

On Information Creation and Its Effect in Incomplete Financial Markets

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ABSTRACT

“Thirst for information” existing in financial markets shows that information supply is insufficient and private information is value. Agents will select to acquire economic information under the market incentive mechanism. This is the basis of information creation in incomplete financial markets. Because the information supplies insufficiency in the financial markets is exogenous, information creation is natural exogenous. From this perspective, this paper thinks that information creation has a practical base and a very important significance in financial economic field. The effect of information creation has dual character: the one is positive effect, which should improve market efficiency in long term; the other is negative effects, which should aggravate the market speculation and manipulation, cause financial bubble, and amplify financial risk in short term.

Keywords: Incomplete Financial Markets; Information Creation; Negative Effects; Positive Effects

1. Introduction

There are lots of phenomena in financial markets show that investors seem to be “thirst for information”. It can be partly interpreted by investors who have asymmetric information and incomplete information. Many economists in their economic theoretical literature believe that the reason of asymmetric information or incomplete information in markets lies in the bounded rationality of agent or the transaction costs of information; they have not conducted the research from the perspective of information supply. Complete information means that any agent has complete knowledge about the economic environment. It is obvious that no one in the world can have full knowledge about their environment; it was felt that full knowledge is not necessary because the price system makes an appropriate response to all necessary information, so agent requires only information is his preference and prices. This is a very idealistic view. There are lots of phenomena shows that it is insufficient for information supply of markets.

With the same of commodity market, information supply not only refers to information suppliers are willing to offer information, but also refