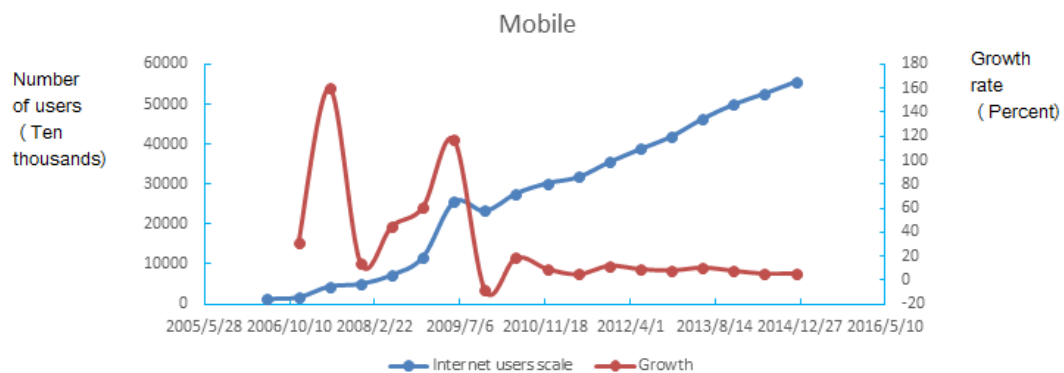
Fig. 2. Mobile Internet users and the growth of this population in China. (Source: CNNIC, [January, 2015], *Zhong Guo Hu Lian Wang Fa Zhan Tong Ji Bao Gao* [Statistical Report on Internet Development in China], Retrieved March 19, 2016 from https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)

QQ, also known as Tencent QQ, is a Chinese instant messaging program that was developed by Tencent Technology Company Ltd. Its users constitute a major part of the media users. Registered QQ users reached 60,000 in November 1999 and grew to more than 100,000 by April 2000. By 20:43 pm of May 27th, 2000, the concurrent users of QQ exceeded the 100,000-mark for the first time. In June, new registered QQ users soared to 1,000,000 within only one month. On June 21st, "mobile QQ" entered the mobile Internet platform of "mobile new life," supported by China Unicom. This was considerably significant for both QQ users and China Unicom

---

[2] Data Source: The Statistics of China's Internet Development

mobile users. By February 2001, Tencent (the service provider of QQ) had more than 1 million concurrent QQ users and more than 20 million registered users. Concurrent QQ users exceeded the 3-million mark in March 2002, and registered users increased to 200 million by September 2003. Tencent was enlisted on Hong Kong Stock Exchange in June 2004. Based on the quarterly data of the scale of QQ monthly active accounts from 2004 to 2015, it appears that QQ monthly active accounts gradually increased every year and reached 209 million in the first quarter of 2015 (refer to the data gathered from China Internet Network Information Center, CNNIC [2015] in Fig. 3).

Fig. 3. Monthly active account size and its growth of QQ (quarterly data). (Source: CNNIC, [January, 2015], *Zhong Guo Hu Lian Wang Fa Zhan Tong Ji Bao Gao [Statistical Report on Internet Development in China],* Retrieved March 19, 2016 from https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)

WeChat, an instant messaging program developed for operation on mobile Internet, is one of the integrated or mixed media as well. The WeChat application was launched by Tencent in 2011. Based on the ten-quarter data, we discover that the scale of WeChat monthly active accounts have expanded by the year. It reached 500 million in December 2014, which is a 644.59% increase in comparison with the numbers recorded for March 2012 (refer to the data obtained from China Internet Network Information Center, CNNIC [2015] in Fig. 4).

Wechat Active Account Size
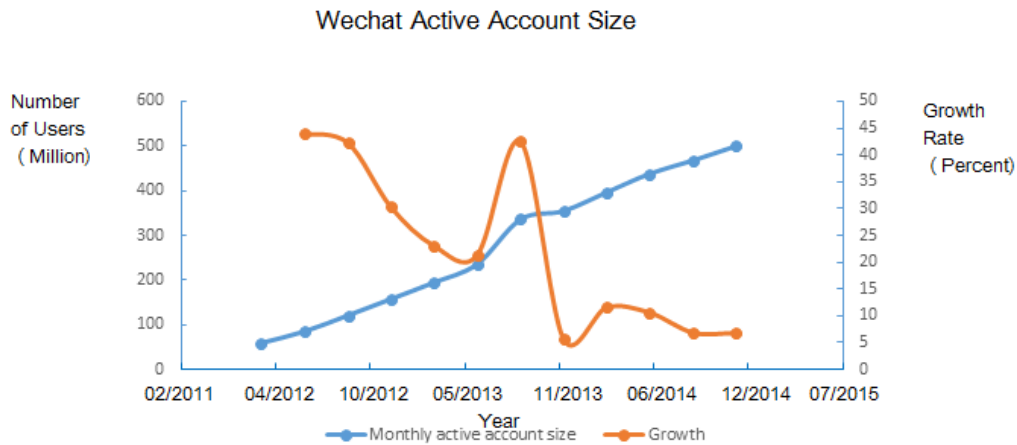
Fig. 4. Monthly active account size and growth of WeChat. (Source: CNNIC, [January, 2015], *Zhong Guo Hu Lian Wang Fa Zhan Tong Ji Bao Gao [Statistical Report on Internet Development in China],* Retrieved March 19, 2016 from https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)

In light of the data presented above, it is abundantly clear that the media users of the Internet network have expanded rapidly due to the constant development of Internet technologies and the wide application of cyber space. New media have become a vital necessity in society.

b) The transformation of new media has been revolutionary, and media have become one of the most important factors that influence the market and economic activities.

Nowadays, Internet technology, which is the main technical support for modern media, has upgraded to the new level of "Internet Plus,"[3] thereby ushering in a new era. Any factor that operates on the "Internet Plus" platform has also changed tremendously. "Internet Plus" is not a simple accumulation or summation of the Internet and other factors. In fact, any factor that operates on the platform transforms into a new factor that is different from its original or traditional form on integration with Internet. Such a unique feature is the major contributor to these revolutionary changes.

---

[3] A Chinese concept that is quite similar to Information Superhighway and Industry 4.0 and firstly proposed by China's prime minister Keqiang Li in his Government Work Report on March 5, 2015.

For example, media step up onto the new stage—the new media—after taking the new form via the medium of Internet. In the twenty-first century, the new media technologies, including Internet and cellphones, are one of the greatest inventions in human history, which help improve the traditional media. With its function of multimedia integration, new media technology makes all forms of media present, operate, and work in the form of integrated media. For instance, a newspaper can be presented in the form of paper or in the electronic form on Internet or cellphones. This innovation makes it possible for media to be transmitted in multiple forms. Theorists have defined the integrated form of media as a strategic, operational, and cultural combination of printing, video, audio, and interactive digital media organizations. By making use of the digital and Internet technologies, various types of media achieve interaction and integration in the form of new media. Meanwhile, the integrated media form helps raise the utilization rate of media as well, as new media have allowed users to gain easier and greater access to information, thereby enabling the grassroots feature. They have naturally become universal, as it is open to the public.

c) Modern media will not only affect the modes of production and lifestyle of the whole society when it is widely spread, but also influence the market and economic activities and assume the role of an important economic factor.

Conversely, the development of integrated media has brought about profound changes in the production and lifestyle within the "global village" as a new driving force of socioeconomic development. Modern media, with the support of Internet technology, are inevitable outcomes of the development of science and technology. The changes in media forms and structure have a significant impact on the social relations of production, as they affect the traditional modes of production and lifestyle and social relations by changing people's views on production, exchange, distribution, and consumption and by shortening these four processes (such as the effect of advertisement). Moreover, people's ways of thinking, communicating, and entertaining are affected too (such as the changes in media education, social link, and entertainment functions). For example, in the context of traditional media, the

scope of interpersonal communication was mostly confined to genetic relationships and relationships with colleagues, neighbors, and friends, due to the slow flow of information and the rarity of double-way information channels. It was quite hard to reach remote areas. However, with new media, the modes of interpersonal communication have taken on various forms apart from face-to-face interactions. Through Internet, cellphone, and instant messaging software such as WeChat, QQ, and Weibo, traditional interpersonal communication has overcome geographical barriers and grown more extended.

Conversely, new media have a great impact on demand and supply in markets and on market fluctuations. For instance, new media exert an influence on demanders' expectation by conveying to them information related to the future of the market, which, in turn, leads to change in the amount of demand in the market. It works in the same way for supply. A research (Li and Qiu, 2010) on the effects of new media during the Euro debt crisis revealed that the conveying of Euro debt crisis information through new media affected the investors' expectation directly and changed the entire investment market. Moreover, new media eventually affected the European capital market as well. Rather than good news, the effect of bad news conveyed by new media was more significant. In addition, new media have an impact on serious market failures such as economic crisis. New media might either accelerate or postpone the spread of crisis and even end the crisis sooner. The results depend on the nature of the dominant effect—either positive or negative.

2) New media have played a "governance" role in markets and economic activities.

a) New media, as an economic factor, have become the third force responsible for coordinating market and economic activities besides "the hand of market" and "the hand of government".

From the perspective of microeconomy, media have played an active role in improving corporation governance and protecting investor interests. When the number of negative news reports by the media increases, the chances for listed companies to correct their violations rise. Media's effects on companies' correction of their violations differ with the variance in the nature of media, reporting methods,

and reporting practices. Moreover, when the media exposure rate rises, it is more likely for administrative institutions to intervene in the violations. Once the administrative institutions intervene, the odds for listed companies to correct their violations increase significantly.

From the perspective of macroeconomic, the media have been rising as a market power in terms of economic activities since the 20th century. Western countries have regarded media as the "fourth party of power", which is independent of legislation, justice, and administration. They believe that media could be another important mechanism for distributing resource and wealth alongside market and politics. In the recent years, a new word "Meizhi", which means media governance, was coined in China. It has been defined by China Central Television (CCTV), emphasizing the key role of media in solving certain social problems. Media exert pressure on the government by media exposure and supervision of some social problems and then promotes and advances the solution of such problems. Thus, "the hand of media" plays an important role in macroeconomic activities, including interest orientation, social wealth balance, supervising and driving government behaviors, restraining corruption, and promoting monetary and fiscal policies of macroeconomic regulation and control.

b) Media not only play an important role in market activities, but also have imponderable advantages in solving market failure in comparison with the other factors. For instance, in 2008, media offered instant and detailed reports of the cause of the subprime mortgage crisis and its process. In addition, while delivering crisis information, media made necessary interpretation and instruction of the information. For example, CCTV specially opened up new TV shows such as "Spotlight on the financial tsunami in the Wall Street" and "The market today" in order to interpret the crisis and to guide people to understand and deal with the crisis rationally. It is believed that China had relatively small losses in the crisis and was able to get out of the crisis quite soon due to the guiding function of media. Here, we need to emphasize that the role of media is more significant and obvious during big market fluctuations such as market failure. This is because i) under normal economic

situations, there are many factors that influence people's expectation of economic activities, and the channels to obtain information regarding these factors are diverse as well; ii) however, once market failure takes place, which leads to the crisis, the situation is completely different. During the crisis, previous experiences of consumption and the knowledge of previous transactions are not useful in guiding people's future behaviors anymore. People tend to focus on the crisis information carried on by media and adjust their economic behaviors accordingly. Conducting empirical test using the data of Asian Crisis in 1997, some studies have proven that cross-border news reports on the crisis influences the domestic economy (Baig, Taimur and Goldfajn, 1998).

The analyses above indicate that media (especially new media) have played a very important role both in the whole socioeconomic base in general and in market economic activities in particular. Their roles in market failure are extremely significant.

New media are therefore a significant factor in the society. In academia, the performance of media in socioeconomic activities has surely been the focus of many academic researches accordingly, as theoretical research is the process of abstraction of behaviors in the real world.

The second context is that the new media issue has not yet been fully explained by the existing academic works, although some works have already touched upon this issue.

In many disciplines of the social science, there are already many mature theories. Classical communication theories have regarded media as an economic factor for a considerable amount of time. Theorists have analyzed the role of media in social change and socioeconomic activities. For instance, the theories of "pseudo-environment" and "agenda-setting", the analyses of "opinion leadership", and "five W's model", and the concepts of "the spiral of silence", and "watchdog" have all been developed from the socioeconomic problems and people's desire to

explain them.[4] Additionally, in economics, economists pay attention to media's important role in economic activities. In the past few years, works in this area have increased, most of which focus on the association between media and economic activities, media's role in market behaviors such as its role in corporate governance, media's role in macroeconomic activities such as media and economic growth, and especially media's role in market failure, as new media's role in market failure is becoming more significant. Some of the studies are theoretical analyses, while others are empirical ones. Thus, theorists have made some advancement in determining the relationship between media and economic activities as well as market fluctuations, which provides us with a solid basis for further exploration on this topic.

Despite the fruitful outcomes of previous research works, there is still a void for us to fill in this filed. First, in the field of media economics, the majority of works focus on economic theory and empirical analysis of media industries. The relationship between media and economic activities has been touched upon, but it remains relatively marginalized, having not been conducted in a systematic and in-depth manner. Second, in the field of economics, most researchers aim to text the existence of a relationship between media and economy. A few economists acknowledge the role of media in economic activities. For instance, Stiglitz and Owen established an early lead in researching the role of media in economic growth. However, there are still a lot of researchers who question the role of media in the economics, and most of the studies get stuck in the argument of whether there exists a relationship between new media and market activities or whether media could affect market activities. Therefore, a few of them have taken media as an important economic factor, introduced it into the economics framework, and conducted systematic analyses and empirical studies on it. However, only a few considered the analysis of the channel, mechanism, effects of media's impact on market fluctuations, and its governance role. It is clear that there are inadequate systematic, in-depth, and applicable findings in the area.

---

[4] All these theories are explained later in Chapter 2.

Since the essential role of media in economy outshines the academic discussion going on regarding this issue, it is necessary to further explore the relations between media and economic activities and the way it influences the society. Within these contexts, the dissertation endeavors to introduce media as a main variable into the market equilibrium model. It employs interdisciplinary methodologies, which have economics at the center, and has a systematic exploration of the logic and functioning mechanism of the role of media in market dynamic change (from equilibrium to non-equilibrium or the other way around) and its effects. Then, it will perform the empirical study and present policy suggestions.

(2) Significance of the Research

This research study on the impact of new media on the economy helps provide a better understanding of the media's essential role and figure out its channel in influencing social changes and economic development from a theoretical perspective. It is also conducive to managing media reports and directing the media industry to a right direction in practice.

1) It has some theoretical values.

a) It introduces the factor of media into economics, particularly into the market supply-demand model, and makes full use of the knowledge and methodology in media studies, information economics, and economics. It facilitates the innovation of the market equilibrium theory and the related interdisciplinary research on media theory.

In contrast with the descriptive and explanatory accounts of media's effects on market activities in previous research works, this study intends to be more analytical, detailed, structured, and systematic. It attempts to first introduce the media factor into the theoretical framework of microeconomics and then create a market force model that includes the media factor. Thus, it will expand the range of media and market behavior theories and deepen the integration of these two theoretical branches. Moreover, it will lay the foundation for market equilibrium theory of media in microeconomics.

It also highlights media's influence on market fluctuations or failures. Until now,

there was no consensus on this issue, and different theorists held varied views on market fluctuations. However, one common idea does exist, which is the fact that market failure is not caused by a single factor. Therefore, the academic community has been exploring the factors that lead to market failure for years. In this research study, media are regarded as a force that exerts an impact on market failure, and this thesis will be supported by the systematic and in-depth analysis will be made. It will definitely be of great academic value in developing market failure theories.

In this research study, there are also many discussions regarding the channels, characteristics, mechanisms, and principles of media's impacts on market activities, which have been ignored in most previous studies that are usually done in the form of case-by-case analyses. This study will not only theoretically complete some of these research contents, but also try to put my theory into practice. This will further improve the theories concerning the relationship between media and market failure.

b) This study makes full use of knowledge and research methods from multi-disciplines such as communication studies and information studies in order to conduct extensive research on media and market and integrate them. Thus, it will further promote the development of interdisciplinary research on market equilibrium theories.

It is necessary to conduct a multidisciplinary study on demand and supply in the market, as there are multiple factors that influence demand and supply in the market and all the factors are very complex. Therefore, research on this topic has a multidisciplinary aspect to it. The previous studies are mainly from a single perspective such as politics, technology, culture, nature, or agriculture, which are quite incomplete individually. Among them, the analyses from the perspective of media are relatively few. Therefore, it is necessary to explore the demand and supply from the media perspective. Moreover, most of them are loose, disorderly or unsystematic, and overemphasis on one perspective makes it hard to be systematic, global, and comprehensive. Hence, this research work will combine the research characters of these disciplines, make full use of the knowledge obtained from them, and adopt research methodologies from them to conduct analysis. This will lay a

foundation for multidisciplinary research on market demand and supply. Conversely, media studies itself has the obvious characteristics of Interdisciplinariness. Hence, this study on media and market should be interdisciplinary as well. Therefore, this study from various perspectives distinguishes itself from other research works due to its adoption of a comprehensive lens and deep grounds on diverse disciplines.

Studies on this topic with interdisciplinary knowledge will boost the development of each discipline as well. By reviewing the literature, we found that works on this topic from the media studies perspective are always limited to the knowledge of its discipline, which makes the scope for research too narrow. With regards to information economics, most of the studies focus on the defects of the information and the impacts of these defects on market equilibrium, in turn, neglecting the importance of the carrier of information and the change of the carrier forms that influence market equilibrium. Although theoretical economics is systematic, it always excludes the media factor from the framework of economics, which will also exclude the impact of media on the market equilibrium. Therefore, the study will discuss the nature of information first and then introduce the mediated information into economics and the theories of market equilibrium. This will contribute to the extensive development of media studies, information economics, and theoretical economics and drive the merging of the disciplines.

2) It helps tackle the market failure problems in reality. Therefore, it has tremendous practical values. Market failure is a global conundrum that people have to confront in the socioeconomic practice. Various schools of economics and other related disciplines have endeavored to find solutions for it. Unfortunately, only a few studies succeeded, and most of them failed. Market is still difficult to clear. In 2008, the global financial crisis broke out, which was an example of the worsening situation of market failure, and there was no effective way to save the economy from crisis. Global economy is still in recession and facing difficulty in recovering. "The hand of media" has the potential to be a supplementary tool in the governance of market failure. Therefore, the analysis of market failure from the perspective of media is of practical importance for real economic activities.

a) Human beings are facing frequent outbreaks of market fluctuations, which may develop into global economic crisis. Therefore, to find a right solution to tackle it with is of great importance. It is an undeniable fact that the media has an influence on alleviating market failure. Hence, in-depth study of the theoretical and practical logic underlying media and market failure, with systematic analyses of the mechanisms, principles, and effects, is necessary. It will practically guide countries, especially China, to avoid, defend, and deal with market failure.

Market failure is a major economic disaster in the economic development of human society. For example, the great depression of the 1930s, which occurred due to market failure, caused a direct loss of 250 billion dollars for the entire capitalist world. This was 80 billion dollars more than the material damage caused by the World War I. The global economic crisis in 2008 was even worse. It is labelled as the biggest financial catastrophe in human history. The crisis caused a direct loss of more than 30,000 billion dollars for the global economy in a single year. In order to solve the problem, theorists have their own duties, which is to provide a new theoretical framework to deal with this economic disaster.

As in China, we could not neglect the loss caused by market failure, despite the fact that to some extent China enjoyed a "free lunch" in Asian crisis and the impact of the 2008 economic crisis was not too strong as well. However, we did have losses in the defense of Asian crisis and in the bailout during 2008 economic crisis. In fact, the 2008 global economic crisis has influenced every aspect of China's economy and its influence is still lasting. To avoid another "subprime mortgage crisis" breaking out in China, the government has adopted deflation policies in several industries, such as real estate, which will inevitably have negative impacts on the national economy. Thus, theoretical guidance is needed both to quickly pass the shadow of the global economic crisis and for sustainable and stable economic development. The exploration on the theory and solution made by this study will give countries in the world some advice on how to avoid and deal with market failure.

b) There are still no all-the-time successful or effective solutions to deal with market failure, though many countries have tried various policies and methods. So, it

is meaningful to continue the research. How to efficiently deal with market failure is still a world conundrum so far. "The hand of media" is a supplementary tool for the governance of market failure following "the hand of market" and "the hand of government". It may not be able to rule the crisis out forever, but at least, it could be an alternative way to alleviate it. Hence, the exploration of governance policies from the perspective of media has practical significance.

2. Structure and Basic Ideas

The main body of the dissertation consists of four parts, namely literature review, theoretic analysis, empirical test, and policy suggestions, divided into seven chapters. Its main innovation lies in three aspects: methodology innovation, theory innovation, and policy innovation.

The first part is the literature review in the first chapter. It looks at the literatures and builds up the theoretical foundation for the dissertation. In this part, we look back at the analyses of the relations between media and economic activities—first the classical theories of relations between media and economic activities in the field of media; second other theories of their relations; third, theories of relations between the media and the market; and fourth, the evaluation.

The second part is the theoretical analysis, from the second to the fourth chapter. It is the core of the dissertation, and it elaborates the role of media in the market and its impact on demand and supply, its functioning mechanism and effects, and the relationship between media and market failure, which serves as the complementary part of literature review and the basis for the empirical research.

1) The second chapter is the basic theoretical assumption. It investigates the relationship between media and information: media are the carrier of information while information is the content of media, and they are not separable. Based on Mcluhan's view "the medium is the message",[5] this study defines media as media information--the combination of media technology and information. In this concept,

---

[5] Marshall, McLuhan. *Understanding Media*. MIT Press, Cambridge, 1964:1.

media are the processors of some particular information, and the information is the content that media transmit selectively and purposely. It emphasizes the significance of media's new definition for economics, especially under the background that the traditional economics focuses on the role of information in market and always chooses to neglect the importance of media. The new definition of media enables us to explain that not only will the information affect people's economic activities and then the whole market, but media will have its own role by changing the range, speed, channels, and effects of transmitting economic information.

2) In the third chapter, the question is raised based on the theoretical assumption in the previous chapter: "What is the role of media in market failure?" It analyzes the causes of market failure, especially from the perspective of media, and points out that the problem of information asymmetry and incompleteness is one of the main reasons of market failure. As for the market mechanism, the problem of information asymmetry and incompleteness will directly lead to imbalance of supply and demand, the ineffective resource allocation, insufficient supply and market failure; for the government, the problem prevents the government from making right decisions and the lack of supervision, which lead to government failure. The study emphasizes that media have a supporting role in dealing with market failure by solving the problem of information asymmetry and incompleteness and lowering the cost of information for both the market and the government.

3) The fourth chapter provides theoretical analysis for the question raised in the third chapter. First, it demonstrates the flaws of the two-dimensional market model —market failure. Second, a new three-dimensional market model is constructed by introducing a third dimension—media—into the two-dimensional market model, as a very important variable in the market. One important problem is addressed before the model construction: the extent or the dimension of the media. When media link the information of supply and the information of demand, there should be n pieces of information correspondingly, but the number of pieces of information processed by each kind of media is always less than n. To theoretically solve this problem, the concept of information bundle is introduced. Based on this new three-dimensional

market model, a new equilibrium pricing model is developed by introducing the media variable into the Cobweb model, which strengthens the research on the supply and demand of market with media involved.

4) The fifth chapter is about the mechanisms of media's role in market dynamic changes. Media could affect the economic behaviors of market agents by influencing the expectation of suppliers and demanders, and in this way, it may lead to the change of market price from non-equilibrium to equilibrium or from equilibrium to non-equilibrium and accelerate the price dispersion or price convergence. Also, it analyzes the effects of media on market dynamic change, including public opinion directing effects, accelerator effects, asymmetric effects, and imitation effects. It not only demonstrates the positive effects but also the negative ones.

The third part is the empirical test, from the fifth to sixth chapter, and is mainly about the examination of the theories mentioned in the second part. Media play a role in the dynamic changes in the market. First, it selects the real estate market in China that is very sensitive to the effects of media, for this market has been very active for decades, and the dynamic change is quite prominent and the data is accessible. Second, it employs new empirical research methods: by displaying the timeline of the technological development of media and defining the important time points of the technological breakthroughs, it can analyze the impact of media technology development on the real estate market. It is different from the traditional way of using the amounts of reports as a variable; in the time series analysis, it employs the H–P Filter method, which has an advantage in distinguishing the long-term fluctuation from the short-term fluctuation. By using the Eviews 6.0 software, it filters the price index of preowned houses in Shanghai, Beijing, and Guangzhou with H–P Filter. After the H–P Filter analysis, a regression analysis has also been done to test how much the media can influence the real estate market. As the result shows, new media function as an accelerator in the dynamic changes in China's real estate market and its impact is not negligible.

The fourth part comprises policy suggestions, trying to give some advices to the government on how to make good use of new media in order to make the market

regulation and price stabilization policies more effective.

The seventh chapter is mainly about the governance role of media on economic activities. It is an extension from the previous parts and the application of those theories. As a policy suggestion, it demonstrates the way to stand out media's advantages and avoid its shortcomings based on the channels of media's function. It also suggests the government to make good use of media to guide the market expectation that helps achieve market equilibrium.

3. Research Methods and Scope

Because of the interdisciplinary feature of the study, the dissertation comprehensively employs diverse research methods and they are listed below. Also, the scope of the research will be strictly defined in this section in order to lay foundation for the theoretical analysis.

(1) Research Methods

First, there is a comprehensive use of research methods from related disciplines. The object of the study has a strong characteristic of multidiscipline; so, the knowledge of economics, media studies, information studies and others are all useful and needed. Also, certain research methods of those disciplines are needed when doing analysis with related theories. For example, basic research methods of media studies such as content analysis and case studies have been used in the dissertation. Some research methods of Information studies and system science have been employed, namely the research methods of taking media functioning as a dynamic process of obtaining, processing, handling, and transferring of information and the scientific methods of taking communication phenomenon as an entity to recognize and investigate. Besides, research methods of economics are widely used in the dissertation.

Second, there is an integrating use of normative analysis and positive analysis. Generally speaking, qualitative and quantitative analysis or normative and positive

analyses are essential in theoretical studies. Qualitative analysis is the premise and basis for quantitative analysis, while quantitative analysis is the extension and examination of qualitative analysis. Everything is a unity of quality and quantity. Quality analysis sets a certain boundary of quantity analysis, and the quantitative analysis is needed to discover and reveal the quality or the rules of things. The prerequisite of this study is the scientific definition of media and abstraction of the nature of media. Only if we confirm the internal relation of media tools and information, we can figure out the interactive and quantitative relation of media market activities. Therefore, the dissertation uses a great amount of logic descriptions to normatively analyze the relationship between media and market in the very beginning. Based on the normative analysis, the dissertation employs a mathematical analysis, such as differential analysis and dynamic optimization analysis, and econometric analysis such as H–P Filter to express and test the theoretical contents with logic descriptions.

Third, there is an interactive use of comparative analysis approach and comprehensive analysis method. They are vital in the dissertation since this research is interdisciplinary. For instance, the dissertation makes comparison of all the related theoretical findings of the research in the literature review and then makes full use of them in the research. In addition, the dissertation does comparative analysis on the concept of information from different perspective of disciplines in the process of theoretical analysis, comprehensively abstracted from the theoretical contents to redefine the concept of media information and categorized it on three levels. When analyzing the role of media in market dynamic changes, it compares different market failure concepts and makes comprehensive use of the findings to study media's effect on accelerating the convergence and dispersion of market during market failure.

Fourth, there is a combination of historical and logical analysis methods. The logical analysis of theory must depend on the historical analysis method. Although the research is made to solve practical problems, historical analysis is still essential when constructing the theories. The logic of media's role in economic activities, especially in the dynamic change of market, can only be understood under the

situation that historical and logical analyses are combined. Otherwise, the research will lose its scientific meaning. Most of the existing studies tried to demonstrate the relations between media and market merely from the perspective of logics and were lacking the link between history and reality. This contributes to media's exclusion from economics. Hence, the dissertation values the combination of historical analysis with logical analysis. When analyzing media theories, the dissertation usually reviews its historical development and keeps in mind that it is a historical process of media accompanying with human history. In the analysis of the relationship between the media and the market, the dissertation focuses on media's role in all past market failures when doing theoretical descriptions.

Finally, there is a combined use of static and dynamic analysis methods. Static analysis is to get the value of endogenous variables by the fixed value of exogenous variable[6], assuming that the adjustment time of the variable is zero. This method is applied in equilibrium analysis and results analysis. Dynamic analysis method, on the contrary, has to distinguish the sequence difference of variables on the time, and research on the interactive relationship between variables on different time points.[7] It applies to non-equilibrium analysis and process analysis. With regards to media's impact on market activities, this research first adopts static analysis to construct an equilibrium market model and then introduces factors such as information asymmetry in the model to make the model dynamic, accompanied by non-equilibrium conditions or market failure. At last, the media factor is introduced into the model to its equilibrium condition after a dynamic adjustment. Only with the combination of the static and dynamic the analysis methods could we understand the theoretical nature of media's role in economic activities and accomplish the theoretical mission to bring the media factor into the framework of economics.

(2) Research Scope and Basic Definitions

The study aims to explore media's role in market changes. It is necessary to define

---

[6] Hongye Gao. *Western Economics*. Renmin University of China Press, Beijing, 2002: 41.
[7] ibid.

some concepts and scopes before developing the theoretical and empirical studies.

First, we need to define the concepts of media and market.

The market in the research includes product market and capital market, both of which are closed market. Foreign trade is excluded from discussion.

The media in the research refer to mass media.

The media in the research are the generalized concept of media, not merely the media tools. Generally speaking, media have both generalized concept and narrow concept. Media in the narrow sense are only the media tools or the carriers to transfer all kinds of information. To be specific, it is all kind of tools to carry and transfer the information from the deliverer to receiver in the process of transmission. Media in general, instead, are the whole process.

Second, it is necessary to redefine media itself.

The media in the research are neither media products nor the media industry. The study takes media as a factor that will impact economic activities and introduces it into the framework of economics and market equilibrium theory. To be more specific, the study seeks to investigate media's function as an economic factor in economic activities and market equilibrium.

The media discussed in the research are mainly new media or mixed media. It comprises all kinds of media based on Internet.

The media in the research are equivalent with media information, which is a new concept to combine media technology with information.

The study takes media as an exogenous variable that will exert influence on economic activities. It is assumed that the role of media in economic activities or market will only be fulfilled via some other economic variables or by affecting those variables. The theoretical assumption is mainly based on the reality in the economy. However, when the role of media in real economic activities is becoming increasingly significant, it is possible that theorists take media as an endogenous variable that influences economic activities. The dissertation also takes a look at this trend.

CHAPTER 1. LITERATURE REVIEW

The literature review chapter investigates and analyzes the related studies on the relationship between the media and the market. Such analysis provides theoretical support for the dissertation. Besides, evaluations have been made on the existing literature to find out some room for further development on the topic. These attempts determine the core of this study as well as the starting point.

1. General Analysis of the Relationship between Media and Economic Activities

Theories of media's role in economic activities are quite abundant. Those general analyses are very important for the dissertation, as they provide a theoretical basis for it.

(1) Studies on Media's Role in General Economic Activities

Theoretical research on the relationship between media and economic activities are not very sufficient, and scholars are of different views.

1) Some scholars propose that media first influence production and consumption behaviors by transmitting information and then affects social and economic activities indirectly. These theories state that the process through which media affect economic activities is two-fold: on the one hand, media change individuals' economic expectations through the transmission of information and then individuals adjust their economic activities; on the other hand, media also contribute to economic changes indirectly because media can reduce the cost, broaden the scope, and reduce the freedom of information transmission (Owen, 2002; Li and Qiu, 2010). Some believe that media, especially new media, will provide people with a new platform for trade and help consumers develop new patterns and habits of consumption (Zhu, 2011; Wang, 2016; Zhao, 2015). There are also scholars that view media's impact as negative, as the more information media carries, the less surprise

consumers get from the products. Consumers then will tend to consume less due to lack of impulse (Katahira, 2007).

2) Some scholars focus on the media elements that have effects in economic activities. There are different combinations of such elements. a) The three-element theory: there are always three media elements that influence economic development, which are independence, quality, and reach of media (Islam, 2002); b) The four-element theory: the quantity, production efficiency, quality, and externality of media are the most important variables that influence economic growth rate (Zhang, 2009); c) The four-variable theory: the four variables of communication scope, communication speed, transparency of information, and information fidelity influence the economic trend (Li and Qiu, 2010); d) The media elements that influence consumption: there are three elements that cause consumers' expectations to change frequently and they are reach rate of news, cost of information, and reports on recession (Doms and Morin, 2004). In addition, the media bias is another important factor that influences consumption (Groseclose, Tim and Milyo, 1997; Hamermesh, 2004); e) The factor that influences micro agents: media exposure (Li and Qiu, 2010); f) Media will also affect economic activities indirectly through the factors of politics, democracy, and public opinion.

3) Some scholars build theoretical models of media's impact on the economy: a) the economic growth model of media efficiency (Zhang, 2009); b) the economic growth model of media study (Zhang, 2009); c) the model of media's impact on financial crisis (Li and Qiu, 2010).

4) Some scholars examine the mechanisms of media's governance role in microeconomic activities. They believe that the main path through which media affect microeconomic agents is that microeconomic agents would get administrative punishment once their violation behaviors are exposed by the media, and then the agents will tend to correct their violation and compensate for the damage (Li and Shen, 2010). Moreover, media exposure will not only influence managers' and board members' reputation among shareholders and future employers, but also in society in the future. Thus, it will lead economic agents to change their behaviors according

to the social norms and market pressure (Dyck and Zingales, 2002; Yu et al., 2011).

5) Attention is also paid to the media's direct impact on the economy as an industry. Scholars have found that media economy has promoted employment of related fields and stimulated the demand and supply of upstream and downstream industries, as it consumes a great amount of resources while producing media products (Li, 2009). They also believe the knowledge economy and technical economy represented by the media technologies of computer and network can directly contribute to GDP, optimize industrial structure, and improve industrial advancement (Li, 2010).

6) Some scholars focus on the interaction between media and economic activities. They not only analyze media's impact on economy, but also examine the impact of economy on media and then formulate the theory of interaction between media and economy. The theory proposes a positive correlation between GNP per capita and newspaper circulation and television coverage and a negative relation between illiteracy rate and ethnic diversity and media share rate (Islam, 2002). They also believe that there is a relationship between media and per capita income and educational level. Newspaper circulation and television ownership is inversely proportional to the state-owned composition ratio of media. They analyze the relationship between media ownership structure and economic development level empirically and conclude that media ownership ratio is proportional to state-owned component ratio and is inversely proportional to wealth level (Djankov, 2001).

(2) Studies of Media's Impact on Macroeconomic Activities

The existing literature on media's impact on macroeconomic activities are relatively abundant, and the interests focus on the economic growth, economic crisis, social justice, government behavior, economic policy, and social harmony.

1) There are studies on the relationship between media and economic growth.

a) Studies on media's role in economic growth

Some scholars argue that media will contribute to economic growth indirectly.

They believe that media in developing countries have always been viewed from a political perspective. People are always concerned about whether the media are subject to the political control or censorship and whether the politics is transparent or public opinion is free. The evaluation of media is always on the cultural value or on the economic value of media as an industry. Such research works are interesting indeed. However, the role of media is not so limited. In most countries, media industry's direct contribution to economic growth is relatively small. Nonetheless, media can indirectly contribute to economy and politics and cause huge changes of economic or political circumstances. Media's impact on economy is realized by affecting production and consumption decisions through transmitting information. New media technology can reduce delivery costs, increase possible economic variables, broaden geographical dimensions, and reduce government's attempts to control information contents for cultural or political reasons (Owen, 2002).

A school of scholars believe that media's impact on economic growth is determined by three factors: independency, information quality, and reach rate of media. First, they analyze the significance of media independency and information quality as well as the way to improve them from the perspectives of media industry ownership, economic structure, financial and legal structure and related industries such as printing industry and circulation industry, and the training of media practitioners. Then, they analyze the role of media reach rate from the perspectives of newspaper, television, and radio and the impact of foreign media. They draw a conclusion that media can have a tremendous positive impact on economic growth if the three problems above are solved and media can represent the public's voice (Islam, 2002).

Another school demonstrate that media is an essential factor of production, along with other economic growth factors such as capital, human capital, technology, and institution and will promote the growth of modern economy. The research study constructs an economic growth model that includes the communication efficiency variable and one economic growth model that is based on media study, makes mathematical analysis on the relationship between media and economic growth, and

concludes that communication efficiency could increase economic growth rate and cause workers to transfer from the product-manufacturing sector to the knowledge-manufacturing sector. The quantity, production efficiency, quality and externality of media will all have effects on economic growth rate (Zhang, 2009).

b) There are lots of studies on the relationship between media and the factors affecting economic growth. Some theorists assume that media can also affect vital variables of economic growth such as investment and consumption.

First, it is believed that news media can influence consumer expectation. The related research illustrates that in the case of high-frequency coverage of news, there are three reasons that cause consumer expectation to change frequently: the cost of information is relatively low when the news coverage is high. Consumers are willing to read articles or stories about recessions, as these are closely related to their future. Tons of economic experts and the government are concerned with the economic situation. The research makes empirical analysis by combining consumer survey data presented by the University of Michigan with the frequency of hint words such as "Declining", "Unemployed", and "Recession" in negative economic news and the quantity of such news. It is revealed that negative news reports have particularly significant impact on consumption expectation and the drop of expectation is often faster than the real recession: Consumers' expectation on economy is far less than the expectation of their future income. However, the impact will not last long—only up to a several months and the expectation will not keep on updating either. The research also summarizes factors that cause news reports deviating from economic base and they are the following: the relative importance of other news, instantaneousness of economic data, and the economic reports' motivation to attract the audience (Doms and Morin, 2004).

Second, some scholars hold that the impact of information (provided by media) about consumption is one of the most important factors for modern economic growth. They analyze consumer and investor behaviors both in the commodity market and financial market and surmise that consumers and investors all choose products and securities based on the information they have access to. The access of

information affects efficient functioning of markets, and the media are the providers of information (Stigler, 1961; Stiglitz, 2000).

Third, some scholars analyze the effects of media bias on consumption. The research compares news materials and news reports from several major newspapers in the U.S. and concludes that the media bias does exist in the production of news. News products do not accord to news materials, and the bias affects expectations and behaviors of news consumers (Groseclose, Tim and Milyo, 1997). The research also analyzes the phenomenon of the constant presence of so-called economists in the media who try to interpret specific events for the audience, question the correctness and expertise of their views and their real motivations, and believe the economists are misleading the audience (Hamermesh, 2004). Some works analyze the media bias of newspapers in U.S. when describing products or events and believe consumers would easily accept fictitious descriptions of products or events deliberately created by the media when they are lacking information. Competition among independent media with each other could reduce the bias to some extent (Gentzkow and Shapiro, 2006). Some scholars analyze the shortcomings of the financial column of Yantai Radio and suggest that financial columns of news media should be more focused, schedule resources, optimize consumption environment, lead rational consumption, protect consumers' rights, and try to promote domestic demands (Cao, 2010).

Fourth, some scholars believe that the media have an important and effective impact on the capital market. The research collects 432 hard news (headlines) in *New York Times* from 1950 to 1966 and then analyzes them by combining them with economic trends in the stock market. According to the result, hard news does not have a significant impact on the stock market, for only by a 10% chance there will be a direct change in the stock market on that day and by less than a 20% chance that any changes happen the next day. And then the researcher tests the impact of national crisis reports on the stock market and finds that news of national crisis will affect the stock market very significantly: there is a 42% chance that the market will have great change (Niederhoffer, 1971). Some studies analyze the impact of news

media when the stock market crash happened in 1929 and 1987 and when earthquake in Kobe of Japan happened in 1985. They conclude that although news reports will not cause significant changes in stock markets directly, reports will result in a strong ripple effect that will exacerbate the changes of stock market price, and media are also a main advocator for speculative price changes (Shiller, 2000).

c) Studies of the relationship between media and green economic growth

These research works are very rare and only emerge after the opening of Copenhagen Climate Conference and when issues of environment and low-carbon are highly concerned. The studies hold that the media responsibility does not only refer to promoting the low-carbon lifestyle of less pollution and more economy but also helping create absolutely new values. The role of media should not just be limited to a simply report of low-carbon policies of government but to foster the understanding and support of corporations and the public and promote successful implementation of low-carbon policy without conflict (Li, 2010).

2) There are many studies of the relationship between media and economic institutions. These studies are relatively abundant in number. They not only include works on the relationship between media and institutional change, but also media and economic policies and government behaviors.

a) Studies on the relationship between media and social institutional change and innovation

Some scholars believe that the media are important factors that have economic effects on the transformation of modern society. The research explores internal mechanism of mass media's impact on institutional change and creates one institutional change model based on media freedom institution and the other institutional change model based on media centralization institution. It then tests these two models with two institutional change cases of "The Hundred Days Reform" and the establishment of Rural Contract Responsibility Institution. According to the author, mass media play a very important role in guiding the change of ideas both in induced institutional change and compulsory institutional change. Media have an impact on shaping and developing institutional reform groups and on the result of

institutional reform (Zhang, 2007).

There are some research works on media's social responsibility in transforming society. The research regards media as an important factor in the transformation and empirically analyzes Serbian media's role in the social transformation of Serbia. As described, Serbian media have a big problem of lacking the sense of social responsibility and needs to be more self-conscious when dealing with problems of environment, pollution, and labor and human rights issues. The reason for the situation is related with Serbia's poor economic condition and undeveloped market (Radenkovic, M Radenkovic and Engus 2010).

Some scholars focus on media's new trend in transforming stage and research on the new emerged citizen newspapers that totally serve the citizens. The author conducts empirical studies on newspapers including Yangcheng Evening News, Xinmin Evening News, Yangzi Evening News, and other newspapers and believes that the newspaper has been influenced a lot during China's social transformation. In fact, the newspaper itself has changed and transformed. There are four characters of newspaper's transformation: the change from directing to practical and service-oriented; the change from producer-oriented to consumer-oriented and from planned economy reports to market economy reports; the change from complementary transmission mode (for instance, a complement of party newspaper) to complete information serving mode; the change from daily to evening, and adaption to the high speed of economic development. It concludes that media are a part of social transformation on the one hand and will also promote social transformation on the other (Li, 1999).

b) Studies on the relationship between media and government behavior

Some scholars analyze the openness and responsibility of government as well as the political accountability in public policies or conflicts between government and the public and propose that during such situations, mass media should, on the one hand, transmit correct information to coordinate the relationship between the government and the public and should also have its supervisory use for government behaviors (Stiglitz, 2002).

Some scholars believe that the media neither have the right to vote directly as individuals do, nor can it decide people's behavior. Instead, it should function as a leverage that can balance the government and the public. The research conducts an empirical analysis on the reaction of politicians and the public towards media broadcasting and concludes that media may drive politicians to consider introducing or executing some policies called by the public for their reputations and political lives. Then, their behaviors will be regulated and the relationship between the government and the public can be eased (Dyck and Zingales, 2002).

Some scholars analyze the media's role in the management of political corruption and discuss the way to strengthen such a role (Wang, 2002). Some discuss media's role in publishing government information and suggest that media should take state interests, public interests, and its own interests into account (Ji, 2004). Some analyze media's role from the perspectives of constructing a service-oriented government and believe that during the process of government's change from control-oriented to service-oriented, it is important for the media to function in directing public opinion, transmitting public information, constructing an interactive platform, and strengthening the supervision of public opinion (Xiang, 2006).

Some scholars believe that under the modern information theory, the marginal cost of information as a public product is almost zero, and price no longer represents everything. Corporations and families tend to care more about economic growth, unemployment and inflation rates, and pay more attention to economic data and information released by government monthly. Therefore, information both influences private agents' decisions of production and investment and the public's evaluation of the government. The media have their own roles in such processes. The research underlies the importance of information disclosure and media's role from six perspectives: principles of information disclosure, media's role in realizing disclosure, the importance of information disclosure to democracy, security motivations, and so on. It then refutes the argument that the government should choose what to monitor based on the agenda and interests, and transparency and openness of government will not bring any interests since they do not meet the

agenda. At last, it proposes that accurate and timely publicizing of information enables more effective allocation of resources, while unclear information will not only harm the political process, but also harm economic results (Stiglitz, 2002).

c) Research of media's impact on economic policies

Some scholars believe that media have an institutional mechanism in a game between the conflict and cooperation on policies and can change conflict into cooperation. The research makes regression analysis on news information and political information exposed to the public and the reaction of the public and finds out that news and political information will affect people's economic attitudes but with a time lag. There are four factors that will influence media's transforming conflict into cooperation: media autonomy (depends on market force, economic environment, and political pressure); legal structure (laws and regulations on information that can be obtained and published); quality of media; consumer demand (the most important one among four factors). At last, the research draws a conclusion that media are important factors in solving the conflicts between the government and the public and in making new economic policies implemented successfully. For economic development, the following measures can be used: privatize every aspect of media industry; open borders to foreign investment and media; stimulate consumer demand (Coyne and Leeson, 2004).

3) Finally, there are many studies of the relationship between media and social development, justice, and harmony.

a) Research into the relationship between media and science and technology progress

Some scholars analyze the history of media technology development and claim that media accelerates science and technology communication, spreads scientific knowledge, and promotes the progress of science and technology (Li, 2000). Some emphasize scientific journals' role in knowledge economy society and take it as a main tool in transmitting scientific knowledge. It has the effects of lifelong education, human resource exploration, and knowledge inheritance and innovation (Liu and Li, 1999). Some discover that information technology industry has experienced four

stages: "hardware-based", "software-based", "network-based", and "content-based". Media industry will become a powerful "value-added service space" for the information technology industry (Jin, 2002).

b) Studies on the relationship between media and social justice

There are two opposing views: one is that the media technology can widen the gap and increase the difficulty for developing countries to enter global market; the other is that media will accelerate development of these countries. They assume that there are both advantages and disadvantages for developing countries when using the media technology. The research makes empirical analysis of media markets both in China and Africa and compares the benefits and costs that new media bring to governments and people in developing countries. It concludes that new media eliminate some kinds of technology gaps and directly promote political and economic progress. However, it also causes new inequalities. To copy media technologies directly from developed countries can bring short term rapid development of economy, but it may cause problems such as lack of innovation in the future (Ludlow, 2007).

c) Research into the relationship between media and social harmony

Some scholars compare the feature of network and its influence on the society both for China and abroad and propose that network is now challenging the ruling idea and ideology management of China's government in an irreversible way. They believe that strengthening scientific construction and management of new media such as Internet in China are very important for constructing a socialist harmonious society (Lu and Wang, 2006). Some believe that media's role in constructing a harmonious and civil society is decided by media's nature, namely the coordination of media and harmony of society, the authenticity of media and justice of society, and the people's feature of media and people-centeredness of society. They conclude that media can either promote or restrict the progress of society (Lu, 2005; Yan, 2009).

(3) Studies on Media's Impact on Microeconomic Activities

Studies in this area are not very sufficient so far and the works in the literature are as follows.

1) Some works focus on media's direct impact on microeconomic activities.

a) Studies on media's impact on corporation governance

Some scholars believe that media have a complementary role in corporation governance besides legal sanctions. The research empirically analyzes media's role in corporation governance and shows that after media's exposure, the illegal corporation will face administrative punishment from the government. Then, it will tend to correct its violation behavior and compensate for the damage. On the contrary, corporations unexposed by media will tend to continue their violations (Li, 2010). Some take the Enron Event for instance, empirically analyze media's role in the corporation supervision, and suggest introducing specific laws of media's supervision on corporations and economic activities in order to direct media's supervision, protect its rights, and coordinate the relationship between media and corporations (Cheng, 2002). Some believe that media have a very special role in corporation supervision and collaboration. The research empirically analyzes corporations' reaction towards reports and concludes that although the media will not set activities of economic agents directly, media exposure will not only influence managers' and board members' reputation among shareholders and future employers, but their reputation in society in the future. This will lead economic agents to change their behaviors according to social norms (Dyck and Zingales, 2002). Some find that bad news carried by media will have economic consequences. By analyzing the panel data of 273 Chinese listed companies from 2009 to 2011, it is found that negative media reports can leave bad performance for the enterprises exposed by media. The negative impacts vary with the frequency, content, and pattern of the reports (Huang, 2013). Some take media as an external power for corporate governance. To enact its governance role, the media have three mechanisms, namely traditional motoring mechanism, reputational mechanism, and

market pressure mechanism. The three mechanisms have their own advantages and limits. So, it is not easy to determine which one is in the leading position (Tian, 2016).

b) Studies on media's role in the development of private enterprises

Some scholars collect and analyze news reports on private enterprises in China. They believe that in China private enterprises belong to the "vulnerable group" and need to be treated equally as state-owned enterprises or with even more privilege sometimes (Lin, 2010).

c) Studies on the relationship between media and corporation brand

The research affirms that the wide application of new media, especially new media's role in advertising, public relations, marketing communication, and interpersonal communication for media, will expand its role in communication by linking it with marketing and enriching it in terms of content. However, the problems of neglecting consumers' feelings and lack of effective control and regulation taking place simultaneously should not be ignored. The author suggests that to transmit real information is the first principle in brand communication (Ma, 2009).

2) There are also studies on media's indirect impact on economy through the impact on politics, culture, and the public opinion. Most of them fall into the category of new political economics.

a) Some scholars analyze media's impact on the economy by influencing politics and focus on the Internet's effects on politics. They find that with regards to the view of the public, the Internet first promotes the public's political participation. Internet's characters of equality and openness provide the public with convenience to discuss and comment. Thus, the public has more opportunities to participate in political affairs. In addition, the Internet also advocates the consultation among the public or between the public and the government. They conclude that, on the one hand, the Internet provides the government with a platform to release laws or policies; on the other hand, the public can also use the Internet to discuss newly released laws or policies. The government's intention and the public's demand can be interacted and communicated in the platform and finally the agreement could be made in discussion (Zhao, 2010).

b) Some scholars analyze media's impact on economy by influencing democracy. Some find that the media bias exists in the process of news production and it is not only caused by editors but by government or news enterprises because of their own interests. Such a bias is hard to eliminate and will harm democracy (Sutter, 2001). Some research on the two most popular search engines GOOGLE and YAHOO find that the two engines are not public goods and do not serve for the public. Instead, they are driven by advertising interests (Couvering, 2004). Some scholars do researches on media's role in public area. Media are regarded as an important form of power to realize the idea of democracy. Media should only be a platform for public discussion and information provision. It could promote the formation of the public opinion by organizing "private citizens" into a "public body" (Shi and Zhang, 2005).

c) Some scholars analyze media's impact on economy by shaping public opinion. Some define media as an important public opinion instrument and believe that media should direct public opinion accurately and actively. Media have the own roles in constructing democracy and a harmonious society (Fang 2006). Some focus on media's function in shaping public opinion and find that sometimes media will provoke public anger or sympathy. This function will have a negative impact on sentencing or conviction (Wang, 2006). Some analyze the phenomenon of "media Judge" and research on media's positive and negative role when reporting social issues. They believe media should stick to its own role. Media should not judge by itself instead of judicature through public opinion (Dai, 2005). Some analyze media's role in guiding public opinion and give advice on how to improve media's ability in directing public opinion and developing mainstream public opinion during social transformation period (Li, 2010).

2. Studies on the Relationship between Media and Market

Works on the relationship between the media and the market are quite rare, as media are always excluded from the market theory model. As a result, most of the studies fall into the category of specific analyses, instead of generalized analyses.

(1) Theoretical Analysis of Media's Impact on Market

Generalized studies on the relationship between media and market lay in three aspects as follows.

1) The first aspect is media's impact on market efficiency. Marion (2002) researched the different corporations affected by various amounts of news reports and found that the numbers of branches and employees of the corporation will influence the number of news reports on it. Besides, there is a positive relationship between the profitability of the corporation and the amounts of positive news reports on it. Li (2008) discovered that most of the public and private information are carried by the media. Efficient media attentions could accelerate the quick transmission of information, which reflects in capital price. Then, effective distribution of resource can be realized to advocate the development of capital market. Bushee, Guay and Hamm (2010) believed that a high coverage of media is good for the quick transmission of information, which will reduce the information asymmetry in the capital market. Gao (2012) discussed the basic idea of the way media influences the stock return. Media have the positive effect of protecting investors and the negative effect of causing the price of capital to be too high due to enough information.

2) The second one is media's impact on market participants. Most of the studies focus on investor behaviors. Shiller (2000) exhibits investor behaviors in the market in his book "Irrational Exuberance". He believed that the media have a role of pushing the soaring or declining stock market. News media are very important in the forming of investor confidence and expectation. Driven by cognitive biases, investors will "overreact" to good news or bad news. Odean and Barbe (2008) reveal the role of media from the perspective of how individual investors distribute their attentions. The buying behaviors of individual investors are usually driven by the attention. To be more specific, important news will cause significant changes of returns. The changes will catch investors' attention and influence their behaviors at last. Hong and Hubik (2008) discovered that investors are vulnerable to be influenced by the

people around them. A fund manager is more likely to buy or sell the same stock as the other managers around do, which will cause local preference. The research helps understand why investors tend to buy stocks from listed companies that they are familiar with. Yang (2007) reviewed the literature on media's impact on capital price and believes that media will influence investors' behaviors, which will consequently change the capital price. The basic rule of how media will influence investor behavior is discussed. Media will process and transmit information out of its own interests and affect the capital price by changing the participation and expected returns of investors. Besides, the research also shows media's impact on the managers. Joe, Louis and Robinson (2009) analyzed the impact of media attention on the board and found out that a firm tends to actively improve the efficiency of the board when the board members of low efficiency are exposed by the media.

3) The third one is media's impact on market fluctuations from the perspective of economic crisis.

a) Discussions of whether media exacerbate or delay the financial crisis

In the analysis of the general path of media's impact on economic crisis, the research discusses the mechanism that new media will influence the economic crisis through changing the breadth, speed, and depth of information transmission to affect market confidence, and thus indirectly affect the process of the economic crisis. It concludes that new media can enhance and accelerate the spread of economic crisis economic recovery. Historical data of the U.S. and Japan and Australia confirms the conclusion (Li and Qiu 2010). Some also analyze media's role in economic crisis from the perspectives of consumption. The research uses theories of "agenda-setting" and "self-fulfilling prophecy" as theoretical basis, observes and studies media's performance during financial crisis and compares news reports on the crisis in China and abroad. It argues that compared with foreign news reports, reports on crisis in China have 12 shortcomings such as structural imbalance, fuzzy and neutral views, unilateral and non-objective contents, too many comments and monotony in forms. The research concludes that the reason for these shortcomings is that there is a gap between reality and the pseudo-environment due to the deviation of media's types,

interests, and demands in China and also due to the lack of preparation for financial crisis and relatively undeveloped level of media. The solution for these problems is that media should accomplish seven improvements such as restoring the base of market information, strengthening public opinion guidance, releasing the supervision, and so on (Yu 2009).

b) Discussions of media's role in financial crisis

The research emphasizes that although different media provide news reports of their own characters when making intensive reporting on financial crisis due to their different forms, contents, and locations, there are some things in common when Chinese media face a global financial crisis for the first time. The research picks print media such as People's Daily, Modern Express, and 21st Business Herald, broadcast media such as Wall Street Storm and First time, and television media such as Brain Storm and Stock Market Today to make a comparison of characters and intensities of their reports. The research finds out that the different media have three similarities during the financial crisis (Guo 2009). Besides, there are also some researches that analyze media's role in public crisis with different examples of events from different angles (Li, 2010; Song 2008; Li, 2009; Chen, Zhao and J Zhao 2010; Zhang 2006; Zhang and Zhong, 2009).

c) Empirical analysis of the relationship between media and economic crisis

These studies mainly investigate the effect of media's role in economic crisis. Kaminsky and Schmukler (1999) researched the correlation between the sharp fluctuations of stock prices in nine Asian countries and published important news both domestic and abroad during the Asian crisis. Ganapolsky and Schmukler(1998) refined the role of news media into every factor that could reflect on economic performance and identified the relationship between them. Some traced down the detailed information of government's policies on addressing economic crisis as well as the exact date and time when the information was published by the media. On the other hand, they collected the stock market index, bond prices, and the deposit rate of the same day. Then, they matched the two data sets to see the reaction of market factors to the news. They concluded that good news has a positive impact on the

recovery of market (Edison, 1997). Some start from economic variables such as stock market, find out the day when the biggest fluctuation takes place, and investigate if the interpretations of news or policies related to the economic crisis are published. A very special reason to cause economic crisis is found by the research, namely the contagion mechanism of media. They emphasized that bad news has a significant effect on market variables (Kaminsky and Schmukler, 1998). These studies analyzed the news reports in a certain economic crisis on the basis of the event study method and used data to prove that market variables, market fluctuations, and news reports published by the media are related.

(2) Analysis of Media's Impact on the Changes of Some Specific markets

Most of the studies on media's role in a specific market rely on stock market and real estate market.

1) Some of the studies focus on media's role in the stock market.

Meschke (2004) collected the data of interviews of 6,937 CEOs by CNBC to investigate if media can influence a firm's stock price systematically. It was found that the interview of the CEO would draw attention from the investors, cause significant willingness to buy, and finally affect stock prices. Chan (2003) investigated the stock returns of the firms that were reported by news and a comprehensive database of headlines about firms was used. The research discovered that there is a drift after news, which indicates that investors underreact to the information. Besides, the drift after bad news is stronger. Fand and Peress (2009) research the existing media coverage effect in U.S. stock market. The returns of stocks with no media coverage tend to be greater than those with high coverage. The frequency of media coverage influences stock returns. Tetlock (2007) measures the interaction between media and the stock market qualitatively. A pessimistic attitude of media imposes a downward pressure on stock prices with the reversion to fundamentals. Unusual pessimistic attitudes are always associated with a high market trading volume. Pollock and Rindova (2003) believed that the information offered by media can affect investors'

impressions of newly listed corporations. There is an inverse and diminishing relationship between the volume of information and underpricing. A positive relationship exists between the volume and stock turnover. Those will finally affect IPO's legitimacy and investor behaviors. Rao, Peng and Chang (2010) tested the relationship between media coverage and monthly stock returns. They claimed that high media coverage of a listed firm will cause low average stock return in the following month. The unusual condition of stock returns mainly happens among the weak performance of stock combinations with high media coverage. Besides, they also researched the impact of media coverage on capital pricing and deemed that media coverage will lead to "ranking list effect". Kim (2016) collected a sample of more than two million newspaper articles and find that media play a role in decreasing stock price synchronicity, increasing the probability of informed trading, and reducing stock price deviation from random walk. It is also suggested that a market-driven media can work as a governance tool in the transitional economies like China. Zhang and Wu (2015) compared two different roles of media coverage: information explanation and information discovery. By using LDA (Latent Dirichlet Allocation) topic model, they demonstrated that the information explanation is more effective on A-share market investors than the information discovery in China.

2) Some highlight media's role in the real estate market.

The studies focus on two aspects: one is media's role in the real estate market; the other is the impact of the Internet on real estate market.

a) Studies on media' role in real estate market.

Sun et al.(2014) combines media attitudes and the ways that people search for information to examine new media's influence on the market expectation. They establish a model integrated the contents of websites with Internet searching modes and try to predict house prices with the model. Mercille (2014) investigates the news reports on the bursting of housing bubbles and the financial crisis in 2007 by Ireland mainstream media and finds out that the mainstream media have no use in predicting the bursting of the crisis. Walker (2014) does research work on the relationship between news media and housing price boost. Media are found to have

impact on housing prices but will not drive the boost. Anglin (1997) studied on the buyer strategies in real estate transactions and found out that the transmission effect of mass media could lower the time and cost for buyers when they select houses. For the empirical results, the use of newspapers and television has significantly promoted trade efficiency and reduced transaction cost. Li (2012) believes that real estate agencies are using new media for marketing in order to obtain more shares of the market with the development of media technologies. Zhao (2005) evaluates the concentration ratio of 9 daily papers advertising of Beijing in 2004 by using structure-behavior-application analysis mode. He also analyzes the pressure on newspapers by real estate, the deviation of news and opinions offered by media from public interests and finds out that news and opinions offered by media are inevitably constrained by commercial powers such as advertising structure.

b) Studies on the Internet's role in real estate market.

Some believe that the depth and width of the Internet have transformed the impacts of capital accumulation, labor input, technical progress, institutional change and market on real estate industry both from time and space. Internet has pushed the development of real estate market such as the technical progress of real estate economy, the refining of labor division in real estate industry, the improvement of real estate market institutions, the reduction of transaction costs, the share of related knowledge, the economic growth related to real estate industry and the displacement of traditional resources in real estate market by information and knowledge (Yang, 2003). Vandell and Green (2000) examined the impact of Internet technology on commercial property. On the one hand, Internet has increased the supply of real estate information and reduced information asymmetry in the market. On the other hand, Internet has provided the evaluation on real estate which will promote the trade in the market. Finally, Internet has simplified the transaction cost, eliminated the broker, and made the consumer to trade with the firms directly.

Some studies propose that Internet will influence real estate transactions. Rutherford and Yavas (2006) believe that the main role of Internet in real estate

transactions is to reduce transaction costs. The Internet can influence the price through capital homogeneity. Ford et al. (2005) explore real estate sales by Internet agents and the impact of Internet on transaction time and price. Empirical results show that the real estate sale by the Internet agents has a higher price than the price of sale by the brokers. They believe that on the Internet each buyer wants to find a better house. So, he or she is willing to pay for the most suitable house at a higher price. Therefore, transactions by Internet could help sellers to earn more. Beracha and Wintoki (2013) analyzes on the impact of online searching intensity on the future changes of housing prices. They discovered that the abnormal online search intensity in a city could predict the abnormal changes of housing prices in the next period. Zumpano, Johnson and Anderson (2003) investigate on the effect of Internet usage in real estate transactions. They find that when using Internet as a searching tool on houses, the buyer's searching time has not been reduced. On the contrary, people tend to put more time on searching house information on the Internet since the searching costs have been reduced.

3. Comments and Evaluations

Based on the literature review above, we conclude that there is progress in the theoretical analysis on the relationship between media and economic activities as well as economic crisis. However, there is plenty of room for innovation.

(1) Characteristics of the Existing Research Works

There has been some development in the theoretical analysis on the relationship between media and economy and their characteristics are as follows.

1) There are diverse perspectives in those researches. Research works on the relationship between media and economy are from different perspectives since the study is a multi-disciplinary issue. There are researches from economics, communication studies, sociology, or philosophy. Among those researches from the perspective of economics, they can be divided into Marxist political economy and

western economics that could also be divided into microeconomics, macroeconomics, econometrics, and neo-political economy. As for the studies on the relationship between media and economic activities, some are from media studies, some are from information economics and other are from sociology.

2) Multiple research methods are employed. There are two reasons. Researches on the relationship between media and economic activities are from multiple perspectives, which require different methodologies. Additionally, the market as an economic phenomenon is related with many aspects such as politics, culture, nature and others. Therefore, multiple research methods are used in the studies. Some studies use theoretical analyses, some use empirical analyses, some use methods of media studies and others use methods of sociology and philosophy. Among those theoretical analyses, some fall into the category of descriptive analysis and others into mathematical analysis. Among those empirical analyses, some fall into the category of case studies, some into Econometrics, and others into analysis based on experience.

3) Contents of the studies are various and abundant. Research on the relation between media and market consist of enormous contents, with almost every aspect of social and economic life covered. Those researches include the basic theoretical studies of their relations, which are not much in amount but serves as the basis of related researches. Among them, some relate to the relation between media and macro economy, including research works on the relationship between media and the economic growth, the relationship between media and the economic crisis, media's role in consumption and investment, media's role in economic policies, media's role in natural resource and environment, the relationship between media and social equality, media and social institutional change and innovation, media and governmental behaviors, media and social harmony, media and technical progress and so on. Some are about the relationship between media and micro economy, including the relationship between media and enterprises, media and the development of private enterprises and their brand-making, and also the role of media in politics, which will influence economy through its impacts on democracy or

culture. As for the research works pertaining to the relationship between media and general market, some of them are from the relationship between media and specific markets such as stock market or real estate market, some are from media and market, and the rest are on media's technical support of Internet.

4) Research is interdisciplinary. Studies on the relationship between media and market are not from a single discipline, but with interdisciplinary characteristics. It is quite difficult to figure out which discipline belong to for some studies since they have the characteristics of economics, sociology, and communication studies. For instance, Doms and Morin (2004) did a regression analysis based on the data of questionnaires on consumers' expectations and their attitudes toward news, which were related to economics and sociology. Islam (2002) analyzes the way that media influence economic growth through media coverage, and his study is related to communications and economics. Dyck and Zingales (2002) studied the effect of media on politics, relating with neo-political economy, communications, and sociology.

5) It might be improper to try to distribute all the studies onto a timeline. For on the one hand, studies from the disciplines of media studies or communication studies recognized and admitted the role of media in economic activities much earlier than those from the disciplines of economics. Conversely, there are early studies from the disciplines of economics on the role of news in some specific markets as well.

In a word, studies on the relationship between media and economy have made some progress, which serves as the basis and origin of this research work.

(2) Evaluations of the Existing Research Studies

After having a comprehensive look at the existing research studies, we discovered that there is still plenty of room for further research.

1) The studies are not systematic enough. The academia has an extensive research scope on the relationship between media and economy. Studies on this topic are

either theoretical or empirical, sometimes policy suggestion. However, most of them have the characteristics of loose, disorder or not systematic. Each discipline or even each scholar makes analysis from a specific angle or on up to a specific point. There are hardly any works to be systematic or with a global view, especially for the study on the relationship between media and market, which is extremely weak with the necessity for systematic, theoretical, and empirical research works.

2) The studies are not in-depth enough. The academia has abundant researches on the relationship between media and economy. However, most of them have remained on the surface of the phenomena or fall into the category of case-by-case analysis. Studies on the path, factors, mechanisms and principles of media's effects on market activities are quite rare. Although there are some highlights in the literature, most of them are still scratching the surface. They have touched upon some contents but with no further exploration, let alone a systematic study.

3) The studies are not practical enough. The academia has multiple research methods with which to study on the relationship between media and economy. However, among the theoretical studies, most of them are subjective reasoning, descriptive explanation, without the support of empirical analysis. Among the empirical studies, most of them only focus on technical analysis, and try to test one certain issue, neglecting the basis of theories. Linking theory with practice is necessary.

Therefore, this study will mainly utilize research methodologies of economics, such as descriptive and mathematical analysis methods of theoretical economics and empirical methods of econometrics. Besides, research methods of sociology and communication studies will be adopted as well. The study will introduce media as a variable in economic activities into the framework of microeconomics and conduct a systematic theoretical analysis on the mechanisms, principles and effects of media's role on market. A framework of market changes theory with media introduced will be constructed. Empirical tests will be performed, and effective advices will be given to contribute to the solution of market failure.

CHAPTER 2. THE DEFINITION OF MEDIA: MEDIA + INFORMATION

On strict terms, as a carrier, media are not able to influence the economic activities solely by themselves. Media without information are like a truck carrying no goods and will be of less use to the economic activities. Departing media from information is one of the main reasons that media is not included as an economic variable in the framework of economics. However, in the real world, with the expanding influence of media on social and economic development, media have been an important factor in economics, which could not be neglected any more.

1. The Development of Theories about the Relationship between Media and Economic Activities

In order to redefine the media, it is necessary to recapture the theoretical development in the relations between media and economic activities. This step cannot be skipped, as it is the starting point of the logic for this research.

There is always a close relationship between media and social economy. For example, the traditional forms of media--newspapers and magazines were the main ways of collecting information of business and commodities for businessmen and consumers. The 20th century witnessed tremendous changes in the forms of media, the advertising industry, newspapers and magazines and TV industry were prospering, and the media products and services were becoming increasingly diverse and accessible, which made it more and more important in the social economy. Conversely, the media industry has been expanding, and become a main industry in the national economy, which contributes tremendously in the social and economic growth; on the other hand, it helps the other industries to realize their profits. Thus, its role in economy is prominent, as well as in politics, culture, and other fields, and it becomes a non-negligible factor.

With the evolution of media factor in the social economy, several questions have been raised by the scholars in various fields: what channels media take to exert

influence and what is its mechanism. There are various related researches in sociology, political studies, psychology, and economics, which are the beginning of studies on the relationship between media and economy.

(1) The Theories of the Relationship between Media and Economic Activities

In the early stage, theorists focused on the relationship between media and economy from the perspective of media's role in economy. The related researches were conducted in the fields of psychology, sociology, politics, history, and literature reviews. Later on, with the development and widely use of the media form—advertisement: its influence in the socioeconomic activities was expanding, and the related researches and discussion were heated.

In the 1970s, with the emergence of TV, media were not only methods of information transmission, but also were increasingly industrialized and later developed as an independent industry. Some scholars began their researches on the media industry and discussed the role of media industry in the economy. Owen, Beebe and Manning (1974) explored the TV media from the perspective of economics.

In the 1980s, with the complication of media industry and its greater contribution, the scholars began to concentrate on the operation, organization of the media companies, the competition between them, and consumption of media products and a series of economic, financial, and monopoly problems ensued. Picard (1989) discussed the economic structure and organization of this industry; Albarran (1996) investigated the global media economy; Owen and Wildman (1992) analyzed the economic problems within this industry.

In the 1990s, the related researches were more diverse, with the introduction of new concepts and methodologies, such as Waterman's (1993) research on the vertical integration and centralization of information transmission; Holtz-Bacha's (1997) exploration of the internationalization of media, and Globerman and Vining's (1996) explanation of the influence of the policy and market change on the public

broadcasting.

From the late 1990s to the beginning of the 21st century, media's role as an economic factor in the economic activities has been explored. There were several related research works on this aspect, but not in a systematic way, and mainly scattered in various fields, such as journalism, communication studies, economics, and politics. In the twenty-first century, with the development of the media technology, especially the Internet, media are viewed as an economic factor. The most important theory developed so far is Picard and Rimmer's (1999) analysis on the impact of economic regression on the media and media's role in the global economy. Meanwhile, there were some papers about the media imperialism. Pagani (2000) analyzed the revenue of interactive TV and business mode and discussed the free newspaper issue.

All above is the development in theories of relationship between media and economy in the foreign theoretical circle. As for that in the domestic theoretical circle, it began from 1978, although the media economic activities emerged from 1949. The lagged development was due to the position of media as the educational tool from 1949 to 1978, as well the carrier of political movement, the voice of government and Communist Party, thus, its economic component was neglected. Since 1978, the theoretical development began to prosper, and after 1982, it entered another stage. The interests in this issue were diverse, such as the nature of media products, the relations between media and productivity, the economic function of media as well as the media industry and market. Then, from 2002, it embarked on another new stage—the invention of new theories. The depth and width of the researches are upgraded.

(2) The Characteristics of the Theories of Relationship between Media and Economy

Usually, the related researches are multi-disciplinary as well as the academic background of many researchers and scholars. They generally take various

perspectives in the analyses.

First of all, despite the diverse perspectives, they all recognize that the media would exert influence on the society. The famous French psychologist and sociologist Tarde described the functions of media industry in his book *The Law of Imitation* published in the end of 19th century. First, he confirmed the role of imitation in the formation of human nature and a social human being, achieved by the transmission of information among individuals, which indirectly viewed the transmission as the basic interactive method.[8] In *Public Opinion and Group* published in 1901, he studied the structure, formation and process of public opinion, and highlighted that newspaper is the bond of public spirit, which is important in the formation of rational public opinion and the establishment of media industry signals the growth of public and group. [9]His argument reveals the link between media and social public and confirms the contribution of traditional media towards social development. As the founder of American Communication Studies, Cooley explained the role of communication in the social development, and took communication, human nature, social development, media development and modern communication as objects, and analyzed their relations from a new perspective. First, he criticized Spenser's social evolution theory, for he believed that the communication can promote the socialization of individuals, as well as social progress.[10] Second, he held that communication helps to remove the disorder of the intellectual world and forms a peaceful and original intellectual world. If it expands and upgrades, it would promote the social development, for it could transmit the information that contains the correct interpretation of life and world. He thought highly of the modern media, for they were convenient and fast, combining the society and freeing the human nature, which would enhance the effects of communication. In addition, the incentive effects of modern media could facilitate the democracy, socialization of individuals and social development. Cooley's research sets the basis for the future analysis.

The American education expert Dewey highlighted the meaning of communication

---

[8] Gabrielle Tarde. *The Law of Imitation*. Henry Holt and Company, New York, 1903.
[9] Gabrielle Tarde. *Opinion and Conversation*. Henry Holt and Company, New York, 1901.
[10] Charles Horton Cooley. *Social Organization*. Charles Scribner's Sons, New York 1909.

to the society in his book *Democracy and Education* (1915). He argued that society exists through transmission of information and communication, and it would not exist without them, which means that the mass media promote the social progress.[11] He added in *Experience and Nature* that media are tools that free human beings and prevent us from being too stressful, and enable us to share the valuable knowledge in the society and to live a meaningful life.[12] It is the extension of his first argument.

Park is a leading figure in Chicago school and a follower of Dewey. He continued the discussion of media's role in forming public opinion. In *Immigration Newspaper and its Control* (1922), he defined communication as the social psychological process of predicting others' views and attitudes to some extent, and the way to develop the individual's opinion to be part of the public opinion, and the role of mass media in the formation of public opinion.[13] These analyses are the basic for further discussion.

In *Free and Responsible Media* (1947), Hutchins explained the relations between the freedom and responsibility of media. He also defined its social task. He emphasized that the voice of public had been controlled by a small group, such as the financial institutions and wealthy people, for they had a big say in exchanging information and views, which would not only directly threaten the opinion market, but also undermine the base of democracy, public participation, and public expression. Within this context, the media organization should utilize its freedom and take the social responsibility, which is vital and unavoidable. He called for the improvement of news agencies to upgrade themselves in morality, democracy, and self-discipline. The ideal media should provide authentic and complete coverage of the event, become the platform of opinion exchange, display the real picture of the society, expound the social goals and value systems, and also provide information at any time.[14] This research study is from the perspective of media political economy, which makes it original and new.

---

[11] John Dewey. *Democracy and Education*. MacMillan, New York, 1916.
[12] John Dewey. *Experience and Nature*. Dover Publications, New York, 2000.
[13] Robert Park. *The Immigrant Press and Its Control*. Harper & Brothers, New York 1922.
[14] Robert Hutchins. *A Free and Responsible Media*. Columbia University Press, New York, 1947.

In the research works above, media are treated equally with the other agents. In contrast, in the theory of the spiral of silence, it is in the center. This is a political science and mass communication theory propounded by the German political scientist Elisabeth Noelle-Neumann. The theory asserts that a person is less likely to voice an opinion on a topic if one feels that he or she is in the minority and fears of reprisal or isolation from the majority.[15] Based on this theory, Neumann expressed the view of a strong mass media, for the public opinion is formed by the interaction of mass media, interpersonal transmission, and the cognition of opinion environments. The opinions emphasized by the mass media are public and active, which tends to be viewed as the opinion of majority. Then, the public opinion takes form in the spiral process. It means that the media take initiative in forming public opinion.

Second, the researches stress the mechanisms or channels of media on the social economy, namely the way the media exert influence on economy. In the 1920s, Lippmann provides a classical explanation, the pseudo- environment theory. He argued that mass media would develop an information environment—pseudo-environment, after selecting and processing the information of the events by the media[16], which is in contrast with the real environment. Due to the complication of the environment we are living, it is very difficult to have a complete understanding of the world. Therefore, we have to rely on the pseudo environment that mass media create to produce judgment. Therefore, human beings in the society are not only confined by the objective environment, but also by the pseudo environment. It would influence human being's cognitive ability, as well as their views on the real world. He also proposed agenda-setting which means mass media contribute to the formation of prejudice in the society and would further have impact on people's idea. It is another channel of media's role in public opinion. It is the first time that the theories of public opinion are systematically organized, and the

---

[15] Elisabeth Noelle-Neumann. *The Spiral of Silence: Public Opinion--Our Social Skin*. University of Chicago Press, Chicago, 1993.

[16] Walter Lippmann. *Public Opinion*. Translated by Kewen Yan and Hong Jiang. Shanghai Renmin Press, Shanghai, 2006.

process from mass media—pseudo environment—audience is established.

Hovland was the first scholar to apply the experimental psychological theories in the research pertaining to media. According to *Communication and Persuasion*, there are four main elements in this research: communicator, message, audience, and the response of audience. He conducted experiments to test the credibility, immunization, fear and sleep, and found out that the credibility is decreasing all the time, and changes in people's attitude depend on the persuader's situation, the persuasiveness of message itself and the sequence of questions posted.[17] His persuasion theory is the basis of analysis on the influence of media on society. The perspective from experimental psychology is rather enlightening for the future study.

In *Mass Communication and the Social System*, the Riley couple propounded the broadcasting mode, and described the steps of transmission of information from the individual to the group and then to the whole society. The first step is the personal transmission, for the deliverer and receiver form a single system by themselves and are very active within the group; the second step is interpersonal transmission, that is, to link the single system with other single systems; the third system constitutes group transmission, for the single system is not independent, but belongs to a group; the fourth step is the social transmission, conducted in the social structure and system, interacting with the political, economic, cultural and ideological aspects of the environment.[18] The progressive steps from point to line and then to surface constitute the process of media functioning in the society.

Several scholars interpreted the function of media as decoding and interpreting. For example, Schramm－Augustus model (1955) stated that the disseminator and receiver are subjects, and their roles are alternative in different stages. It emphasizes the interaction of social communication, and to some extent, it highlights the connection and interweaving in the process of social communication.[19] Stuart Hall's encoding and decoding theory focuses on the role of audience, and takes mass

---

[17] Carl I. Hovland, Irving L. Janis and Harold H. Kelley. *Communication and Persuasion*. Greenwood Press, Westport, 1953.

[18] John W. Riley. *Mass Communication and the Social System*. Harvard University Press, Cambridge, 1959.

[19] Wilbur Schramm. *The Process and Effects of Mass Communication*s. University of Illinois Press, Champaign, 1955.

media as the encoding and decoding of the national ideological institutions, and the audience's interpretations of media products are subjective, based on their social position and status. The decoding method is dependent on the similarities and differences between the views of the audience and that of the ruling class and is divided into three categories: the forward interpretation, compromise interpretation, and antagonizing interpretation.[20] In Maletzke's mass communication model, the concept of field is introduced, and mass media are the field that all the social influences interact with each other, including the social psychological factors. In this system, the audience faces the pressure from media disseminator and is restricted by other factors. Therefore, it is a very complicated process that necessitates the systematic analysis of all the factors and forces involved.

There are also analyses on the components or elements of the media content. The most influential theory is 5 "W" theory, namely who, what, whom, what channel, and what effect.[21] In this classical theory, Lasswell listed the five elements, which constitute the complete transmitting mode. Many scholars have built on this theory and formed five research interests, namely control, content, audience, media and effect, which is the extension of 5W. They are the basis for the future analyses on effects and outcomes of media.

With the deepening information revolution and the invention of new media technology, scholars developed their interests in the media technology. Some of them introduced the physical process of media transmission by employing scientific methodology. For instance, Shannon and Weaver (1948) proposed the famous Shannon-Weaver model of communication in the "A Mathematical Theory of Communication", to explain the linear communication model in the telegram. The process of communication comprises five stages, and the concepts of noise mechanism, feedback mechanism and experience rage are introduced, which explains how the internal and external factors would affect the effects of

---

[20] Stuart Hall. "Encoding and Decoding in the Television Discourse." CCCS Selected Working Paper 2, Sep., 1973, http://epapers.bham.ac.uk/2962/.

[21] Harold D. Lasswell. *The Structure and function of Communication in Society*. Translated by Daokuan He. China Communication University Press, Beijing, 2013.

communication, and may lead to the distortion.[22] Extending these concepts to the analysis of the social communication helps to highlight the other leading factors, besides disseminator and audience. The audience's political, cultural, religious and educational backgrounds are one of them, and the similar backgrounds would be conducive to the communication. Meanwhile, the audience is not passive in receiving information, for they would present their feedback to influence the further communication.

DeFleur improved the Shannon–Weaver model and added elements, channels, and steps of feedback. His model overcomes the single linearity problem and takes the transmission as an interactive social system, consisting of society, group and individuals.[23] Among them, the prerequisite of media impact is the coexistence of media, audience, and social system, and these three factors are all related with each other and mutually determining the process of maintaining, changing, and conflicting. Their relationship shows that the media system is a vital branch of the social system, and the changes in the political and economic powers are closely related with the media system.

Some scholars combined the physical elements with social theories in the analyses on the communication. In the 1960s, Toronto school was formed in Canada, with Innis as a leading figure. In his *Bias of Communication,* the media are categorized into time-binding and space-binding types. Time-binding media are durable, so it is helpful in establishing authority and forming the hierarchical social system. They include clay or stone tablets. Space-binding media are more ephemeral. They include modern media such as radio, television, and mass circulation newspapers, which facilitate the dissemination of power and technology.[24] The media play a role in the temporal and spatial dissemination of knowledge, and the focus either on time or space would lead to the bias of meanings for the culture implanted in it. In any society or culture, those two media bias coexist. However, one would be more

---

[22] Claude Sharron. *The Mathematica Theory of Communication*. University of Illinois Press, Champaign 1949.

[23] Jeffrey C. Hubbard, M. L. DeFleur and Lois B. DeFleur. "Mass media influences on public conceptions of social problems". *Social Problems*, 1975, 23(1): 22–34.

[24] Harold A. Innis. *The Bias of Communication*. University of Toronto Press, Toronto, 1991.

obvious than the other one. A stable society requires the balance between the temporal bias and the spatial bias.

Another leading figure McLuhan emphasized the significance of media to the social development. According to his view, the base of communication is the medium itself but not the content--information. The meaning of media is not only to transmit information, but also create a new social and cultural environment, or create new information. All the media would impact human beings' psychology, and the influence has nothing to do with the information the media delivers, so it is the medium that is changing the society.[25] The emergence of the new media is a creation of a completely new environment. It is the extension of human beings, especially human beings' feelings and abilities. In the traditional media age, human beings were divided; in the new media age, the extension is comprehensive and balanced. According to the nature of media, the development of human society could be divided into several stages: oral transmission; printing media; mechanical media; electronic media. We are living in the digital media age and living in the new environment that electronic media creates.

In the 1980s, based on the theories of the Toronto school, Meyrowitz examined the impact of electronic media on social activities. He believed that people are separated due to the geographic differences and having different social status and different levels of abilities to collect information, which lead to the formation of different social groups.[26] However, in the electronic media age, for the instant, public and sharing transmission of information, people have equal chances to secure information, so the information environments they are facing tend to be the same. The new media undermine the role of geography in information gaining. The new media create an open, interactive and engaging information system, which enhances its role in the society.

In addition, there are many fruits in the research conducted on media's function.

---

[25] Marshall McLuhan. *Understanding Media*. MIT Press, Cambridge 1964.
[26] Joshua Meyrowitz. *No Sense of Place: The Impact of Electronic Media on Social Behavio*r. Oxford University Press, Oxford, 1986.

One is a three-function theory propounded by Lasswell (1948): to monitor the environment, to link different parts of society in order to adapt to the environment, and social inheritance. Another one is four-function theory by Wright (1959): monitoring, explaining and regulating, entertaining and socialization. According to the agenda-setting theory propounded by MaCombs and Shaw in 1972, the mass media have the agenda-setting function, by attaching different degrees of importance to various events and incidence in the news coverage. It affects people's judgment and evaluation of significance of certain events.[27] It examines the comprehensive impacts of mass media on social life, which lasts for a long period of time. These theories expound media's responsibilities and functions and consider media as a part of the society and link it with other factors in the social life. The interaction between media and other factors boosts social progress, and it is lasting, organic, and interactive.

Undoubtedly, media's significance in the social life has been testified in many works, but its shortcomings and limitations are also a major subject in the researches.

Lazarsfeld analyzed the effects of communication, and he employed samples to testify the correctness of theory. In his classical book *The People's Choice* (2012), there are two classical arguments. The first one is that media's effects are limited. He takes the votes in one county in US as the sample, to discuss the relationship between media and the success in election. He discovers that the relationship is very weak, and the media's impact on the election success is lower than expected, and sometimes it can be negative; the second one is the two-step flow of communication and public opinion leaders, who refer to those having great influence on the public opinion. Based on the historical experience, since media are unable to persuade all people, they could utilize two-step flow effects, which means to persuade the leader first and then let the leader convince the followers.[28]

---

[27] M. McCombs and D. Shaw. "The Agenda-setting Function of Mass Media". *Public Opinion Quarterly*, 36(2): 37–45, 1972.

[28] Paul Felix Lazarsfeld, Bernard Berelson and Hazel Gaudet. *People's Choice*. Renmin University Press, Beijing, 2012.

Some scholars developed the gatekeeper theory. According to Wright (1986), there are several gatekeepers between media and audience, who are responsible for the selection, edition, and transmission of information. They would be influenced by external factors, which in turn influence the information delivered. In the modern market economy age, media are controlled by financial groups, and the actions of gatekeeper would be influenced by them. So, they would manipulate and purposely select the news, and at the same time, they are serving for the interests of capitalist, and transmitting the information that capitalists consider as proper.

With the deepening of analyses on the media, people's understanding of media is expanding gradually. For example, American scholar Symthe first took media economy as attention economy in 1950s. Then in 1960s, McLuhan pointed out that in the second round of selling, the attention resources are the main element of media economy. In 1990s, Goldhabe analyzed the connotation of this concept. At the same time, Chinese scholars questioned the attention economy, and argued that media economy is influence economy (Peng, Jin and Yu, 2001), or public opinion economy (Wu, Jin and Li, 2005). They believed that "media economy in nature is the laws of development of media industry, decided by the public opinion functions... In other words, media industry makes use of public opinion to realize its economic goal."[29] All these efforts are facilitated the theoretical development of media's role in economy.

(3) The General Theoretical Analysis of Media

The media studies is a discipline as well as a theoretical system. For media studies, media consist of various media tools, or carriers to transfer all kinds of information.

Generally speaking, media have both generalized concept and narrow concept. To be specific, media are all kind of tools to carry and transfer the information from the deliverer to receiver in the process of transmission when refers to the narrow concept. Media in general, instead, are the whole process mentioned above.

---

[29] Xinxun Wu, Guanjun Jin, and Hailin Li. *Modern Media Economics*. Fudan University Press, Shanghai, 2005: 6.

First of all, media are the carrier of information, which has to be admitted in the field of media studies and economics. However, it is not same as denying the important role of media or the inseparability of media and information, but rather strengthening this fact.

1) The analysis of the definition of Media

In media studies, the medium is a vehicle for information transmission, and on literal meaning, it refers to the interface between the two or of many, which can be a person, or be an object.

The interpretation of media varies in different theoretical fields. From a broader perspective, there are "sharing theory", "persuading theory", "reaction theory", "media theory", "understanding theory", "interaction theory", "association theory", "stimulation theory", etc.; also there are many kinds of the definition of media in a narrow sense, but the core explanation is that the medium is one of the tools storing information or transmitting information and data. Other scholars believe that media can be regarded as a kind of organization, and so on. However, the principle is the same. Among "tool theories", the most accepted explanation is the one in Webster Dictionary, which regards the media as a tool to influence or transmit something.

The media in this research refer to mass media, and the theoretical circles divide it into four categories.

The first one is the primitive media that use the direct way to transmit and receive information, such as gestures, flag semaphore and beacon-fire.

The second one consists of letters, pictures, scripts, signals, printed matters and photos.

The third one includes telephone, CDs, movies, radios, TV and cellphones.

The fourth one is the Internet media, which is different from the other three categories, due to its special form as the carrier of information. (Some scholars view Weibo, WeChat as the fifth category and call them "We-media", which was first introduced when blog was developed. It is freer and more accessible to everyone. In

this research, we'd rather put them in the fourth category.) Internet media are not confined by time and place and are very easy to use.

The mass media are defined as the transmission of information to the public, and it takes the forms of newspaper, radio, TV, movie, magazine and books and so on. The "public" refers to the general media users everywhere, without knowing each other. Severin and Tankard (2000) holds that mass media are targeting at the massive, heterogeneous and anonymous audience, the information is transmitted in a public way, and it is very transient.[30] The author follows their interpretation.

The media in this research work are the one in general sense, instead of merely the media tools. The media in narrow sense mean the tools of transmission, or the carrier of information. However, in the modern society, the social media do not only refer to the tools, but also include media products, media technologies, media industry, media market, media organization, and media economy, as well as media economics. For example, the theory of media organization proposes that media are the social organizations that collect process and transmit information. Theoretically speaking, individual can produce and pass information products, but with the progress in science and technology, the transmission of information becomes a systematic activity in a large scale, and it requires the involvement of organizations. As a social organization, the mass media have own structures and targets. The scholars of communication studies hold that the media organization is the combination of utility, efficiency and standards.[31] The media products are the products that are able to carry and send the information and special messages, such as newspapers, TV and Internet. The media economics focuses on the allocation of rare resources via media, the production and service of media products, the way to determine the amount and the users of media.

As a factor that plays an important role in the social, economic, political and cultural aspects, the media's influence is expanding, and its connotation and

---

[30] Werner J. Severin and James W. Tankard Jr.. *Communication Theories: Origins, Methods and Uses in the Mass Media*. Addison Wesley Longman, Inc, 2000: 5.
[31] Denis Mcquail. *Mas Comminication Theory*. Qinghua University Press, Beijing, 2009: 8.

implication is richer. It is not only the tools, but an activity and process. Therefore, the theoretical circles have equated media with communication to some extent, and that is the definition of general media. In the dissertation, the object is the general media, or the process of transmitting information.

2) The analysis of the media forms and functions

Media take various forms, and are usually divided into two kinds: traditional media and the new media.

Traditional media generally refer to the form of spreading information by newspapers, magazines, books and other print media and radio, television, movies and other tele-media. The concepts of the new media and traditional media are relative. The term of new media was first proposed and used by Mcluhan as early as 1953 to describe some new technical characteristics such as "electronic information gathering" and "global reach", which set the roots for the current mainstream definition for new media. Generally speaking, there are three different definitions for new media. The first defines new media from the perspective of digital and regards it as a range of media practices that utilize digital technologies and the computer (Dewdney and Ride 2006, Campbell et al. 2011). The second takes new media as a vast array of digital technologies, for example the Internet and the World Wide Web, Satellite Broadcasting, Digital and CGI effects, computer graphics, CDs and DVDs, Cell Phones and others (Edwards 2004, Manovich 2001). Those two definitions are certainly influenced by Mcluhan's concept, by conceiving media from the technical propositions. For instance, Manovich attempted to define media from eight propositions: new media as computer technology, as digital data, as cyber culture and others. The third definition is very special, focusing on one of new media's characteristics--"new". New media are always new, uncertain, and not fully understood. When they become the mainstream media like the digital media now, new media will lose the trait of "being new" and transform to the traditional media.

For the author, new media are a constantly changing concept, which refers to the media that make use of new information technologies. Since Internet technology is dominating nowadays, we endeavor to define new media as follows:

New media refer to the media that use digital devices based on Internet technology to spread information. The media practices usually include interactive and creative participation. New media consist of digital television, live satellite TV, mobile TV, IPTV, Blog, podcasts, Web TV, TV online, building video, mobile multimedia (SMS, mobile phone MMS, mobile games, mobile TV, mobile radio, mobile newspaper, etc.), online instant messaging groups, Chatwords, virtual community, search engines, simple aggregation (RSS), E-mail, Web portal, and so on, and the information transferred constitutes social news and current affairs, economic activities, culture, entertainment and others.

Carrier tools and information cannot be separated in the contexts of traditional and new media. Different tools employed in the two forms attribute to the distinct characteristics of their information transmission. On the basis of modern Internet technology, new media replace the linear structure of information flow of the traditional media with an interactive structure, and are characterized by the following features:

First, the information flow-rate is faster. The Internet is famous for its vast amounts of information. People can have access to all available information through the network search engine anytime, anywhere. And its approach and use cost are almost negligible compared with the traditional media.

Second, it has a strong decentralization tendency. When the traditional media are in the dissemination of information, the users have the freedom of choosing whether or not to accept and the media types, but only choosing in a fixed period of time (the program broadcast time) and the fixed content (published in newspapers and magazines). This is the spread of information that takes media as the center. By contrast, the new media with new media properties, such as high storage capacity, media streaming, and search engines, make the users to secure the required

information anytime and anywhere. The process is instant, and the information transmission is from media-centered into information-centered.

Third, it has strong interactivity. The information receiver is as well as the publisher. New media make information transmission become all of people spreading to everyone, that is to say, the new media mode becomes multi-points to multi-points when the traditional mode is point to multi-points.

Fourth, it has a high transparency. The information transmission, acquisition and release of new media are easier, more open and transparent, so the information hiding is more difficult.

Fifth, it has a strong real-time performance. From the point of transfer efficiency, the advantages of new media are clearer. The time lag of the information release and acceptance becomes negligible. People can adjust their own economic behaviors, social behaviors, and culture behaviors according to information available at any time.

Sixth, it has the characteristics across time and space. Because of the information flow velocity is slow, the scarcity of two-way information channels, and the spread scope of the geographical and time limitation, it is difficult for the traditional media to radiate distant regions. New media, on the basis of the network technology, not only have the function of information interaction, but also make people who are thousands of miles apart, in different environment, devoid of involvement to build a relationship and exchange mutually. Such communications are beyond geographical barriers and the difference of time, and have a strong extensibility, across time and space.

As for the functions of media, Lasswell (1948) divided the function of the mass media into three aspects: monitoring the surrounding environment, contacting with various social sectors to adapt to the environment, and the inheritance of social culture. And Wright (1959) added the fourth function, namely the entertainment function.

The function of monitoring the surrounding environment means that the mass media could pay close attention to the natural and social environments where human beings exist and live, collect all the information and transmit them to human beings. It is viewed as the first and most important function of mass media, for human beings cannot live without natural and social environments, and environment safety is the necessary condition of living. The mass media could transmit various types of information among people, like flood, earthquake and other natural disasters, as well as war, disability and other social disasters. It is like a warning, to help human beings to be prepared to the upcoming disasters, and that is the reason Schramm called mass media as "social radar".[32] For example, when the PM 2.5 index is too high, the mass media pass the message to people and warn them not to go outside or be well prepared when going out. Moreover, the mass media could supervise the economic environment, such as stock markets, or real estate markets. When these markets are too hot, the mass media will send signal to people and remind them to be more rational and to take precautionary measures to avoid crisis.

The function of social coordination refers to linking different parts of the society together in order to adjust to the surrounding environment. The mass media will not only transmit the information, but also pass its own interpretation, to guide people to have the right reactions. This function can avoid the overreaction of the public and the possible threat to the safety of the society. For example, when a new policy is released, the mass media will provide its understanding and interpretation in the report, which could enhance the public's understanding of the policy and avoid misinterpretation and overreaction, and furthermore it is conducive to the implementation of this policy. On January 26th, 2011, the State Council released eight regulations of the real estate market, with the purpose of calming down the overheated real estate market. Almost all the mass media provided their own interpretations when reporting. With the massive coverage, the public learned the goal of the regulations was to fight against the over-supply, rather than restricting

---

[32] Wilbur Schramm. *Mass Communnication*. Xinhua Press, Beijing, 1984: 37.

the housing demands. In this sense, the social coordination function is good to the society and individuals in the aspect of getting and making use of information.

The function of cultural inheritance is also very important, passing the social culture down from generation to generation. This function has run since the birth of mass media and been developed with the progress of media technology. Human beings obtain abundant information from mass media and pass down the knowledge to their next generation, as well as the social value and principles. In the Internet age, this function is more notable, for information is more accessible to people via searching tools on the Internet, and the questions about the knowledge, values and principles can be answered.

The fourth function is entertainment, to satisfy human beings' need of entertainment and to enrich their spiritual life. The traditional media have this function, such as radio, TV, book and magazine, and new media do a better job. In the new media age, the publication of the entertainment information is much easier, because every individual could release information, and ordinary people have a greater chance to be grassroots stars. Stars were the main actors in the entertainment industry, but now the ordinary people were aware of a way to entertain people and become stars.

These are the four basic functions of mass media, and there are other functions based on them, such as those economic, political and general social functions, along with the strengthening or weakening functions determined by the social positions and rights.

3) The analysis of media economics

Media economics is essentially the study of media communication as an important factor in socioeconomic activities. One view in media economics holds that media, or mass media, are the productivity.[33] It is well explained by Zhou (2007): with the updating of science and technologies and the development of society and economy, some new productivity factors will gradually appear in or be integrated into the

---

[33] Hongduo Zhou. *The Textbook of Media Economics*. Beijing Economy and Finance University Press, Beijing, 2007.

overall productivity system, for example, scientific technologies, post and telecommunication, education and broadcast television, etc. It is a new type of productivity factors demonstrated in the productivity system with the development of information generation after the society entered the information era; besides, Zhou also argues that media vehicles are the main channel for information transmission and the core for linking all the productivity factors. Otherwise, all the factors could not possibly work together to form productivity since they would have been only on their own and isolated from each other. Moreover, it is emphasized in media studies that media productivity is a type of mental productivity; Zhou regards it as an uncertain factor which may include scientific technologies (both natural science and social science as productive forces), production management, modern education, post and telecommunication, broadcast television and production information, etc. However, there is still disagreement on whether this productivity is direct or indirect. As for that, Zhou has his own opinion and holds that the media productivity is a direct productivity with a relatively high degree of modernization and is formed under the new conditions in the era of information society; therefore, it is a vital factor in the overall productivity system.[34]

Apart from that, there is another greatly concerned and discussed issue recently in media economics--the proposition of three media economic forces: economy of attention, economy of influence, and that of opinion. They are actually three key factors in different levels corresponding to the effects of media on various social activities.

In the economy of attention, human attention is treated as a resource, and a complicated economic relationship between media and the public is established on the basis of the production, distribution and consumption of that resource.

The influence economy is derived from the attention economy, and influence refers to the depth and extent of the impacting power on society in information transmission, especially to achieve a specific media effect; besides, in the influence

---

[34] ibid.

economy, the system, operation and economic benefits of media and the interaction between media and consumers are also involved.

Regarding the concept of opinion economy, it actually states that the real cause for media's capability to influence the society is its special attribute of being a social instrument of public opinion; that attribute enables media to manipulate agenda, form public opinion and ultimately affect every aspect of the society.[35]

2. The Analysis of the General Theories of Information

Since the late 1940s, with the birth of information theory and cybernetics, information has become a scientific conception and has thus been widely used in both the natural and the social sciences. It has been frequently referred to and studied in philosophy, mathematics, system theory, cybernetics, economics, and management, which makes itself one of the very cores of the conceptual systems of these subjects of knowledge.

(1) The Analysis on the Connotation of Information

The simplest explanation of information is a message with new knowledge or new content. With the development of the information field, the connotation is becoming richer and people have created more than one hundred definitions of information.

Among all the definitions, there are several classic ones.

1) Information is viewed as new contents and knowledge

Information was understood by Hartly as a means of selecting media symbols and was thus measured by the degrees of freedom in light of the earliest function of its kinds:[36]

$$H = \log S^N$$

(H is the amount of information revealed; S is the number of symbols; N is the number of choices.)

The merit of Hartley's definition of information lies in its potential in the objective

[35] Yun Zhou. "The three Theories of Media Economics". *Chongqing Broadcasting and TV University Journal 2*, 2008: 43-45.
[36] I. V. R. Hartley. "Transmission Information". *The Telephone Magazine in Bell System*, 1928: 33–40.

measurement of information, which prepared Shannon to develop his information theory.

2) Information is viewed as the elimination of random uncertainty.

Shannon stated that information is random in nature, but it can be processed by statistic methods. Shannon also went further to introduce a formula for measuring the amount of information, which is stated as follows:

$$I(X;Y) = H(X) - H(X|Y) \geq 0$$

where H(X) is the entropy of information source X, that is, the variable of X owned by an information recipient before media; $H(X/Y)$ is the entropy of X when the recipient gets Y; $H(X;Y)$ is the actual amount of information of X obtained by the recipient during the media.
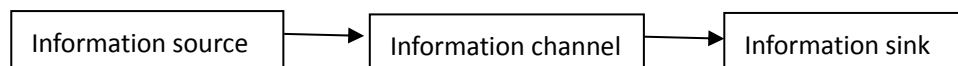
Fig. 5. Information source, channel, and sink.

The breakthrough of Shannon's definition of information rests in the mathematic formula of measuring information mentioned above, which ushered in a new phase of quantitative analysis of information as the foundation of information theory.

3) Information is defined as the exchange of contents during the adaptation and response of agents to the environment.

Wiener (2007) redefined information in the light of cybernetics, that is, "information is information, not matter or energy; it is the exchange of contents during agents adapting and responding to the environment. Meanwhile, the process of receiving and using information is also the one of both agents adapting themselves to the accidental changes of the environment and the efficient surviving in it."[37]

The significance of this definition lies in the dynamic point of view of information, the discovery of both the subjectivity and the objectivity of information, and their interactions.

4) Information is defined as variety. Ashby (1956) defined information as

---

[37] Norbert Wiener. *Cybernetics: Or the Control and Communication in the Animal and the Machine*. Peking University Press, Beijing, 2007: 89.

aggregative variety. According to him, the essence of information rests in the innate variation of substances. Moreover, information reflects the forming, relationships, and variety of substances; it is contained in the variation instead of the substance itself.[38]

5) Information is considered to be any observable outcome of posterior probability being effectively changed by the principle of conditional probability. By defining information as such, Arrow (1977) actually rendered information as a highly abstract understanding that sets the background for the subsequent development of information economics.[39]

The definition of information can also be approached from other perspectives. For instance, Wu (1991) described information from the following five aspects: the nature of information, the objects of information, the subjects of information, the medium of transmitting information, and the interaction between the object and subject of information, which was a summary of the abovementioned classic thoughts in this regard.

Information can also be defined by various disciplines. In economics, for instance, it is understood as data, news, intelligence, knowledge, and so forth. In management, it is described as valid data for decision-making; for instance, it is regarded as processed data that are tailor made for a client's decision-making. In computer science, it is the signals that are transmitted in circuits. In philosophy, it is considered as the diversity of the forms and movements of all cosmic substances, regardless of whether the information itself has been received or responded to or even exists. Lazarev forwarded two propositions in his *Cognitive Structure and Scientific Revolution*: information is the diversity of all that exists in the world; and information does not possess the diversity of the entity of the substances themselves but of only their forms or structures.[40]

---

[38] G. Longo. *Information Theory: New Tendency and the Problem Unsolved*. Springer Publishing, New York, 1976: 102.

[39] Kenneth Arrow. "Extended Sympathy and the Possibility of Social Choice". *The American Economic Review*, 67(1): 122–126, 1977.

[40] Lazarev, Ф.В.. *The Cognitive Structure and Scientific Revolution*. Translated by Yanyan Liu. Hunan Press, Changsha, 1986: 57.

The definition of information in mass media is more in favor of Shannon's theory (Shannon himself is also recognized as a great mass media expert). In a Concise Journalism dictionary, information is defined as intelligence, news, instructions, data, signals, and the like that are related to the cognition of the environment (which, in turn, leads to the economic definition).

It is clear from the theories mentioned above that there is no consensus among the varying definitions of information in various disciplines due to different understandings of and approaches to it. The reason for its diversity can be concluded as the following:

One is that information itself is complicated, diversified, broad, multi-layered, and multi-functional; thus, it is often approached from a certain angle instead of an all-embracing generalization.

The other is that information study is often multi-disciplinary, and its extent is extremely broad. Therefore, each field of study approaches it on the basis of its own needs and from its own angle, which results in diversified concepts.

It is still not comprehensive to define information from the mass media viewpoint, even though such a definition has already integrated some understanding of information from various disciplines.

(2) The Analysis on the Characteristics of Information

Generally speaking, information has the following characteristics:

1) Information is omnipresent.

Whether it is the inorganic world or the organic one, the macroscopic cosmos or microscopic particles, unicellular organism or complicated human body, the nature or human societies, everything can carry information. The chemical reaction between iron in the inorganic world and oxygen is a form of information expression. Birds' twitter is also an expression of information. Human languages, accouterments, machinery, architectures are expressions of information. In a word, information is everywhere at all times.

2) Information is objective.

Information is neither illusory, nor conceived and created casually. Information comprises the states and fashions of the movement of all entities in the world.

3) Information is infinite.

With respect to the material world, matters are infinite and so is information. In terms of time, it is limitless and so is information. Even in a limited space and time, information is infinite due to the diversity of matters and the continuance of their movements.

4) Information is manageable.

Self-present information can be transformed into languages, images, and sound through summarization, induction, analysis, and so on or can be translated into artificial information such as computer codes or tele-media signals, which are regarded as the processing of information.

5) Information is abstract.

Information itself is invisible, but its carriers (including languages, images, symbols, hard copies, cassettes, CDs) are visible. Thus, to the recipients, information acquirement and exploitation calls for the ability for abstraction.

6) Information is dynamic.

Since substances in the world are in motion, the objective matters that are reflected in information are consequently in motion as well. Once a piece of information is obtained at a specific point of time, its source, the objective matter, is then taken as immutable. Besides, the arrival at actualized information calls for abstraction, process, input, and output, which inevitably results in a time delay of the obtained information. Furthermore, present information is also used to predict future ones, which renders it ahead of time. Hence, information is dynamic.

7) Information can be false.

After all, information is an objective substance that has been artificially processed. This enables information to exist independent of the objective world. Since it is inevitable to introduce subjective factors while processing information, it is very likely to end in false information. In addition, information is the result of the abstraction of a mess of objective matters; however, the material world reflected by the resulting abstracted information is only partial, which then leads to a parochial

understanding of the information—that is, information falsehood. On top of it, limited cognition and impure motives also produce false information.

3. The New Definition of media: Media + Information

The influence of new media on economic activities is not only based on its role as the carrier, but also on its content—the information. Conversely, information without media as the carrier can only be a potential message, but not the real message, as it cannot reach people. Media without information or information without media are of little use in the real world. Therefore, it is impossible to deny their inseparability.

From the analyses presented above, it is concluded that media have a very close relationship with information. While defining media, we cannot simply equate media with transmission tools, and when defining information, it is not correct to regard it merely as new data or message. The right way is to define media as the combination of media and information, and it is the process of passing down the information to the users through various media. The reasons are as follows.

(1) Media are the Carrier of Information

Media should have two core factors. It is a tool, and it also contains information. Noticing this, in his book *Understanding Media* (1964), McLuhan proposed that the "the medium is the message".[41] Although he presented a lot of interpretations for this definition, at least from the literal level, he saw the importance and the core status of information in media.

As a matter of fact, in the interpretation of media from media studies, information was not actually isolated from media. For example, the "sharing theory" takes the process of media as the process of information sharing, and it holds that without information there would be no sharing; the "persuading theory" takes the purpose of communicating behavior as persuading or affecting others, and it holds that without information this purpose would not be achieved at all; the "reaction theory" regards media as the reaction of organisms to some stimulation, and the stimulation is

---

[41] Ibid 4.

simply that of information.

As an encyclopedic scholar of media studies, McLuhan took the media as the extension of the human body. As for computer, its keyboard was viewed as the extension of the hands, its camera as the extension of the eyes, and its microphone as the extension of the mouth, and what these extensions contact or transmit are all information.

Besides McLuhan, Roloff (1981) defined media as a symbol transmitting process that provides the resources or facilitates the negotiation of the exchange of resources in an interpersonal relationship. Additionally, the symbol in the definition obviously means information. So, the interpersonal media are also a process of information transmission.

The functions of media also support this explanation.

First of all, the monitoring function aims to display all the information, including that of economy (e.g., stock market), of social life (e.g., traffic, weather report, news), and of warning, such as bad weather, or crimes that impose threats on the society. However, all the information is directly displayed, without interpretation or inclination.

Second, the social coordination function is to interpret the information and to supervise and monitor the society. The information here is related to certain preference. For example, the exposure of bad actions is liable to grab the attention of the public and guide them to have universal understanding, which strengthens social norms.

Third, the cultural inheritance function is to pass down information, value systems, and social norms to the future generations and to form a universal value system among the members in the society, which helps people have a sense of belonging to the society and reach agreement on many issues.

Last but not the least, the entertainment function is for entertainment and relaxation. Usually, it takes diverse forms, but the purpose is the same--make people relaxed, have access to culture and knowledge, and upgrade their tastes.

From the perspective of media economics, media and information are inseparable. In nature, media economics analyzes the special role of media in the development of industries and national economy via the formation of public opinion and transmission of information. Theories concerning the economy of attention, the economy of influence, and the economy of opinion focus on media's role in transmitting information and its impact on the economy, and they try to introduce media to economic analysis as a direct factor.

All in all, based on the analyses above, the media are viewed not only as tools of transmission, but also the information itself. These two elements are indispensable, although one might be more emphasized than the other one in different time points or places. The nature of media is the process of transmitting information via media tools, and it interacts with and influences other political, economic, and cultural processes.

(2) Information is the Content of the Media

From the perspective of information, information is the content of media, and media cannot exist without information.

It is believed that information is the latest response to the changes and characteristics of things in the objective world, which are then transmitted and reproduced by means of media; therefore, information can be data, news, intelligence, and knowledge. Additionally, information can be categorized into three types in view of the process through which it reaches the recipients.

1) The self-present information that enjoys an objective presence is independent of the existence of any external agents. This kind of information is more likely to constitute the objective realities that have not been processed and are hence taken as original information.

2) The self-performance information is abstracted from objective realities by human beings in accordance with their needs and available means. This kind of information is regarded as academic information.

3) The real information is delivered to recipients through media and can be used directly. The process of communication in the media means to transform self-present or self-performance information into real information.

All categories of information are dependent on the carrier—the media—for the reasons listed below:

1) Information is transmittable.

Just as the value of goods can only be realized through exchange, the value of information makes its capability for transmission imperative. Information, if not transmitted, is only potential information with its value waiting to be fulfilled. Thus, the capacity to be transmitted is the most important characteristic of real information.

2) Information is dependent.

Information can be communicated and shared only in a case in which it is represented by various forms of media tools, such as languages, images, sound waves, hard copies, cassettes, films, CDs, Internet, and so on. Its dependence on the media is an extension of its abstraction. Due to its abstraction, it can only be expressed through the media, and thanks to the media, it turns into broadly used resource and wealth. This attribute of information is endowed by the media.

3) Information is a public good and can be shared.

Since information is also decided by the media such as Internet, television, and radio, which endows it with the characteristic of being public, information does not suffer any losses when being transmitted from hand to hand. Information, as an exploitable public entity, is owned by the whole society. At a point of time and space, information, to some extent, is a public good. Unlike tangible entities that are usually exhausted in transaction and use, information is rather enriched due to transmission, feedback, and exploitation.

From the analysis above, it is evident that real information is inalienable from media. Without media, abstract information cannot transform into real one. Thus, information can only be represented by means of media, and its value can only be fulfilled when communicated through media.

(3) Media are the Combination of Media Tools and Information

No matter in what sense, media and information are inseparable—they are like two sides of a coin. We can also consider the media as a truck carrying or transporting goods, and information is like the goods in the truck. If there were no goods, the truck would be meaningless. Similarly, without trucks, goods cannot be transported expediently. In this sense, it can be said that information is the content of media, while media are the carrier of information, and they are inseparable.

Hence, the author has combined information and media into one key word: information media or media information. In this way, we can transform the media into a new concept, that is, define the media as a unity of the media and information. Its essential feature is a process of transmitting all kinds of information to the object (the users) by using various media carriers. The important significance behind the fact that we no longer take the media only as a tool is that we can properly explain the significant effect of the media in modern social activities. For example, we know that an important fact of media is that in guiding and changing people's value orientations and their emotional states, the media also reconstruct the ideology of the modern society. We also know that when the media guide people's supply and demand and change the interest of people, media redistribute social wealth and make themselves an important variable affecting social and economic activities. All these show that the meaning of media has gone beyond the limitations of a tool, as the medium has combined itself and information into a dynamic process, embraced social politics, economy, and culture and has become one of the main factors affecting them. This is the media we are dealing with now.

(4) The Meaning of Media Information from the Perspective of Economics

The new definition of media (media information) is based on the explanation from the perspective of economics, in order to reveal the laws of media's transmitting economic information via media tools and that of media's influence on the social economy. Some scholars take media economics as the economic activities of media

itself or the new economic activities that are closely related with economic information. This view also has some merits, as it shows the interaction of media and information in economic activities.

The significance of this research from the perspective of economics is to introduce media as an important economic factor in the field of economics.

From the perspective of economics, the media have already been included in the economic scope as an economic factor, and this is closely related to the information revolution.

Toffler (1980) regards the information revolution as the third wave of social change. It is believed to have started in the mid-1950s, with the invention of computer, and its focus is to create and develop knowledge, with information technology as its main body. Human society is transiting into the information era, from a pattern of industrial society to that of information society. Physical strength and mechanical force will no longer be the focus in an information society. As a result, the field of information economics has emerged at the right moment.

Information economics originated in the 1940s and developed from 1950s to 1960s before it reached a mature stage in the 1970s. It has further extended from capital and labor—the original two factors influencing economic growth—to four factors, which are capital, unskilled labor, human capital, and new ideas (information). Since knowledge is one of the production factors and can only be acquired, like capital, at the cost of abandoning current consumption, knowledge (education) lag can severely harm the stability and persistence of economic growth. Therefore, a country should fund the development of knowledge and the education institutions spreading knowledge in the same way it invests in infrastructure construction. With the intervention of long-term effects of knowledge investment, the tendency of a virtuous circle may form in long-term economic development. In other words, investment prompts knowledge production and transmission, while the effects of the latter, in return, promote the investment. In this sense, the substantial

growth of investment in the long run can boost the economic growth of a certain country, although this conclusion was originally rejected by traditional theories.

In theoretical economics, information is introduced to discuss economic growth in a more rigorous way than that in information economics. As it is known, a constant focus of macroeconomics is on the discussion of influencing factors in economy, which is also a basic task in theoretical economics. These factors can be discussed from various perspectives, and at certain periods, different economists tend to take different factors into consideration, such as land, labor, capital, technologies, and systems, and so on. As for the inclusion of information as an economic factor into economic growth study or the incorporation of techniques under the scope of information and knowledge into economic growth, it can be dated back to the times of Solow (1956) and Romer (1994).

In Solow's neoclassical model of economic growth, apparently information has already been incorporated as an economic growth factor. However, the most serious drawback of this model is that technology is still only considered as an exogenous variable.

In Romer's model of economic growth, technology is regarded as an endogenous variable and also a hard core in economic system; besides, it falls into the scope of knowledge and information.

Since information is inseparable from the media and already introduced into the study of economic growth, then the media are bound to have certain effects on economic growth.

In conclusion, it is of great theoretical and economic values to redefine the definition of media before introducing it to the field of economics.

CHAPTER 3. MEDIA AND MARKET FAILURE

The introduction of media into Microeconomics as an economic factor is not only conducive to the explanation of the new situations or changes in the economic activities in the real world, but also helpful to solve the problems in the economy. The goal of economics is not only to explain the phenomena in the world, but also to change the world and improve it. One of the main problems in economy is the market failure, and we try to introduce media into the framework of economics, to discuss whether it will help to solve this problem.

1. Market failure and "the Hand of Media"

"The invisible hand" theory was first introduced three hundred years ago by the classical economists, and it is the basic assumption of the liberalism two-dimensional market theory. However, the "market failure" problem made people reconsider whether "the invisible hand" is panacea or not. It was once replaced by the Keynesian "visible hand" theory after the Great Depression, but the latter one was proved to be falsifiable by stagflation crisis in 1970s, along with the government failure theory. The frequent outbreak of crises proves that neither the hand of market (supply determines demand) nor the hand of government (demand determines supply) can solve the problem of market failure, so the hand of media might be an alternative or an auxiliary solution.

(1) "The Invisible Hand" and Market Failure

Since Adam Smith first invented the theory of "the invisible hand", the liberal economists hold that market system is the only correct and effective way to solve economic problems: in the competitive market, market price, supply-demand, competition, and risk work together to allocate the resources, and finally the Pareto Optimality of market equilibrium can be reached. The theory of market system suggests the in an open and free market, without the intervention of government,

the supply will determines the demand and makes the market reach the equilibrium naturally.

Capitalism has developed from liberal stage to monopoly one, and its inherent flaws, especially the cyclical economic crisis, determine that market system is by no means the panacea. After the Great Depression in 1930s, the regression in the capitalist world was in sharp contrast with the success in the planned economy in Soviet Union, which made people doubt the correctness of classical liberalism. Apparently, with the expansion of market and complication of market structure, market is unable to make good use of the pricing and competition systems in the process of allocating resources, therefore, many problems emerged, which was called "market failure".

There are several causes for market failure. The first one is the incomplete competition in the market, caused by monopoly, restrictions imposed by enterprises, or the franchised rights offered by the government, which would lead to the inefficient allocation of resources; the second one is the public goods, which refer to the products that one's consumption will not influence the others' consumption; these products are non-exclusive and non-competitive, the private market cannot provide these products, so the market cannot produce sufficient public goods, which will lead to market failure; the third one is the externality of the market, which means that the two parties' activities will affect the third party, and it will result in the cost or profit of the third party. The externality breaks the balance of the cost and benefit, and will lead to the market failure; the fourth one is the incompleteness of the market, caused by the asymmetry of information, as the information economists believe, and that is their main contribution. The fourth type of market failure caused by the asymmetry of information is different from the other three types, for those three are based on the assumption that the market is completely competitive and informative; in contrast, the fourth type holds that the market has the feature of asymmetry of information. Thus, we call the first three types as traditional market failure and the fourth one as the new market failure.

The classical liberalism began to decay and people started to doubt the effects of the "invisible hand". The Great Depression was a good example to show its failure in effectively allocating the resources and production. Thus, the Keynesian school that advocating the intervention of government emerged and played an important role in national policies.

(2) "The Visible Hand" and Market Failure

The national intervention was very effective in solving the traditional market failure problems for a long period after 1930s, and it helped to save the economy out of the crisis. The traditional market failure caused by incompleteness of market, externality and public goods can be partly solved with the government intervention. For example, the governments become the producer and provider of public goods and charge the cost of negative externalities. After the World War II, the Western countries enjoyed 20 years of prosperity, so were Soviet Union, East European countries and China, whose economic growth was attributed to planned economy. All these facts show that the national interventionism is successful. Hence, the government mechanism theory believes that the government should intervene in the resource allocation, and the supply should be decided by demand in order to reach market equilibrium.

However, in the 1970s and 1980s, the national interventionism's role was questioned, for it led to some negative consequences. James Buchanan called it as "government failure".

The theoretical circles, especially the public choice school attributed the government failure to four reasons: the first one is the internal effect of the government, which is caused by the incapability of the government. The flaws in the decision-making systems, the incompleteness of information in the decision-making and the shortsightedness would all result in the wrong decisions; the second one is the overexpansion of government resulted from the redistribution of public goods and wealth, interest groups, bureaucracy and financial illusions; the third one is the

inefficiency of government, because of lack of competition, incentive and supervision mechanisms; the fourth one is the inefficiency in the resource allocation, led by the government rent seeking behaviors. All these four reasons fall into the category of traditional government failure theory. The information economists have different views on this issue, for they hold that the government failure is due to the incomplete information, which leads to the difficulty in decision-making and wrong decisions.

The failure of the "hand of government" is reflected in the real economic activities in many Western countries in the 1970s and 1980s. Due to the long-term financial deficit policy and inflation designed to collect money for financial budget, there followed stagnation and regression. In Eastern European countries, Soviet Union and Eastern Asian countries the governments had a tight control over the economy, for the planned economy replaced the market economy, which caused the imbalance in the economic development, high GDP but low living standards of people.

Then the Neoliberalism emerged, and its expectation school, currency school and supply school did many researches on the market mechanism, and they believed that the cause of economic crisis is the government intervention, rather than the flaws of the market. The limits of the neoliberalism are also very obvious, for embracing the market system did not help all countries out. Some European and North American countries succeeded, but some Eastern European countries, South American countries and Asian countries failed instead.

The financial crisis in the 21st century proved the failure of neoliberalism, so the theoretical circles and the government begin to devise the new solutions.

(3) "The Hand of Media" and Market Failure

When neither the visible hand nor invisible hand works, is there an alternative? The "hand of media" may be the choice, for it could fill in the blanks between

government and market, and the interaction of market, government and media would create a more stable economic environment.

Unlike "the invisible hand of market", "the hand of media" is not raised by a particular famous scholar but develops from the word "Meizhi" invented by China Central Television (CCTV), which means the governance by media. The hand of media implies that media have a governance role in solving socioeconomic problems.

As mentioned before, one obstacle that the market and government cannot overcome is the incompleteness and asymmetry of information. As for the market mechanism, the obstacle will directly lead to imbalance of supply and demand, the ineffective resource allocation, insufficient supply and market failure; for the government, the obstacle prevents the government from making right decisions and the lack of supervision, which lead to the government failure.

Both market mechanism and government mechanism tried to control and change one dimension of the market to achieve the equilibrium but failed, and they need media to overcome the obstacle--the incomplete and asymmetric information.

2. The Role of Media in Solving Market Failure

The role of "the hand of media" in the market failure lies in its contribution in fixing information defects by combining media and information.

(1) Market Failure and Information Defect

The neoclassical market equilibrium price model is based on the assumption of complete information, which is questioned by many scholars. Economists believe that the assumption of microeconomics above does not correspond to reality. In real economy, information is often incomplete and asymmetric that shows the information differences between suppliers and demanders. Under the circumstances of incomplete and asymmetric information, price in the market could not realize equilibrium between supply and demand and the function of market is quite limited.

In this field, information economics has made greater breakthrough. Information economists believe there are two reasons that complete information market could not be realized. On the one hand, insufficient production information causes incomplete information, and in that condition, price could not represent supply and demand, even cause adverse selection. On the other hand, some economic groups know more information than others. In this condition, one who knows more information than others may create profit by hiding information. When that happens, ideal equilibrium price might not be realized in the market.

According to incomplete information theory, two situations may occur as follows:

One is adverse selection of demand. This is caused by the limits of people's cognitive ability. People could not know when and where things have happened or will happen. That is to say, market economy could not provide sufficient information and allocate them to the party that needs them. Thus, under the circumstances of incomplete information, price does not fully reflect the interaction between supply and demand. For example, as to demand, if the price of a certain product is cut down, according to demand law, the quantity demanded will increase. But when consumers do not have the complete information that the market price is cut down, the quantity demanded may decrease instead.

The other is adverse selection of supply. In Microeconomics theory, on the basis of supply law, if the price of a certain product is raised, the quantity supplied will increase. But when producers do not have complete information, when price is raised, the quantity supplied might decrease instead.

If adverse selection of supply and demand happens, it entails low efficiency of market, equilibrium price and clearing market might never be realized, that stands for market failure.

The crises reveal the flaws and failures of the market. How to solve the problem of market failure? There is no consensus on this question.

From the perspective of information, the market failure is resulted from the incompleteness, asymmetry and cost of information. It is necessary to solve these three defects before avoiding market failure. The author argues that media are able to be a positive factor in solving the three problems, so it is conducive to avoid market failure.

(2) Media's Role in Solving the Incompleteness of Information

Incomplete information was first put forward and studied by Marschak (1949), later on it was given an accurate mathematic description by Nermuth (1982), and then Nobel Prize winner Stiglitz (2000) summarized it into nine scenarios. In general, its incompleteness mainly bears two implications: the absolute incompleteness, arising from limited cognition that makes it impossible to know anything anytime anywhere; and the relative incompleteness as Simon put it, that is, the market economy itself is incapable of producing sufficient information and its efficient allocation against a backdrop of an extremely complicated world and limited human sense.

The incompleteness of information exists in the reality. The cause for this defect is believed to be the fact that information is affected by its creation, means of media, volume and time delay. Therefore the remedy for this defect lies in addressing the above issues first, and apparently media can play a positive role in this regard.

Media, especially new media, are good at the creation of information; they are capable of transforming a wealth of self-presence and self-performance information into the real information. Mcluhan (1964) believed that medium was the extension of human body in a way of computer keyboards being the extension of human hands. This being said, media can in a way improve the creation of information and overcome the incompleteness of information during the process.

With regard to transmission of information, obstructed channels are one of the reasons for the incompleteness. As the development of mass media, modern tools and approaches are far more advanced than traditional ones. And accordingly the former enable people to access to far more information by various tools, which to some extent can overcome the incompleteness.

In addition, the sheer volume of information is another reason for the difficulty of processing information and the challenge in storage. However, new media based on computers and Internet technology display remarkable advantages in this regard by allowing the storage of massive information, which inevitably redresses the incompleteness.

Furthermore, due to the time delay in information transmission, information is always lagged. The time difference occurs when self-presence or self-performance information being transformed into the real information. That is to say, once something happens or comes into being, the information about it will be received after a time span. Media, as the carrier of information, perform the fundamental function of passing along information; the shorter the process the smaller the time delay will be. Therefore, new media based on Internet technology shortens this process to a large extent and as a result, people can enjoy instant access to the majority of the latest information worldwide.

(3) Media's Role in Solving the Asymmetry of Information

Information asymmetry is a concept under the premise of incomplete and asymmetric information in information economics, and it has existed for a long term. This theory was once called into question in the 1960s by a group of European and American economists, and later formally put forward by Stiglitz (1968), Akerlof (1970) and Spence (1973) in the 1970s.

In most cases, information asymmetry is mainly studied in the context of market economy. It deals with the difference of the access to information between various economic agents. Those with more and better information are in a relative advantageous position to gain profit than those with inadequate information. This theory denies the ideal assumption of neoclassical economics on market being the market of complete information and the eventual disappear of price disequilibrium and holds instead that prices are discrete on the ground that information is incomplete. There are tons of studies that have been carried out in the field of information economy as to information asymmetry, including the forms and use of information, the analyses of the designs of principal-agent system and incentive mechanism, discussion on choices and moral risks, and the innovation of market signal models, team theory, price discreteness, auction and bidding, optimal taxation theories and allocation of information resources etc. These theories not only

introduced the concept of information asymmetry into the analysis of economic decision-making but also provide useful tools to discover the economic problems brought by information asymmetry in the real world.

It thus can be concluded that information asymmetry has great significance in information economy and exerts great influence in economic behaviors.

Generally speaking, in the field of economics, information asymmetry is mainly dealt with by way of system innovation, principal-agent system, incentive mechanism, auction system and optimal taxation etc.

However, there are other approaches to address information asymmetry. Information asymmetry is in nature an issue of information transmission and discrimination. Owners of information, for the sake of their advantage and profit, are reluctant to share the information but would choose to pass on false one sometimes, while those who possess less information, in hope of getting rid of the disadvantage, are in desperate need of information, and have to single out the true information if there is any, hence the asymmetry.

Media, especially new media, have own resources and advantages in addressing the issue above, and the most notable advantage is the ability of turning private goods into public ones.

Private goods are those possessed exclusively by individuals or organizations that can forbid availability of the goods to others. Therefore, non-owners may use them only with the consent from the owner at a cost. Private goods are characterized by competitiveness and exclusiveness of consumption; on the contrary, public goods, as in *The Pure Theory of Public Expenditure* by Samuelson, are defined as "which all enjoy in common in the sense that each individual's consumption of such a good leads to no subtractions from any other individual's consumption of that good,"[42] and are considered as being non-rivalry and non-excludable.

Information asymmetry theory is based on the proposition that information is a private good, leading to consequences, such as concealing information and

---

[42] Paul Samuelson. "The Pure Theory of Public Expenditures". *The Review of Economics and Statistics*, 36(4) :387, 1954.

discrimination. However, media tools, for instance, newspapers, magazines, books, radio, television, the Internet etc., to great extent have the attributes of public goods, for one's consumption would not negatively affect the other's, and sometimes it is open to public or a group of people, so the information that is dependent of these tools accordingly has the characteristics of quasi-public goods. That is to say, once a piece of information on the media is sustainable, it is non-rivalry and non- excludable and thus can be re-consumed unless it is damaged in use.

New media tools have a strong public characteristic, and the information carried by them is accordingly public in a great degree. The Internet provides a platform for information release. When following opinion leaders or in seek of self-content, or for any other reasons, people are willing to provide their own information for exchange, and thus the Internet has moved private goods into the public domain. With this having been said, the Internet addresses, to some extent, the exclusiveness of information by its owner and somehow redresses the imbalance between information owners and the rest. In addition, the Internet also avails information discrimination, which further offsets the asymmetry and promotes a balance of information ownership. Therefore, the converse choices and moral risks in principal-agency can be addressed. Against this background, people are gradually able to choose in a wiser manner and the market is consequently optimized.

Media tools surely can also be private. This duality makes media on the other hand capable of worsening the asymmetry. For instance, the one who monopolizes newspapers, radio, television etc. is able to release false or outdated information which will surely exacerbate the circumstances of the disadvantaged group, resulting in a more unequal distribution of social profits. In terms of new media, however, this drawback is relatively insignificant, but once the Internet is being censored, information that is most needed may not be delivered at all or not in a timely manner. The monopoly of the media will then lead to the monopoly of the market, which will be discussed later in this paper. Apart from this, the information environment, or the visual environment, that is created by media tools is yet a new form of the asymmetry. The information environment, taking form as mass media selecting,

processing, and restructuring the symbolic events or information, differs greatly from the virtual environment. However, this information environment is often regarded as objective, hence the information asymmetry that deprives people of the opportunity of correctly responding to the real world.

(4) Media's Role in Reducing the Cost of Information

Information economists hold that information is valuable because of its ability to eliminate or reduce subjective uncertainty on profits. Suppose that a subject's activity set (opportunity set) is A: (a1, a2, ……an……) and the profit earned is R when subject is in engaging in an economic activity; let the set of all the possible profits be R: (r1, r2, ……rn……) and all the probability distribution set of possible profits be P: (p1, p2, ……pn……); as the information factor is taken into account, the relationship between activity set "A " and the probability distribution set P is then as follows:

$$p=g(a,I) \qquad P \in p \qquad a \in A$$

Wherein I denotes the information possessed by the subject.

Assume that the expense for economic activity "a" is 100 RMB with the subject having no information whatsoever, and when he or she obtains the information, the cost will go up to 200 RMB. Then the information has a value of 100 RMB in the subject's decision-making.

In Arrow's information value evaluation model, Xi is the recipient's opportunity revenue, or in other words, is the personal unit contribution earned from his investment of stocks when the natural condition "i" appears, and without the condition, his revenue would be zero. Let the number of "i" in its natural condition n be a finite number, i.e., i= (i1, i2 ,…in), and the individual fixed overall resource be 1. And suppose that a_i is the investment sum when "i" occurs, normally all the resource invested in is:

$$\sum_{i=1}^{n} a_i = 1 \qquad\qquad\qquad (1)$$

Let the probability of the occurrence of natural condition "i" be Pi; the individual

makes a rational choice of the investment allocation vector a_i=(a1, a2, …an) to maximize the expected value of the utility function of diminishing marginal utility:

$$\sum_{i=1}^{n} p_i U(a_i, x_i) \tag{2}$$

Wherein P_i is the (subjective) probability of condition "i", and U (a_i, xi) is the utility (function) derived from investment sum a_i when condition "i" occurs.

According to Karush–Kuhn–Tucker conditions, the optimal a_i is described as in formula (1), and the function of Lagrange multiplier λ is as follows:

$$\begin{aligned} P_i X_i U'(a_i, x_i) &= \lambda(a_i > 0) \\ P_i X_i U'(0) &\leq \lambda(a_i = 0) \end{aligned} \tag{3}$$

wherein, U is (natural) logarithm, that is, $U'(a_i, x_i) = \log(a_i, x_i)$

$$\sum_{i=1}^{n} p_i \log a_i + \sum_{i=1}^{n} p_i \log x_i$$

Since U'(0) = +∞, the second in formula (3) is not the expected value function anymore, and therefore, the former formula (2) now is:

$$\sum_{i=1}^{n} p_i \log a_i + \sum_{i=1}^{n} p_i \log x_i$$

Since the second function is not related to ai, the maximum value of formula (2) equals to the maximum of the first function $\sum_{i=1}^{n} p_i \log a_i$ which does not include xi, the opportunity revenue. Actually, to the logarithm function, as ai=Pi, its optimal value is:

$$\sum_{i=1}^{n} p_i \log p_i + \sum_{i=1}^{n} p_i \log x_i \tag{4}$$

According to Shannon's formula of information volume:

$$H = \sum_{i=1}^{n} p_i \log P_i \tag{5}$$

In this regard, Arrow defined the information channel of the capacity H as passing on information with the smallest possible error. While releasing information, if presetting the information channel for individuals to access to the information on condition i with the capacity H, and investing in it, then its revenue is Xi and its utility is logXi. Therefore, the expected utility in case of obtaining information is as follows:

$$\sum_{i=1}^{n} p_i \log x_i$$

Comparing the above formula with formulas 1-4, that is, with the maximum utility without information, the difference is apparent, i.e.:

$$\sum_{i=1}^{n} P_i \log x_i - (\sum_{i=1}^{n} P_i \log P_i + \sum_{i=1}^{n} P_i \log x_i) = -\sum_{i=1}^{n} P_i \log P_i$$

In Arrow's analysis, the above difference reflected the different effects between obtaining information 100M. If the cost of information is taken into account, information is 100I just as studied above, the equation now is 4000C+1000v+900M+100I=6000W; if the other market variables remain the same and have specific values, then the rise in cost will reduce the surplus value. Apparently, the introduction of information cost will affect the time spent on maximizing the profit and discourage the effort in pursuing profit, and this is exactly the price has to be paid for the cost of information.

Search theory argues that people have to search in order to obtain information, which is a costly process. Information search theory is just for this phenomenon and is related to the information asymmetry theory. Stigler was the first to bring up this concept in 1961, and it was a fruit in the field of information economics. Its main rationale is that the initial economic information possessed by the subject of economic activities is limited and incomplete, and accordingly such a subject's actions are of great uncertainty. If the economic subject hopes to take the optimal decision, it needs to search related information, which of course has a cost. Later on, Salop (1977), Diamon (1984), Mckenna (1986) and others systematically developed this theory. The central points of view can be concluded as follows: 1) search is only

a convenient term for describing any information collecting activities, and its benefit consists of all the potential economic opportunities; 2) search is actually a process of resource allocation, and it realizes possible market transactions through information collection; 3) search does not stop after getting together market information, but it also extends to resource allocation in light of economic decisions based on the market information gathered, and it is agreed that the premise for search is the continuous discreteness of market signals and players' positive responses of market towards market uncertainty.

Therefore, at least three conclusions about search theory can be drawn from the above analysis. First, information is not free and hence the need for search. Second, search has a cost too. The greater the number of searches is, or the greater the frequency of search is, the higher the price for information will be. As the number of searches goes up, the marginal revenue arising from the searching declines. When the expected marginal revenue equals to the marginal cost because of search, it will be called off. And here the expected marginal revenue of extra search cost means the reduced amount of the expected lowest cost caused by each extra search multiplies purchase quantity.

Mass media are of great value in reducing the cost of the information search and the information cost.

1) The cost of the information provided by mass media is negligibly low

Mass media as information transmission tools have a strong public characteristic. It can be said that media are the vehicle that carries information around. The cost is low but the utility of media is hard to estimate, for instance, with traditional media, people could secure a great deal of valid and valuable information once they read through a newspaper or turned on the radio. Till now, with new media, tons of millions of pieces of information are available on the Internet, which bears a great significance to producers and customers in the process of production and consumption and has minor costs.

2) Media can also create a difference in the cost dispersion

The more information media provide, the lower the cost of market transactions

will be. With market prices reaching closer to the minimum, the degree of market dispersion falls. Customers have two sources of market information. One is the information proliferated from mass media, and the other is the private market information gathered around by customers through searching. And it is agreed that the more customers that know about market, the closer the market price will be to the lowest. Or put it another way, the more ignorant customers of the market are, the farther away the market price will be to the lowest price. That is to say the better informed and more familiar customers are of the market with the help of media, the smaller the market cost dispersion will be and vice versa. In a word, media are inversely proportionate to market price dispersion, or, the increase of media information reduces the market price dispersion. Therefore, through the effect of media, prices can be greatly converged and thus the price fluctuation will be kept in check.

3) Media can also replace information searching.

Under some circumstances, information search cost is negatively related with media; that is to say, the increase of media information could possibly lead to a fall in the demand of individual search, and then result in a decrease of the number of searches. If the customers and producers can access to the information without the search or any cost, but in need on media instead, for instance, the search engines of the Internet, at a way low cost either in terms of time or money, then the media can be regarded as having replaced the individual search.

Regarding the impact of public information from media on the pricing system, Stigler also believes that the effect of price advertising is equal to the majority of the customers having performed a great number of search; the price dispersion will remarkably fall; since the price advertising has a more notable significance on the products with a higher marginal value of search, the advertising will be used mainly to depress the price dispersion of those with a higher overall purchase expenditure.[43]

---

[43] George J. Stigler. *The Essence of George J.Stigler*. Edited by K. R. Leube and T. G. Moore. The Commercial Press, Shanghai, 1999: 74.

CHAPTER 4. THE MARKET MODEL BASED ON MEDIA

It is necessary to verify the proposition that media are playing a role in solving the market failure. We are going to have a detailed study in this chapter, with the beginning of introducing the media into market model.

1. The New Theories of Market Equilibrium and Dynamic Changes (with Media Involved)

Price theory is the theoretical foundation of Microeconomics. In other words, the whole theoretical system of Microeconomics is centered on price theory. If we introduce media into the theoretical frame of Microeconomics, we should also start from fundamental theory of price. With media involved, we would build new models that take media as an essential factor.

(1) The Equilibrium Price Model with Media Involved

The first part is about the limitation and shortcoming of two-dimensional market theory.

Different schools have different opinions about the emphasis on the market dimensions and market itself. One of the initiators of economics argues that "the supply can create demand". That fits the situation in the early stage of capitalism, when the market economy was not well-developed, so the production was more important. Therefore, according to Say, the purpose of production for individual producers is either to satisfy their own demand for this product, or to exchange the products with others. Moreover, he believes that the trade is the exchange in nature, and currency is just functioned as a medium. Consumers are producers, goods would be exchanged with other products, and the consumption and production are highly consistent. In this sense, the supply of products would create the demand, and the total supply is the same as the total demand in the aspect of amount. The partial supply-demand imbalance will be removed by the price system. We call it "Say's

law".

The role of currency is ignored in Say's law, and his theory is only applicable in the barter economy age. As Marx pointed out, when barter economy evolves to the trade with currency as a medium, the selling and buying are separated as two independent processes. After selling the product, it is possible that the seller will not immediately purchase products from other producers, which lead to insufficient demand relative to supply. Marx criticized Say's law and the identity between seller and buyer, for one individual, the selling and buying are two different activities, which are not always in the same process. Moreover, Marx ascribed the crisis to the separation of selling and buying.[44]

Keynes emphasized the market demand, and his interpretation of the failure in clearing the market was the deficient demand. In his age, the market economy was much more mature compared with the age the invisible hand theory was prevailing, the technology was more advanced, and overproduction had been a threat to the economy. Keynes's deficient demand theory was originated from this realistic background, and its focus was buyer's market, which means that the buyer has more say in the market when the supply exceeds demand. Keynes's prescription of overproduction was to rely on the government to increase the investment, which would lead to a higher demand, income level and consumption. This policy would guarantee the boom of the economy, full employment and the increase in production. The mistake Keynes made was his ignorance of the real cause for supply-demand imbalance--the incompleteness and asymmetry of information.

In Microeconomics theory, price is determined by demand and supply. Demand means the quantity of products that consumers are willing to buy and could afford them in different kinds of prices during a period. It is determined by many factors. The main factors include: the price of the product, consumers' income, price of relevant products, consumers' preference and consumers' price expectation on this product. The demand function shows the relationship between demand quantity of the products and various factors that will influence the quantity. Normally,

---

[44] Karl Marx. *Das Capital*. Renmin Press, Beijing, 1972: 131–133.

Microeconomics assume that other factors remain unchanged, and only analyze how the price of the products influence their quantity, that is the quantity of demand is just considered as price function of the products. In Microeconomics, it is usually expressed as:

$$Q^d = f(P)$$

(P refers to the price of the products; Q^d refers to the quantity demanded of them.)

Microeconomics theory mentions elasticity of demand, which means the responsiveness of the quantity demanded of a good or service to a change in its price.

The definition of supply is the quantity of products that producers are willing to sell and able to provide, adjusting and changing accordingly to different prices during a period. It is also determined by many factors. The main factors include: the price of the product, cost of production, production technology, price of relevant products, and producers' price expectation on this product.

In the meantime, the supply function assumes that other factors remain unchanged (ceteris paribus), so we only have to consider the influence of the quantity supplied on a change in its price, that is to say, we just consider the quantity supplied of a product as its price function. The price function could be expressed as:

$$Q^S = f(P)$$

(P refers to the price of the products; Q^S refers to the quantity supplied of them)

Microeconomics theory also emphasizes the elasticity of supply, which means the responsiveness of the quantity supplied of a good or service to a change in its price.

According to the logic of Microeconomics theory, when quantity demanded and quantity supplied are equal, price in that condition is the equilibrium price; it is called clearing market, and quantity demanded and quantity supplied are called equilibrium quantity.

When demand curve and supply curve shift, the equilibrium price will change. When other conditions remain unchanged, the change of demand will lead to moves of equilibrium price and equilibrium quantity in the same direction; the change of

supply will lead to move of equilibrium price in the opposite direction and move of equilibrium quantity in the same direction.

As mentioned above, two situations may take place when the market failure is resulted from the incompleteness of information.

One is adverse selection of demand. This is caused by the limits of people's cognitive ability. People could not know when and where things have happened or will happen. That is to say, market economy could not provide sufficient information and allocate them. Thus, under the circumstances of incomplete information, price does not represent supply and demand. For example, as to demand, if the price of a certain product is cut down, on the basis of demand law, the quantity demanded will increase. But when consumers do not have complete information, when price is cut down, the quantity demanded might decrease instead.

The other is adverse selection of supply. In Microeconomics theory, on the basis of supply law, if the price of a certain product is raised, the quantity supplied will increase. But when producers do not have complete information, when price is raised, the quantity supplied decrease instead.

If the media is introduced into the two-dimensional market model, a new three-dimension market model would be built up, which may solve the market failure problem to some extent.

The second part is about media as the carrier of market information.

Almost all the researches on supply and demand are based on the assumption that the amount of supply and demand is known or knowable. And this is the premise of Marshall's local equilibrium price theory. There are two situations of imbalance of supply and demand: the first one is overproduction, or supply is over demand. In this case, because of the price competition, the goods will be sold at the level lower than the value, and then the demand will rise and a new equilibrium price is achieved at a lower level than the original one; the second one is insufficient supply, or demand is over supply. The goods will be sold higher than the value level, and the demand will decrease gradually. A new equilibrium price is achieved at a higher level than the original one.

If the equilibrium status cannot be reached, it follows the market failure. As discussed above, the main cause for the market failure is the incompleteness and asymmetry of information, which means that the market information is not completely transmitted to the agents and the messages that the buyers receive are different from those that the sellers receive. Apparently, the information about the demand and supply is an important factor in achieving the market equilibrium price. Under such a background, the idea of "three-dimension market" was first proposed by Zhang (2005). In his "three-dimension market" model, information was introduced as the third dimension.

Before the emergence of media, there are brokers who take care of linking the information of supply and the information of demand in market. This special job has been done for over 3000 years. As in the *Book of Changes*, it describes that all the people get around and trade with each other in the market in the afternoon, so all the wealth is gathered, and people leave the market with the products that satisfy their needs. This literature is the record of the market activities in the ancient time. In the twenty-first century, the functions of the broker have changes, and more emphasis is put on the technical and business aspects. New media have become the main form of carrier of the information, and through its interaction with information, it is a third factor in the market that will influence the market equilibrium. Thus a new three-dimension modern with media as the third dimension is called to fit in now.

The third part is about the market equilibrium with media.

In the new three-dimensional market equilibrium price model, there are three main factors, namely supply, demand and media.

Before introducing media into the new model as the third dimension, one clarification needs to be made: the extent or the dimension of the media. For instance, in the market for a particular good, there are n demanders and n suppliers. In the old three-dimensional model, the information is the third dimension. In order to reach the equilibrium of the market, there should be n pieces of information corresponding to make the information complete and perfect. In our new model, however, the media become the third dimension instead. Therefore, we encounter a problem of how to correspond media to the multiple agents, for there are still n

demanders and suppliers in the market, while the extent or dimension of the media is not n. To solve this problem, we have to introduce a new concept, information bundle.

The concept of information bundle is similar to consumption bundle but not exactly the same. According to Varian[45], consumption bundle is "a complete list of the goods and services that are involved in the choice problem". In another word, there is a set of goods for a consumer to consume. Quite similarly, information bundle is a set of information prepared and managed by the media for both the demanders and suppliers. In detail, each media will manage and carry several pieces of information for the market. After summing up all the pieces of information managed by all the media and subtracting the repetitive ones, the sum of pieces of information is the information bundle. The number of pieces may equal to n and may not. If the information bundle has n pieces of information, that means the market is information complete and symmetrical. Otherwise, the market is information incomplete and asymmetrical.

For example, in the market of a particular good A, to simplify the problem, we assume that there are n demanders and n suppliers all together. To take decision for their market activities, the demanders and suppliers need to search for the relevant market information. Before the emergence of media, the demanders and suppliers can rely on the brokers to secure the market information. Under such condition, there is a cost for the information. The information gathered by the brokers would be incomplete and asymmetrical because of the limits of human powers. After the emergency of media, especially the new media, demanders and suppliers can get the information they need from media, the cost of which is very minimal and can be neglected. The information itself will be more complete and symmetrical. The information bundle carried by the media may be less than all the information in the market, or the number of pieces of information delivered by media is lower than n, but the price of good A will be less dispersed and the market will achieve equilibrium more quickly compared with the age when brokers played the significant role as information collector. If the information bundle equals to all the existing information,

---

[45] Hal Varian. *Intermediate Microeconomics: A Modern Approach* (8th edn.). W. W. Norton & Company, New York, 2010: 20–21.

then the market achieved perfect competition with complete and symmetrical information.

Thus, in the following discussion of the new three-dimensional market model[46], the information carried by media will be referred as the information bundle. The best condition of the market is that the information bundle equals to the sum of information, and the number of piece of information is n.

According to the theories in Microeconomics, the supply and demand can be expressed as the functions of price. If we assume that the information is incomplete and asymmetric in the two-dimensional market condition, or the cost of getting information is too high, then it is very difficult for the supplier to know the price p_t. They have to predict the price in this period on the basis of previous price level, and then to decide the amount of supply. Here supply is a function of price, $s_t = f(p_t^e)$

The demand in this period d_t is determined by the price in this period p_t, and demand is a function of price, $d_t = g(p_t)$. We can use four equations to show the market status:

$$d_t = a - \alpha p_t \tag{1.2}$$

$$s_t = -b + \beta p_t^e \tag{1.3}$$

$$p_t^e = p_{t-1}^e + \eta(p_{t-1} - p_{t-1}^e), \ 0 < \eta < 1 \tag{1.4}$$

$$d_t = s_t \tag{1.5}$$

where a, b, α, β are constants and positive numbers.. d_t is the quantity demanded in period t, s_t is quantity supplied in period t, p_t is price in period t, p_t^e is expected price in period t. Formula (1.4) is adaptive expectations equation of price and η is the coefficient of price expectations which denotes that the deviation between the price of the previous period and the expected price of the previous period is partially used to adjust the current expected price. Formula (1.5) is

---

[46] The new model is constructed by introducing the role of information into the Cobweb Model. The Cobweb Model has been explained in many economics textbooks. Hongye Gao. *Microeconomics.* 2014: 49.

condition of market clearing.

By substituting formula (1.2) into formula (1.3) and (1.5), we obtain

$$p_t = \frac{a+b}{\alpha} - \frac{\beta}{\alpha} p_t^e \tag{1.6}$$

Combining formula (1.4) and (1.6), we get

$$p_t = \frac{a+b}{\alpha}\eta + \left(1 - \eta - \frac{\beta}{\alpha}\eta\right)p_{t-1} \tag{1.7}$$

According to the value of $(1+\beta/\alpha)\eta$, the characteristics of the solution of equation (1.7) can be summarized as follows:

a) If $0 < (1+\beta/\alpha)\eta < 1$, price p_t converges directly.

b) If $(1+\beta/\alpha)\eta = 1$, $p_t = \frac{a+b}{\alpha}\eta = \frac{a+b}{\alpha+\beta} = p^*$, where p^* is the equilibrium price.

c) If $1 < (1+\beta/\alpha)\eta < 2$, price p_t converges.

d) If $(1+\beta/\alpha)\eta = 2$, there exists a saddle path $p_t = p^*$.

e) If $(1+\beta/\alpha)\eta > 2$, price p_t diverges.

In order to reach the equilibrium, the supplier's expectation should be the same as that of the demander, or the amount of supply should be equal to that of demand. It requires the producers to be informative, knowing the technological condition, the price and quality of factors and the market price of products; it also requires the consumers to be informative as well, knowing the prices of all products, the functions and usage of products, their own revenues, preference and utility. If one of these two requirements is not satisfied, the supply and demand cannot be reflected by the price, and the price cannot be in the equilibrium level.

The author tries to introduce media as the third factor and create a three-dimensional market model. It is assumed that the media are contributory to solving the problem of incompleteness and asymmetry of information, and to reducing the cost of obtaining information for both producers and consumers. Then both parties can change the price expectations according to the information they are

able to secure, which would narrow the gap between the expected price and real price.

It is assumed that the expected price in this period is not only affected by the previous price levels, but also by the media. For the suppliers, their expectation of price in the current period T can be expressed as:

$$p_t^e = p_{t-1}^e + \left(\sigma\eta \frac{p_{t-1} - p_{t-1}^e}{p_{t-1}^e} \right) p_{t-1}^e, \quad 0 < \eta < 1, 0 < \sigma < 1/\eta \tag{1.8}$$

where σ is the adjustment coefficient of the price expectation coefficient η.

If we let $\left(\sigma\eta \frac{p_{t-1} - p_{t-1}^e}{p_{t-1}^e} \right)$ to be σ_t, we could get $p_t^e = p_{t-1}^e + \sigma_t p_{t-1}^e$ where σ_t is not constant and will change with time.

σ is the adjustment coefficient of the supplier's expectation by media. When $\sigma > 1$ and approaches to the infinite, the adjustment of the current price expectation is greater, and the change in the supply amount is bigger, which indicates that the media's impact on the supplier's side is obvious. Vice versa.

When (1.4) is replaced by (1.8), the price in the period t is :

$$p_t = \frac{a+b}{\alpha}\sigma\eta + \left(1 - \sigma\eta - \frac{\beta}{\alpha}\sigma\eta \right) p_{t-1} \tag{1.9}$$

According to the value of $(1+\beta/\alpha)\sigma\eta$, the characteristics of the solution of equation (1.9) can be summarized as follows:

a) If $0 < (1+\beta/\alpha)\sigma\eta < 1$, price p_t converges directly.

b) If $(1+\beta/\alpha)\sigma\eta = 1$, and $p_t = \frac{a+b}{\alpha}\sigma\eta = \frac{a+b}{\alpha+\beta} = p^*$ where p^* is the equilibrium price.

c) If $1 < (1+\beta/\alpha)\sigma\eta < 2$, price p_t converges.

d) If $(1+\beta/\alpha)\sigma\eta = 2$, there exists a saddle path $p_t = p^*$.

e) If $(1+\beta/\alpha)\sigma\eta > 2$, price p_t diverges..

If media are not involved, and $(1+\beta/\alpha)\eta > 2$, then the prices are divergent, and the market system is not stable. With the media, if it is possible to narrow the gap between the expected price and the real price, then $0 < (1+\beta/\alpha)\sigma\eta < 2$, the market price would converge and the market system would be stable.

Above is the analysis on the three-dimension market theory, and it is quite direct, but not mathematically strict. It is a good step to introduce media into the Microeconomics.

One thing needs to be noted is that, in the dissertation, media are regarded as an exogenous variable. With the development of media technology, media may convert to an endogenous variable in the future. In the case, media should be defined as a new variable in the model rather than an adjustment coefficient.

(2) The New Model of Dynamic Changes in the Market (with Media Involved)

The market is always changing, sometimes from equilibrium to non-equilibrium, and vice versa. In this changing process, the media as the adjustment coefficient plays a role.

First, media will affect the influence of exogenous shocks, such as the changes of policy and natural conditions. When media increase the influencing coefficient of providers' expectation, the adjustment of suppliers' expected price will relatively increase and then changes of commodity supply and market price will increase. At this time, media play a role in amplifying exogenous shocks and exacerbating market volatility. On the contrary, when media reduce the influencing coefficient of providers' expectation, the adjustment of suppliers' expected price will relatively reduce and then changes in commodity supply and market price will reduce. At this time, media play a role in minimizing exogenous shocks and slowing down market volatility, which is conducive to market stability.

Second, media will affect the changing speed of the market system from equilibrium to non-equilibrium, and then from non-equilibrium to equilibrium. Considering media increase the influencing coefficient of providers' expectation, if

the market price and the expected price change toward a certain direction after departing from the equilibrium market system, such media would increase the adjustment of providers' expected price. Therefore, it will speed up the market system back to equilibrium from a non-equilibrium state. As we all know, if the market system deviates from equilibrium, the market price will fluctuate around the equilibrium price. According to the previous analysis, media will increase market volatility, thus slowing down market system back to equilibrium from a non-equilibrium state. Considering that media reduce the influencing coefficient of providers' expectation, we will get the opposite conclusion.

We will analyze the problem by building the dynamic theoretical model, into which media are introduced. Consider the random form of the above model.

$$d_t = a - \alpha p_t \tag{2.1}$$

$$s_t = -b + \beta p_t^e + \varepsilon_t \tag{2.2}$$

$$p_t^e = p_{t-1}^e + \sigma \eta (p_{t-1} - p_{t-1}^e), \ 0 < \eta < 1, 0 < \sigma < 1/\eta \tag{2.3}$$

$$d_t = s_t \tag{2.4}$$

The difference between this model and the above model is that supply formula (2.1) includes random disturbance term ε_t. This exogenous shock makes the market system transformed from equilibrium to non-equilibrium state.

Combining Formulas (2.1)-(2.4), we obtain the price p_t following ARMA(1,1) process：

$$p_t = \lambda_0 + \lambda_1 p_{t-1} + \mu_t + \delta_1 \mu_{t-1} \tag{2.5}$$

where $\lambda_0 = (a+b)\sigma\eta/\alpha$, $\lambda_1 = 1 - \sigma\eta - \beta\sigma\eta/\alpha$, $\mu_t = -\varepsilon_t/\alpha$, $\delta_1 = \sigma\eta - 1$.

Assume $|\lambda_1| < 1$. Because $0 < \sigma\eta < 1$, we can get $|\delta_1| < 1$. Now ARMA model (2.5) is stable, which guarantee the stability of market system.

To transform the ARMA(1,1) process into MA(∞) process：

$$p_t = \frac{\lambda_0}{1 - \lambda_1} + \frac{1 + \delta_1 L}{1 - \lambda_1 L} \mu_t \tag{2.6}$$

where L is lag operators.[47] Formula (2.6) becomes

$$p_t = \frac{\lambda_0}{1-\lambda_1} + \mu_t + \sum_{i=1}^{\infty} \phi_i \mu_{t-i} \qquad (2.7)$$

where $\phi_i = (\lambda_1 + \delta_1)\lambda_1^{i-1} = -\frac{\beta}{\alpha}\sigma\eta\lambda_1^{i-1}$.

Let $\phi_0 = 1$, then impulse response function is

$$\frac{\partial p_{t+j}}{\partial \mu_t} = \phi_j, \ j = 0, 1, 2, \cdots \qquad (2.8)$$

The change of σ will influence the impulse response function. Take the partial differential of ϕ_j w.r.t. σ:

$$\frac{\partial \phi_j}{\partial \sigma} = \begin{cases} -\dfrac{\beta}{\alpha}\eta, & j=1 \\ \dfrac{\beta}{\alpha}\eta\lambda_1^{j-2}[j(1+\dfrac{\alpha}{\beta})\sigma\eta-1], & j \geq 2 \end{cases} \qquad (2.9)$$

According to the sign of λ_1, we discuss this issue in two different cases.

Case 1：$0 < \lambda_1 < 1$

Now

$$\phi_j < 0, \ j = 1, 2, \cdots \qquad (2.10)$$

According to formula (2.9), $\partial\phi_1/\partial\sigma < 0$; For large enough $j \in \mathbb{N}$, we get $\partial\phi_1/\partial\sigma > 0$. According to this conclusion, combining formulas (2.8)-(2.10), we obtain the impulse response functions of ARMA(1,1) processes corresponding to different values of σ ($\sigma_1 < \sigma_2$), as shown in Fig. 6.

---

[47] Walter Enders. *Applied Econometric Time Series*. Higher Education Press, Beijing, 2006: 36–38.
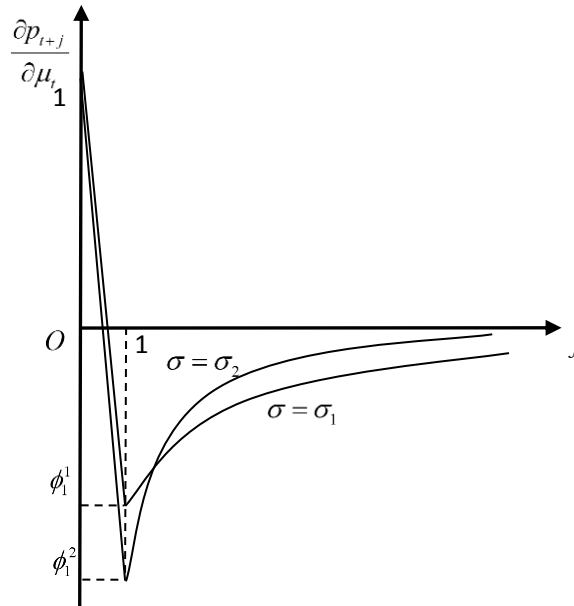
Fig. 6. Impulse response functions ($0 < \lambda_1 < 1$).

According to Fig. 6, when current price is shocked by a positive change, the price will respond negatively, until the absolute value gradually decreases to zero. When σ increases, the absolute value of the price response of next period increases ($\left|\phi_1^2\right| > \left|\phi_1^1\right|$) and the speed of impulse response function goes faster. This means when the current supply of goods is hit by positive exogenous shocks, or the current supply is greater than the supply of clearing market, current price would immediately decline[48], and the market is in a non-equilibrium state. The supplier will expect commodity price to fall in next period, so they would reduce the supply, and the market price will rise above the equilibrium price. Over time, the market price decreases, tending to be the equilibrium price, and the market will return to equilibrium from non-equilibrium. In this process, by changing the suppliers' expectation of price, the media affect the impacts of exogenous shocks on the market price by adjusting people's expectations. When suppliers' expected price

---

[48] $\dfrac{\partial p_{t+j}}{\partial \varepsilon_t} = -\dfrac{1}{\alpha}\dfrac{\partial p_{t+j}}{\partial \mu_t} = -\dfrac{\phi_j}{\alpha}$, $\dfrac{\partial p_{t+j}}{\partial \varepsilon_t}$ and $\dfrac{\partial p_{t+j}}{\partial \mu_t}$ are opposite in sign.

adjustment becomes larger (σ becomes larger), the impact of exogenous shocks on the next period's price increases, and the market returns to equilibrium in a faster way.

Case 2：$-1 < \lambda_1 < 0$

If i is even, $\phi_i > 0$; if i is odd, $\phi_i < 0$. So the impulse response functions converge to 0.

According to $\lambda_1 < 0$, we get $\sigma\eta + \beta\sigma\eta / \alpha > 1$, thus

$$j(1+\frac{\alpha}{\beta})\sigma\eta - 1 > 0, \ j \geq 1 \tag{2.11}$$

Combining formula (2.9) and (2.11), if i is an even positive number, $\partial\phi_i / \partial\sigma > 0$; if i is odd, $\partial\phi_i / \partial\sigma < 0$.

According to the above analyses, we obtain the impulse response functions of ARMA(1,1) processes corresponding to different values of σ ($\sigma_3 < \sigma_4$), as shown in Fig. 6.
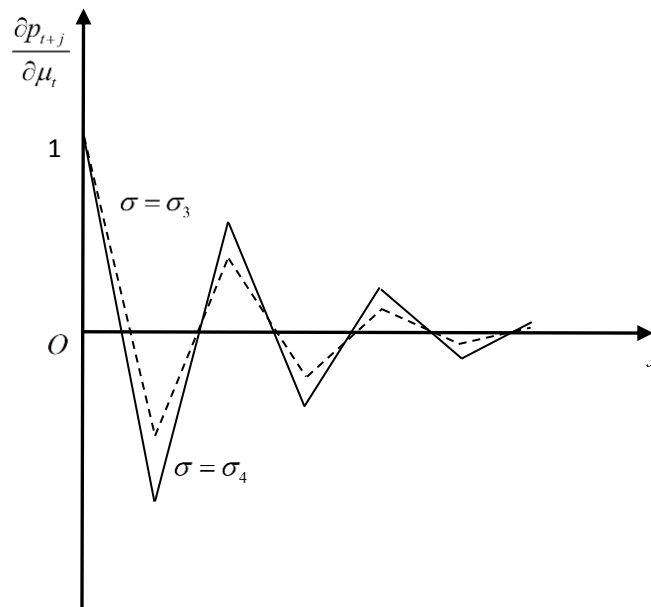
Fig. 7. Impulse response functions ($-1 < \lambda_1 < 0$).

According to Fig. 7, when current price is affected by a positive shock, the response of price should fluctuate around zero, and their absolute value decreases to zero gradually. When σ increases, the absolute value of the price's response in each period would increases, and the absolute value of the impulse response function decays more slowly. This means when the current supply of goods is affected by a positive exogenous shock, and at the same time the current supply is greater than the level of market clearing, current prices would decline immediately and the market changes to a non-equilibrium state; suppliers expect the commodity prices to fall in next period, and supply reduces subsequently, meanwhile the market price rise to above the equilibrium price level; market price fluctuates around the equilibrium price. Over time, the fluctuations of the market price gradually decrease, and converge to the equilibrium level, and then the market returns to equilibrium from the state of non-equilibrium. In this price-adjusting process, if the media increase the adjustment of the expected price of supplier (σ price becomes larger), then the market price volatility will increases, and the speed of returning to market equilibrium from the non-equilibrium state slows down.

The above models and analyzes are based on expectations of suppliers. Conclusions are similar based on the expectation of buyers and we will not formulate them in detail here.

2. The New Market Demand Model (with Media Involved)

This section focuses on media's impact on the market demand, both in the microeconomic and macroeconomic levels.

(1) The Microeconomic Analysis of the Media's Impact on Market Demand

As discussed above, media are an important factor that influences the demand in the market, for it will change the expectation of consumers.

$$d_t = \sigma p_t^e + u \quad 0 < \sigma < 1$$

In the period t, besides u, the demand would be affected by the expected price of consumers p_t^e, which would be influenced by media σ. The greater the role of media are, the greater the value of σ would be, and the faster the consumers' expectation will change, which lead to changes in the market price.

One of the latest contributions of information economics to micro economy is to put forward the new theory of sticky information (Hippel, 1994). Information stickiness is defined as the incremental expenditures to be paid for transmitting specific information to the searchers. If the cost is pretty low, then low stickiness it has and vice versa. Information stickiness degree is not determined only by information itself, but also by the searchers and providers. Based on analysis of Mankiw and Reis (2001), information cost consists of three parts: information acquisition, information assimilation and information processing. Since information is costly, the rate of information acquisition and arrival is manipulated by the principle of minimum cost. The quite obvious consequence is that people do not constantly collect and process relevant information, let alone the decision behaviors based on the updated information.

Regarding the influences of information on consumption, some scholars take that the information stickiness of consumers is exogenous, for instance, Mankiw and Reis (2001) argued that anticipatory adjustment is a Poisson Process because the probability of updated information in each period remains the same. If complete information is attained through updating, the future expectation would be rational. The current consumption is going to be influenced by consumption expectations and lagged information.

If media have a great influence on the market demand or consumers and is able to guarantee the full access to complete information, then the expectation of the future price would be more rational. It is not only conducive to market clearing, but also the healthy development of market.

Reis (2006) argued that even if anticipation of consumers is rational, consumers would only update information at intervals and then change their consumption

behaviors because of information stickiness, besides the spreading of new information also takes time, and the total consumption is still of excessive sensitivity. His analysis tells us that because of the stickiness of the medium itself, the demand or the expectation of consumers would be lagged too, which would change the equilibrium of market.

Regardless of exogenous stickiness theory or endogenous stickiness theory, it is concluded that information exerts influences on consumption. It is basically due to effects of income impacts on consumption. And this effect is influenced by information stickiness with a time lag. After solving the problem caused by information stickiness, the income impacts on consumption can be immediately and quickly reflected. The media are the answer. For exogenous information stickiness, new media could make macroeconomic policy effective and efficient. Because new media are able to put consumers under the circumstances of complete information and symmetric information due to the following principal characteristics of media: wide-spread span, real-time transmission, active and effective communication, which improves the time lag of information stickiness. For endogenous information stickiness, the consumption behavior could be shaped by three powers (attention, influence and force of public opinion) through information bombing. Consumers passively receive new information and alter the consumption behaviors due to continuant information arrivals. For instance, 10 years ago Chinese consumers rarely approve of sweet hot pot. Due to the repeated advertising bombing of Haagen-Dazs chocolate fondue, many of them gave it a try and slowly started to accept it. Without the intervention of advertising, you cannot imagine how late the Chinese consumers update the information of sweet hot pot will be.

(2) The Macroeconomic Analysis of the Media's impact on Market Demand

In order to have a better understanding of effects of information on consumption, this section will further use sticky information Phillips Curve and sticky prices Phillips Curve to analyze it from the perspective of Macroeconomics.

First, Mankiw and Reis (2001), Reis (2006), Molinari (2006), and Coibion (2006) conducted the sticky information Phillips Curve analysis. They doubted that the new

Keynesian Phillips Curve is enough to explain inflation inertia, the delayed and gradual monetary policy impact on inflation. Therefore, Mankiw and Reis (2001) and others perfected the sticky information model to explain the dynamic effects of total demand to output and prices. The equation of sticky information Phillips Curve is as follows:

The desirable price for enterprises, its expression is as follows:

$$P_t^* = P_t + ay$$

P^*, *p* and *y* respectively stands for desirable price of enterprise, total price level and output gap (logarithmic form). α stands for influence of output gap changes to the marginal cost of the enterprise. This above equation shows that the enterprise's desirable price depends on p and y. The changes of the output gap will affect the marginal cost, and further the optimal level of the enterprise.

For the fixed price of enterprise that updates plans lately before *j* period, its expression is as follows:

$$P_{t,j}^* = P_{t-j} + P_t^*$$

P_{t-j} represents the level of price before j period. This equation shows that the level of price fixed by the enterprise that updates its plans lately before j period equals to t (the anticipatory value of optimal price)

The enterprises with λ adjust the current price according to the latest information. The enterprise with (1 -λ) does not respond to changes in the current information, they still perform the price level suitable to the current expectations before j period, and then overall price of enterprise is as follows:

$$P_t = \lambda \sum_{j=0}^{\infty} (1-\lambda)^j E_{t-j} P_{t,j}$$

To integrate the above three equations, the price level equation will be as follows:

$$P_t = \lambda \sum_{j=0}^{\infty} (1-\lambda)^j E_{t-j} (P_t + ay_t)$$

According to the price level equation, the equation reflects the dynamic relationship between output and inflation will be derived as the follows:

$$\pi_t = \frac{a\lambda}{1-\lambda} y_t + \lambda \sum_{j=0}^{\infty} (1-\lambda)^j E_{t-1-j} (\pi + a\Delta y_t)$$

where $\Delta y_t = y_t + y_{t-1}$ equals to output growth rate.

According to the equation, inflation depends on the output, inflation expectations and output growth expectations. Specifically, the coefficient of current output gap manifests as the increasing function, which means that the higher information updating frequency gets, the more sensitive the current price decision will be for the current economic environment; the more information we can acquire, the faster price will adjust. As for Phillips Curve, the steeper curve means the weaker information rigidity, and vice versa. Those enterprises without information updating do not adjust their price after positive aggregate demand impacts, which let money be of non-neutrality. The key point of sticky information Phillips Curve is that expected value based on delayed information set showed up. The impact of delayed expected value in t period gradually influences inflation, because the information affecting expected value is gradually updating. In addition, in the sticky information model, the real rigidity refers to the shortage of sensitivity of desirable relative prices to macroeconomic environment, which is the cause of non-neutral currency. If the decision maker thinks other enterprises do not update decisions, then the price adjustment amplitude according to updated information is relatively small while reducing the slope of the Phillips Curve. The real rigidity increases the weight of monetary policies. The non- neutrality characteristic of currency will be above the average.

Second, the sticky price Phillips Curves, so called new Keynesian Phillips Curves, derived from studies of nominal rigidities by Taylor (1980) and Calvo (1983).

The time dependent pricing model in sticky price Phillips Curves normally assumes that only enterprises with γ adjust the price, the others with 1-γ execute the previous level of price in each t period. Thus price adjustment among enterprise is staggering, and each enterprise has the same probability of adjusting the price level in each period. In the time dependent pricing model, the new Keynesian Phillips Curve has the following expression:

$$\pi_t = \frac{a\lambda^2}{1-\lambda} y_t + E_t \pi_{t+1}$$

$\pi_t = p_t - p_{t-1}$ stands for the inflation rate. Among the equation, t and t -1 p_t and p_{t-1} respectively stands for the logarithm of general price level in the period of t and t -1. y_t is taken as a potential output gap. α stands for marginal cost impact on inflation. According to the new Keynesian Phillips Curve, the current inflation is the function of output and the next phase of inflation expectations.

In terms of price stickiness, enterprises always are capable of anticipating the maximum profit level when updating and fixing multi-period level of price. Price stickiness led to non-neutral currency. The Phillips Curve is not vertical, and inflation and output volatility is alternating. And the Phillips Curve slope is a function of stickiness index (real rigidity or nominal rigidity). The stronger the price stickiness gets, the more flat the Phillips Curve will be, and vice versa.

Now we can see that sticky price and information differ in a specific way. The theory of sticky price assumes that price is not absolutely flexible when facing the exogenous impact of long-term contracts, staggered wages and adjustment cost. People constantly attain information without any time lag. However, the theory of sticky information assumes that certain people take economic decision according to original information due to cost of information access, assimilation and processing. The slowly spreading information led to nominal rigidity.

There are mixed comments about the above two models. Some think that sticky information model is much closer to reality because sticky price model failed to explain the persistence of inflation and gradual influence of monetary policies on inflation with apparent time lag. In the sticky information Phillips Curve, the monetary squeeze will lead to recession, which explains the acceleration phenomena. That is why monetary policies take time to generate maximum effects on inflation. Some also pointed out that sticky information Phillips Curve has many disadvantages including real-time prediction error effect, inflation inertia effect and lacking of volatility. So we believe that sticky price model is better. And some others suggest that the two models should be integrated (Koehler and Willis, 2007), which implies harmony between microeconomic flexibility and macroeconomic rigidity. Dupor et al (2010) formally established the double sticky Phillips Curve including sticky prices and sticky information model.

We are holding different views. Sticky price and sticky information models should be integrated for market discussion based on one precondition, the impact of media on information. If the capacity of media for information transmission is insufficient, then power of media on consumers is also not strong, so we call it sticky information. We can conclude that the model of sticky information stays closer to reality, which explains the dynamic influence of total demand to output and price. On the contrary, the immediate, efficient and global information transmission implies stronger power on consumers, and the linear Phillips Curve reflects the dynamic influences of total demand to output and inflation.

3. The New Market Supply Model (with Media Involved)

By changing the expectations of producers or suppliers, media's influence is exerted.

(1) The Impact of Media on Market Supply

As discussed above, the media are an important factor in the market demand, for it could also influence the expectations of producers or suppliers:

$$s_t = \sigma p_t^e + u \quad 0 < \sigma < 1$$

In the period t, besides u, the demand would be affected by the expected price of consumers p_t^e, which would be influenced by media σ. The greater the role of media is, the greater the value of σ would be, and the faster the producers' expectation will change, which lead to changes in the market price.

In real economy, media's function of transmission will lead to suppliers' dissemination of future economic anticipation in three-dimensional market. In such market, information transmission is the main source for suppliers to obtain information. Due to media's deliverability and sharing, it may attract suppliers' whole attention when information is spread out through it. Thus, media play an important role for suppliers in predicting the fluctuation of macro-economy.

Especially, when economic turbulence happens, media's over interpretation, explosive report and trend analysis towards recession information might lead to suppliers' excessive pessimism on future economic expectation that will result in contagion effects of investment and decline of economy. Moreover, in real economy, the medium has its own interests and its preference of choosing and processing information is easily influenced by suppliers' information demand. The combination of media's nonselective excessive transmission and its selective transmission based on consumers' preference may have impact on investment market and cause fluctuation. Certainly, if the current situation is properly reflected in media reports during the economic fluctuation and the investment environment is well interpreted, media could become another hand besides the market and the government. Media may be regarded as a tool to change suppliers' pessimistic anticipation in order to avoid economic panic and speed up recovery of economy and investment market.

(2) The Macroeconomic Analysis of Media's Impact on Market Supply

Media will influence the whole investment market through changing suppliers' expectation. Now I will investigate the effect of media on investment, by using an example of preference model in stock market.

This model is based on the analysis frame of Consumption Capital Asset Pricing Model propounded by Lucas (1978) and Lagerwall (2004), and will show the relation between the changes of stock anticipated excess earnings and media.

In the analysis frame of Lucas (1978), information of current and future economic situation is included in current fluctuating output and consumers' future anticipation of economic situation mainly depends on the information of current fluctuating output.

First, it is supposed that two markets exist in real economy, namely product market and stock market. In the product market, there are n different enterprises that produce one and perishable product. The production is totally exogenous without utility transferred from resources for production. The process of production is compliant with Markov Process and the transformed equation is

$$(Y',Y) = prob\{Y_{t+1} \leq Y' \mid Y_t = Y\}$$

In product market, there is an assumption that enterprise ownership is determined by current stock market. Stocks are issued in competitive stock market and each enterprise just offers one share of completely divisible stock. Thus, in different period, the initial stock quantity hold by consumers stands for the shares of production quantity owned by consumers at that time.

Also, there is another assumption that a large number of consumers with the same preference exist and their utility function is in line with Epstein- Zin/Weil preference which is common compared to traditional utility function and without any direct connection between relative risk aversion coefficient and inter-temporal elasticity of substitution. The function is as follows,

$$V_t = U(C_t, E_t V_{t+1}) = \frac{\left\{(1-\beta)C_t^{1-\rho} + \beta\left[1+(1-\beta)(1-\gamma)E_t V_{t+1}^{\frac{1-\gamma}{1-\gamma}}\right]^{\frac{1-\rho}{1-\gamma}}\right\}^{\frac{1-\gamma}{1-\rho}} - 1}{(1-\beta)(1-\gamma)} \quad (1)$$

In this function, b refers to subject discount factor, $1/\rho$ refers to inter-temporal elasticity of substitution of definitive consumption path, g refers to relative risk aversion coefficient, ρ, $\gamma > 0$, $\beta \in (0,1)$. As a consequence, consumers' utility maximization in this market is:

$$\max_{C_t} V_t = U(C_t, E_t V_{t+1})$$

$$s.t.: C_t + \sum_{i=1}^{n} P_{it} Z_{it+1} \leq \sum_{i=1}^{n} Y_{it} Z_{it} + \sum_{i=1}^{n} P_{it} Z_{it} \quad (2)$$

Here, C_t refers to consumption quantity of one kind of product in period t; P_{it} refers to transaction price of the stock issued by enterprise i(i=1,2,…n) in period t; Z_{it} refers to consumers' shares of stock issued by enterprise i(i=1,2,…n) in period t, $0 \leq Z_{it} \leq 1$;

Y_{it} refers to production quantity of one product by enterprise i(i=1,2,…n) in period t.

According to Robert and Lucas (1978)'s research, Euler equation of dynamic optimization above is the behavioral equation of stock equilibrium price change in the market. Solving the problem of optimization in equation (2) is Euler equation.

$$E_t\left\{\left[\beta\left(\frac{C_{t+1}}{C_t}\right)^{-\rho}\right]^{\frac{1-\gamma}{1-\rho}}R_{t+1}^{\frac{1-\gamma}{1-\rho}-1}R_{it+1}\right\}=1, i=1,2,\cdots,n \qquad (3)$$

In the equation, $R_{it+1}=(P_{it+1}+Y_{it+1})/P_{it}$, $R_{t+1}=(\sum_{i=1}^{n}P_{it+1}+\sum_{i=1}^{n}Y_{it+1})/\sum_{i=1}^{n}P_{it}$.

Meanwhile, supposing $H\equiv\left[\beta\ C_{t+1}/C_t^{-\rho}\right]^{\frac{1-\gamma}{1-\rho}}R_{t+1}^{\frac{1-\gamma}{1-\rho}-1}R_{it+1}$ and H follows logarithmic normal distribution, in accordance with nature of logarithmic normal distribution, we can arrive at the following: $E_tH=e^{E_t\log H+\frac{1}{2}\text{var}(\log H)}=1$, that is

$$\frac{1-\gamma}{1-\rho}\log\beta$$
$$+E_t\left[-\rho\frac{1-\gamma}{1-\rho}\Delta\log C_{t+1}+\left(\frac{1-\gamma}{1-\rho}-1\right)\log R_{t+1}+\log R_{it+1}\right] \qquad (4)$$
$$+\frac{1}{2}\text{var}\left[-\rho\frac{1-\gamma}{1-\rho}\Delta\log C_{t+1}+\left(\frac{1-\gamma}{1-\rho}-1\right)\log R_{t+1}+\log R_{it+1}\right]=0$$

Based on the definition of variable variance, we could obtain:

$$E_t(\log R_{it+1})=-\frac{1-\gamma}{1-\rho}\log\beta+\rho\frac{1-\gamma}{1-\rho}E_t\Delta\log C_{t+1}-\left(\frac{1-\gamma}{1-\rho}-1\right)E_t(\log R_{t+1})$$
$$-\frac{1}{2}\rho^2\left(\frac{1-\gamma}{1-\rho}\right)^2\text{var}(\Delta\log C_{t+1})-\frac{1}{2}\left(\frac{1-\gamma}{1-\rho}-1\right)^2\text{var}(\log R_{t+1})-\frac{1}{2}\text{var}(\log R_{it+1})$$
$$+\rho\left(\frac{1-\gamma}{1-\rho}\right)\left(\frac{1-\gamma}{1-\rho}-1\right)\text{cov}(\Delta\log C_{t+1},\log R_{t+1})$$
$$+\rho\left(\frac{1-\gamma}{1-\rho}\right)\text{cov}(\Delta\log C_{t+1},\log R_{it+1})$$
$$-\left(\frac{1-\gamma}{1-\rho}-1\right)\text{cov}(\log R_{t+1},\log R_{it+1})$$

$$(5)$$

Considering $R_{t+1}^fE_t\left\{\left[\beta\left(\frac{C_{t+1}}{C_t}\right)^{-\rho}\right]^{\frac{1-\gamma}{1-\rho}}R_{t+1}^{\frac{1-\gamma}{1-\rho}-1}\right\}=1$, and using the same derivation process, we could get

$$\log R_{t+1}^f = -\frac{1-\gamma}{1-\rho}\log\beta + \rho\frac{1-\gamma}{1-\rho}E_t\ \Delta\log C_{t+1}\ -\left(\frac{1-\gamma}{1-\rho}-1\right)E_t(\log R_{t+1})$$

$$-\frac{1}{2}\rho^2\left(\frac{1-\gamma}{1-\rho}\right)^2\text{var}\ \Delta\log C_{t+1}\ -\frac{1}{2}\left(\frac{1-\gamma}{1-\rho}-1\right)\text{var}\ \log R_{t+1} \qquad (6)$$

$$+\rho\left(\frac{1-\gamma}{1-\rho}\right)\left(\frac{1-\gamma}{1-\rho}-1\right)\text{cov}\ \Delta\log C_{t+1},\log R_{t+1}$$

Combining equation (5) with equation (6), we could get

$$E_t\ \log R_{it+1}\ -\log R_{t+1}^f +\frac{1}{2}\text{var}\ \log R_{it+1}\ =\rho\left(\frac{1-\gamma}{1-\rho}\right)\text{cov}\ \Delta\log C_{t+1},\log R_{it+1}$$
$$+\frac{\gamma-\rho}{1-\rho}\text{cov}\ \log R_{t+1},\log R_{it+1} \qquad (7)$$

Due to the quite small value of $\text{var}\ \log R_{it+1}$, equation (7) could be approximated as

$$E_t\ \log R_{it+1}\ -\log R_{t+1}^f \approx \rho\left(\frac{1-\gamma}{1-\rho}\right)\text{cov}\ \Delta\log C_{t+1},\log R_{it+1}$$
$$+\frac{\gamma-\rho}{1-\rho}\text{cov}\ \log R_{t+1},\log R_{it+1} \qquad (8)$$

Supposing $M_t \equiv \sum_{i=1}^{n}P_{it}Z_{it}$ which represents the market transaction value of consumers' owned stock portfolio in period t, and $Q_t \equiv \sum_{i=1}^{n}Y_{it}Z_{it}$ which represents quantity of a product consumers owned in the form of stock dividend that could be used for consumption in period t. Thus, feasible consumption constraint of consumers in each phase is

$$0 \le C_t \le M_t + Q_t.$$

On this point, we could further assume that proportional relationship between consumption quantity of consumers in each phase C_t and total resources owned by consumers $M_t + Q_t$ is constant, that is

$$\frac{C_t}{M_t+Q_t}=\xi \Rightarrow C_t = \xi(M_t+Q_t) \qquad (9)$$

Equation (9) can be converted into another form after the logarithm.

$$\log C_t - \log Q_t = \log \xi + \log\left(\frac{M_t}{Q_t}+1\right) \qquad (10)$$

Equation (10) can be converted into the one below by using first order Taylor's approximation and first order difference.

$$\Delta \log C_t \approx \phi_m \Delta \log M_t + (1-\phi_m)\Delta \log Q_t \qquad (11)$$

In the equation, $\phi_m = \left(\dfrac{M_t}{Q_t}\right)\Big/\left(\dfrac{M_t}{Q_t}+1\right) < 1$.

Meanwhile, when we plug equation (11) into equation (7), we can get

$$
\begin{aligned}
E_t\left[\log R_{it+1}\right] - \log R_{t+1}^f \approx{} & \varphi_m \operatorname{cov}\left[\Delta \log M_{t+1}, \log R_{it+1}\right] \\
& + \varphi_q \operatorname{cov}(\Delta \log Q_{t+1}, \log R_{it+1}) \\
& + \varphi_r \operatorname{cov}\left[\log R_{t+1}, \log R_{it+1}\right]
\end{aligned}
\qquad (12)
$$

In this equation, $\varphi_m = \rho\left(\dfrac{1-\gamma}{1-\rho}\right)\phi_m$, $\varphi_q = \rho\left(\dfrac{1-\gamma}{1-\rho}\right)(1-\phi_m)$, $\varphi_r = \dfrac{\gamma-\rho}{1-\rho}$.

The left part of the equation stands for the stock anticipated excess earnings. According to the definition of M_t, among values of the right part, $\Delta \log M_t$ refers to the change of market transaction values of consumers' stock portfolio; $\log R_t$ refers to the rate of portfolio revenues in the whole stock market; $\log Q_t$ refers to quantity of a product consumers owned in the form of stock dividend that could be used for consumption directly and its changes are mainly from changes of output. In this model, changes of output follow Gauss-Markov Process, so in the economy described within the model, information of current and future economic situation could be expressed by current output variables. Thus, it can be seen that $\Delta \log Q_t$ is the total change rate of gross output from different enterprises with regards to consumers' stock portfolio proportion, and it reflects the foundation of information which will determine consumers' anticipated change of current and future economic situation.

φ_m、φ_r、φ_q show the changing features of market transaction values based on consumers' stock portfolio, rate of revenues of stock portfolio in the market and influences of the changes of consumers' macroeconomic anticipation to stock anticipated excess revenues respectively.

Based on this model, we can conclude that the changes in anticipation of suppliers' macroeconomic information will significantly influence changes in stock earnings

periodically. When suppliers show optimism to future economic anticipation from media, it will push stocks price higher; vice versa.

Therefore, when there is not enough driving force to economic growth, media's over interpretation and explosive reports on relevant economic information might lead to suppliers' pessimism on future economy, worsen future economic anticipation, result in contagion effect of changes of stock earnings and accelerate the decline of stock price in the whole market or even stock market crashes (such as American's negotiation crisis of debt ceiling and US ratings downgrade by Standard & Poor's); while economic turmoil especially economic crisis happens, media's responsible reports on real information and full interpretation will better suppliers' future economic anticipation consistently and cause contagion effects to change stock earnings, avoid economic panic, prevent stock price from constantly declining and bring stock market recovery.

CHAPTER 5. THE MECHANISM OF MEDIA ON THE DYNAMIC CHANGE IN MARKET

After building up the three-dimension market model, our next task is to analyze the mechanism, channels and effects of media on the market, which is an extension of the theoretical development.

1. The Mechanism of Media

The mechanism of media refers to the methods or means by which the influence of media is achieved, and it could be analyzed from different perspectives. There are four main mechanisms, namely transmission mechanism, opinion directing mechanism, exposure mechanism and governance mechanism. Among them, the first two mechanisms are the most basic ones.

(1) The Transmission Mechanism

Transmission mechanism of media is the operational process of information transmitted by media. There are several questions to ask: Who transmit? Why transmit? How to transmit or in what way to transmit? What is the effect of transmission and how to obtain feedback? And how is the relationship between those elements?

First, we focus on the dynamic system of the transmission mechanism of media. The dynamic system is the starting point of information transmission process, which means why to transmit the information. It is inseparable with the subject of transmission (transmitter). Different transmitters have different purposes and dynamic systems. We can examine the dynamic system of transmission mechanism from the aspects of government, enterprise (media enterprise) and individual.

As for the government, when it becomes the subject of information transmission,

the transmission power of information is inseparable from the governmental functions. It may have four reasons: 1) with the people's growing demand for information and the development of information technology, the function of announcement has become the main function of the government. The government not only collects different information from different sources, but also transmits the relevant information effectively to the public. 2) The government has the motivation to maintain the political stability or economic stability and development. When the government deliver and implement a new economic policy, it will break down the content and expectation of the economic policy into details, in case the negative behaviors of the public. It will guide the public to accept and implement the new policy. When certain economy event occurs, for example, the economic crisis or economic overheating, the government will also analyze the current economic situation and transmit the information to the public and guide them to produce a reasonable response. However, when domestic public conflict occurs, to calm the public anger, the government turns to inform the public of anticipated situation and processing results. 3) The government has the function to safeguard the national interest. When the country has conflict with another country, usually using the information transmission function, the government can inspire citizens' patriotic sentiment to against the external foe. 4) The governmental information transmission has the motivations in terms of improving the quality of citizens, enhancing social welfare and fostering social democracy. For instance, government will analyze the information to orient the public to seek good deed and enhance the life quality of the citizens, thus to make joint efforts to build welfare society and democratic society.

Regarding the media enterprises, when they become the main agents to transmit the information, the fundamental force is subjective to the pursuit of maximizing profit internally and competitive pressure externally.

Like other general enterprises or industry, the main purpose of media enterprise or media industry is to pursue the maximum profit by producing and exchanging the products. However, the product of media enterprise is different from those of the

general enterprise. The product of media enterprise is the information product and the production process is the information transmission process. To gain a comparatively higher profit during the process, the media enterprises have to compete for the maximum media market share, which is realized by obtaining the notification, guiding the attention of the public and also influence them during the process of information transmission. The media enterprise is restricted by many factors including social responsibility, freedom of press, Journalism ethics and political check, etc. Thus, the goal of media enterprise is to pursue not only the maximum profits, but also the maximum of social benefits. For example, *Chinese Journalists Occupational Ethics Rules* defines that the journalists must "adhere to the principle of respecting the authenticity of news and regard authenticity as the live of news. Adhere to deep investigation and achieve reports to be truthful, accurate, comprehensive and objective"[49]. At the same time, the media enterprise has the social responsibility to maintain the political and economic stability and guide people to be good, which is in accordance with the government's target of information transmission.

When the subject of information transmission is individual, the motivation becomes more complicated. For one thing, it has the incentive of information exchange and self-satisfaction. For the consistent development of media technology, the media tool becomes easier to control and use. Therefore, the ability of individual as main subject to transmit information is becoming more and more strong. When individual successfully guide the receiver's economic and social behavior through information transmission, his/her leadership position will be consolidated. Likewise the individual will become more dominant with more followers in the next orientation behavior. Once the number of followers grows into a certain amount, the leader can have a big influence on economy and society. For example, if the number of "Internet mercenaries" and "stock group" is huge to a certain degree, they can control the public opinion about social events or create a decisive impact on the

---

[49] Liangrong Li. *The Theory of Journalism*. Fudan University Press, Shanghai, 2007: 388.

stock market. Currently, the effect of the popular media tools, such as blog and WeChat, is more obvious.

It is clear that the motivations vary in different subjects.

Second, we analyze the transmission mode of this mechanism. It is also very important that the way media subject spreads information out. From the aspect of media, according to different ways of media transmission, we can divide it into different transmission modes. Based on the different transmission levels, it can be divided into information transmission mode and information-oriented mode. Based on the different characteristics of transmission, it can be divided into single path transmission mode and network path transmission mode. Based on the different latitude of transmission, it can be divided into linear transmission mode and nonlinear transmission mode.

In the modern society, especially with the new media technology, single path transmission mode refers to the use of a single media tool for information transmission, such as the simple use of newspapers, television, and Internet and so on to deliver information. This mode is not that common in today's world. In general, under the condition of new media, information transmission often uses network transmission mode, which shares the same message via several kinds of media tools overlapping with each other. For instance, *People's Daily* has print and electronic versions and we can watch TV show on TV or on the Internet. However, not all TV programs can be uploaded to the Internet in time, which varies from categories and time period. Moreover, the linear transmission mode is simply a process of information transmission, which includes the information transmission from the deliver to the audience without feedback and interaction during the whole process. The more widely used mode is interactive transmission mode, including the audience's attitude, feedback and interaction with communicator after information is delivered to the audience. As the result of the interaction, exchanging roles between communicators and audience occurs during this process. The communicator turns to be the audience next moment, and the audience becomes the new communicator.

Third, we investigate the feedback of the effects of transmission. The transmission

of information by new media does not end after the information is delivered. It is necessary to pay attention to its effects and feedback

Transmission effect is related to the effectiveness and success rate of transmission mechanism, while the effect of feedback will play a decisive role in the next round of transmission. Of course, just as the purposes of transmission, different subjects of transmission have different feedback of effects.

Regarding the information from the government, to be carefully sorted and filtered, its credibility is higher and the transmission effect of government is superior to other types of transmission subject. However, accordingly, for its discretion, timeliness is often worse than other subjects. As to the feedback of transmission effect, the government is weaker than other subjects and most of the time the government learns the transmission effect from media enterprises. In addition, the government gets better feedback of information effect through direct transmission via media than indirect transmission through other media enterprises. The reason is that, on the one hand, the former will pay more attention to the effect of feedback and make timely adjustment to the next information transmission; on the other hand, indirect transmission may lead to media companies' misinterpretation of the information, which is not consistent with the original one.

For media companies, the authenticity and credibility of information transmission is generally weaker than the governmental transmission. Therefore the transmission effect is slightly weaker than the government. But its timeliness, especially the report of a particular event will be higher than the government, such as when a social event or public event occurs, the media enterprise exposures generally faster than the speed of the government. Because with various media tools and higher degree of freedom, media enterprises will be better than the government in terms of the collection of information transmission feedback, such as news sites and news media of blog comments can help enterprise collect the reaction of the public immediately. In addition, the media's timely opinion on social events will strengthen or reduce the influence of the events, and will affect the government's solution of the event. Thus, media transmission is a supplement to governmental regulation means in dealing

with economic and social events and its transmission effect is also very significant.

In terms of personal transmission, it receives the worst transmission effect among all the subjects, due to the non-professional information collection and the lack of credibility. It is more likely to have false exaggerated information and not easy to be adopted by the public and change the public's attitudes and behaviors. (Exceptions are opinion leaders, once the opinion leaders formed, their followers will adjust their attitudes and behaviors based on the opinion of their leaders. With the growing number of followers, personal transmission effect will be more and more obvious.) However, among all the information transmission subjects, the timeliness of personal transmission is the highest. Many social events, such as pollution incidents are first exposed by individuals, and then followed by the reports on real situation released by the media enterprises and government.

As for the feedback of transmission effect, in spite of its rapid feedback, it suffers from the weakest availability, due to the fact that the number of audience in individual transmission is usually much smaller. Additionally, personal transmission is easily influenced by feedback and the feedback information usually can decide the content of the next transmission or even whether to end up the transmission.

(2) The Guiding Opinion Mechanism of Media

Generally speaking, for the media transmission mechanism itself, the media here has a strong objectivity. But unavoidably, it will add some subjective opinions in the process of delivering information, for they will add interpretation and understanding in this process, which is not objective. With the new media technology, the interpretation becomes increasingly important in the transmission process, and the subjects that provide interpretation are diverse, therefore, the subjectivity and guidance of public opinion are more obvious. That is the reason to separate the opinion directing mechanism from transmission mechanism.

But in terms of reality, the objective transmission and subjective orientation of media are inseparable. Especially for the function of new media, transmission will be accompanied by the function basic guidance. Of course, in theory, they also can be distinguished. These two different functions, analysis and guidance, will help us to

analyze the transmission mechanism more thoroughly.

Objective and subjective media transmission are related with the profitability of media. If the profitability of the media subject is weak, the transmission of information tends to be objective, rarely with subjectivity. But if the profitability of the media subject is strong, it will filter and choose information carefully and add much subjective consciousness on value judgment.

In the process of market dynamic changing, the transmission and opinion directing mechanisms exert influence on the direction and speed of market change (convergence or divergence).

First of all, the media's transmission mechanism will affect the market. Generally speaking, the media with strong objectivity and few subjective judgment and decision can be convenient for the users to make decisions by themselves. But there might be one consequence: if the users grasp insufficient information, they tend to make wrong decisions and then act or respond in the wrong way. In this sense, the objective transmission mechanism probably would lead to misunderstanding, especially in special periods, such as the economic crisis, the users are easy to make wrong judgment and then choose the wrong behavior and countermeasures. Another possibility is that the information with strong objectivity has strong authenticity as well, which is good for the users to secure real information. But it will sometimes have negative effects, especially the special period such as economic crisis. During the period of economic crisis, lots of coverage of crisis information would easily result in public panic, which may result in irrational behaviors and reactions that negatively affect the market.

Second, the media's opinion directing mechanism is helpful to form the users' understanding and judgment since it transmits the information with subjective judgments. This mechanism has advantage in guiding the public to make the right decisions and behave in the right way to stabilize the economy. In the special periods, media's transmission of information with interpretation and subjective judgment could suppress the fear of the public and guide them to take the good measures to avoid economic regression; meanwhile, it accelerates the convergence of the market to the equilibrium state.

However, there are some limits in the opinion directing mechanism. Once the media with subjectivity deviate from the real environment and form the information environment, or "pseudo-environment", which will have negative consequences. For instance, during the economic regulation, the over interpretation could cause the media environment to deviate from the reality and the transmission mechanism becomes invalid. According to the conclusion of Janis and Feshbach in their book of *Media and Persuasion*, "extreme fear stimulus may arouse some form of interference factors that reduce the media effect".[50] On the contrary, to transmit over optimistic message about the economy is not a good idea, if only for the purpose of preventing the market from divergence, for it would make the public doubt about the credibility of the information and seek to obtain information through other channels.

As a result, both the transmission and opinion directing mechanisms have their advantages and disadvantages. Using any of them alone is likely to cause negative effects. But the combination of two mechanisms requires balancing the scale of the transmission and opinion directing. Only by balancing these two mechanisms, the media could play a positive role in the economic activities and economic recovery or economic prosperity.

(3) The Exposure Mechanism of Media

Exposure mechanism is regarded as effective and special in many theorists' view. For some scholars, the exposure by media is the same as the negative reports that reveal the crime or bad behavior to the public.[51]

The author admits the reports that reveal the "ugly" facts are part of exposure of media, but also emphasizes its positive role in transmitting information. Generally speaking, media exposure mechanism is to collect and expose the information unknown to the public repeatedly. When needing a bridge to link information senders and receivers (refers to the general public), media are the unique and specific connection medium and hub. Therefore, the media exposure is a special mechanism. In short, it is mechanism to deliver the hidden information in the

---

[50] Carl Hovland, Irving Janis and Horald Kelley. *Communication and Persuasion*. Greenwood Press, Westport, 1953: 80.
[51] Peigong Li and Yifeng Shen. "The Governance Role of Media in Enterprises: With China's Experience". *Economic Review*, 4: 14–27, 2010.

process of information transmission.

Media exposure mechanism is a special way of information transmission, which is different from other mechanism for its distinctive features that determine to what extent the effect and impact it plays in information transmission.

First, the exposure mechanism has an amplification effect. Once an individual event was reported, through new media, which is fast and interactive, especially with the development of universal network and the rise of new media such as blog or BBS, reporting and broadcasting can transform the event from single, local and occasional accidents to holistic, comprehensive and inevitable events, with the butterfly effect and magnifying glass effect. For example, media's exposure on watermelon swelling agent events arouses the public's further concerns on food safety issues. In-depth reporting and centralized bombing news forced people experience a fear for all watermelons. Due to some swelling agent, public's fear grows for all watermelon, which results in the poor sales of watermelon and leading to the farmers' direct economic loss. The amplification effect turns an individual case into an overreaction to all related objects.

Second, the exposure mechanism has an accumulation effect, embodied in the accumulation of time and space. The accumulation of time refers to the exposure of one incident reported intensively in a certain period of time by several media organizations and multiple forms of media such as newspapers, television news, network news, broadcasting, etc.) On this particular incident, the media give tracking reports densely, repeatedly and constantly, in a short period of time to disseminate the information to every corner of the world. The accumulation of space refers to all kinds of reports on a specific event from many angles to coexist on the same page which originally need to be collected through various channels. All the information is gathered in a newspaper or a piece of news, to help people have a more comprehensive and profound understanding about it. During the Foxconn continuous suicide event is being reported, for example, there is not only detailed reports of the suicides, but also the coverage of similar events before, as well as different voices within Foxconn workers, managers, and sometimes combined with the understanding of social scientists and other experts. Therefore, the public can have a better understanding of the events and a deeper impression.

Third, exposure mechanisms have the characteristics of high transparency. Once being exposed, receiver of the information, the public, will pay more attention to the exposed events, to ensure that it is under the supervision and discussion of the whole society. Opinions of social public will push the legal and administrative institutions to handle with the events. So the exposed events, in the supervision of four parties, society, legal institution, government and media, become highly transparent. Especially the engine function of new media, with the ability of Internet mass searching, can expose those hidden information easily.

The exposure mechanism enables the public to know certain social events in a short time by repetitive reports and explanation in the coverage, which easily catches the attention of the public and quickens their response. To some extent, it punishes the bad people and encourages people to do good things. This mechanism is quite fast, transparent and effective.

It probably would have bad results if used improperly. On the one hand, it is effective in catching the attention of public, but relatively speaking, it may catch too many attentions and diminish the importance of other events that worth attention. On the other hand, usually the media exposure is followed by cyber man-hunting, which threats personal privacy and afflicts the bad doers in an inappropriate way. Moreover, the exposure is quick but short in time span, so the attention is massive but not lasting, and the problem is not completely solved or be suppressed in a short period but reemerges again after massive coverage ends. For instance, the media exposed the pollution of many enterprises, which admitted their misbehavior and promised to stop. However, most enterprises continued polluting when the exposure ended.

(4) The Governance Mechanism of Media

The governance mechanism is another special mechanism of media.

In the microcosmic level, the exposure mechanism can promote the management of corporation in two ways. First, it is realized by influencing the reputation of the manager. Negative reports will give a bad impact on the manager's performance, forcing the manager to take actions to solve the problem actively and to face the

pressure of shareholders. Second, it is realized by administrative intervention indirectly. After media exposure, some illegal actions of companies may draw the attention of administrations and will be forced to amend, so as to protect the interest of shareholder and investors; otherwise the companies will be punished. So the media will influence the microeconomic entities, resulting in the changes in supply and demand, which contribute to the dynamic changes in the market.

In the macroeconomic level, exposure mechanism can fortify the governmental control over macro economy, for media can be a supplement for the inherent disadvantages of governmental macro-control. Because in the process of government regulation and control, some accidents are inevitable to occur and media can be the external supervisor to remedy the limitations, which may even be paid much more attention and aroused the notice and concern, making the illegal behavior punished reasonably instead of muddling through by bribery or some other illegal behaviors. The government can be more rational and functional in issuing the policies that will affect the supply and demand.

Media could solve some problems of the market failure by influencing the microeconomic and macroeconomic entities. It will affect the quantities of supply and demand, and further affect the market equilibrium.

In addition, media could be unofficial, especially in the Internet age. One of the most prominent means is Internet, the new media, with the characteristics of anonymous participation, interaction and convenience, etc., can release the information of those events which may be difficult to broadcast via traditional media. For example, the event triggers domestic Internet sensation is first reported on blog, which describes Changping Luo, deputy editor of Caijing magazine accused Liu Tienan (vice-ministerial level), deputy director of the National Development and Reform Commission and director of National Energy Bureau, to Central Discipline Inspection Commission in the name of the individual. The mass retransmission and publication formed a strong pressure of public opinion, which force the official investigation into the case. Media supervise the administrative behavior. Once the illegal actions occur, they will be exposed under the spotlights.

2. The Principles of Media Mechanism on Market Equilibrium

The role of four media mechanisms on the market equilibrium is changing in different stages. Thus, compared with traditional media stage, the characteristics of new media stage have great differences.

(1) The Principles of Mechanism of Media on Market Equilibrium

The influence of the media system on the market is mainly reflected in the impact on the equilibrium and dynamic changes, and its principles are as follows:

1) In the early stage of the market imbalance between supply and demand, the market price is still the equilibrium price, but at this level, supply and demand is not in equilibrium: supply is greater than demand, or vice versa. At this point, the media, especially the new media, can collect the mass information of the supply chain and demand chain and pass it to the market, so that the market price equilibrium is quickly broken, and also the market price is dispersed. The suppliers and demanders adjust their economic behaviors according to the market supply and demand, thus supply and demand fluctuate around the original level of market price, so the market is in the process of dynamic change. Media at this stage break the original static market mainly by solving the incompleteness and asymmetry of market information, so that the market is in the state of dynamic change.

In the Internet age, information production, distribution and exchange have become more professionalized, and mostly been controlled by professional media, which means media, in a large extent, monopolize the public opinion and the mainstream view. With the rapid development and popularization of network technology, information consumption is increasingly relying on the Internet. In particular, the control of information and public opinion by media reflects in the following aspects: First, in the information production stage, the media can use the agenda setting effect to screen information and make arrangements on issues related to producing the preferred "information products", which effectively affect facts and opinions to which people pay attention and decide the sequence of importance. In

general, the more emphases given by the media to an event, the more public attention will be drawn to the problem; Second, in the information distribution stage, the media could change the way of information transmission, reflecting the network-interactive transmission mode, instead of vertical or parallel mode, thus reducing the information loss; Third, in the information exchange and consumption stage, the media can utilize their own channels of information and coverage providing an r information to consume platform with wider latitude, change the existing distribution of information, and help more people consume and grasp the information. In addition, unlike the other product consumption, the information also has some characteristics of public products. Consumers can transfer and exchange information to other consumers after receiving it, which forms a new information reproduction process. At present "Internet plus" era, the cloud computing, big data and Internet of things (IOT) make use of Internet technology to collect accurate mass data from supply chain and consumers, in order to carry on the accurate positioning of the market and achieve the balance between supply and demand.

In addition, media can overcome the flaws of market and the government through improving the information. For the market, the media can expose environmental pollution events, to internalize the externality; media could expose poor product quality, and also advertise the high-quality products, avoiding the adverse selection; the media can also put pressure on participants in the market, forcing them not to lie excessively. For the government, the media can provide the corresponding channels of information for the government decision; the media can supervise administration of the bureaucracy and give encouragement, improving administrative efficiency; the media can expose corruption, giving a fair competition opportunity to the market. At the same time, the media can provide information and market feedback to the government to render the government decision-making more objective and effective.

In general, media utilize those characteristics to change static state of original market's imbalance between supply and demand, let the market be in the dynamic process of price dispersion, and then make the supply and demand to adjust itself

through the price mechanism, to achieve the future supply and demand balance.

2) On the way to the market supply and demand balance, the supply and demand in the market slowly adjust around the equilibrium level, and gradually move towards supply and demand balance and price equilibrium. At this point, the media, especially the new media can accelerate the convergence of market price and the market can quickly reach the new equilibrium of price and that of supply and demand, through transferring market information timely and separately, overcoming the "information stickiness" and "price stickiness" problems.

This feature of the media is particularly notable when the market is facing dramatic changes. During this period, due to the malfunction of the market mechanism, government mechanism or other lagging problems, the media, through timely and selectively transferring market information, can speed up the market changes towards balance and save market out of the crisis. The governance of the media to market fluctuations can be divided into the early warning, the guidance of the public and the response to public demand, and the government agenda setting. And the way of governance can also be divided into direct governance, indirect governance and assistant governance. Direct governance refers to the direct impact on public opinions and government agenda setting; indirect governance is to reflect the wishes and appeal of the public on the governance of the market to the government; assistant governance refers to supervise the government behavior and market status during the crisis, through releasing good information to accelerate the market recovery and optimizing government governance effect.

In short, the media mechanism is a supplement to the market mechanism and government mechanism to improve and solve the problem, through the functions that markets and the government do not have. Unlike the control on one single dimension of the market that made by market and the government mechanism, media can change the market supply and demand at the same time, rapidly leading the supply and demand from the imbalance state toward equilibrium state.

(2) The Principles of Mechanism of New Media on Market Equilibrium

The effects of the media on the market vary with the categories of the media: traditional media or new media. Although the two do not differ in their basic way of influencing, the new features of new media still enable it to have stronger effects on economic activities than the traditional media. Moreover, those new features have become key factors influencing economic activities due to the apparent improvement on the range, speed, channels and effects in transmitting economic information, and they also enhance the media influence on the economic outlook and behaviors of people. That can be shown in details in the following part.

1) The first one is a wider transmission scope of economic information by new media than by traditional media.

The new media mainly have three advantages over its traditional counterpart: first, it makes information integration easier; second, it lowers the unit cost in information transfer; and lastly, it enhances the repetitiveness and interactivity of information transfer. From the perspective of information disseminator, new media have provided everyone a means of realizing We Media; no matter it is an official news agency or a private micro-blog platform, it can be the source of information transmission. From the perspective of transmission range or scope, the new media, with the great flexibility, help to collect information from every corner of the world, and then spread information around the world; in this way, the process enhances the media among information subjects. Therefore, diversified transmitters help to create a wider range of richer information sources and a more vivid restoration of actual events; besides, the extended transmission range also enables more users to obtain an all-round and timely understanding of current economic situation. Naturally, with such diversified channels for information transmission and a wider transmission range, the dissemination of an economic crisis also become easier over a wider scope once it happens; on the contrary, once the adverse information about an economic crisis dissipated, the possibility of a favorable turn or a breakaway from

the crisis will greatly increase.　That is exactly how the double-edged sword of new media works.

2) The second one is a faster transmission of economic information by new media than by traditional media.

The traditional media have an important feature, the time-lag, during information transmission and thus they might occur in traditional way of transmitting economic information from transmitters to audiences. The cause of this time-lag is as follows: information publisher or transmitters need some time to notice the occurrence of an economic crisis and its specific information, and it also takes some time for audiences to know the information, and for them to verify and understand what they've obtained. Opposite to that, the new media can discover, release and transmit information in a fast way so that the transmission time can be reduced and the transmission speed improved. This advantage of new media can be attributed to the advancing technologies in information transmission and the changing ways of transmission. Thanks to the new media, each person and acting agent can be a transmitter. On the one hand, the users, both individuals and enterprises, could obtain a timely understanding of economic situation and macroeconomic policies of the government through the new media; on the other hand, the government, also an user, can become aware of the performance and responses of microeconomic entities, such as their investment and consumption, through the new media. In this way, new media have become an information bridge connecting the public and the government. It makes the two sides easier to reach an agreement on the economic prospect and also helps balance consumption and investment.

3) The third one is with high efficiency in transmitting economic information by new media than by traditional media.

Another distinct feature of new media, compared with traditional media, is the more apparent and complementary acquisition of information. A chief cause of market failure is that people are unable to fully understand the current market situation and the uncertainty in the environment leads to the imbalance between our consumption and investment. In the context of traditional media, economic

information cannot be verified and recognized fast so that people's understanding of market only stays at the superficial level; however, the new media enable freer transmission of information and make it hard to conceal any information, which consequently enhance the authenticity and reliability of information. In this way, people can produce effective judgment on the market according to different information and thus have relatively clear strategies for consumption and investment. Moreover, the reliable information and clear understanding of market can help with the formation of relatively consistent market outlook, and such an outlook will correspondingly impact the market process.

Meanwhile, the new media offer more diversified, vivid, active and popularized ways of expressing information, which can also enhance the authenticity and reliability of economic information. Through new media, people can freely and smoothly select the economic information they like or want to focus on and reach their own judgment on this information after their own analysis. Once the actively acquired information is collectively digested and released by people, an invisible force of market anticipation will form. If the anticipation is bad, it may lead to or aggravate a market failure; otherwise it will promote the balancing of market.

4) The fourth one is a more active role of new media in transmitting economic information than traditional media.

Another feature of new media distinct from traditional media is the stronger interactivity and activeness. In fact, the new media engage everyone in the We Media; in this way, information can be transmitted and received in a timely and effective manner, and we can obtain feedback for what we sends out in the shortest time. With the approaching era of We Media, both micro economic agents and macro decision-makers can transmit and acquire information actively and directly through the new media, and thus can communicate and exchange ideas via new media so as to know more about the market. The new media are equipped with an all-dimensional and synchronous mode of transmission, and this mode can attract extensive attention on certain economic hot spots in a short time, and can also

reflect the possible consequence of current market situation and accordingly people's attitudes and responses.

As mentioned above, this all-dimensional and synchronous mode of transmission can have both positive and negative effects. On the one hand, it may spread certain psychological panic and negative sentiments over a wide area and thus enhance the defensive measures of people and their negative anticipation of the market; as a result, more converging information may become the booster for market failure and outbreak of economic crisis. On the other hand, the all-dimensional information displayed by new media can enhance our understanding of the current market situation and the nature of market, and our uncertainty and panic about the economy can be gradually appeased with the real-time, interactive and transparent news coverage and information exchanges on new media; besides, the new media also render it possible to realize the information interconnection and policy synchronization in a global range, which will certainly lead to a favorable turn in economic recession and even an economic recovery.

All in all, it is the distinct features of new media in transmitting economic information that result in its specific effects on consumption and investment. The changes in new media in terms of range, speed, efficiency and activeness of economic information transmission enable people to formulate a clearer understanding of market situation and produce quicker responses; consequently, they can adjust their economic anticipation and change accordingly their consumption and investment behaviors in time. On the one hand, these changes in consumption and investment behaviors might avoid market failure and help people out of economic recession so that the market can reach a balance; on the other hand, they can also accelerate the speed of market failure, lead to a serious imbalance between demands and supply, and even an economic crisis at the end.

3. The Channels of Media on the Market Dynamic Change

In the analysis on the mechanism of media on the dynamic changes in the market, the discussion of its channels is of great importance. The channel refers to the processes and steps, through which a goal is accomplished.

(1) The Basic Channels of Media on the Market Dynamic Change

First of all, when the market has dramatic fluctuations, the government would issue the policies to tackle with it. The media will transmit the policy information immediately. Because of its timeliness, synchronicity, interaction and feedback, the media could deliver the policy information fast and effectively. During some urgent times, the amount of information rises exponentially, and its transmission process is expressed by this function:

$$sif = r^{\alpha} \tag{1}$$

where r refers to the policy information, sif the effective information after selection by media, and α multiplier of media tools' effects on information.

Second, the supplier and demander would analyze the information after receiving it, calculate the loss, think about the measures, and form the new expectation and decision. The process could be expressed in the function:

$$\exp = h(sif) + u \tag{2}$$

where $\exp$ refers to expectation, u the other factors that affect the expectation.

Then the agents in the market would adjust their behavior based on their expectations.

$$s = s(\exp) \tag{3}$$

$$d = d(\exp) \tag{4}$$

Finally, their adjustment of the behavior will change the amount of supply or demand, which lead to the change in the price:

$$tec = f(s(\exp), d(\exp)) \tag{5}$$

Here, tec refers to the change in the total amount of the market, to show the changing tendency of the market. tec is directly related to supply and demand, and indirectly affected by expectation.

Based on the analysis above, it is learned that in the channels of media on the market, the value of α is very important, functioning as the accelerating value of media transmission mechanism. The speed, range and effectiveness of information transmission vary with the variation of α, as well as the speed of forming new expectations, adjusting behaviors and market prices.

(2) The Channels of Media on the Market Demand

In the analysis above, we have explored media's influence on demand in the microeconomic level; in other word, it is the influence on consumption in the macroeconomic level. The choice between sticky price theory and sticky information theory to explain the impact on the market demand depends on whether information is fully complete, namely whether the information transmission of the media is complete and symmetrical. This is the analysis from the perspective of media. Besides media, consumption is also affected by a variety of other factors together, such as income, life cycle and past experience, and so on. However, the effects of these factors on consumption are also inseparable from the media. According to the Mode EKB analysis [52] of consumption behavior, it depends entirely on the consumer psychology. It is the "central controller" of the consumer. Consumers input external information into the central controller, and combine the input content with "insert variables" (attitude, experience, and personality, etc.), then obtain the operation result, namely the purchase decision, and then implement it. The changes in consumer psychology are closely connected with the media. If the media exposure for some consumption behavior has strong effect or sensational role, it will have certain effects on consumers' consumption psychology, so as to change

---

[52] Lin Jiang. *Psychology and Behavior of Consumers*. Renmin University Press, Beijing, 2011.

their expectations, and even affect the behavior. So a consumption behavior is the combination and interaction of the media and other various factors.

However, when the market is experiencing dramatic changes, the other factors would be weak, while the media's role is more obvious. The impact of income and consumption experience on consumption in the normal context is greater than that in the unstable situation, for the future income is not fixed, and it requires special consumption activities to overcome the instability, rather than considering the life span or the previous consumption habit. In the unstable context, the consumption is mainly determined by consumer's expectation of the future economy, which is a key factor in decision-making and policy-making. The expectation is closed related with the psychology of consumers, so the EKB mode is quite applicable here.

In general, the channels of media mechanism on the consumption behavior mainly can be listed as follows:

1) The media will provide information about the economic situation, and this information is a fundamental basis of consumers' expectation adjustment. So consumers will forecast, estimate, judge and image according to the media and others information on the situation of economic and other economic variables, for their own interests and some possible changes (mainly the gain and loss of the interests of the consumer). Then they do the rational choice of consumption under this basic judgment.

2) Once consumers form expectations under the current economic situation, and they also show their attitude to the present economic conditions, which all together would form consumption trend. This state is commonly expressed by consumer confidence in economics. For example, the Michigan state university scholars collected various consumption data, prepared consumer expectations index to reflect consumer expectations for the future. And together with the customer satisfaction index, consumer expectations index constitutes the consumer confidence index. The change of the consumer confidence index mainly depends on the change of consumer expectations, i.e. the judgment and prospect of their future income, the whole macroeconomic conditions and the development trend. This is also a reflection of their integrated, holistic attitudes toward the future of consumption tendency. If consumers' expectations for the future are better, confidence is high; if

they are gloomy for the future economic outlook, consumer confidence index is lower.

3) Consumer expectations or confidence directly determine their consumption behaviors. Consumers will determine their own needs according to their own expectations, and confirm the direction of the information collection, analyze the choices, finally decide on the buying amount, and evaluate their own consumption behavior after completing the purchase. And the demand recognition, information collection, analysis and choice, purchase decision and post-purchase evaluation constitute a complete consumption behavior. The expectations hypothesis theory in the 1970s thought that expectation can affect the marginal propensity to consume, and more obviously effect on long time expectation, at the same time also can affect people's consumption confidence. If with uncertain attitude on the future economic trends for a long time, namely with lower long-term expectations about the future, people' consumer confidence will decline to very low levels and make the marginal propensity to consume lower.

4) The change in consumption variables directly affects the economic situations and changing trend. Such as by influencing consumer expectations and consumer confidence, it can affect consumers' purchasing behavior and effect on the whole society consumption and ultimately affect the macroeconomic. For example, the U.S. economy fell into recession affected by the "9·11" event after 2001, and it caused a big setback for consumer confidence. According to the results of the university of Michigan survey research center (SRC) conference committee sampling survey of 5000 households across the U.S., U.S. consumer confidence index fell to five consecutive months ended in November, reached 82.2%, the lowest level since February 1994. And the U.S. is mainly through consumption to drive economic growth. Consumption accounts for more than 60% of U.S. gross domestic product, so the confidence index is once released, it can be a big setback for investor confidence and lead to the stock market crash. Not only investors and consumers lost confidence to the future economy, suppliers were also pessimistic about Christmas sales, the entire American economy started to go through. For example, the outbreak of the global crisis caused by the U.S. subprime mortgage crisis in 2008 declares that the media can affect consumer confidence index and effect on consumption and

ultimately affect the whole economy. On December 1, 2008, the national bureau of economic research announced that the U.S. economy had entered the recession began in December 2007. On December 4 and 9, the European Union and Japan also announced separately the European Union and Japan's GDP fell respectively by 0.2% and 0.5% according to the survey , since then the global economic crisis broke out. At that time, the consumer confidence index also accompanied with a decline. Take America for example, America confidence index continued to decline until 2009 March, began to pick up under the influence of rescue policy.

In a word, the above processes can be summarized as: the media release information about the economic situation first, and then consumers begin to adjust expectations mainly according to the media (or other variable). The change in the consumption expectations will form consumer confidence, and it will directly affect the behavior (embodied in the changes of measure of consumption), and the change of measure of consumption will directly affect the whole macro economy, and finally affect economic trends.

Media—Consumer expectations- Consumer confidence—Measure of consumption—Economic crisis

Media's role in the special economic environment, such as the economic crisis, is different from that in the normal state in many ways.

First, the consumer expectations are more dependent on the media during the crisis. Because once the economic crisis broke out, the experience of the people in the past is no longer valid. The factors such as income and price also become no longer determinate. It has become difficult to obtain information which can be collected by market channel under normal economic situations, and become more dependent on the media transmit information. Therefore, the media of the economic crisis usually causes panic and makes consumption sharply decline at the beginning of the economic crisis, and it makes the whole social economy fall to the bottom.

Second, the effect of the media during the economic crisis is more obvious than the one during the normal situations. During the economic crisis, after the release of the media about the economic crisis, consumer confidence index will fall, and the declining rate is higher than normal state of the economy. For example, according to the result of DOMS empirical analysis, the crisis report makes consumer

psychological expectations and confidence decline, and the expected decline is often more quickly than the actual decline of economy. And the consumer confidence index falling causes the lack of consumption, and it makes the whole economic situation worse. This paper argues that the causes of this phenomenon is that people will tend to focus on more about economic recession and depression reports in a recession phase, because it is closely related to their future economic. The economic outlook of consumers is much lower than their expectations of future earnings.

Third, during the crisis, the media for consumption structure has significantly changed. During the crisis, though people have some lower revenue forecast for the future, together with repeatedly all-round coverage reports of the crisis, it will further undermine consumer confidence, and then make their confidence index fall more, and try to reduce spending. However, due to the existence of the consumption inertia and survival, the falling range of the consumption of normal product is relatively small, while the luxury consumption decreased a lot. However, from the total amount, whether normal product or luxury consumption level will fall. As a result, the media during the crisis is likely to produce a stronger inhibitory effect on consuming behavior than usual. This can cause further deterioration of the crisis, or cause economic recovery slow, because the overall consumption is insufficient. Thus, it will affect the whole socioeconomic level and lead to economic recession.

Fourth, during the crisis, the negative effect of the media consumption mechanism is often large at the beginning of the crisis. As mentioned above, it can cause the consumer confidence index to fall more rapidly. And in the middle and late of crisis, the positive effect of the mechanism of action of media is greater and greater. With the good news on the recovery of the economic crisis, consumers will enhance economic confidence in the future, and they will improve the level of consumption. So it will affect the overall macroeconomic recovery.

(3) The Channels of Media on Market Supply

The channels of media on supply are similar to that on demand. For example, the channels of media are the processes of affecting the supply expectations, and indirectly acting on the economic trends is similar to that of influencing the

consumption expectation. Both of them rely on the transmission of information in order to change people's expectations and confidence and finally have impact on the supply and demand.

Media—supply expectation—supply behavior—economic situation

However, as the supply market and consumer market is different, the influence of media for suppliers is different too.

1) Suppliers rely more than consumers on media to make reasonable investment expectations and adjust their investment behavior. In this sense, the expected behavior of consumers is affected by spending habits, but the investment is not. This is due to the fact that, on the one hand, the risk in the supply market is far greater than that in the consumer market. Once the investment decision is made, it is irreversible. A small deviation of investment behavior will cause irreparable damage, and hence, suppliers need a lot of useful information to make their own investment more rational. Conversely, the supply market is open. Not only does it have a huge amount of information, but also it makes the information have a strong openness and commonality through the media carrier. Therefore, it becomes easy, almost having no cost for suppliers to access the media.

In an unstable economy, producers' expectations are more dependent on the media than that in the normal state, as the information they are able to collect from the companies is too limited to make the right judgment about the macroeconomy. Therefore, the openness of the media can help.

2) The influence of the media's negative information for suppliers is bigger. People are more sensitive to negative news than positive news, and more inclined to believe negative information. This characteristic is directly related to people's appetite for risk. According to the general theories of economics analysis, people tend to be more risk-averse. For example, the theory of Kahneman and Tversky (1979) states that under the premise of people in the face of equivalent number of wealth changes, if the variation is lost, people are more inclined to gambling, namely risk preference. If this change increases, people are more likely to achieve earnings certainty, namely risk aversion.

It indicates that the demand for positive information of investors is not equal to that of the negative information. This is because investors need negative information

to guide their investment behavior, in order to avoid wealth loss. For future income, investors are characterized by risk aversion. They do not want to adjust the investment behavior too much to gain great benefits. This feature is well reflected in the Chinese stock market. The characteristics of Chinese stock market basically show short rise time and long fall time. The influence of negative information on the stock market's volatility is far greater than the influence of positive information. Investors also pay more attention to negative information.

This feature is more obvious in the unstable economic situation, where almost all the reports are negative. As most investors are risk averse, they usually adjust their expectations according to the negative information. According to the "agenda-setting" and self-prophecy implementation" theories, the mechanism of the media for investment has a significant effect on the whole economic situation. According to the "agenda-setting" theory, when the economic recession or the possible crisis begins to appear, as the media will repeatedly report the economic recession and crisis risks, it makes the investors have to focus on the "issue" crisis and economic recession. But investors are highly sensitive to negative information. At this time, the investors' expectations about the crisis must be below the normal level. The investment levels also drop under such expectation. So, the actual economic level is not too bad to make the recession turning into crisis, but the media repeatedly report negative information, leading to panic due to the investors dramatically declining expectation, and accelerate the outbreak of the crisis in the end. The "self-prophecy implementation" theory states that people are in the "pseudo environment" of information construction at first, but due to other causes, it makes the original pseudo-environment into reality. For example, a lot of news reports the declining consumption ability during the financial crisis in the U.S. At this time, investors will assume that the insufficient consumption of the U.S. may affect the export of Chinese products and lead to the failure of China's export manufacturing businesses. If they adjust their own investment behavior and stop investment in export manufacturing enterprises, then the assumption is likely to become a reality. China's export manufacturing will be unstable and collapse. The economic crisis is in pseudo-environment state at first; however, due to the large number of excessive media reports, it becomes a reality.

3) The channel of media on supplier's expectation is not linear but interactive and mutual. In the three-dimension market, with the features of being able to be transmitted and shared, once the media is delivering, it can catch the eyes of suppliers, who adjust expectations of future supply based on the information they receive. Then, herding effects take place in the supply market. The reference group theory (Lessig and Park, 1978) states that there are three effects of reference group. The first one is related with the information, in the uncertain environment, in order to reduce the risk and secure useful information, people observe and follow the people they respect; the second one is about the value system: people join certain groups with the aim to upgrade their image and value system by imitating the economic behaviors of the members of the group; the third one is in the consideration of fame and gains: in order to avoid criticism or punishment and be recognized by the other members in the group, people adjust their behavior according to the principle and norms of this group.

Apparently, the information effect is the most important one in the capital market. On the one hand, the new investors have limited access or ability to the effective information, hence, the better choice for them is to follow the decisions of reference group. Here, the reference group refers to other experienced investors, experts sharing opinions in the media, and media authorities. They think that their investment is rational and with low risk, for they act in unison with most investors in the market; on the other hand, since the capital market is still uncertain, the information one individual investor gets is limited and impossible to reflect all the changes in the market. Therefore, the new investors will follow the reference group. The experienced investors are quite different, as they interact with others to obtain information. For instance, they can discuss on Internet forums before making decisions. In the case of stock market, the authorities or mainstream media's information and interpretation influence the whole market. Due to the incompleteness of information, the small investors have difficulty getting useful information. Therefore, they need to observe the reference group. The information they get from the reference group is not only the data for one individual stock, but also the whole stock market information. Thus, the authorities and mainstream media can exert great influence on most investors in the stock market via the

interaction with the media. Hence, the reliance of investors on the reference group enables the media to have an impact on the investment and help them to form the new expectations that guide their future behavior.

In a volatile market, media play a greater role in investment behavior and its effect is bigger. In the first stage of the market volatility, the over interpretation and massive coverage of economic crisis result in pessimistic attitudes and expectations of the investors, which guide their behaviors later. The pessimism spread by the media can further worsen the economic situation, like the fall in the stock market, and it may develop within the national territory to the whole globe. On July 2, 1997, Thailand chose the flexible currency rate system, which was the beginning of Thailand's financial crisis. It was soon followed by the outbreak of financial crisis in other Southeastern Asian countries. In the late 1997, the deterioration in the foreign currency market and stock market in South Korea, Hong Kong, and Taiwan reflected that the crisis was a regional one—the Asian financial crisis. In the expansion of crisis, media's role cannot be neglected. According to the empirical analysis on the relationship between the Asian financial markets in the crisis and media conducted by Baig, Taimur and Goldfajn (1998), compared with the normal economic state, the foreign currency market in crisis is closely correlated with the media about the crisis. As for the stock market in the crisis, it is also correlated with media about the crisis, but not that close. The information is not only about the situations in the domestic market, but also those in the foreign market. The fear of the Asian financial crisis was partly caused by the news of crisis.

It is clear that the excessive transmission about the crisis may result in the over pessimistic expectation of economy, which worsens the domestic financial market, as well as the regional financial market, or even global financial market.

In the later stage of the crisis, the interpretation mechanism begins to work, which affected the expectations of suppliers or investors, and the expectations in turn would affect their economic behaviors. The interpretation mechanism refers to the selection, processing, and evaluation of the market information, and the guidance of people expectations, with the purpose of influencing their supply. This mechanism usually works in the economic crisis or unstable situation, with the goal of avoiding panic and stabilizing the market. If the market information is delivered to the market

without interpretation, the receivers--suppliers tend to have more pessimistic expectations of the future, and they are inclined to reduce the production, which accelerates the market failure. If the market information is transmitted to the users with correct interpretation, especially those provided by the government, then the suppliers would have a more accurate expectation and adjust their behavior properly, which is helpful to reach the market equilibrium in the future.

Media's impact on the expectations of the suppliers can be expressed by functions. When the media are able to provide a reasonable interpretation of the unstable market, the media play a positive role in the formation of correct expectation, which is beneficial to the recovery of economy and market equilibrium, $\frac{\partial Y_i}{\partial I_i^1}<0$. The more interpretation the media provide, the more rational their expectation will be, as well as the economic situation, so . $\frac{\partial^2 Y_i}{\partial (I_i^1)^2}<0$. Therefore, $-\frac{\partial Y_i}{\partial I_i^1}$ is an increasing function of I_i^1, and $\frac{\partial U_i}{\partial I_i^1}$ is also an increasing function of I_i^1, for $\frac{\partial^2 U_i}{\partial (I_i^1)^2}>0$. So, the marginal effect of media transmission is increasing , which means that the interpretation of media have a positive role in tackling with the economic crisis.

When the media fail to provide a reasonable interpretation of the unstable market, the media play a negative role in the formation of correct expectation, which worsen the economy and market equilibrium, $\frac{\partial Y_i}{\partial I_i^1}>0$. The more interpretation the media provide, the more pessimistic the expectation will be, as well as the economic situation, so $\frac{\partial^2 Y_i}{\partial (I_i^1)^2}>0$. Therefore, $-\frac{\partial Y_i}{\partial I_i^1}$ is a decreasing function of I_i^1, and $\frac{\partial U_i}{\partial I_i^1}$ is also an decreasing function of I_i^1, for $\frac{\partial^2 U_i}{\partial (I_i^1)^2}>0$. So, the marginal effect of media transmission is negative and decreasing , which means that the interpretation by media has a negative role in tackling the economic crisis.

In the 2008 financial crisis, the media home and abroad both emphasized its role

of guiding the opinion. For instance, *Washington Journal* provided many reports with detailed explanations. The No.1 Financial Channel in Shanghai invited experts, journalists to discuss and explain the cause and development in the crisis on the TV show. These are the good examples of media's function in real economies.

4. The Effects of Media on the Market

The three main effects of media on the market are public opinion directing, accelerator, and asymmetric effects. They are the practical manifestations of the impacts that the media have on supply and demand.

(1) Public Opinion Directing Effect

Public opinion directing effect plays an important role in the process through which the media influences the whole economic situation. This effect works when the media, through transmitting and interpreting economic information, creates a public opinion environment on the economic reality, which further affects the confidence and anticipation of supplier and demander and leads to their adjustments in production and consumption. Last, the adjustments influence the real economy and even to the economic trends.

First, media's public opinion directing effect can be divided into positive effect and virtual effect. Positive effect refers to the fact that in uncertain economic times, media, based on the users' right to know, consciously interprets information on various media channels; replaces the ambiguous information with a clear one, has objective interpretations instead of bombarded sensations and exposures. It can impel users to adjust their mentality, mood, and attitude and avoid undue panic and unrealistic optimism and finally lead people's cognizance of economic reality to become rational. Virtual effect refers to the fact that in economically stable times, considering their own live space, the media deviate from objectivities, exaggerate or over-concentrate reports to meet the needs of users, and create an information-distorted crisis environment by propaganda and speculation.

The pseudo-environment theory in media studies believes people react to the real social environments through the pseudo-environment created by the media. It says that the media involuntarily create a virtual environment along with the real world. The agenda-setting theory believes the tendency and vigor (notability and significance) of media's special reports to some news (issues) would impact people's concerns and cognitions towards these issues and influence people's judgement on the surrounding "big issues" and their significance. The self-fulfilling prophecy theory from sociology expresses that self-fulfilling words in the beginning is a false definition of the situation. As it evoked a new behavior that impact definition of situation, the original false conception comes true. These theories support the opinion of virtual effect of public opinion directing effect.

The reality also supports this opinion. After the American Subprime Crisis, media's first headlines not only made people panic, but also led to "concentrated" and "exaggerated" influence that the crisis situation was not truly reported. When people carry out actions in supply and demand, they are more pessimistic than predicted and more cautious. All these made the crisis worsen. For example, according to the media's professional interpretation on the crisis, the total need for export goods from China would decline and even export-oriented enterprises may not avoid going bankrupt. This was not the reality, but only a prediction. Many enterprises quickly ended the long-time relationships with Chinese enterprises after hearing the perdition, which resulted in these Chinese enterprises going bankrupt and economic crisis quickly spreading across China.

Both positive and negative public opinion directing effects have some impact on economic situations. The positive effect to some degree helps the economics to develop in the good direction and be favorable for a stable and prosperous economics; while the virtual effect of public opinion directing may further unhealthy economic development, such as overheating and crisis.

Second, the public opinion directing effect also has characteristics of herd behavior. Herd behavior originally is the special irrational behavior in financial market. It refers to the crowd psychology and behavior, in which investors often make decisions according to other investors' behavior in the market. This theory applies to the crisis infection theory and underwent further development in the form of reputation herd

behavior model from Scharftstein et al. (1990), information flow model from Bikhchandani et al. (1992), sequential herd behavior model from Banerjee (1992). These theoretical models have some similarities with public opinion directing herd behavior effect.

Public opinion directing effect refers to the situation in which investors follow media and public opinion experts or public opinion environment trends in order to decide their consumption and investment behavior, which leads to herding behavior. When the effect works, an individual's expectations of the market would tends to be closed. Economic behavior also shifts from individual behavior to social behavior. If the unanimous expectation of the economy is good, it is favorable for economic development, but it may also lead to overheating. On the country, economy may have sudden exacerbation. We can see the significant impact the public opinion herd behavior effect on the economic situation.

There are several causes for the public opinion herding behaviors. First, under the symmetry-broke information conditions, the cost for the individuals to collect and handle crisis information is too high to afford. Most of the individuals have no ability to do it. The information from media can, to some extent, complement the defect in information and help individuals easily and quickly get comprehensive information. The information is full-ranged covered in all places. The variety of media ensures that information in highly transparent. As explained in Bauman's scene monitoring theory, with the development of media technology, our society has turned from the minority monitor the majority to the majority monitor the minority. So, the head of governments are more likely to attract the eyes of the people. It is hard for governments to completely hide disadvantageous information from the public. On the contrary, the government could reasonably use the powerful media technologies to guide the public and minimize the damage that brought by false information. There are conditions that media herd behavior effect works. Second, crowd psychology is another reason. Looked from the gambling angle, crowd behaviors are often rational dominant speculating strategy. The prospect on economics is a prospective behavior. The future is uncertain. So, it is hard for the prospect to be precise. As noted before, media would create close prospects, then the future economic trends may be influenced by the major economic entities or the results of

the major prospects. As a result, the individual trends get crowd common cognizance through the information provided and interpreted by the media and the Internet interactions to help take consumptive and invest decisions in order to avoid damages. Thus, media influence economic trends through media's herd behavior effect.

(2) Accelerator Effect

Accelerator effect means that media's influence to supply and demand is like accelerators, speeding up the changes in the supply and demand. Media have functions of boosting or restraining consumptions and investments.

It is due to media's amplification effect. Once media increase the coverage of current economic, aggregate and even sensationalize the information, the audiences would reach a close prospect under the guides of the information and adjust their consumption and investment actions accordingly. It would finally have positive or negative impacts on macro-economy and impact the economic trends.

We take economic crisis as an example to present the action process that media accelerator affect economic trends.

First, we analyze the diffusion degree of crisis under the two situations after economic crisis, with and without media influence.

The first situation is with no media impacts. Since there are no media facts, the diffuse of economic crisis totally depends on the deterioration degree of economic itself, like trade and financial factors and pure crisis diffuse factors, like political culture, etc. If crisis happens in country A and affects country B, it will reflect on the GDP decrease of country B. The decrease degree is reflected from c point to d point. The time takes to influent the GDP of country B would be a little longer.

The impact of Crisis is measured by the degree of reaction to crisis, or the diffusion degree of country A's crisis in country B.

The second situation is under media influence. Because of media, the diffuse of economic crisis would be influenced by media. If country A has economic crisis, the information would quickly spread to country B through media tools. Under the exaggerated reports, the users of country B would have a unanimous negative prospect on the crisis that would directly impact the level of investments and

consumptions of country B. And the GDP of country B slumped. The GDP of country B descended as well. The time lag is small when country A influences country B. The GDP of country B is sensitive to economic crisis and less elastic because of the media.

When comparing the two situations, it was revealed that the media does have some degrees of impact on the diffusion of economic crisis. When there is no media, the sensitiveness of country B to the economic crisis of country A is relatively small. The diffusion of the crisis also has a time lag. While, under the media environment, the impact of the crisis of country A to country B would be stronger, the impact force, the reaction degree as well as the diffusion degree are bigger. Therefore, media have an accelerator role on economy, especially during some special periods like the economic crisis.

(3) Asymmetry Effect

When media impose an impact on the economic situation, one of the important channels is people's psychological expectation, which could be influenced during the process. Because of the asymmetry of risk preference, people's expectations on economic depression or prosperity will not be asymmetric.

Economists divide people's risk preference into three categories: risk aversion, risk preference and risk neutral. In general, economists believe most people are risk-intolerant. Hereupon, when it is about the bad information of economy, out of risk aversion, people will have a bad expectation on economy and to avoid investment and consumption, which may promote the economy. However, when it is about the good information, most people will not change their expectation at once, thus, they will have a response time and will not adjust their economic behavior in a short period of time. In this case, the economic recovery or economic prosperity will comparatively be delayed. This is the asymmetry of psychological expectation on economic situation.

We can describe the situation above in the following model: we assume that the function U of economic prosperity effect can be explained by media (MI) and other variable (Z). The function model is as follows:

$$U = F(MI, Z)$$

Because people's reflection degree on media's information on economic prosperity is low, so according to the description of function, the first derivative of economic prosperity is positive, but the second derivative is negative. To put it in a simple way, under the influence of the good news, GDP is increasing, while the margin is reducing. It can be described as below:

$$\frac{\partial U}{\partial MI} = p > 0, \frac{\partial^2 U}{\partial MI^2} = \frac{\partial p}{\partial MI} < 0$$

The model indicates that most people will change their economic behavior according to the information on economic recovery of prosperity. However, as to the long adjusting period, the speed of economic recovery and prosperity is slowed down.

The bad economic news has different impacts on people's expectations, which can also be explained by the model above. If we assume U as the effect of economic recession, then people's reflection on the degree of economic situation is more intense. Not only for its positive marginal index, but as the depression of economy information increases, the marginal index will be bigger and bigger.

$$\frac{\partial U}{\partial MI} = p > 0, \frac{\partial^2 U}{\partial MI^2} = \frac{\partial p}{\partial MI} > 0$$

The phenomenon above is very prominent in subprime crisis. Once the crisis occurs, under the information attack of the bad information, the economy will decrease rapidly. Under this circumstance, Investors have very negative expectations on future. The price of stock market and real estate declines rapidly in a short period of time and investors started to flee away from the market. Because most of the investors are risk aversion and afraid of the continuous investment will result in greater damage, which leads to the expansion of crisis.

When the bad news about the market is released and transmitted by the media, the supplier or investor would have pessimistic expectations of the future, which lead to the fall in the amount of supply and demand, and the dramatic change in the market prices. Sometimes, the supplier or investor would even quit, if they are risk adverse, for they fear that they will lose more in the future.

In conclusion, the market's reaction to the bad news in the market is faster than that to the good news about the market, and the adjustment based on the bad news

is also faster. Since it has been discussed above, the author will not investigate it again.

CHAPTER 6. THE EMPIRICAL ANALYSIS ON MEDIA'S ROLE IN REAL ESTATE MARKET

After introducing the theory of the media's influence on the market changes, another task is to test the theory empirically. The design of empirical study in this research is to select a classical example, rather than analyzing the general cases, which is too inclusive and board to deal with. China's real estate market is selected to be the object of research, for it is booming in the Internet age, in which the new media technology becomes increasingly advanced, so it is worthwhile to investigate the influence of the media on the real estate market.

1. Model and Data Selection

The empirical study on the media's effects on China's real estate market is very special, and its fundamental task is to explain the relations between the dependent variables and independent variables.

(1) The Setting of the Model

The model is built based on the theoretical analysis in the previous chapters, and its setting is as follows:

$$p_t = p_t^{eq} + \sum_{i=1}^{n} \lambda_i D_t^i + \varepsilon_t$$

(1)

Where P_t^{eq} is the equilibrium price, which changes over time, D_t^i is the strength of the impact of the policy i, ε_t represents other factors. Coefficient $\lambda_i > 0$ indicates the policy i's impact is positive, while $\lambda_i < 0$ indicates policy i have a negative impact. Policy impact strength is expressed as a function below:

$$D_t^i = \begin{cases} 0, & \text{if } t < t_i \\ D^i(sif_{t-t_i}, t), & \text{if } t \geq t_i \end{cases}$$

(2)

Here t_i represents the period of the implementation of the policy i. (2) shows that the impact of the policy will change over time, while the impact path is related with Internet information. Assuming in the initial stage of policy implementation, policy impact strength increases exponentially, but it falls over time and would finally approaches to zero, as shown in Fig. 8.
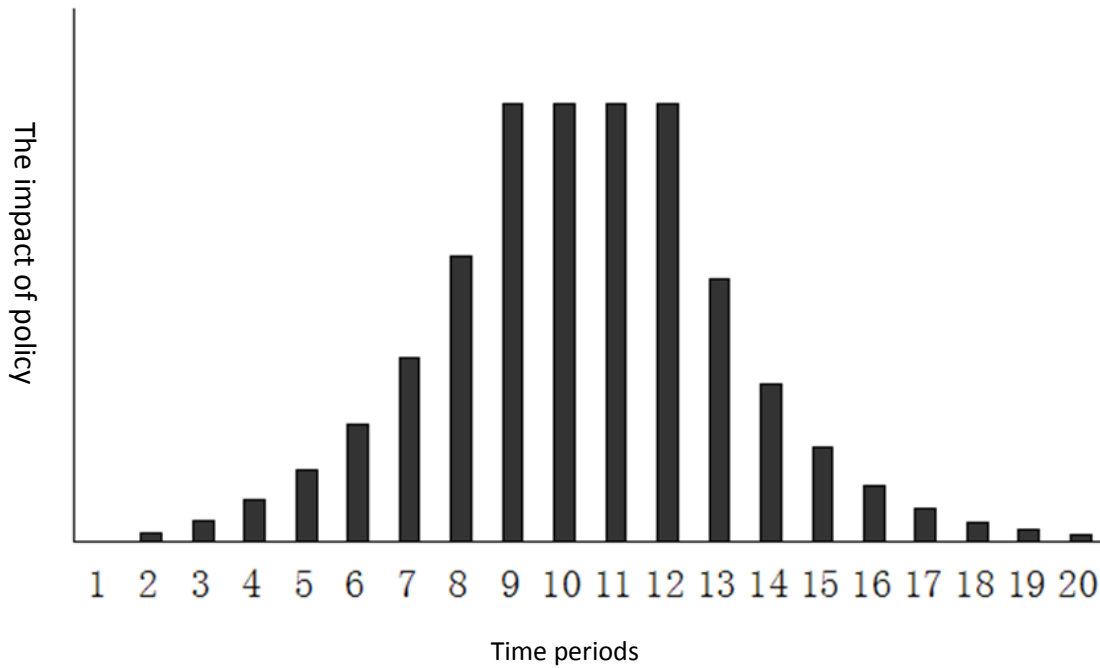
Fig. 8. Policy impact dynamics.

This analysis focuses on the impact of the initial influence of policies, for the analysis of convenience, we may assume $D_t^i = \beta(sif_{t-t_i} - 1)$, and it is inferred that

$$D_t^i = \beta(r^{\alpha(t-t_i)} - 1).$$

(3)

With the development of the Internet, media's role in the real estate market impact continues to strengthen. Fig. 9 depicts changes of strength in the policy impact in the early stage. Development of the Internet enablesαvalue to increase from α1 to α2, in order to reach to the same strength of impact, the time required is reduced from ta to tb; with the same time tb, impact intensity increased from Da to

Db. Therefore, the influence of the media on the real estate market mainly consists of the increase in speed and intensity . This analysis focuses on the analysis of the former, that is, when real estate policy is issued, a greater impact of the media will stabilize housing prices in a higher speed.
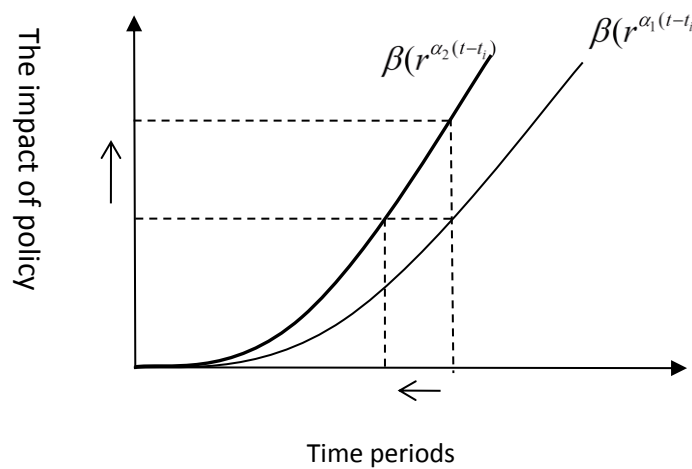
Fig. 9. The changes of impact intensity in the early stage of policy implementation

(2) Date Selection and Explanation

How to determine the time period of media is an important content of the empirical analysis, while the real estate market categories and data selection are also important in this study.

1) The Media Development and the Division of Time Periods.

This section mainly focuses on three aspects of the development of China's media, namely the rise and the development of the Internet, the emergence and development of mobile Internet and the emergence and development of WeChat APP. After determining the appropriate time periods, it analyzes the impact of the development of media on China's real estate market prices.

First of all, according to the Internet-scale data[53], 2007 is an important time node

---

[53] Data source: The Statistics of Development of China's internet (1996–2015)

of China's media development. The main reasons are as follows:

a) Based on the national Internet scale data, it is clear that 2007 was one of peaks. Since 1996, the Internet scale peak appeared several times, but 2007 was a significant growth in high point, particularly as shown below. (See the data from China Internet Network Information Center, CNNIC (2015) as Fig. 10).
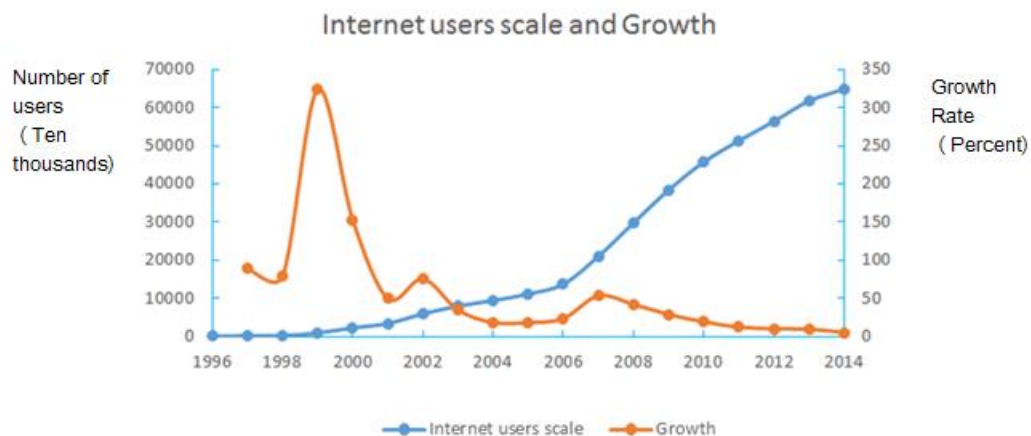
Fig. 10. Internet users scale and growth of China. (Source: CNNIC. [January, 2015], *Zhong guo hu lian wang fa zhan tong ji bao gao [Statistical Report on Internet Development in China].* Retrieved March 19, 2016 from https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)

As shown in Fig. 10, since 1996 the number of Internet users was rising each year, but the growth rate of Internet users has fluctuated. Fig. 10 displays the local peaks in 1999, 2002 and 2007, suggesting that in these three years the Internet scale relatively achieve rapid development. Therefore, while in 2007 the growth rate of Internet users is relatively lower than in 1999 and 2002, but it is still a local peak.

b) Based on the Internet-scale data in the three major provinces and cities[54], the year of 2007 reached the highest point.

Beijing, Shanghai and Guangdong which are the three cities with the greatest development in real estate market, and from the available data, since 2003 the three

---

[54] Li and Shen (n 46).

cities have the highest Internet popularization rate. Since 2003, the Internet scale peak appeared several times, 2007 is the peak in a single year.
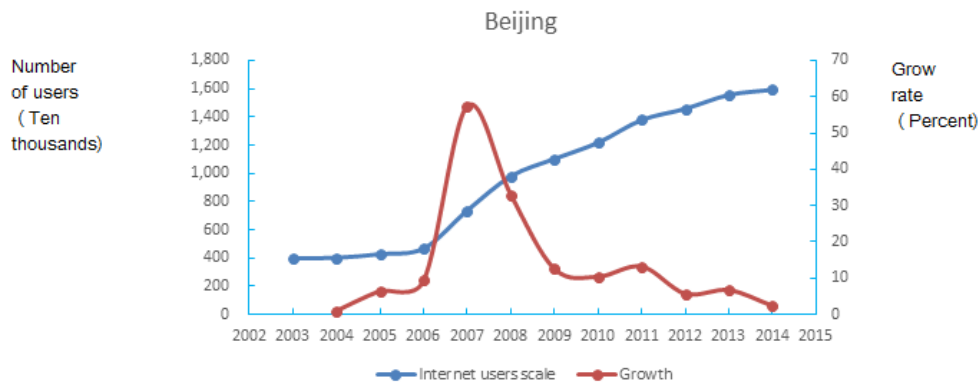
Fig. 11. Beijing Internet users scale and growth. (Source: CNNIC. [January, 2015], *Zhong guo hu lian wang fa zhan tong ji bao gao [Statistical Report on Internet Development in China].* Retrieved March 19, 2016 from https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)
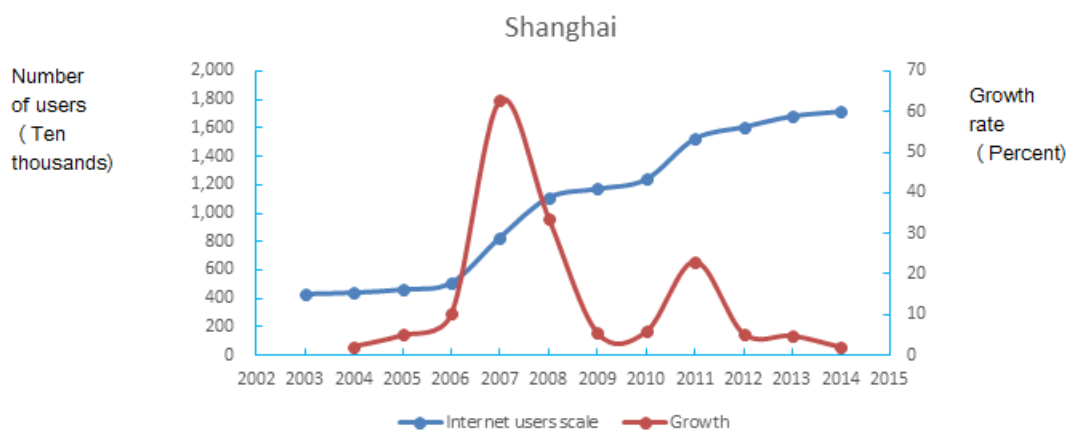
Fig. 12. Shanghai Internet users scale and growth. (Source: CNNIC. [January, 2015], *Zhong guo hu lian wang fa zhan tong ji bao gao [Statistical Report on Internet Development in China].* Retrieved March 19, 2016 from https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)
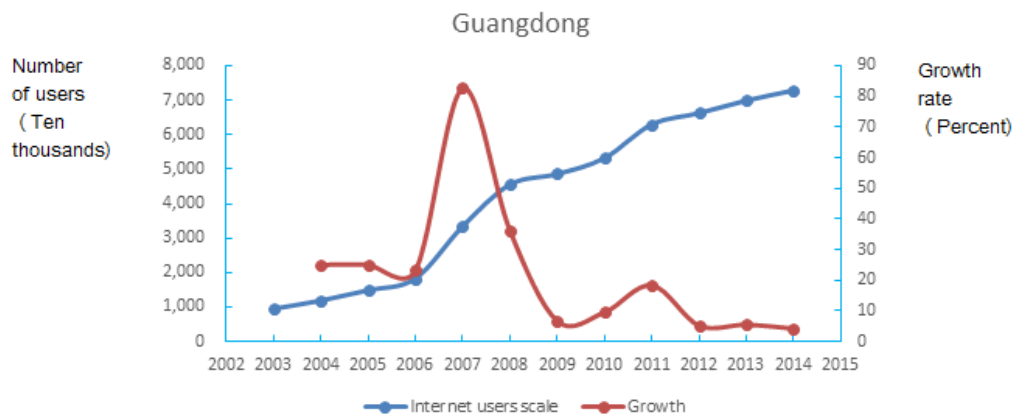
Fig. 13. Guangdong Internet users scale and growth. (Source: CNNIC. [January, 2015],
*Zhong guo hu lian wang fa zhan tong ji bao gao [Statistical Report on Internet
Development in China].* Retrieved March 19, 2016 from
https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)

From Fig. 13, we learn that since 2003 the number of Internet users in Beijing,
Shanghai and Guangdong was increasing every year, but the growth rate fluctuated.
The growth curves in Fig. 11, 12 and 13 show that Internet user scale growth reached
a local peak in Beijing, Shanghai and Guangdong in 2007, 2011 and 2013. From 2004,
the growth rate of the Internet users was rising, and reached the peak in 2007 and
then it fell. Although in 2011 and 2013, it also reached the peak, but the growth rate
was not as fast as that in 2007. Thus, from the data of Beijing, Shanghai and
Guangdong, we can conclude that 2007 is the year when the growth of Internet was
the greatest. (See the data from China Internet Network Information Center, CNNIC
(2015) as Fig. 11, 12, 13).

c) Based on the data about the mobile network size[55], the year of 2007 witnessed
the greatest growth rate.

---

[55] Data source：The Statistics of Development of China's Internet and The Statistics of Development of China's
Mobile Network

Since 2006, the scale of mobile Internet users reached to the peak for several times, and 2007 was the global peak.
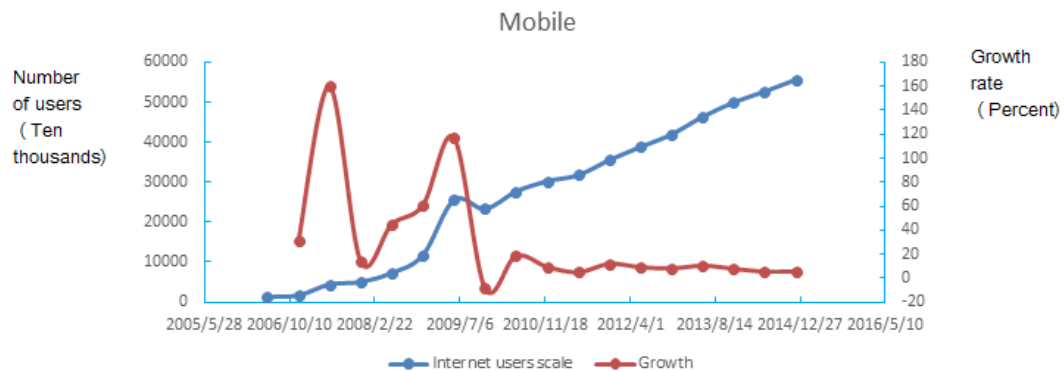
Fig. 14. Scale and growth of mobile Internet users. (Source: CNNIC. [January, 2015], *Zhong guo hu lian wang fa zhan tong ji bao gao [Statistical Report on Internet Development in China].* Retrieved March 19, 2016 from https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)

In Fig. 14, we learn that the number of mobile phone users has expanded each year, but the growth rate is fluctuating. Growth curves of Fig. 14 show that in June 2007, June 2009, June 2010, December 2011 and June 2013, the growth rates reached local peaks. Since 2006, mobile Internet user scale increased gradually, after reaching a high point in June 2007 it began to fall. While in June 2010, December 2011 and June 2013 reached a local peak, but in 2007, it reached the global peak. Thus, mobile network develops very fast in 2007. (See the data from China Internet Network Information Center, CNNIC (2015) as Fig. 14).

According to the three reasons, we believe that for media development 2007 is an important time node.

Second, in the aspect of the size of the WeChat user, 2013 is also an important time node in China's media development process. The reasons are as follows:

WeChat is a new form of integrated media that was formed with the rapid development of the Internet and smart phones, it has been very active since 2011 in China, and in2013, it developed most. (See the data from China Internet Network

Information Center, CNNIC (2015) as Fig. 15).
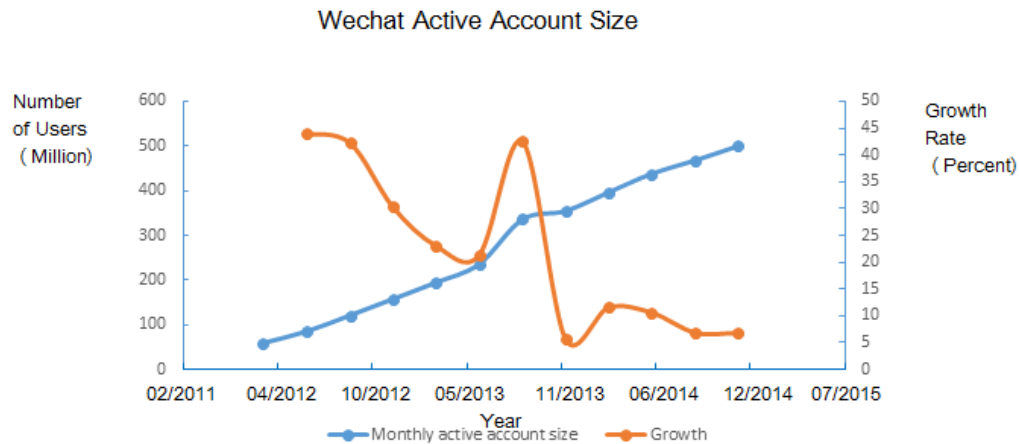
Fig. 15. Monthly data about the scale and growth rate of WeChat active users. (Source: CNNIC. [January, 2015], *Zhong guo hu lian wang fa zhan tong ji bao gao [Statistical Report on Internet Development in China].* Retrieved March 19, 2016 from https://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf)

2) The selection of the real estate market data and empirical methods

We select the data of pre-owned housing market for two reasons. One is that there will be some time lagging in the Supply and demand of new house, but there is no such problems in pre-owned housing, for its supply and demand are very flexible; the other one is for big cities like Beijing, Shanghai and Guangzhou, the new housing are inclined to be built far away from the urban center, which is against the demand of consumers. Hence, it cannot well reflect the impact of housing policy on housing prices. Therefore, the paper selected Beijing, Shanghai and Guangzhou, the three major cities of pre-owned housing transactions and house prices data, to test the responding speed to the housing policy.

The Shanghai pre-owned housing price data is referred by the pre-owned housing index. This monthly data shows the normal transaction prices in the pre-owned housing market in 11 District 51 controlled areas in Shanghai as the calculation sample, and it is gained after careful calculation according to some related

theoretical analysis. The index takes November 30, 2001 as the base period, 1000 as the base point. It is released every month. From 2004, the government began to regulate the overheated real estate market in China. In March of 2004, the government issued the order that the neglected issue of the land transferring should be solved before August 31, otherwise the land would be confiscated and become national land reserve. This order is to tackle with the overheating of real estate market by limiting the land supply. Another more important policy is the Eight Regulations, issued in March 2005, which showed that the real estate market became a big concern of the government. Therefore, we would select the data from January 2005 to May 2015, from Reports of "the Pre-owned Housing Market in Shanghai"[56], issued by the Office of Pre-owned Housing Market Index in Shanghai. In Beijing and Guangzhou, the housing price data is represented by the selling price index in the pre-owned housing market. This monthly index takes the sample of pre-owned residential housing (the single house is excluded), and makes December 2004 as the base period, 1000 as the base points. It is calculated via Laspeyre Index calculation, based on the total amount and the average price calculation. The selected time periods in Beijing and Guangzhou are from December 2004 to May 2015, and from January 2005 to May 2015, respectively. The source of the data is www.fdc.fang.com.[57]

H–P Filter method is widely used in the analysis of time-series economic data, in order to distinguish the long-term trends from short-term fluctuations. This method is proposed by the Hordrick and Prescott. For a given original sequence data $\{y_t\}_{t=1}^{T}$, it consists of trend component $\{y_t^g\}_{t=1}^{T}$ and periodic fluctuation component $\{y_t^c\}_{t=1}^{T}$.

$$y_t = y_t^g + y_t^c \qquad (11)$$

The way to separate the two elements in the H–P Filter is minimizing the square of the deviation of trend components y_t^g from the original sequence y_t, if the sum of

the squares of the second order difference is not too much as a constraint condition.

$$\min_{\{y_t^g\}_{t=1}^T} \sum_{t=1}^T (y^t - y_t^g)^2$$

$$s.t. \qquad (12)$$

$$\sum_{t=2}^{T-1} [(y_{t+1}^g - y_t^g) - (y_t^g - y_{t-1}^g)]^2 \leq \mu$$

The smaller the parameter μ is, the smoother the trend component is. This minimization problem can be solved by the Lagrangian function, by making λ as the Lagrange multiplier. H–P Filter problem is transformed into the solution of $\{y_t^g\}_{t=1}^T$ when the value of the function below reaches the minimum, when $\{y_t\}_{t=1}^T$ is given:

$$\sum_{t=1}^T (y^t - y_t^g)^2 + \lambda \sum_{t=2}^{T-1} [(y_{t+1}^g - y_t^g) - (y_t^g - y_{t-1}^g)]^2 \quad (13)$$

(3) Policy Selection

According to the previous analysis, we use 2007 and 2013 as the time nodes, and the time period from 2005 to 2015 is divided into three stages, namely 2005-2007, 2008-2013, 2014 to present, we select two important policies targeting at real estate market and the responding speed of the market in each stage. The policies selected are listed in Table 1.

Stage	Time	Policy	Policy Content
2005-2007	2005/3	1	"Eight Regulation" was issued, to strictly control the real estate market, target at stable housing prices, establish the government responsibility system, adjust housing and land supply structure, strictly control the passive housing demand, and guide the residents' consumption.

			In May that year, the details of the policy were issued.
	2006/5	2	"Six Regulation" was issued, the new around of control over real estate market.
2008-2013	2010/4	3	On January 10, 2010, the State Council promulgated the "Eleven Regulations ", strengthen the management of loans of the second house, stipulating that down payment shall not be less than 40%, and the loan should be restricted. In April the same year, Beijing first introduced "Eleven Regulation", stating that each family can only buy one house in the future. Since then, the similar regulations were issued in four cities including Shanghai, Guangzhou, Wuhan, and Chongqing.
	2011/1/26	4	The new "Eight Regulations": the down payment ratio of the second house raises to 60 percent, lending rate to 1.1 times of the benchmark rate, plus the previous policy, in 2011 the down payment of the first house is 30%, and no commercial loans to the third house.
2014 to the	2014/1/1	5	The Policies of Property Taxation

present			
	2014/3/4	6	Qi Ji the Deputy Minister of the CPPCC National Committee, Department of Housing sent "two-way regulation" policy signals of the real estate market.

Table 1   Policies of the Real Estate Market

2. Empirical Analysis, Results, and Interpretation

In this section we adopt H–P Filter method to empirically test changes in the pre-owned housing markets in three major cities of China, and then provide the interpretation of the results. At the end we put forward some corresponding policy recommendations based on the empirical analysis.

(1) Empirical Analysis

With the help of software Eviews 6.0, the pre-owned housing price index of Beijing, Shanghai and Guangzhou (Hereinafter referred to as BSG) is processed by H–P Filter method. According to frequency-power rules, the monthly data is utilized in this section, and the smoothness index λ is set as 14400. The results of H–P Filter are demonstrated in Fig. 16 to 18. Each figure shows the original sequence, trend component and fluctuation component of the pre-owned housing price index. The trend component (Hereinafter referred to as "trend price", which is regarded as the dynamic equilibrium price) shows the increase in the housing prices caused by population inflows and rapid development of the cities. The fluctuation component shows the impacts of the external factors such as policy interference. This section aims to analyze the effects of real estate policies through observations of the direction and size of deviation between trend component and fluctuation component. The shaded

area shows the period of time from policy implementation to policy beginning to play their regulatory role (From the month of policy implementation to a month before policy playing significant roles). The narrower the shaded area is, the faster the policy starts to play the regulatory role. The vertical line located at the month of policy implementation shows that the policy effects were instant and prompt.
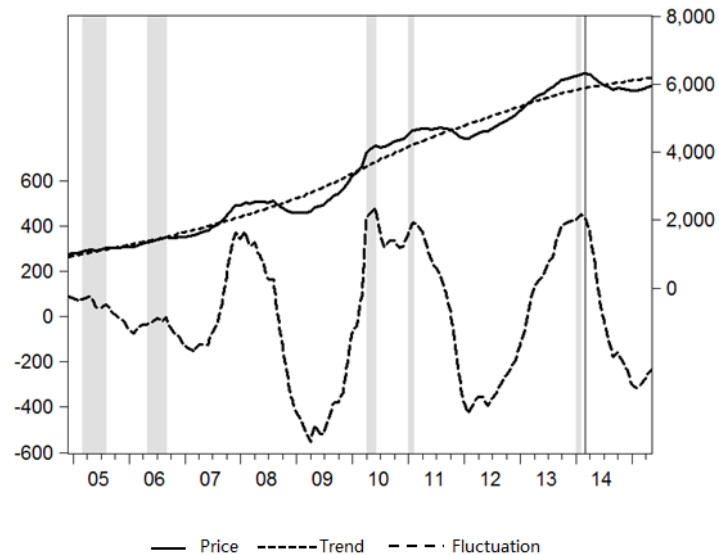
Fig. 16. H–P Filter result of pre-owned housing price index in Beijing (Dec 2004 to May 2015). (Source: The Window of Real Estate: The Price Index of Pre-owned Housing http://www.ehomeday.com/cyfw/zsjj_sec.asp)
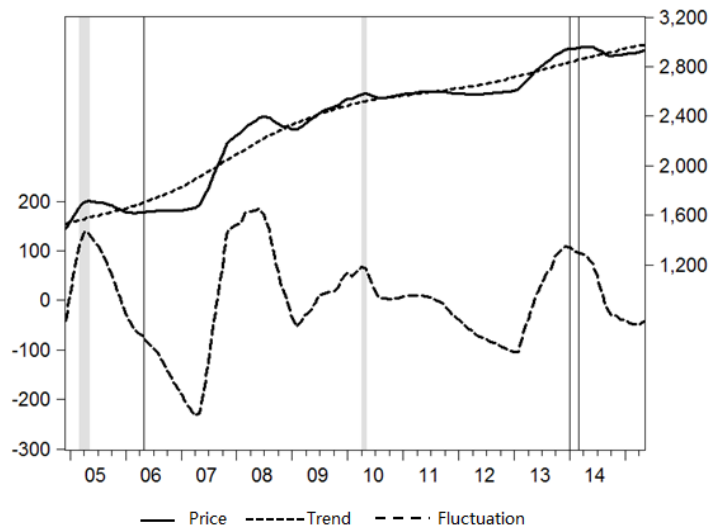
Fig. 17. H–P Filter result of pre-owned housing price index in Shanghai (Dec 2004 to May 2015). (Source: The Window of Real Estate: The Price Index of Pre-owned Housing http://www.ehomeday.com/cyfw/zsjj_sec.asp)
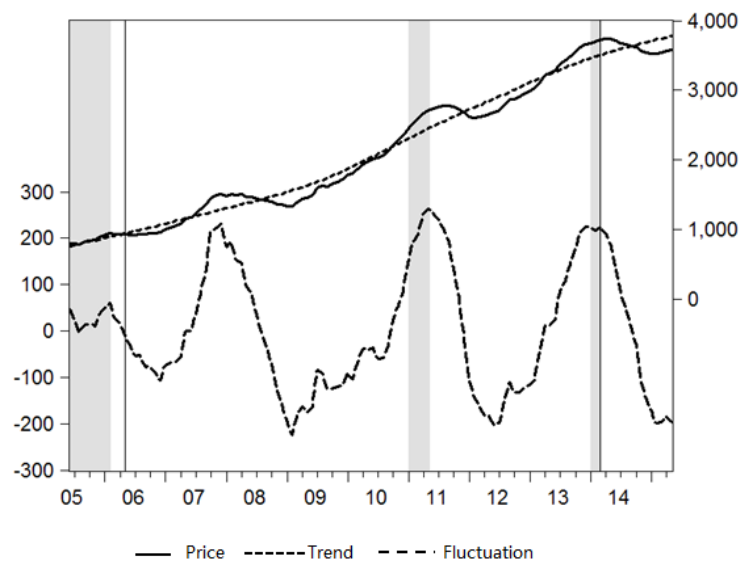
Fig. 18. H–P Filter result of pre-owned housing price index in Guangzhou (Jun 2005 to May 2015).

(Source: The Window of Real Estate: The Price Index of Pre-owned Housing http://www.ehomeday.com/cyfw/zsjj_sec.asp)

(2) Results and Interpretation

Based on the processed data and empirical results, it is clearly found that the rapid development of new media fastens the reaction speed of pre-owned housing price to the real estate policy in 2007 and 2013. It is important to note that here reaction speed refers to the time the new policy takes from implementation to the time that it begins to play their regulatory role significantly.

1) According to Fig. 16-18, before 2007, the reaction speed of pre-owned housing price to "Policy 1" and "Policy 2" in BSG (Beijing, Shanghai and Guangzhou) was 3 months at least. The reaction speed of Guangzhou even reached to 11 months.

In March 2005, "Policy 1" was issued. According to Fig. 16–18, the deviation between trend price and pre-owned price in BSG started to occur just at the time of policy being issued. And the reaction speed was 6 months for Beijing, 3 months for Shanghai and 11 months for Guangzhou. From September 2005 (Beijing), June 2005 (Shanghai) and March 2006 (Guangzhou), the reaction speed began to decrease rapidly. The forward trend was reversed, which means that pre-owned housing price dropped remarkably, compared with trend price.

In May 2005, "Policy 2" was issued. A new round of real estate market regulation started. After 5 months the reverse deviation of pre-owned price from trend price in Beijing began to expand from October 2005. Because of the remained influences of previous policies on pre-owned housing price in Shanghai and Guangzhou, the reversed deviation of pre-owned price from trend price was still expanding, which means that the pre-owned housing prices continued dropping, compared with the trend price.

It shows that before 2007, the reaction speed of the housing market to housing policies was not fast enough, which was partly due to the relatively small scale of Internet. Before 2007, the number of interest users was increasing, but its scale was not big enough. After 2007, it continued to increase, and the growth rate was quite stable and slightly rising sometimes. Because of the limited scale of Internet users, the effect of information dissemination about housing policies on the housing price

changes was not obvious.

Due to the influences of international financial crisis from 2007 to 2009, housing prices in China fluctuated greatly. Compared with Asian financial crisis in 1997, the reaction speed of housing prices was much faster. But it was not the focus in this research. So, we did not investigate the change of housing prices during that period.

2) According to Fig. 16–18, from 2007 to 2013, the reaction speed of pre-owned housing prices to housing policies was faster and faster. The reaction speed to "Policy 3" and "Policy 4" in Beijing, Shanghai and Guangzhou were respectively 3 months, 3 months and 5 months.

From the late 2009 to the beginning of 2010, the pre-owned housing prices in Beijing rose rapidly, then returned to trend prices but later deviated again (Fig. 16). During that period, the pre-owned housing prices in Shanghai rose rapidly, and deviated from trend prices (Fig. 17). The pre-owned housing prices in Guangzhou experienced the highly rising period in 2009 and 2010 (Fig. 18). With the housing policy issued in the beginning of 2010 and beginning of 2011, the highly rising tendency stopped. In Jan. 2010, "Policy 3" was issued, the improvement of mobile device technology and the popularity of media technology promoted the transmission of the policy by mobile devices and attracted people's attention immediately. It took 3 months and 2 months respectively in Beijing and Shanghai for the pre-owned housing prices to deviate from trend prices, but the gap was narrowed quickly in June and July of 2010. With the "Policy 4" issued in Jan. 2011, the media transmitted the information to the public. After rising for 2 months, the pre-owned housing prices in Beijing began to be stable again and the gap to trend prices began to be smaller. After rising for 5 months, the gap between pre-owned housing prices in Guangzhou and trend prices began to narrow in June 2011.

After 2007, China actually entered the new media age. More crucially, with the enlarging scale of smart phone users, mobile Internet became very popular. People can have access to information at any time due to the unlimited Internet connections. Thus, the speed of information dissemination is much faster than that in simple fixed Internet age. The result is consistent with the change in its effects on in housing

market.

3) According to Fig. 16–18, the reaction of pre-owned housing price index to policies became faster. The reaction speed of pre-owned housing prices in Beijing, Shanghai and Guangzhou to "Policy 5" and "Policy 6" is 3 months in maximum, and sometimes it is even shorter.

In 2012 and 2013, the pre-owned housing prices in Beijing and Guangzhou rose dramatically and positively deviated from trend prices. This was the same as in Shanghai in 2013. The policies in 2014 prevented the housing prices from rising too much and made pre-owned housing prices to approach the trend prices. With the "Policy 5" issued in Jan. 2014, the pre-owned housing prices in Beijing and Guangzhou fluctuated within a narrow range while in Shanghai it dropped instantly. With the "Policy 6" issued in March 2014, this information was transmitted in the Internet information platform immediately and it accelerated the reaction of pre-owned housing prices to policies in Beijing, Shanghai and Guangzhou. As shown in Fig. 16–18, pre-owned housing prices in Beijing, Shanghai and Guangzhou significantly dropped.

The faster reaction is attributed to the establishment of a social network information platform, like Weibo and WeChat, based on the development of mobile network. As mentioned before, in 2013, the number of WeChat users was rising rapidly and reached to a peak. These communication platforms promote the speed of information dissemination, which will in turn accelerate the speed of housing policies dissemination and change in housing prices.

With 2007 and 2013 as time nodes, it is learned that the reaction of pre-owned housing price index to policies in the three cities becomes faster and faster from stage 1 to stage 3.

(3) A New Regression Analysis

Based on the previous empirical analysis of the role of new media in the real estate market we did, it was discovered that the new media have a significant

influence on the housing price, and determine to develop a regression model to further examine the extent of the new media's influence.

1) The selection and description of variables

To better understand the impact of new media, more independent variables and control variables have been added into the regression model while the dependent variables of housing price and transactions remain unchanged.

The dependent variables are the pre-owned housing transactions and housing prices. We use the 66 monthly housing-related data in cities like Beijing, Shanghai and Guangzhou from January 2011 to June 2016, which were collected by National Bureau of Statistics of China and Eastymoney Choice Data bank.

The independent variables are the Internet search indexes related to the pre-owned housing transactions and housing prices, as well as some real estate policies. In China, Internet users prefer the Baidu search engine to Google search engine. So the Baidu search indexes with 6 particular key words are chosen as the independent variables to present the role of media. The 6 key words are: real estate policy, mortgage rate, real estate tax, real estate agents, transaction tax for pre-owned houses and provident fund. We can call these 6 Baidu search indexes as media indexes as well.

The control variables are GDP as the economic growth level, the consumer expectation index and consumer price index.

Dependent variables	Pre-owned house price (pi)	
	Pre-owned housing transaction (sv)	
Independent Variables	Real estate policy (media 1)	Baidu keyword search index
	Mortgage rate（media2）	Baidu keyword search index
	Real estate tax（media3）	Baidu keyword search index
	Real estate agent (media4）	Baidu keyword search index
	Transaction tax for pre-owned houses（media5）	Baidu keyword search index
	Provident fund（media6）	Baidu keyword search index
Control Variables	GDP（gdp）	
	Consumer expectation index（ce）	
	Consumer price index（cpi）	

Table 2   Descriptions of the variables

variable	mean	min	max	p50	sd
pi	106.6	95.90	137.2	103.5	9.037
gdp	109.5	105.4	121.3	109.2	3.411
ce	103.4	97	109.9	103.8	3.121
cpi	102.7	100.8	106.5	102.3	1.434
sv	13381	2200	61114	11494	9260
media1	256.6	156.9	591.4	227.8	91.78
media2	1471	814.8	2507	1430	412.6
media3	3324	1227	10023	2957	1591
media4	715.0	403.3	1229	669.6	179.8
media5	2355	784.1	12439	2028	1546
media6	6919	3435	10275	6684	1514

Fig. 19. Statistics of the variables.

2) The regression models and results

For the pre-owned housing price index, a regression model is developed as:

$$pi_i = \beta_0 + \beta_1 gdp + \beta_2 cpi + \beta_3 ce + \gamma_j m_{ij} + \varepsilon_i$$

In this model, GDP, CPI and CE are control variables and m_{ij} for the media attention index is the independent variable. 6 Baidu search indexes are used in their log forms as the media attention index. So the preowned housing price model is a function in which the price is dependent on media regardless of the control variable. In Chapter 4, we also have an equilibrium price model with media involved in the three dimensional market. The equilibrium price model is also a function in which the price is dependent on media. Therefore, these two models could be incorporated to demonstrate the impact of media on price.

The theoretical model of equilibrium price for the three dimensional market is $p_t^e = p_{t-1}^e + \sigma_t p_{t-1}^e$. It means that the equilibrium price for period t is determined by the adjusted price of the previous period t-1. The price of the previous period t-1 is adjusted by the agents in the market based on their expectations that are influenced by media. Briefly stated, in the theoretical model, the price is determined by media to some extent.

The regression model expands the equilibrium price model for the three-dimensional market by adding three control variables. The equation means that the housing price for period i is determined by media attention index to some extent as well.

Then we can figure out the relevance of our two models. Both examine the relationship between market price and media. The difference is that the regression model measures the scale of media's effect on the market price by controlling the price of the previous period t-1 which can be determined by too many factors.

For the pre-owned housing transactions, a regression model is created as:

$$\ln sv_i = \beta_0 + \beta_1 gdp + \beta_2 cpi + \beta_3 ce + \gamma_j m_{ij} + \varepsilon_i$$

In order to eliminate the impact of heteroscedasticity and to clearly demonstrate the economic meanings between different variables, the pre-owned housing transaction (sv) and the 6 Baidu search indexes are used in their log forms.

Since the housing transactions and housing prices of Beijing, Shanghai and Guangzhou from 2011 to 2016 can be taken as a relatively small sample, we decide to use the ordinary least square (OLS) regression. The robust regression is used to avoid the heteroscedasticity because there proves to be no Multicollinearity after we have done the variance inflation factor (VIF) test. The regression results are as below:

VARIABLES	Beijing	Shanghai	Guangzhou	Beijing	Shanghai	Guangzhou
cpi				3.237**	2.796**	2.521***
				(1.409)	(1.070)	(0.874)
gdp				-1.031**	-0.690*	-0.578**
				(0.434)	(0.359)	(0.238)
ce				-1.226***	-0.912***	-0.744***
				(0.368)	(0.327)	(0.234)
media1	-15.51***	-10.89***	-8.404***	-17.53***	-12.74***	-10.02***
	(4.678)	(3.851)	(3.034)	(4.850)	(3.863)	(3.001)
media2	-0.903	-0.897	-3.551	6.870	5.952	2.483
	(6.871)	(5.302)	(4.272)	(6.993)	(5.810)	(4.189)
media3	3.651	2.753	1.693	0.868	0.860	0.225
	(3.431)	(2.706)	(2.127)	(3.606)	(3.057)	(2.215)
media4	24.59***	18.44**	10.76**	18.47**	13.21*	6.046
	(7.827)	(7.229)	(4.977)	(8.199)	(7.604)	(5.250)

media5	5.293	1.844	2.865	8.303*	4.409	5.054*
	(4.415)	(3.518)	(2.547)	(4.565)	(3.735)	(2.538)
media6	-8.557	-5.292	-3.476	-12.41	-6.856	-4.203
	(9.944)	(8.064)	(6.595)	(11.59)	(9.959)	(7.502)
Observations	67	67	67	67	67	67
R-squared	0.416	0.332	0.261	0.556	0.477	0.455

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig. 20. Regression result of the pre-owned house price.

VARIABLES	Beijing	Shanghai	Guangzhou	Beijing	Shanghai	Guangzhou
cpi				-0.0181	-0.0789	0.0869*
				(0.0375)	(0.0678)	(0.0444)
gdp				-0.0761***	-0.0649*	-0.0673***
				(0.0123)	(0.0372)	(0.0114)
ce				-0.0292**	-0.0141	-0.0169
				(0.0132)	(0.0184)	(0.0123)
media1	-0.814***	-0.810***	-0.464*	-0.418***	-0.478**	-0.277
	(0.168)	(0.204)	(0.247)	(0.126)	(0.202)	(0.225)
media2	0.301	0.181	-0.602*	0.122	-0.149	-0.495
	(0.298)	(0.350)	(0.332)	(0.247)	(0.325)	(0.379)
media3	0.239**	-0.0449	0.105	0.170*	-0.0779	0.142
	(0.116)	(0.122)	(0.123)	(0.0945)	(0.163)	(0.109)
media4	0.718***	0.502	0.387	0.665***	0.622*	0.334
	(0.256)	(0.304)	(0.345)	(0.202)	(0.319)	(0.352)
media5	0.369	0.629*	0.377	0.239	0.447	0.287
	(0.276)	(0.360)	(0.242)	(0.173)	(0.302)	(0.210)
media6	-1.021***	-0.536	-0.205	-1.107***	-0.810*	-0.293
	(0.287)	(0.395)	(0.445)	(0.281)	(0.420)	(0.472)
Observations	67	66	61	67	66	61
R-squared	0.488	0.471	0.224	0.676	0.599	0.366

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig. 21. Regression result of the pre-owned housing transaction.[58]

From Fig. 20 above, we can see that the result remains robust after the three control variables have been added. The real estate policy index (media 1) has a negative impact on the house price and is significant at 1% level. Meanwhile, the real estate agent index (media 4) has a positive impact for all the three cities and is significant at 5% level except for Guangzhou. However, the impacts of the other 4

---

[58] The independent variables are using the previous period data in order to test their lag effects on the housing transactions.

indexes are not significant with different signs.

In order to restrain the excessive growth of house prices for the first-tier cities, the Chinese government implements the real estate policies mainly for controlling and uses media as a guiding or directing tool. Therefore, the public may neglect some good real estate policies. Under such condition, the media index 1 (real estate policy search index) will have a negative impact on the growth of the housing prices to some extent. Such a result can also reflect the effectiveness of the real estate policies issued by the government recently. As for the media index 4 (real estate agency), the result can reflect the status of the Chinese real estate market's development. During the boom of real estate market, the influence of real estate agencies expands. On the contrary, its influence will shrink during the recession. When the real estate agents are very active, it is a sign that people are enthusiastic on the real estate investment. Capital flows from fictitious economy to real economy and there will be a positive effect on the growth of house price.

Consumer expectation index (ce) is a reflection of people's expectation towards the current development level of the economy. When the expectation is low, the fictitious economy will also tend to decline, for the yield from financial investment will be less than that from real economic investment (real industry). People will tend to invest more on the real industry instead of on finance and this will cause a negative influence on the house price growth.

From Fig. 21 above, we can see that the result keeps robust after the three control variables being added. Considering that the media index may have a lag effect on the pre-owned housing transactions, we use one period lag of the house transactions when doing the regression. The real estate policy index (media 1) has a negative impact on the house transaction and is significant at 1% level. Meanwhile, the real estate agent index (media 4) has a positive impact for all the three cities and is significant at 5% level except for Guangzhou. However, the impacts of the other 4 indexes are not significant with different signs.

So we can conclude that the effect of media on the real estate market is quite constant both on the house prices and house transactions.

(4) Policy Recommendations

Under the current economic situation, the breadth and depth of information transmission has changed dramatically due to the new media. Based on the theories and empirical analysis above, we could see that new media plays an important role in reflecting the influences of housing policies on housing prices. But media is also a double-edged sword. If we use the media in a proper way, it will accelerate information transmission and promote the healthy development of housing market. Otherwise, the excessive information transmission will result in the panics of consumers and worsen the situation in the housing market. In view of the theories and empirical analysis above, we try to make three-policy recommendations from the perspective of the interaction of new media and housing market.

1) It is necessary to establish supervising organizations for new media industry and control the first-level effect on housing market accurately.

There is insufficient supervision on new media's influences on the housing prices. We must set up new laws to promote new media's role in public opinion guidance and information transmission. First, it is necessary to improve the existing legal system that regulates the new media industry. And according to the principles of industry classified supervision, we should divide the supervision functions into different levels, from the central bank, industry supervisory committees, Securities Exchange Commission to Insurance Regulatory Commission and so on. Second, we should make the specified New Media Industry Management Law in order to supervise the new media's behaviors in guiding public opinions and mobilizing social assets. Last, we should establish an independent online new media supervision platform. We could not judge if the assets mobility supervision is the result of new media, so it is necessary to use the open and off-site supervision in the age of Internet as an alternative. We recommend that the Internet developers explore a new online supervision platform according to social role definition of current new media and housing market development, open the supervision functions to more social media and supervisors gradually in a limited way and realize the model of open

supervision management.

2) It is also necessary to improve the policies of protecting real estate investors and their legal rights.

The rights of the users of new media industry fall into the category of the rights that the housing investors have and should be protected. First, we should improve the complaining system in the Internet, and listen to the complaints from the investors, in order to avoid the severe fluctuation of excessive assets mobility caused by new media's impact on housing prices. The central bank should establish a platform of protecting housing investors' rights, and a website and consulting hotline to ensure that the wrong behaviors of new media industry in terms of housing prices should be punished. Second, it should establish investors' financial integrity protecting systems to safeguard the legitimate rights of investors and consumers. Third, we should establish a behavior information center for new media industry and provide searching service for local consumers with respect to investment and business activities. Last, we should establish online housing market investment information alert platform and provide alert service timely for high-risk housing investment information and investing products through Internet tools.

3) It is important to enhance the cooperation of new media industry supervision and develop effective and standardized management model for cooperation.

Now financial integration is taking place at home and abroad. The influence of new media industry in different regions and areas indicates that the online housing investment environment is gradually forming. The absolute supervision could be impossible by one independent department, region or organization. Therefore, on the one hand, we should enhance the cooperation of inter-departmental supervision in new media industry, including central bank, Securities Exchange Commission and Insurance Regulatory Commission. On the other hand, we should also enhance the cooperation in different areas. The media's social impact and guided behavior across provinces need to be supervised in a network-oriented way in order to build unified and effective management through cooperation.

CHAPTER 7. THE GOVERNANCE OF "THE HAND OF MEDIA" ON "MARKET FAILURE"

The analysis on the influence of the media on market aims to solve the problem of market failure. Therefore, it is necessary to explore how to use media to address the market failure effectively in the real economy, after researching on the influence of market effect mechanism of media.

1. Analysis of "the Invisible Hand" and "the Hand of Media"

As mentioned before, this central question is how to solve the problem of market failure. The study on theories, mechanisms and empirical cases are all aim to prove that "the hand of media" has an impact on market failure, which will be achieved through the functions of media.

(1) The Governance by "the Hand of Media"

As mentioned earlier, market failure is the defects of market itself, one main cause of which is the incomplete and asymmetric information. Hereupon, the Keynesian theory of "the visible hand of government" emerged in response to the market failure. But it has been proved that "the visible hand of government" is not always the good measure. There are a variety of helplessness and "failure" in the governance of market failure.

In recent years, the rise of "media governance" highlights the influence of media on economic activity. The "hand of media" will compensate for the deficiency of "the hand of market" and "the hand of government" and solve market failure effectively. When the market is in the process of dynamic change, agents in the market would adjust the direction of market based on the information they get, making it towards a

healthy market economy or to achieve market equilibrium and maximize the market interests.

Since the hand of government fails to solve the market failure, the hand of media becomes the main force in tacking with the market failure; and sometimes, it would play a role in solving government failure. In this case, it is obvious that while governing market failure, media also have a certain impact on government failure.

When solving market failure and government failure, the governing functions of media are mainly referring to guide the market entity and to reflect the interests of market agents and the government agenda setting. The types of governance patterns are direct governance, indirect governance and auxiliary governance. Direct governance refers to the direct market information transmission and government agenda setting; indirect governance refers to the reflection of interests and demands of market agents to the government, while auxiliary governance refers to the supervision of government behaviors and current market situation. Through releasing the positive information to accelerate the movement toward equilibrium and optimize the government's governance effect.

There are mutual effects and mutual interactions among "the hand of media", "market hand" and "government hand". When addressing market failure, the "the hand of media" will work through the market mechanism, for instance, it works through the supply and demand of the market and it adjusts the market equilibrium by changing price. Moreover, the "the hand of media" can supervise and coordinate government failure in some circumstances. At the same time, to work effectively, the government and policy orientation are indispensable.

All in all, the hand of media is the supplement for market mechanism and government mechanism, optimizing and addressing the market problem through the functions that the market and government cannot have directly. Especially during the economic crisis, it can play a greater role in crisis governing, hence to help people come out of the crisis as soon as possible. The following part is the specific analysis of its functions and measures.

(2) The Governance of "the Hand of Media" with the Function of Public Opinion Directing

When the market is in a discrete status or in a crisis, the main function of media is opinion directing, namely to make both sides of supplier and demander aware of the current information of market by spreading the immediate and comprehensive market situation as well as the positive information to guide the public opinion, in order to avoid the deviation of market supply and demand or greater fluctuation due to the psychological panic.

In 2008 the global subprime crisis once caused great confusion. The confidence index of market economy fell to their lowest level since 1982, which is even worse than the 9.11 event. But China made use of the media power to guide market during the economic crisis. During the crisis, CCTV broadcast a series programs such as, Wall Street, The Dialogue, which can spread the information selectively. Moreover, they also invited experts to analyze and provide a suggestion and guide the users' behaviors to avoid panic. At the same time, each local TV newspapers and magazines also avoided the report of news on the crisis, instead, they provided a guide reading, to maintain the public psychological stability and mobilize the public to pull through the crisis. So, the Chinese government played an important role in keeping the stable market by using the media.

Obviously, the function of opinion directing by media is helpful for market stability and healthy development, even avoidance of market failure.

(3) Media as a Platform to Express the Interests and Wishes

Different from one-way information transmission of the traditional media, new media transmission is interactive communication and network, which provides a wide range of information exchange platform, on which market agents can express their demands for interests and finally convey it to the government through the media. The platform function of the media can make the government grasp the correct direction of public policy and avoid the policy mistakes caused by

government failure.

Along with the social progress and economic development, the market entities express their pursuit of individual rights with increasing urgency, and the media provide the technical support for their expression. Depending on network technology, the network platform has very high popularity, making the market entities exchange and receive message by expressing their wishes and needs freely. Collection and analysis of the attitude of the main beneficial entity is to grasp the market demand and the direction of public opinion.

At this point, the government can learn the needs of stakeholders through the network platform and make policies to address the problems of market failure and government failure based on the public demands. The government can do this by solving the most urgent problem first and rebuild the market's confidence. After releasing the policy, the government can also learn the policy effects and the improvements by observing public attitudes. The scarcity of the policy and the exclusiveness of the public asymmetric information is an obstacle to maximizing the interests of both sides. The nature of media platform promotes the dynamic game between the government and the public, which makes the communication between the government and the market entities come true and eliminate the information asymmetry between the two parties at the same time. In this process, the government and the market entity can make more gambles and reach balance based on the needs of the target and the possibility of choices, finally maximizing the mutual benefits.

In conclusion, media provide the government and the market entity with a dynamic game platform for information communication, in order to express the interests of the market entity and meet their demands to a certain extent. Also, media allow the government to collect the public opinions and makes policy accordingly. This is how media address the two problems of market failure and government failure.

However, it is possible that many negative attitudes are posted on the network platform by the market entity, and the government may improperly deal with

excessive posting on the platform and make bad policy, resulting in a new round of information asymmetry and making the media platform meaningless.

(4) The Governance of "the Hand of Media" with Agenda-setting

Media agenda-setting function refers to the function of drawing attention to some specific problems by affecting the market entity's behavior and the government agenda in the next phase, by the transmission, opinion directing, and platform functions of media.

Media's agenda-setting function is a major part in the governance of market failure and government failure. It also plays an important role in the development of market equilibrium.

Agenda-setting is usually divided into media agenda, public agenda, and the government agenda. The first effective one is the media agenda. Media produce and transit a large number of high information to the users frequently, which may directly attract the attention of the public and the government and affect their agenda as well, and which may also cause changes in the public agenda first and then affect the government agenda.

In the process, media must be the first to decide the agenda. While addressing the problems of market failure and government failure, the government and the market entity are likely to be the sponsor of the agenda-setting. The government can release the agenda through the mainstream media. The market entity can also express the public opinion and their interest pursuit and try to change the agenda. It is the game between both parties. Finally, both sides endorse the agenda and solve the problem accordingly. When governing "the hand of government", there will be supervision and evaluation of government's policy. At this time, the market entity is also likely to initiate the agenda-setting, in order to discuss and analyze the gains and loss in market failure and evaluate the policy effect.

Therefore, the core functions of governance while addressing the market failure and government failure is to influence the agenda-setting of the media—from finding

and solving problems to the final evaluation of the agenda-setting.

Let us take China as an example. With the development of new media, the two greatest concerns for the market entity are commodity price and housing price. Searching the reports on these two aspects, we discover that there were 3110 articles using "housing price" as keywords in the title of news report and there were 1710 articles using "commodity price" as keywords on People's Daily Online alone from January 2008 to July 2013. There is more than one report on hosing price every day and nearly one report on commodity price on average in People's Daily Online. Obviously, housing price and commodity price are the main concerns of the Chinese government. The government adjusts its policy according to the feedback of opinion survey and regulates the macroeconomic market and stabilizes the housing price and commodity price, in order to maintain the stable development of Chinese economy in the meanwhile.

The agenda-setting function of media provides reference for the market and the government's agenda, in order to detect and solve problems and evaluate the results. But it is important to note the media of agenda-setting are not always reasonable. The agenda-setting also has a sequence. It is very likely that the most urgent problems appear in the back position for the lack of significance, while some less important issues are set in the front position for their eye-catching features.

2. Policy Suggestions for the Role of Media in Market Failure Governance

In the empirical analysis, we mainly use the data of China to analyze the influence of the media on the real estate market of China. We can also discover that the media have played a significant role in the dynamic process in China's market. Through summarizing the experience and lessons, we can obtain the following new understandings.

(1) Avoiding the Over-transmission of "the Hand of Media"

As discussed above, the media can warn that am economic crisis is coming. So, it is necessary to pay attention to the reports about the crisis in the media and to analyze the information and take precautions. For example, there have been some reports warning that the subprime crisis might come in media coverage, but the crisis broke out and spread over the whole world. Although some investors quit the market before the crisis, the loss that was avoided is negligible relative to the cost actually incurred by the financial crisis. The reason behind is that the government and society did not attach enough importance to the message that the media delivered.

Sometimes, the media deliver false messages. Sometimes, the media are over-sensitive, even talking too widely, and that is why the precaution function cannot be maximized, as people tend to ignore the message media delivers. On the one hand, the failure of precaution function is due to too many warnings at the same time, which is caused by the over-sensitivities to multiple issues, thereby preventing the public from telling which warning is right; conversely, the media are not complete, scientific, or objective, for the media are unable to analyze the crisis thoroughly before it breaks out, and so, people doubt the credibility of media. Therefore, the improper way of transmission and the incomplete message undermines the media's precaution function and prevents people from adjusting their behaviors. So, the finding that people respond slowly to the precaution from the media is not against the fact that people are very sensitive to negative reports.

We should fully take into account these negative effects of the media when developing the policies to prevent and govern market failures. There are several aspects that should be considered.

First of all, it is necessary to investigate the details prior to the analysis and pay attention to the reports of media in the policy-making process. Although some information of the reports may be false, we still have to consider this information and be very cautious.

Second, we need to analyze scientifically the motivation of the warning and

precaution and the credibility of the information. It is necessary to screen and filter the information. This is why, the cost of information searching cannot be reduced with the help of media, but it cannot be zero. Thus, the policy-makers will be more rational, and the implementation of the policy will be more rational too.

Third, the government should strengthen the regulation and management of the information publisher, in order to prevent the media from publishing false information, which leads to market failure. This has already been analyzed in case market failures did not actually happen; however, due to excessive media coverage and exaggerated rendering, market failures occur.

(2) Employing the Auxiliary Function of "the Hand of Media" to "Government Failure"

Through the above analysis, we learn that the new media, as a mechanism outside of market and government, has its incomparable advantages in solving social conflicts and crises. In the governance process in the market failure, it has a significant effect in avoiding the occurrence of market failure or in preventing it from worsening. So, the auxiliary function is indispensable.

There are some suggestions to properly utilize this function.

First of all, the government should ensure the maximum degree of media freedom and reasonably guide news coverage. Although the media industry is not a part of the government machinery, its production, exchange, circulation, and consumption are entirely controlled by the government. Once the government restricts the freedom of the press, media production cannot be achieved. Due to its own limitations, the government cannot fully collect information. Without the assistance of media, the government has to face government failure and market failure caused by information asymmetry. Therefore, the freedom of the press guaranteed by the government is the precondition for the government to get enough information. The freedom of the press is not equivalent to the full liberalization of the media. The government also needs to guide the media, in order to avoid the explosion of

information or "media virus".

Second, the government also needs to establish and improve public information releasing mechanism as well as maintain the government's information transparency. Governments should have own agencies under their control to publish market information, in order to guarantee the authority and credibility of information, which is convincing to the public. Meanwhile, the government needs to maintain its own information disclosure. On the one hand, it can maintain the credibility of the information released by the government; on the other hand, only if the information is sufficiently transparent, it can impel the public and the media monitor and evaluate the policies of the government and make recommendations and set the agenda.

Third, governments need to establish and improve media monitoring system to completely guide the public opinion and to adjust and implement new public policies according to the changing public opinion and public demands. After the implementation of the policy, it is necessary to get the feedback, according to which the policies are adjusted.

Fourth, the media should strengthen communication with the public and reflect their desire, in order to provide the social basis for the government's governance policies. New media rely on the Internet to transmit market information. The interactivity and autonomy features of media tools render it a good platform for public discussion and exchange of market information. It also provides opportunities to Dynamic Game in the process of implementation policies against market failure. The platform will reflect the public's judgment of the market failure and their demand for policy, allow the public to fully express their opinions and attitudes, before the stage of agenda-setting. It helps solve the market failure.

(3) Avoiding the Pseudo-governance of "the Hand of Media"

Although the media seem to be out of the framework of the government and the market in theory, it is closely linked with them, for the company and organizations in

the media industry are the products of the market and are subject to government regulations. So, it is of great significance to keep "the pursuit of truth" as the career goals of journalists and "the pursuit of real news" as the goal for news reports. If the message of the media itself is invalid, it is out of the question that the media complement the market and the government.

However, as for the media industry itself, the biggest problem in the information transmission process is the existence of "pseudo-environmental traps". In the process of transmitting the information of market failure, as a product of market mechanism, the companies of media have the dual characteristics of the maximization of profit and the pursuit of real news. So, the way to balance the relationship between the two characteristics is an important prerequisite for the media to play an active role in solving market failure.

There are indeed some phenomena of the pseudo-environment trap caused by the pursuit of interests in reporting market failure. This problem has been mentioned several times in this dissertation.

The media imperceptibly create a pseudo-environment of the world when helping people exchange market information. The fact of market failure is concealed or distorted by the "gatekeeper" of individuals or organizations for their own needs and value judgments, the control in the news production process, and the decisive role of media in public agenda-setting. So, it seems that market failure does not occur or that the failure is not as serious as the media described, while the media create a false coverage of market failure. At times of economic volatility, a lot of elements are much less effective in helping people analyze the economic situation than during the normal period. Therefore, economic agents have to turn to the media and trust the information in the media (possibly dubious) or adjust their economic behavior by analyzing the market information on the media. The false information of market failures leads to panic among economic agents. This panic may also be infected. In the conditions of new media, the pseudo-environment may be created by the users of new media. Some agents publish false market information, some spread the false information, and some blindly follow information. Therefore, from this perspective,

mass media are undoubtedly a "double-edged sword". Of course, in the new media condition, whether the feature of the media can be achieved in large partly depends on the public's personal qualities and media literacy. The public also needs a rational exchange of information of market failure in order to form the media into a connection between the government and the public. In many cases, it is seen that a lot of false information is generated by the public itself on the network platform and is diffused by other blind obedience. In March of 2011, the event of panic buying of salt was caused by the spread of false information through public blind obedience. In the event, the false information was that the salt had the function of resistant to radiation, and the information had been spread in the network. Thus, the quality of information is also very important, which has not been discussed in the dissertation and left for future research.

In the process of governance for market failure, the media should play the role of quickly restoring public confidence and avoiding panic. Its primary function is to strengthen the self-regulation of the media industry in periods of market volatility and prompt them to give top priority to the interests of the public, guarantee the timely and appropriate transmission of market volatility information, and play its proper precaution and guiding function. Therefore, the following points should be focused on while making policies for market failure:

First, in terms of policy-oriented market failure, we have to try to guide the media organizations to objectively reflect the real estate market volatility, in order to avoid the exaggerating or biased reports of market situation or the artificial new information asymmetry, which would lead to public cognitive biases. Media organizations must maintain industry self-regulation, put its social responsibility and public interest in the first place, and let the real information be objectively passed to the users. In periods of market volatility, due to the role of the media firewall and spillway dam, media organizations should establish a pseudo-environment that is not entirely inconsistent with reality but is objective, reasonable, and healthy pseudo-environment, in order to avoid the public into pseudo-environmental traps. As in the market failure pseudo-environment, although it is from the actual

development of the crisis in some respects, it also has positive effect in the aspects of advance warning and economic recovery. So, it also has a good effect for the prevention and governance of market failure. Thus, when making policy on media treatment of market failure, it also needs to pay attention to this characteristic.

Second, we need to strengthen the integration of traditional media and new media, contributing to the integration of the traditional pseudo-environment and the modern pseudo-environment. Although the traditional pseudo-environment based on traditional media and the modern pseudo-environment based on new media have completely different basis and features, there are no antagonistic contradictions between them. Both of them are built on the basis of the real-world environment, and the difference is that the traditional pseudo-environment tends to be more of a real environment. Therefore, on the one hand, the interaction and integration of the two pseudo-environments can drive the users to compare the two in order to have a correct understanding of the real environment. Conversely, after the forces of the fusion of the two pseudo-environments, they will be more powerful and can also play a greater role of guidance and governance in market failure.

Third, we need to enhance new media users' media literacy. As the media have features of interaction and autonomy on the Internet, improving the public's media literacy is to be considered for the market failure governance policies, as it is the only way to prevent the network's baseless assertion and obedience and avoid the pseudo-environmental traps caused by the new media users.

CONCLUSION

This dissertation analyzes the role of new media in the market both theoretically and empirically and draws conclusions as follows:

Theoretically, the study aims to fill the void in this academic field, as previous researchers failed to incorporate the factor of new media such as the Internet in the framework of economics.

The concept of media is redefined as media plus information in order to emphasize the inseparability of media and information. In order to overcome the flaws of the traditional two-dimensional model, media are introduced as a very important variable of the market into the model, and a new three-dimensional market model with media as the third dimension is constructed. In addition, the definition of "information bundle" is proposed to solve the problem that the media and market information may have different dimensions. The model demonstrates that new media can accelerate dynamic changes in the market by speeding up dispersion or convergence of prices. Conversely, when the market is in equilibrium, new media can lead the market to disequilibrium by speeding up dispersion of the market price; moreover, when the market is in non-equilibrium, new media can lead the market to equilibrium by speeding up the convergence of the market price.

Based on the new three-dimensional market model, a new equilibrium pricing model is developed by introducing media as a variable into the Cobweb Model. The model explains how new media influence the expectations and behaviors of market agents, which enriches the study on the supply and demand in the market. Market agents obtain information about market status from new media, and they gain new perception about the market prices and change their buying and selling behaviors accordingly.

Four mechanisms of the role of new media regarding how they influence the dynamic changes in market were articulated as well; namely transmission, guiding opinion, exposure, and governance mechanisms. Due to the works of these

mechanisms, new media are able to affect dynamic changes in the market and function as a supplementary tool to solve market failure.

The empirical analysis is set to test the impact of new media on the mechanism of fluctuations of prices (prices rise or fall, rapidly rise or fall). The H–P Filter (Hodrick–Prescott Filter) method is employed in the empirical analysis, and the data is obtained from the China's real estate market and the number of Internet users from 2005 to 2014. The H–P filter method is advantageous in distinguishing the long-run trend from the short-run fluctuation. The result shows that the changes in prices are more instant when there are more new media users, especially after 2013, which served as a typical example of new media's role in the economy. The empirical finding is very consistent with the theoretical hypothesis. It can be concluded that new media play a very important role in the market as well as in economic activities by affecting the equilibrium price and the expectations of economic agents. With the increasing new media users, the risk of rapid fluctuations of prices within a very short time is also rising. Moreover, a regression analysis is done to test the extent of the price fluctuations as well as the impacts of different media information on the prices.

Based on the theoretical and empirical analyses, the dissertation suggests that the government should properly utilize "the hand of media" by taking new media as a communication platform between the government and public, in order to regulate the market or make stabilization polices more effective. First, the government should be aware of the importance of new media and its effect in regulating "market failure". Second, the government should accept and promote the role of media in regulating "government failure". Third, the government should pay attention to the negative impact of new media, as the media are a two-edged sword and can result in public panic when over-transmitting or conveying fake news.

REFERENCES

[1]. Ahmed, Shaghil, Barry Icks, Ping Wang and Byung Sam Yoo. "International Business Cycles." *The American Economic Review 83*, No. 3 (1993): 335-359.

[2]. Akerlof, Geroge A. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *The Quarterly Journal of Economics 84*, No. 3 (1970): 488-500

[3]. Albarran, Alan. *Management of Electronic Media*. Cengage Learning, Boston, 2009.

[4]. Albarran, Alan. *Media Economics: Understanding Markets, Industries, and Concepts*. Iowa State University Press, Iowa City, 1996.

[5]. Anglin, Paul. "Determinants of Buyer Search in a Housing Market." *Real estate Economics 25*, No.4 (1997): 567-589.

[6]. Arrow, Kenneth. "Extended Sympathy and the Possibility of Social Choice." *The American Economic Review 67*, No.1 (1977):219-225.

[7]. Ashby, W. Ross. *An Introduction to Cybernetics*. Chapman&Hall, London, 1956.

[8]. Baig, Taimur and Ilan Goldfajn. "Financial Market Contagion in the Asian Crisis". *IMF Working Paper 98-155*, Nov., 1998, https://www.imf.org/external/pubs/ft/wp/wp98155.pdf.

[9]. Banerjee, Abhijit V. "A Simple Mode of Herd Behavior." *The Quarterly Journal of Economics 107*, No. 3 (1992): 797-817.

[10]. Bapra, E. C. *Modern Capitalism and Economic Crisis*. Joint Publishing, Hongkong, 1975.

[11].   Barber, B. M., and Terrence Odean. "All That Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors." *The Review of Finance Studies 21*, No. 2 (2008): 785－818 .

[12].   Bell, Daniel. *The Coming Post-industrial Society*. Commercial Press, Shanghai, 1986.

[13].   Beracha, Eli and M. Banajide Wintoki. "Forecasting Residential Real Estate Price Changes from Online Search Activity." Journal of Real Estate Research 35, No. 3 (2013): 283-312.

[14].   Bikhchandani, Sushil, David Hirshleifer and Ivo Welch. "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades." *Journal of Political Economy 100*, No. 5 (1992): 992-1026.

[15].   Burbidge, John and Alan Harrison. "Accounting for the Impact of Fluctuations in U.S. Variables on the Canadian Economy." *The Canadian Journal of Economics 18*, No. 4 (1985): 784-798.

[16].   Bushee, John Core, Wayne Guay and Sophia Hamm. "The Role of the Business Press as an Information Intermediary." .*Journal of Accounting Research 48*, No. 1 (2010):1-19.

[17].   Calvo, Guillermo A. "Staggered Prices in a Utility-Maximizing Framework". *Journal of Monetary Economics 12*, No. 3 (1983): 383–398.

[18].   Calvo, Sara and Carmen Reinhart. "Capital Flows to Latin America: is there Evidence of Contagion Effects." *The World Bank Policy Research Working Paper*. May 6th, 1996, http://documents.worldbank.org/curated/en/300461468753000150/Capital-flows-to-Latin-America-Is-there-evidence-of-contagion-effects.

[19].   Campbell, Colin, Leyland F. Pitt, Michael Parent, and Pierre R. Berthon. "Understanding Consumer Conversations around Ads in a Web 2.0 World." *Journal of Advertising 40* (2011):87-102.

[20].   Cao, Haiying. "Rational Consumption and Protection of People's Interest-Media's Role in Expanding Domestic Demand." *Chinese Journalists 6* (2010): 58-59.

[21].   Cao, Jin, and Yuezhi Zhao. *The Political Economy of Communication*. Fudan University Press, Shanghai, 2007.

[22].   Cao, Jin and Yuezhi Zhao. "The Academic Structure of Communication Political Economy." *Nankai Journal 5* (2008):32-43.

[23].   Cao, Peng. "The Influence Economy and Profit Mode of Media." *Journalism and Writing 12* (2001):23-28.

[24].   Cao, Yan and Li Yang. "The Five Roles of Media in the Transitional Age." *News Battleline 1* (2011):72-73.

[25].   Carretta Alessandro, Vincenzo Farina, Duccio Martelli, Franco Fiodelisi, and Paola Schwizer. "The Impact of Corporate Governance Press News on Stock Market Returns." *European Financial Management 17*, No. 1 (2011):100-119.

[26].   Carrington, Tim and Mark Nelson. "Media in Transition. The Hegemony of Economics" in *The Right to Tell: The Role of Mass Media in Economic Growth*.The World Bank, Washington, D.C, 2002:225-245.

[27].   Cashin, Paul, Manmohan Kumar and C. John McDermott. "International Integration of Equity Markets and Contagion Effects." *IMF Working Paper*, Nov. 1st, 1995, https://www.imf.org/en/Publications/WP/Issues/2016/12/30/International-Integration-of-Equity-Markets-and-Contagion-Effects-1911.

[28]. Caster, Newman. *The Rising Internet Society*. Translated by Zhoujiu Xia. Social Science Academic Press, Shanghai, 2001.

[29]. Chan, Wesley. "Stock Price Reaction to News and No-news: Drift and Reversal after Headlines." *Journal of Financial Economic 70*, No. 2 (2003): 223 - 260.

[30]. Chang, Haiqing. "The Measurement of Media Scale and Its Economic Feature." *Economic Management 9* (2004): 24-27.

[31]. Chen, Hong. "The Social Role of Mass Media." *News Lover 6* (2006):13.

[32]. Chen, Jin, Hongxia Zhao, and Jie Zhao. "The Role of New Media in Public Crisis." *Media Observance 9* (2010): 14-15.

[33]. Chen, Shihua. "The Knowledge and Theory of Political Economy of Media in North America." *Zhejiang Communication College 17* (2010):33-39.

[34]. Cheng, Wanyun and Jie Lin. "The Mood of Investors in the Social Media and Stock Market Index." *Management 5* (2013)：111-119.

[35]. Cheng, Xi. "The Supervision on the Economic Situation from Media." *Chinese Journalists 4* (2002):10-12.

[36]. Coibion, Olivier. "Inflation Inertia in Sticky Information Models." *B.E. Journal of Macroeconomics 6*, No. 1 (2006): 1-29.

[37]. Cooke, Philip. "New Media and New Economy Cluster Dynamics" in *Handbook of New Media*. SAGE Publications Ltd*, Thousand Oaks, 2006: 266-325.

[38]. Cooley, Charles Horton. *Social Organization*. Charles Scribner's Sons, New York, 1909.

[39]. Couldry, Nick. "Transvaluing Media Studies: Or, Beyond the Myth of the Mediated Centre" in *Media and Culture Theory*. Routledge, Abingdon, 2005:177-194.

[40].   Couvering, Elizabeth Van. "New Media? The Political Economy of Internet Search Engines." *The Collection of the 2004 Conference of the International Association of Media and Communicating Researchers*, 2004:7-14.

[41].   Coyne, Christopher J. and Peter T. Lesson. "Read All about It! Understanding the Role of Media in Economic Development." *Kyklos 57* (2004):21-44.

[42].   Dai, Liying. "The Ways to Enhance the Economic Coverage in the Financial Crisis." *News Knowledge 8* (2009):46-47.

[43].   Dai, Xiaorong. "The Disfunction of Media." *News Knowledge 11* (2005): 91-93.

[44].   David, Paul A. and Domonique Foray. "Information Distribution and the Growth of Economically Valuable Knowledge: A Rational for Technological Infrastructure Polities." In *Technological Infrastructure Policy: An International Perspective.* Kluwer Academic Publishers, Dordrecht, 1996:87-116.

[45].   Dellas, Harris. "A Real Model of the World Business Cycle." *Journal of International Money and Finance 5*, No. 3 (1986): 381-394.

[46].   Dewdney, Andrew, and Peter Ride. *The Digital Media Handbook*. Routledge, Abingdon, 2006.

[47].   Dewenter, Ralf. "The Economics of Media Markets." *Discussion Paper of University of the Federal Armed Forces Hamburg 10* (2003):1-33.

[48].   Dewey, John. *Democracy and Education*. Macmillan Publishers, Basingstoke, 1916.

[49].   Dewey, John. *Experience and Nature*. Dover Publications, New York, 2000.

[50].   Diken, Peter. *Global Change*. Commercial Press, Shanghai, 2007.

[51].   Djankov, Simeon, Caralee McLiesh, Tatiana Nenova and Andrei Shleifer. "Media Ownership and Prospetity." In *The Right to Tell: The Role of Mass Media in Economic Growt*h. The World Bank, Washington, D.C, 2002: 141-166.

[52]. Doms, Mark E. and Norman J. Morin. "Consumer Sentiment, the Economy, and the News Media." *FRB of San Francisco Working Paper* No. 2004-51, Sep., 2004, https://www.federalreserve.gov/pubs/feds/2004/200451/200451pap.pdf.

[53]. Dupor, Bill, Tomiyuki Kitamura and Takayuki Tsuruga. "Integrating Sticky Prices and Sticky Information." *The Review of Economics and Statistics 92*, No. 3 (2010): 657-669.

[54]. Dyck, Alexander and Luigi Zingales. "The Corporate Governance Role of the Media." *NBER Working Paper*, No. 9309, Nov., 2002, http://www.nber.org/papers/w9309.

[55]. Edison, Hali. "The Reaction of Exchange Rates and Interest Rates to News Release." *International Finance Discussion Paper 2*, No. 2 (1997): 87-100.

[56]. Edwards, Richard. "The Moving Image" in *The New Media Book*. British Film Institute, London, 2004: 157-159.

[57]. Edwards, Sebastian. "Interest Rate Volatility, Capital Controls and Contagion." *Journal of Applied Economics 1* (1998): 55-86.

[58]. Eichengreen, Barry, Andrew Rose and Charles Wyplosz. "Contagious Currency Crisis." *NBER Working Paper*, No. 5681, July, 1996, http://www.nber.org/papers/w5681.

[59]. Everett, M. Rogers. *Communication Technology*. Translated by Keren Zhuang. Taiwan Zhongzheng Publishing, Taiwan, 1988.

[60]. Fand, Lily and Joel Peress. "Media Coverage and the Cross-Section of Stock Returns." *Journal of Finance 64*, No. 5 (2009): 2023－2052.

[61]. Fang, Yanming. "The Function, Task and Role of Media." *Jianghai Journal 1* (2006): 97-103.

[62]. Feng, Jiansan. "The Dialogue between Communication Political Economy and Cultural Research." *Communication and Management 2* (2003): 97-104.

[63]. Figueroa, Borja Mora. "The Development of Transversal Media Corporations." *Journal of Media Business Studies 5*, No. 3 (2008):35-52.

[64]. Ford, James Scott, Ronald C. Rutherford and Abdullah Yavas. "The Effects of the Internet on Marketing Residential Real Estate." Journal of Housing Economics 14, No. 2 (2005): 92-108

[65]. Fuhrer, Jeffrey and George Moore. "Inflation Persistence." *The Quarterly Journal of Economics 110*, No. 1 (1995): 127-159.

[66]. Ganapolsky, Eduardo, and Sergio Schmukler. "The Impact of Policy Announcement and News on Capital Markets: Crisis Management in Argentina during the Tequila Crisis." *The World Bank Working Paper*, July 31st, 1998, http://documents.worldbank.org/curated/en/707701468752985900/The-impact-of-policy-announcements-and-news-on-capital-markets-crisis-management-in-Argentina-during-the-Tequila-Effect.

[67]. Gao, Hongye. *Microeconomics*. Renmin Press, Beijing, 2014.

[68]. Gao, Ya. "The Attention of Media, Returns of Stocks and Market Efficiency." *International Business Association 10* (2012)： 25-30.

[69]. Gavin, Neil. *The Economy, Media and Public Knowledge*. Leicester University Press, London and New York, 1998.

[70]. Gentzkow, Matthew and Jesse Shapiro. "Media Bias and Reputation." *Journal of Political Economy 114* (2006): 280-316.

[71]. Giddens, Anthony. *The Nation State and Violence*. Translated by Zongze Hu. Joint Publishing, 1998.)

[72]. Giddens, Anthony. *Modernity and Self-Identity*. Translated by Zongze Hu. Joint Publishing, Hongkong, 1998.

[73]. Ginning, Carol. "The Development of TV in America." Edited and translated by Hongyu Wen. *International News 5* (1998): 67-72.

[74]. Glick, Reuven and Michael Hutchison. "Financial Liberalization in the Pacific Basin: Implications for Real Interest Rate Linkages." *Journal of the Japanese and International Economics 4*, No. 1 (1990): 36-48.

[75]. Globerman, Steven and Aidan R. Vining. "A Framework for Evaluating the Government Contracting-Out Decision with an Application to Information Technology". *Public Administration Review 56*, No. 6 (1996): 577-586.

[76]. Goldfajn, Ilan and Taimur Baig. "Financial Market Contagion in the Asian Crisis." *IMF Working Paper*, Nov., 1998, https://www.imf.org/external/pubs/ft/wp/wp98155.pdf.

[77]. Goldhaber, Michael H. The Attention Economy and the Net. First Monday 2, No. 4 (1997): http://journals.uic.edu/ojs/index.php/fm/article/view/519/440.

[78]. Groseclose, Tim and Jeffrey Milyo. "A Measure of Media Bias." *The Quarterly Journal of Economics 120*, No. 4 (1997): 1191-1237.

[79]. Guo, Yuan. "The Comparative Analysis on the Reports of Financial Crisis from Different Media in China." *News Lover 11* (2009): 35-36.

[80]. Guo, Zhenzhi. "My Views on Communication Political Economy." *Modern Communication 1* (2002): 34-37.

[81]. Guo, Zhenzhi. "The Agenda-setting Function of Mass Media." *International News 3* (1997): 55-61.

[82]. Hall, Stuart. "Encoding and Decoding in the Television Discourse." *CCCS Selected Working Paper 2*, Sep., 1973, http://epapers.bham.ac.uk/2962/.

[83]. Hall, Robert. "Stochastic Implications of the Life Cycle Permanent Income Hypothesis: Theory and Evidence." *Journal of Political Economy 86*, No. 6 (1978): 971-987.

[84].   Hamermesh, Daniel S. "Maximizing the Substance in the Soundbite: A Media Guide for Economists." *The Journal of Economic Education 35*, No. 4 (2004): 370-382.

[85].   Han, Xiaoyan. "Analysis on the Impact of New Media on Social Economy." *Modern Communication 2* (2013): 101-102.

[86].   Harbeler, Gottfried. *Prosperity and Depression*. University Press of the Pacific, Stockton*, 2001*.

[87].   Hartley, I. V. R. Transmission of Information. *Bell System Technical Journal 7*, No. 3 (1928): 535-563.

[88].   He, Huazheng. "The General Virtualization of Economy and Its Path to Realize during the New Media Era." *Modern Economic Research 2* (2015): 34-38.

[89].   Heller, Agnes. *Everyday Life*. Chongqing Press, Chongqing, 1993.

[90].   Herman, Edward. "The Media and Markets in the United States" in *The Right to Tell: The Role of Mass Media in Economic Growth*. The World Bank, Washington, D.C, 2002: 61-82.

[91].   Hickman, Bert and Victor Filatov. "A Decomposition of International Income Multipliers" in *Global Econometrics*. The MIT Press, Cambridge, 1983.

[92].   Hippel, Eric von. "'Sticky Information' and the Locus of Problem Solving: Implications for Innovation." *Management Science 40*, No. 4 (1994): 429-439.

[93].   Holtz-Bacha, Christina. "Development of the German Media Market: Opportunities and Challenges for U.S. Media Firms." *Journal of Media Economics 10*, No. 4 (1997): 39-58.

[94].   Hovland, Carl Irer, Irving Lester Janis and Harold H. Kelley. *Communication and Persuasion*. Greenwood Press, Westport, 1953.

[95].   Hong, Harrison, Jeffrey Kubik and Jeremy Stein. "Social Interaction and Stock-Market Participation." The Journal of Finance 59, No. 1 (2004): 137-163.

[96].   Hong, Harrison, Jeffrey Kubik and Jeremy Stein. "Thy Neighbor's Portfolio:
Word of Mouth Effects in the Holdings and Trades of Money Managers." *The
Journal of Finance 60*, No. 6 (2005): 2801-2824.

[97].   Hu, Lin and Ningfeng Sun. "The Cultural Productivity and Media
Management in America." *Modern Communication 2* (2004)：44-45.

[98].   Huang, Hui. "An Empirical Research on Market Reaction and Firm
Performance after Negative Media Coverage." *China Soft Science 8* (2013):
104-116.

[99].   Huang, Lei and Li Ming. "Analysis of the Impact of media on Capital Market."
Times Finance 8 (2012):265.

[100].   Hubbard, Jeffrey, Melvin DeFleur and Lois Defleur. "Mass Media Influences
on Public Conceptions of Social Problems." *Social Problems 23*, No.1
(1975):22-34.

[101].   Hutchins, Robert. *A Free and Responsible Media*. Columbia University Press,
New York, 1947.

[102].   Innis, Harold A. *The Bias of Communication*. University of Toronto Press,
Toronto, 1991.

[103].   Islam, Roumeen. "Into the Looking Glass: What the Media Tell and Why—An
Overview" in *The Right to Tell: The Role of Mass Media in Economic Growt*h. The
World Bank, Washington, D.C, 2002: 1-23.

[104].   Islam, Roumeen, Djankov Simeon and Caralee McLeish. "The Right to Tell:
The Role of Mass Media in Economic Growth." *The World Bank Development
Studies*, Nov. 30th, 2002,
http://documents.worldbank.org/curated/en/957661468780322581/The-right-t
o-tell-the-role-of-mass-media-in-economic-development.

[105]. Ji, Xinqing. "The Role of Mass Media and Transparency of Government Information." *China's Political Management 11* (2004): 50-53.

[106]. Jia, Luping, Peng Li and Aihua Wang. "The Role of Traditional Media in Public Crises." *News and Communication 1* (2011): 22-24.

[107]. Jiang, Jianguo. "The Lack of Western Media Social Responsibility and The Broadcasting of Consumption Culture." *News and Communication 6* (2009): 64-70.

[108]. Jiang, Lin. *The Psychology and Behavior of Consumers*. Renmin University Press, Beijing, 2011.

[109]. Jin, Bei. IT Industry and the Development of Media Economy." *Economic Theory and Business Management 12* (2002): 24-29.

[110]. Joe, Jennifer R., Henock Louis and Dahila Robinson. "Managers' and Investors' Responses to Media Exposure of Board Ineffectiveness." *The Journal of Financial & Quantitative Analysis 44*, No. 3 (2009):579-605.

[111]. Kahneman, Daniel and Amos Tversky. "Prospect Theory: An Analysis of Decision under Risk." *Econometrics 47*, No. 2 (1979): 263-292.

[112]. Kaminsky, Glaceila and Sergio Schmukler. "What Triggers Market Jitters? A Chronic of Asian Crisis." *The World Bank Working Paper*, April 30th, 1999, http://documents.worldbank.org/curated/en/698861468770046050/What-triggers-market-jitters-A-chronicle-of-the-Asian-crisis.

[113]. Katahira, Hotaka. *Principles of Power Brands*. Translated by Yanyan Lin. Orient Publishing Center, Shanghai, 2007.

[114]. Kim, Jeong-Bon. "Can Media Exposure Improve Stock Price Efficiency in China and Why?" *China Journal of Accounting Research 9*, No. 2 (2016): 83-114.

[115]. Kong, Aiguo. "The New Media in China in the Financial Crisis." *Advertising Industry 12* (2008): 94-96.

[116]. Lagerwall, Bjorn. *Empirical Studies of Portfolio Choice and Asset Prices*. Elanders Gotab, Stockholm, 2004.

[117]. Lasswell, Horald D. *The Structure and Function of Communication in Society*. Harper and Brothers, New York, 1948.

[118]. Lazarev, Ф.В. *The Cognitive Structure of Scientific Revolution*. Translated by Yanyan Liu. Hunan Press, Changsha, 1986.

[119]. Lazarfeld, Ralph F. *People's Choice*. Renmin University Press, Beijing, 2012.

[120]. Leng, Song. "The Role of Media in the Crisis." *China TV 9* (2005): 31-35.

[121]. Lessig, V. Parker and C. Whan Park. "Promotional Perspectives of Reference Group Influence: Advertising Implications". *Journal of Advertising 7*, No. 2 (1978): 41-47.

[122]. Leube, Kurt R. and Thomas Gale Moore. *The Essence of Stigler*. Commercial Press, Shanghai, 1999.

[123]. Li, Baoping. "Make Good Use of Media." *China Radio and TV Academic Journal 5* (2010): 32-33.

[124]. Li, Benqian. *Media Economy and Chinese Economy*. Shanghai Jiaotong University Press, Shanghai, 2010.

[125]. Li, Guoping. "The Freedom of Economic News and the Efficiency of Capital Market." *Shanghai Lixin Accounting College Journal 22*, No. 2 (2008): 69-75.

[126]. Li, Kaiyi. "The Role of Media in Government's Dealing with Crisis." *Exploration and Free Views 10* (2009): 27-29.

[127]. Li, Haiqing. "The Role of Media Opinion Directing in the Globalization Age." *News Knowledge 12* (2010): 8-9.

[128]. Li, Heping. "The Role of Media to Technological Progress." *Technology and Dialectics 6* (2000): 45-47.

[129].   Li, Jiansong. "The Role of Media in the Public Crisis." *China Communication and TV Journal 6* (2010): 20-21.

[130].   Li, Jianxin. "The Comparison of New and Traditional Media." *Media Observation 5* (2010): 38-39.

[131].   Li, Jing. "The Revolution Caused by New Media's Advertising." *Modern Economic Information 22* (2009): 16-17.

[132].   Li, Kun. "The Communication Political Economy and Its Practical Meaning." *International Political Research 4* (1998): 101-105.

[133].   Li, Ling. "The Changing Role of China's Media in the Late 20th Century." *Publishing Research 5* (1999): 21-23.

[134].   Li, Liangrong. *The Theory of Journalism*. Fudan University Press, Shanghai, 2007.

[135].   Li, Peigong, and Yifeng Shen. "The Role of Media in Company Governance: China's Experience." *Economic Review 4* (2010): 14-27.

[136].   Li, Yun, and Guojing Qiu. "The Influence of New Media on Economic Crisis and Empirical Research." *Academic Monthly 5* (2010): 84-90.

[137].   Li, Yun, and Guojing Qiu. "The Influence of New Media on Consumption During the Financial Crisis and Empirical Research." *The Fifth Conference of Political Economy* (2010): 17-23.

[138].   Li, Yun. *Research on the Impact of Media on Economic Crisis*. Fudan University Press, Shanghai, 2018.

[139].   Lin, Hui. "The Opinion Trap of Private Enterprises." *News and Communication 3* (2007): 56-63.

[140].   Lipmann, Walter. *Public Opinion*. Translated by Kewen Yan and Hong Jiang. Shanghai Renmin Press, Shanghai, 2006.

[141]. Liu, Hong. "The Dual Role of China's Media: Conflict and Complement." *Modern Communication 4* (2000): 21-23.

[142]. Liu, Hongmei. "The Criticism on Western Communication Political Economy." *News Communication 2* (2010): 91.

[143]. Liu, Jianming. "The History and Future of Global Media." *Media Observation 8* (2007): 42-46.

[144]. Liu, Xiaohong. "Mass Media and Public Field-The Views on Media Political Economy." *News 3* (2005): 75-76.

[145]. Liu, Xiaohong. "Coexistence, Conflict and Lesson-The Evolution of the Relations between Media Political Economy and Cultural Research." *News and Communication 12*, No. 1 (2005): 49-53.

[146]. Liu, Xiaohong. "The Global Consumers—The Criticism on the Global Media from the Perspective of Media Political Economy." *Sociologist 5* (2005): 218-220.

[147]. Liu, Yuhui. "The Empirical Analysis on the Response Mode of Information in China's Stock Market." *Management 8* (2003): 14-20.

[148]. Longo, G. *Information Theory: New Tendency and the Problem Unsolved*. Springer Publishing, New York, 1976.

[149]. Lu, Cairong and Xiujun Wang. "Highlight the importance of New Media's Role in Establishing a Harmonious Society." *Chinese Cadres Tribune 1* (2006): 35-38.

[150]. Lu, Fansheng. "The Role of Media in Constructing the Harmonious Society." *News Lover 9* (2005): 1.

[151]. Lucus, Robert E. "Asset Prices in Exchange Economy." Econometrica 46, No. 6 (1978): 1429-1445.

[152]. Ludlow, Rosemary. *New Media Meets the South*. Webster University, ProQuest Dissertations Publishing, Wester Groves, 2007.

[153]. Lunenburg, Marion A. van. A Content Newspaper Analysis of Dutch industry. *Corporate Communications: An International Journal 7*, No. 2 (2002):126-135.

[154]. Ma, Teng. "The Application Value of Media in Brand Spreading and some Problems*." Shandong Sociology 8* (2009): 39-42.

[155]. Magill W. G., B. S. Felmingham and G. M. Wells. "Cyclical Interdependencies between Nations in the Pacific Basin." *Economia Internationale 5* (1981):15-21.

[156]. Maletzke, Gerhard. "Psychology of Mass Communication." *Comunicologos* (1963), https://www.comunicologos.com/english-version/theories/maletzke-s-model/

[157]. Mankiw, N. Gregory and Ricardo Reis. "Sticky Information: A Model of Monetary Non-Neutrality and Structural Slumps." *NBER Working Paper*, No. 8614, Dec., 2001, http://www.nber.org/papers/w8614.

[158]. Mankiw, N. Gregory   and Ricardo Reis. "Imperfect Information and Aggregate Supply." NBER Working Paper, No. w15773, Mar. 1st, 2010, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1560909.

[159]. Manovich, Lev. *The Language of New Media*. MIT Press, Cambridge, 2001.

[160]. Mansell, Robin. "Political Economy, Power and New Media" in *New Media and Society*. SAGE Publications, Thousand Oaks, 2004: 74-83.

[161]. Marschak, Jacob. "Role of Liquidity under Complete and Incomplete Information". *The American Economic Review 39*, No. 3 (1949): 182–195

[162]. Marshall, Alfred. *Elements of Economics of Industry*. Macmillan and CO, London and New York, 1892.

[163]. Marx, Karl. *Capital* (1–3). Renmin Press, Beijing, 2004.

[164]. Marx, Karl and Friedrich Engels. *The Collection of Marx and Engle*s (3). Renmin Press, Beijing, 2008.

[165]. Marx, Karl and Friedrich Engels. *The Collection of Marx and Engle*s (21). Renmin Press, Beijing, 2008.

[166]. Marx, Karl and Friedrich Engels. *The Collection of Marx and Engle*s (26). Renmin Press, Beijing, 2008.

[167]. Masson, Paul. "Contagion: Monsoonal Effects, Spillovers, and Jumps Between Multiple Equilibria." *IMF Working Paper*, Sep. 1st, 1998, https://www.imf.org/en/Publications/WP/Issues/2016/12/30/Contagion-Monsoonal-Effects-Spillovers-and-Jumps-Between-Multiple-Equilibria-2755..

[168]. McCombs, Maxwell and Donald Shaw. "The Agenda-setting Function of Mass Media." *The Public Opinion Quarterly 36*, No. 2 (1972): 176-187.

[169]. McKercher, Catherine and Vincent Mosco. "Knowledge Workers in the Information Society." Lexington Books, Lexington, 2008.

[170]. McLuhan, Marshall. "The Later Innis." *Queen's Quarterly 60*, No. 3 (1953): 385–394.

[171]. McLuhan, Marshall. *Understanding Media*. MIT Press, Cambridge, 1964.

[172]. Mcquail, Denis. *Mass Communication Theory*. Qinghua University Press, Beijing, 2009.

[173]. Mendelssohn, L. A. *The Theory and History of Economic Crisis and Cycle*. Translated by Zhu Si. Joint Publishing, Hongkong, 1975.

[174]. Meng, Jin. "To Face the Challenge of 'Attention Economy'." *News World 8* (2001): 12-16.

[175]. Mercille, Julien. "The Role of the Media in Sustaining Ireland's Housing Bubble." *New Political Economy 19*, No. 2 (2014): 282-301.

[176]. Meschke, Felix. "CEO Interviews on CNBC (June 2004)." AFA 2003 Washington, DC Meetings. Available at *SSRN:* https://ssrn.com/abstract=302602.

[177]. Meyrowitz, Joshua. *No Sense of Place: The Impact of Electronic Media on Social Behavior*. Oxford University Press, Oxford, 1986.

[178]. Molinari, Benedetto. "The Role of Sticky Information in Dynamics of Inflation: Estimates and Findings", Temi di Ricerca (2006).

[179]. Motaga, Katahir. *Principles of Power Brands*. Translated by Lin Yanyan. Joint Publishing, Hongkong, 2017.

[180]. Mowat, C. L. *The New Cambridge Modern History*. China's Sociology Press, Beijing, 1988.

[181]. Nermuth, M. and H. P. Kunzi. *Information Structures in Economics: Studies in the Theory of Markets with Imperfect Information*. Springer Publishing, New York, 1982.

[182]. Neumann, Elisabeth Noelle. *The Spiral of Silence: Public Opinion--Our Social Skin*. University of Chicago Press, Chicago, 1993.

[183]. Nguyen, Bang Dang. "Is More News Good News? Media Coverage of CEOs, Firm Value, and Rent Extraction." *Quarterly Journal of Finance 5*, No. 4 (2015): 1-38.

[184]. Niederhoffer, Victor and Laurel Kenner. *Practical Speculation*. Wiely and Sons, New Jersey, 2003.

[185]. Niederhoffer, Victor "The Analysis of World Events and Stock Prices." The Journal of Business 44, No. 2 (1971): 193-219

[186]. Noelle-Neumann, Elisabeth. *The Spiral of Silence: Public Opinion--Our Social Skin*. University of Chicago Press, Chicago, 1993.

[187]. North, Douglass. *The Evolution of Property Rights and Institutions*. Translated by Shouying Liu. Shanghai Renmin Press, Shanghai, 2000.

[188]. Owen, Bruce. "Media as Industry" in *The Right to Tell: The Role of Mass Media in Economic Growth*. The World Bank, Washington, D.C, 2002:167-186.

[189].   Owen, Bruce M., Jack H. Beebe and Willard G. Manning. *Television Economics*. Lexington Books, New York, 1974.

[190].   Owen, Bruce M. and Steven Wildman. *Video Economics*. Harvard University Press, Cambridge, 1992.

[191].   Pagani, Margherita. "Interactive Television: A Model of Analysis of Business Economic Dynamics." *International Journal on Media Management 2*, No. 1 (2000): 25-37.

[192].   Palmer, R. R., Joel Colron and Lloyd Kramer. *A History of Modern World.* World Publishing, Beijing, 2011.

[193].   Park, Robert. *The Immigrant Press and Its Control*. Harper and Brothers, New York, 1922.

[194].   Peng, Xingyun. "Sticky Information Economics." *Economic Review 12* (2011): 15-20.

[195].   Picard, Robert G. *Media Economics: Concepts and Issues*. SAGE Publications, Thousand Oaks, 1989.

[196].   Picard, Robert G. *"*Effects of Recession on Advertising Expenditure." *Journal of Media Economics 14*, No. 1 (2001):1-14.

[197].   Picard, Robert G. and Tony Rimmer. "Weathering a Recession: Effects of Size and Diversification on Newspaper Companies." *Journal of Media Economics 12*, No. 1 (1999): 1-18.

[198].   Pollock, Timothy G. and Violin P. Rindova. "Media legitimation effects in the market for initial public offerings." *Academy of Management Journal 46*, No. 5 (2003): 631-642.

[199].   Popov, M. F. "The Cycle of Capitalism Yesterday and Today." *Journal of Translation from International Economy 2* 1990: 6-10.

[200]. Qiao, Mu. "The Empirical Analysis on Media's Impact on Sino-US Relationship." *Contemporary Media 2* (2002): 21-23.

[201]. Qin, Wanshun, Yunhui Jin, and Yongxiang Bu. "The Correlation between China's Economic Cycle and World Economic Cycle." *Learning and Practice 2* (2002): 26-31.

[202]. Radenkovic, Vladimir, Miodrag Radenkovic, and Kristina Engus. Media and Social Responsible Business: A Serbian Model. *African Journal of Business Management 4*, No. 16 (2010): 3433-3439.

[203]. Rao, Yulei, Diefeng Peng and Dachao Cheng. "Would Media Attention Lead to Abnormal Returns of Stock?" *Theory and Practice of System Engineering 2* (2010): 287-297 .

[204]. Reilly, John W. *Mass Communication and the Social System*. Harvard University Press, Cambridge, 1959.

[205]. Reis, Ricardo. "Inattentive Producers." *The Review of Economic Studies 73* (2006): 793-821.

[206]. Reis, Ricardo. "Inattentive Consumers." *Journal of Monetary Economics 53*, No. 8 (2006): 1761-1800.

[207]. Rijckeghem, Caroline Van and Beatrice Weder. "Sources of Contagion: Finance or Trade?" *Journal of International Economics 54,* No.2 (2001) : 293-308.

[208]. Roloff, Michael E. *Interpersonal Communication: The Social Exchange Approach*. SAGE, Thousand Oaks, 1981.

[209].   Romer, Paul M. "The Origins of Endogenous Growth". *The Journal of Economic Perspectives 8*, No. 1(1994) : 3–22

[210]. Samuelson, Paul A. " The Pure Theory of Public Expenditure." *The Review of Economics and Statistics 36*, No. 4 (1954): 387-389.

[211]. Say, Jean B. *A Treatise on Political Economy*. Claxton, Remsen & Haffelfinger, Philadelphia, 1880.

[212]. Scharfstein, David S. and Jeremy C. Stein. "Herd Behavior and Investment." *American Economic Review 80*, No. 3 (1990): 465-479.

[213]. Scholl, Rosanne M. *Political and Economic Communication: Media Effects on Economic Attitudes*. The University of Wisconsin Press, Madison, 2008.

[214]. Schramm, Wilbur. *The Process and Effects of Mass Communications*. Xinhua Press, Beijing, 1984.

[215]. Selover, David. "Interdependence in the Pacific Basin: A Vector Auto-regression Approach." *Unpublished Working Paper*, 1991.

[216]. Selover, David. "Business Cycle Transmission between the United States and Japan: A Vector Error Correction Approach." *Japan and the World Economy 9*, No. 3 (1997): 385-411.

[217]. Seren, M. "The Worsening of Economic Crisis in 1970s and 1980s." *Journal of Translation from International Economy 5* (1988): 1-7.

[218]. Severin, Werner and James W. Tankard. *Communication Theories: Origins, Methods and Uses in the Mass Media.* Addison Wesley Longman, Inc, 2000*:* 5.

[219]. Sharron, Claude. *The Mathematical Theory of Communication*. University of Illinois Press, Champaign, 1949.

[220]. Shi, Xuejun. "Competition and the Disclosed Facts of Our Media Industry." *Advertising Panorama 4* (2014): 46-57.

[221]. Shi, Yibing and Zhuo Zhang. "The Reconstruction of Media's Role in Public." *Modern Media 3* (2005): 132-133.

[222]. Shiller, Robert. *Irrational Exuberance*. Princeton University Press, Princeton，2000.

[223]. Smythe, Dallas W. D*ependency Road: Communications, Capitalism, Consciousness and Canada*. Ablex Publishing, Norwood, 1981.

[224]. Solow, Robert M. "A Contribution to the Theory of Economic Growth". *Quarterly Journal of Economics 70*, No. 1 (1956): 65–94.

[225]. Spencer, Michael. "Job Market Signaling". *The Quarterly Journal of Economics 87*, No. 3 (1973):355-374.

[226]. Stiglitz, George Joseph. "The Contributions of the Economics of Information to Twentieth Century Economics." *The Quarterly Journal of Economics* 115, No. 4 (2000): 1441-1478.

[227]. Stiglitz, George Joseph. "The Economics of Information." Journal of Political Economy 69, No. 3 (1961): 213-225

[228]. Stiglitz, George Joseph. "Transparency in Government" in *The Right to Tell: The Role of Mass Media in Economic Growth*. The World Bank, Washington, D.C, 2002:27-44.

[229]. Stiglitz, Joseph E. "Theory of Liquidity Preference and the Term Structure of Interest Rates." *Cowles Foundation Discussion Papers 252*, 1968, https://ideas.repec.org/p/cwl/cwldpp/252.html.

[230]. Sun, Daoyuan, Ce Zhang, Wei Xu, Mei Yun Zuo, Junjie Zhou, and Yudie Du. "Does Web News Media Have Opinions: Evidence from Real Estate Market Prediction." *Proceedings of the 18th Pacific Asia Conference on Information Systems*, 2014, https://aisel.aisnet.org/pacis2014/374 .

[231]. Sutter, Daniel. "Can the Media Be So Liberal? The Economics of Media Bias." *Cato Journal 20*, No. 3 (2001):431-452.

[232]. Tan, Shu. "The Role of TV in Solving Social Problem." *News 3* (2010): 118-120.

[233]. Tarde, Gabriel. *The Law of Imitation*. Henry Holt and Company, New York, 1903.

[234]. Tarde, Gabriel. *Opinion and Conversation*. Henry Holt and Company, New York, 1901.

[235]. Taylor, John B. "Aggregate Dynamics and Staggered Contracts." *The Journal of Political Economy 88*, No. 1 (1980): 1-23.

[236]. Tetlock, Paul C. "Giving Content to Investor Sentiment: The Role of Media in the Stock Market." *The Journal of Finance 62*, No. 3 (2007): 1139－1168．

[237]. Tian, Gaoliang, Hua Feng, and Zhongbo Yu. "The Corporate Governance Role of Media Coverage in Capital Market." *Accounting Research 6*, (2016): 21-26.

[238]. Toussaint-Desmoulins, Nadine. *Media Economy*. China Media College Press, Beijing, 2012.

[239]. Toffler, Alvin. The Third Wave. *William Morrow &Co Inc*, New York, 1980.

[240]. Vandell, Kerry D. and Richard K. Green. "The Impact of Technology and the Internet on Commercial Real Estate." *The National Association of Realtors Transact 2000 Conference Paper*, Sep. 15[th]th, 2000, https://s3.amazonaws.com/academia.edu.documents/30771322/Technology_RealEstate.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1538011439&Signature=8sy5Vv9EwVZr9lvAIktd3SPw9XM%3D&response-content-disposition=inline%3B%20filename%3DThe_Impact_of_Technology_and_the_Interne.pdf.

[241]. Varian, Hal. *Intermediate Microeconomics: A Modern Approach (Eighth Edition)*. W. W. Norton & Company, New York, 2009.

[242]. Walker, Clive B. "Housing Booms and Media Coverage." *Applied Economics 46*, No. 32 (2014):3954-3967.

[243]. Wang, Luolin and Jingwen Li. *The Analysis and Prediction of China's Economic Situation*. Social Science Academic Press, Beijing, 2002.

[244]. Wang, Mingliang. "The Mechanism of the Potential Negative Role of Internet on Conviction and Sentencing." *Modern Law Science 28*, No. 6 (2006): 172-179.

[245]. Wang, Xuanlong. "The Role of Mass Media in Knowledge Economy Age." *Economic Forum 24* (2004): 143-144.

[246]. Wang, Yu. "The Role of Foreign Media in Restraining Corruption." *China's Communist Leader Forum 10* (2002): 54-56.

[247]. Wang, Yun. "A Brief Analysis on the Impact of New Media on Social Economy." *New Media Research 3* (2016): 50-56.

[248]. Waterman, David. "A Model of Vertical Integration and Economies of Scale in Information Product Distribution." *Journal of Media Economics 6*, No. 3 (1993): 23-35.

[249]. Wen, Xue, and Lifeng Huang. "The Analysis on the Change in Learning Methods from the Perspective of Media in Web 2.0." *Academic Forum 12* (2008): 33-35.

[250]. Wilhelm, Richard, Cary Baynes (translators). *Books of Changes*. Princeton University Press, Princeton, 1967.

[251]. Wiener, Norbert. *Cybernetics: Or the Control and Communication in the Animal and the Machine*. Peking University Press, Beijing, 2007.\

[252]. Wright, Charles Robert. *Mass Communication: A Sociological Perspective.* McGraw-Hill College, New York, 1986.

[253]. World Bank. *World Development Report 2002: Building Institutions for Markets*. New York: Oxford University Press, 2001.

[254]. Wu, Jiapei, Kang Xie and Minglang Wang. *Information Economics*. Higher Education Press, 1991.

[255]. Wu, Xiaoming. "Media's Role in Public Event." *Jianghai Journal 6* (2009): 205-211.

[256]. Wu, Xinxun, Guanjun Jin and Hailin Li. *Modern Media Economics*. Fudan University Press, Shanghai, 2005.

[257]. Xiang, Huaquan. "The Special Role of Media in Constructing a Service-oriented Government." *Theory and Practice 4* (2006): 83-85.

[258]. Xing, Lei. "The Impact of New Media Marketing on National Economy." *China Journal of Commerce 8* (2016): 7-8.

[259]. Xue, Jingxiao, and Bing Zhang. "The Difference or Similarity in the Economic Cycles in East Asian Countries." *Economic Review of Nankai University 4* (2001): 3-10.

[260]. Yan, Gongjun. "The Special Role of New Media in Constructing Civil Society." *Modern Media 4* (2009): 82-84.

[261]. Yang, Boshu and Lingling Li. "The Evolution of Capitalist Consumption, Media's Role and Globalization." *News and Communication 1* (2001): 36-45.

[262]. Yang, Jidong. "Does Media Influence Investors' Behavior?" *Finance Research 11* (2007): 93-102.

[263]. Yand, Jirui. "The Positive Role of Internet Economy on the Real Estate Sector." *Reform of Economic System 1* (2003): 25-29.

[264]. Yang, Kui and Enying Jing. "Media's Role in the Formation of Modern Consumption Culture." *Lanzhou University Journal 32*, No. 1 (2004): 79-83.

[265]. Ye, Lu and Yinghao Zhang. "The Role of Media in Extreme Event Reports." *Media Observation 10* (2010): 42-43.

[266]. Yu, Zhongbo, Gaoliang Tian, Baolei Qi and Hao Zhang. "The Corporate Governance Mechanism of Media Coverage—A Survey Based on Earning Management." *Management World 9* (2011): 127-140.

[267]. Yu, Zhongbo, Tiangao Liang and Yongmei Zhang. "Media Coverage, Institutional Development and Market Reaction to Earnings: A Further Investigation about Market Pressure Hypothesis." *Accounting Research 9* (2012): 40-51.

[268]. Yu, Guoming. "The Media Brand from the Perspective of Attention Economy." *Modern Advertising 5* (2000): 31-35.

[269]. Yu, Guoming. "Attention Economy-An Interpretation of Media Industry's Nature." *News Battleline 6* (2003): 7-12.

[270]. Yu, Guoming and Biao Li. "The Analysis on the First-round Reports of Financial Crisis." *Journalism and Media Study 2* (200): 11-18.

[271]. Yu, Guoming and Biao Li. "How to Report the Current Financial Crisis." *Communication and Writing 4* (2009): 73-75.

[272]. Zhang, Bing. "The Analysis on the Synchronization of China and America Economic Cycles and the Mechanism." *World Economic Research 10* (2006): 28-33.

[273]. Zhang, Chun, and Mingming Wu. "The Role of the Media in Capital Market: Information Interpretation or Information Discovery." *Journal of Finance and Economics 41*, no. 12 (2015): 72-83.

[274]. Zhang, Guoqing. "The Self-Discipline of U.S. Media." *Academic Monthly 11* (2005): 36-37.

[275]. Zhang, Renchang. "Media's Responsibility and Role in Low-Carbon Economy." *China's TV Journal 4* (2010): 81-82.

[276].   Zhang, Ting, and Qian Zhong. "The Role of Mobile Media in Unexpected Events." *Media Observation 12* (2009): 46-47.

[277].   Zhang, Weiping. "The Role of Media in Unexpected Events." *Xinjiang University Journal 34*, No. 2 (2006): 15-19.

[278].   Zhang, Xiaobing. "The Crisis of Traditional Media Industry and Media Responsibility in the Financial Crisis." *Southern Journal 7* (2009): 47-48.

[279].   Zhang, Xiaoqun. *Media Efficiency and Economic Growth*. Social Science Academic Press, Beijing, 2009.

[280].   Zhang, Xiaoqun. "Media's Role in Economic Development." *Theoretical Research and Empirical Analysis 4* (2004): 57-64.

[281].   Zhang, Xiaoqun. "Media's Role in Institutional Reform—based on Theoretical Analysis and Empirical Analysis on China." China Media Report 22 (2007): 21-26.

[282].   Zhang, Zhongren. "The Third Dimension of Market." *Shimane Journal of Policy Studies 10* (2005): 19-29.

[283].   Zhao, Gaohui. *The Political Role of Internet from the Perspective of Public*. Fudan University Press, Shanghai, 2010.

[284].   Zhao, Luping and Zhiang Zhang. "Media's Role Dealing with Public Events." *Jianghuai Journal 5* (2006): 187-189.

[285].   Zhao, Shuguang. "Whether the Newpapers is Captivated by Real Estate Developers?" *Media Observer 7* (2005): 17-19.

[286].   Zhao, Yulin. *Economics Dictionary*. China Economic Pressing, Beijing, 1990.

[287].   Zhao, Yue. "The Impact of New Media on Economy." *Market Modernization 7* (2015): 266.

[288]. Zeng, Peng. "Research on the Impact of the Development of New Media on Traditional Economy." *China Journal of Commerce 3* (2016): 159-161.

[289]. Zhong, Jianqian. "The Economic Report of Financial Crisis." *New Economic Magazine 8* (2009): 66-67.

[290]. Zhou, Hongduo. *The Textbook of Media Economics*. Beijing Economy and Finance University Press, Beijing, 2007.

[291]. Zhou, Xiao. "The Power of New Media on Industrial Structure." *Economic Management 18* (2006): 62-67.

[292]. Zhou, Yun. "The three Theories of Media Economics." *Chongqing Broadcasting and TV University Journal 2*, 2008: 43-45.

[293]. Zhu, Lili. "The Meaning of Globalization of Media Economy." *News Knowledge 1* (2004): 14-15.

[294]. Zhu, Xiaoping. "The Impact of New Media on the Economic Living Patterns —Taobao as a Case Study." *Today's Mass Media 8* (2011): 95-96.

[295]. Zumpano, Leonard, Ken H. Johnson and Randy I. Anderson. "Internet Use and Real Estate Brokerage Market Intermediation." *Journal of Housing Economics 12*, No. 2 (2003): 134-150.

DATA AND STATISTICAL APPENDIX

1. Data of Internet user scale

Internet user scale (ten thousand)	Nationwide	Beijing	Shanghai	Guangdong
1996	62			
1997	117.5			
1998	210			
1999	890			
2000	2250			
2001	3370			
2002	5910			
2003	7950	398	431.6	950.2
2004	9400	402	441	1188
2005	11100	428	463	1486
2006	13700	468	510	1831
2007	21000	737	830	3344
2008	29800	980	1110	4554
2009	38400	1103	1171	4860
2010	45730	1218	1239	5324
2011	51310	1379	1525	6300
2012	56400	1458	1606	6627
2013	61758	1556	1683	6992
2014	64875	1593	1716	7286

2. Data of other media user scale

Mobile	Internet user scale (ten thousand)
June 2006	1300
December 2006	1700

June 2007	4423
December 2007	5040
June 2008	7305
December 2008	11760
June 2009	25548
December 2009	23344
June 2010	27678
December 2010	30274
June 2011	31768
December 2011	35558
June 2012	38825
December 2012	41997
June 2013	46376
December 2013	50006
June 2014	52705
December 2014	55678

WeChat	Monthly active account size（million）
March 2012	59.2
June 2012	85.2
September 2012	121.2
December 2012	157.9
March 2013	194.4
June 2013	235.8
September 2013	336
December 2013	355
March 2014	396
June 2014	438
September 2014	468

December 2014	500

QQ	Monthly active account size（billion）
June 2004	1.101
September 2004	1.19
December 2004	1.35
March 2005	1.492
June 2005	1.731
September 2005	1.848
December 2005	2.019
March 2006	2.205
June 2006	2.242
September 2006	2.214
December 2006	2.326
March 2007	2.537
June 2007	2.732
September 2007	2.887
December 2007	3.002
March 2008	3.179
June 2008	3.419
September 2008	3.551
December 2008	3.766
March 2009	4.108
June 2009	4.48
September 2009	4.849
December 2009	5.229
March 2010	5.686
June 2010	6.125
September 2010	6.366

December 2010	6.476
March 2011	6.743
June 2011	7.019
September 2011	7.117
December 2011	7.21
March 2012	7.519
June 2012	7.836
September 2012	7.839
December 2012	7.982
March 2013	8.254
June 2013	8.185
September 2013	8.156
December 2013	8.08
March 2014	8.48
June 2014	8.29
September 2014	8.2
December 2014	8.15
March 2015	8.32

3. H–P filter data and results

Beijing

Month	Price	Trend	Cycle	Month	Price	Trend	Cycle
2004M12	1000	912.23	87.77	2010M03	3600	3505.07	94.93
2005M01	1019	938.22	80.78	2010M04	4012	3573.67	438.33
2005M02	1031	964.21	66.79	2010M05	4102	3641.89	460.11
2005M03	1064	990.22	73.78	2010M06	4188	3709.49	478.51
2005M04	1099	1016.26	82.74	2010M07	4144	3776.29	367.71
2005M05	1129	1042.36	86.64	2010M08	4150	3842.14	307.86
2005M06	1108	1068.54	39.46	2010M09	4241	3906.88	334.12

2005M07	1135	1094.84	40.16	2010M10	4307	3970.41	336.59
2005M08	1173	1121.29	51.71	2010M11	4335	4032.64	302.36
2005M09	1181	1147.93	33.07	2010M12	4406	4093.50	312.50
2005M10	1181	1174.80	6.20	2011M01	4516	4152.94	363.06
2005M11	1191	1201.96	−10.96	2011M02	4627	4210.95	416.05
2005M12	1208	1229.43	−21.43	2011M03	4669	4267.52	401.48
2006M01	1198	1257.27	−59.27	2011M04	4692	4322.68	369.32
2006M02	1210	1285.52	−75.52	2011M05	4684	4376.50	307.50
2006M03	1266	1314.22	−48.22	2011M06	4677	4429.04	247.96
2006M04	1307	1343.40	−36.40	2011M07	4695	4480.43	214.57
2006M05	1339	1373.10	−34.10	2011M08	4710	4530.77	179.23
2006M06	1379	1403.33	−24.33	2011M09	4696	4580.21	115.79
2006M07	1428	1434.13	−6.13	2011M10	4653	4628.90	24.10
2006M08	1442	1465.52	−23.52	2011M11	4565	4676.99	−111.99
2006M09	1493	1497.52	−4.52	2011M12	4454	4724.64	−270.64
2006M10	1480	1530.15	−50.15	2012M01	4388	4772.01	−384.01
2006M11	1486	1563.44	−77.44	2012M02	4394	4819.23	−425.23
2006M12	1503	1597.40	−94.40	2012M03	4480	4866.40	−386.40
2007M01	1501	1632.04	−131.04	2012M04	4559	4913.59	−354.59
2007M02	1523	1667.38	−144.38	2012M05	4603	4960.87	−357.87
2007M03	1546	1703.40	−157.40	2012M06	4615	5008.25	−393.25
2007M04	1616	1740.09	−124.09	2012M07	4692	5055.73	−363.73
2007M05	1652	1777.44	−125.44	2012M08	4768	5103.28	−335.28
2007M06	1689	1815.39	−126.39	2012M09	4855	5150.86	−295.86
2007M07	1781	1853.93	−72.93	2012M10	4938	5198.39	−260.39
2007M08	1865	1892.98	−27.98	2012M11	5014	5245.77	−231.77
2007M09	1988	1932.51	55.49	2012M12	5100	5292.88	−192.88
2007M10	2148	1972.45	175.55	2013M01	5213	5339.61	−126.61
2007M11	2312	2012.74	299.26	2013M02	5321	5385.79	−64.79

2007M12	2423	2053.35	369.65	2013M03	5472	5431.28	40.72
2008M01	2438	2094.26	343.74	2013M04	5605	5475.92	129.08
2008M02	2509	2135.47	373.53	2013M05	5682	5519.56	162.44
2008M03	2488	2177.00	311.00	2013M06	5736	5562.06	173.94
2008M04	2544	2218.92	325.08	2013M07	5834	5603.27	230.73
2008M05	2537	2261.30	275.70	2013M08	5908	5643.07	264.93
2008M06	2540	2304.25	235.75	2013M09	6021	5681.37	339.63
2008M07	2511	2347.86	163.14	2013M10	6118	5718.07	399.93
2008M08	2555	2392.30	162.70	2013M11	6166	5753.10	412.90
2008M09	2439	2437.69	1.31	2013M12	6208	5786.44	421.56
2008M10	2357	2484.19	−127.19	2014M01	6241	5818.07	422.93
2008M11	2280	2531.97	−251.97	2014M02	6297	5848.01	448.99
2008M12	2224	2581.18	−357.18	2014M03	6314	5876.32	437.68
2009M01	2208	2631.93	−423.93	2014M04	6280	5903.08	376.92
2009M02	2227	2684.34	−457.34	2014M05	6164	5928.40	235.60
2009M03	2228	2738.49	−510.49	2014M06	6039	5952.42	86.58
2009M04	2241	2794.42	−553.42	2014M07	5957	5975.30	−18.30
2009M05	2373	2852.14	−479.14	2014M08	5905	5997.19	−92.19
2009M06	2395	2911.61	−516.61	2014M09	5839	6018.25	−179.25
2009M07	2454	2972.79	−518.79	2014M10	5878	6038.65	−160.65
2009M08	2584	3035.57	−451.57	2014M11	5854	6058.51	−204.51
2009M09	2721	3099.81	−378.81	2014M12	5838	6077.98	−239.98
2009M10	2786	3165.36	−379.36	2015M01	5795	6097.16	−302.16
2009M11	2899	3232.01	−333.01	2015M02	5801	6116.15	−315.15
2009M12	3101	3299.56	−198.56	2015M03	5835	6135.04	−300.04
2010M01	3301	3367.76	−66.76	2015M04	5881	6153.87	−272.87
2010M02	3394	3436.35	−42.35	2015M05	5938	6172.69	−234.69

Shanghai

Month	Price	Trend	Cycle	Month	Price	Trend	Cycle
2004M12	1490	1531.00	−41.00	2010M03	2561	2502.08	58.92
2005M01	1547	1540.15	6.85	2010M04	2578	2510.34	67.66
2005M02	1611	1549.29	61.71	2010M05	2582	2518.12	63.88
2005M03	1669	1558.42	110.58	2010M06	2565	2525.45	39.55
2005M04	1703	1567.56	135.44	2010M07	2551	2532.35	18.65
2005M05	1714	1576.69	137.31	2010M08	2543	2538.85	4.15
2005M06	1710	1585.86	124.14	2010M09	2549	2545.00	4.00
2005M07	1705	1595.07	109.93	2010M10	2553	2550.82	2.18
2005M08	1700	1604.38	95.62	2010M11	2558	2556.35	1.65
2005M09	1689	1613.83	75.17	2010M12	2566	2561.62	4.38
2005M10	1677	1623.46	53.54	2011M01	2575	2566.67	8.33
2005M11	1661	1633.33	27.67	2011M02	2580	2571.53	8.47
2005M12	1647	1643.51	3.49	2011M03	2586	2576.23	9.77
2006M01	1625	1654.06	−29.06	2011M04	2591	2580.82	10.18
2006M02	1620	1665.03	−45.03	2011M05	2594	2585.32	8.68
2006M03	1616	1676.50	−60.50	2011M06	2597	2589.78	7.22
2006M04	1621	1688.51	−67.51	2011M07	2598	2594.23	3.77
2006M05	1625	1701.12	−76.12	2011M08	2599	2598.72	0.28
2006M06	1627	1714.38	−87.38	2011M09	2600	2603.27	−3.27
2006M07	1632	1728.33	−96.33	2011M10	2597	2607.93	−10.93
2006M08	1635	1743.01	−108.01	2011M11	2592	2612.74	−20.74
2006M09	1634	1758.45	−124.45	2011M12	2586	2617.73	−31.73
2006M10	1634	1774.68	−140.68	2012M01	2583	2622.94	−39.94
2006M11	1635	1791.70	−156.70	2012M02	2581	2628.41	−47.41
2006M12	1637	1809.52	−172.52	2012M03	2577	2634.16	−57.16
2007M01	1639	1828.13	−189.13	2012M04	2575	2640.22	−65.22
2007M02	1642	1847.52	−205.52	2012M05	2575	2646.62	−71.62
2007M03	1648	1867.66	−219.66	2012M06	2579	2653.38	−74.38

2007M04	1657	1888.50	−231.50	2012M07	2582	2660.50	−78.50
2007M05	1681	1909.97	−228.97	2012M08	2584	2668.01	−84.01
2007M06	1751	1932.01	−181.01	2012M09	2588	2675.90	−87.90
2007M07	1820	1954.51	−134.51	2012M10	2591	2684.17	−93.17
2007M08	1930	1977.38	−47.38	2012M11	2595	2692.81	−97.81
2007M09	2009	2000.50	8.50	2012M12	2600	2701.82	−101.82
2007M10	2089	2023.74	65.26	2013M01	2607	2711.16	−104.16
2007M11	2185	2047.00	138.00	2013M02	2616	2720.80	−104.80
2007M12	2217	2070.15	146.85	2013M03	2661	2730.72	−69.72
2008M01	2246	2093.11	152.89	2013M04	2701	2740.87	−39.87
2008M02	2271	2115.76	155.24	2013M05	2741	2751.20	−10.20
2008M03	2315	2138.04	176.96	2013M06	2777	2761.67	15.33
2008M04	2339	2159.86	179.14	2013M07	2805	2772.21	32.79
2008M05	2362	2181.17	180.83	2013M08	2837	2782.78	54.22
2008M06	2387	2201.92	185.08	2013M09	2856	2793.33	62.67
2008M07	2396	2222.08	173.92	2013M10	2892	2803.82	88.18
2008M08	2385	2241.62	143.38	2013M11	2915	2814.21	100.79
2008M09	2360	2260.54	99.46	2013M12	2934	2824.46	109.54
2008M10	2338	2278.84	59.16	2014M01	2941	2834.54	106.46
2008M11	2319	2296.51	22.49	2014M02	2943	2844.44	98.56
2008M12	2316	2313.59	2.41	2014M03	2951	2854.15	96.85
2009M01	2297	2330.06	−33.06	2014M04	2956	2863.66	92.34
2009M02	2293	2345.96	−52.96	2014M05	2957	2872.97	84.03
2009M03	2318	2361.29	−43.29	2014M06	2955	2882.09	72.91
2009M04	2348	2376.06	−28.06	2014M07	2940	2891.04	48.96
2009M05	2370	2390.27	−20.27	2014M08	2919	2899.83	19.17
2009M06	2398	2403.92	−5.92	2014M09	2894	2908.49	−14.49
2009M07	2427	2417.02	9.98	2014M10	2887	2917.03	−30.03
2009M08	2442	2429.57	12.43	2014M11	2893	2925.49	−32.49

2009M09	2459	2441.56	17.44	2014M12	2895	2933.88	−38.88
2009M10	2471	2453.00	18.00	2015M01	2902	2942.23	−40.23
2009M11	2489	2463.89	25.11	2015M02	2905	2950.54	−45.54
2009M12	2519	2474.23	44.77	2015M03	2911	2958.83	−47.83
2010M01	2538	2484.04	53.96	2015M04	2917	2967.11	−50.11
2010M02	2540	2493.32	46.68	2015M05	2932	2975.39	−43.39

Guangzhou

Month	Price	Trend	Cycle	Month	Price	Trend	Cycle
2005M06	802	755.38	46.62	2010M06	2009	2045.46	−36.46
2005M07	795	771.85	23.15	2010M07	2021	2082.05	−61.05
2005M08	784	788.31	−4.31	2010M08	2061	2118.92	−57.92
2005M09	819	804.79	14.21	2010M09	2123	2155.99	−32.99
2005M10	836	821.28	14.72	2010M10	2216	2193.16	22.84
2005M11	847	837.78	9.22	2010M11	2285	2230.34	54.66
2005M12	892	854.32	37.68	2010M12	2352	2267.43	84.57
2006M01	919	870.88	48.12	2011M01	2459	2304.35	154.65
2006M02	948	887.48	60.52	2011M02	2534	2341.01	192.99
2006M03	930	904.14	25.86	2011M03	2586	2377.34	208.66
2006M04	934	920.87	13.13	2011M04	2669	2413.27	255.73
2006M05	927	937.70	−10.70	2011M05	2712	2448.77	263.23
2006M06	920	954.63	−34.63	2011M06	2734	2483.81	250.19
2006M07	918	971.70	−53.70	2011M07	2758	2518.37	239.63
2006M08	936	988.91	−52.91	2011M08	2770	2552.47	217.53
2006M09	929	1006.29	−77.29	2011M09	2779	2586.12	192.88
2006M10	948	1023.83	−75.83	2011M10	2756	2619.38	136.62
2006M11	949	1041.55	−92.55	2011M11	2724	2652.29	71.71
2006M12	953	1059.44	−106.44	2011M12	2681	2684.92	−3.92
2007M01	1003	1077.50	−74.50	2012M01	2615	2717.33	−102.33

2007M02	1027	1095.71	−68.71	2012M02	2607	2749.59	−142.59
2007M03	1047	1114.05	−67.05	2012M03	2622	2781.76	−159.76
2007M04	1077	1132.49	−55.49	2012M04	2631	2813.90	−182.90
2007M05	1152	1151.02	0.98	2012M05	2662	2846.04	−184.04
2007M06	1169	1169.58	−0.58	2012M06	2676	2878.21	−202.21
2007M07	1223	1188.16	34.84	2012M07	2711	2910.42	−199.42
2007M08	1287	1206.71	80.29	2012M08	2791	2942.68	−151.68
2007M09	1356	1225.20	130.80	2012M09	2864	2974.96	−110.96
2007M10	1457	1243.62	213.38	2012M10	2875	3007.25	−132.25
2007M11	1485	1261.94	223.06	2012M11	2908	3039.52	−131.52
2007M12	1511	1280.16	230.84	2012M12	2950	3071.71	−121.71
2008M01	1479	1298.30	180.70	2013M01	2988	3103.79	−115.79
2008M02	1509	1316.39	192.61	2013M02	3030	3135.69	−105.69
2008M03	1486	1334.46	151.54	2013M03	3123	3167.34	−44.34
2008M04	1500	1352.58	147.42	2013M04	3211	3198.67	12.33
2008M05	1468	1370.81	97.19	2013M05	3241	3229.61	11.39
2008M06	1471	1389.23	81.77	2013M06	3284	3260.08	23.92
2008M07	1444	1407.92	36.08	2013M07	3375	3289.99	85.01
2008M08	1425	1426.97	−1.97	2013M08	3428	3319.29	108.71
2008M09	1413	1446.47	−33.47	2013M09	3491	3347.89	143.11
2008M10	1396	1466.52	−70.52	2013M10	3553	3375.75	177.25
2008M11	1364	1487.20	−123.20	2013M11	3613	3402.80	210.20
2008M12	1353	1508.59	-155.59	2013M12	3654	3429.01	224.99
2009M01	1335	1530.78	−195.78	2014M01	3676	3454.36	221.64
2009M02	1329	1553.83	−224.83	2014M02	3696	3478.83	217.17
2009M03	1391	1577.79	−186.79	2014M03	3727	3502.45	224.55
2009M04	1441	1602.69	−161.69	2014M04	3736	3525.21	210.79
2009M05	1453	1628.56	−175.56	2014M05	3735	3547.18	187.82
2009M06	1491	1655.42	−164.42	2014M06	3709	3568.39	140.61

2009M07	1599	1683.25	−84.25	2014M07	3674	3588.92	85.08
2009M08	1620	1712.04	−92.04	2014M08	3658	3608.84	49.16
2009M09	1618	1741.79	−123.79	2014M09	3638	3628.22	9.78
2009M10	1648	1772.46	−124.46	2014M10	3617	3647.17	−30.17
2009M11	1684	1804.02	−120.02	2014M11	3559	3665.75	−106.75
2009M12	1718	1836.43	−118.43	2014M12	3539	3684.06	−145.06
2010M01	1780	1869.64	−89.64	2015M01	3531	3702.17	−171.17
2010M02	1800	1903.60	−103.60	2015M02	3521	3720.14	−199.14
2010M03	1867	1938.23	−71.23	2015M03	3541	3738.03	−197.03
2010M04	1936	1973.47	−37.47	2015M04	3571	3755.89	−184.89
2010M05	1968	2009.24	−41.24	2015M05	3578	3773.73	−195.73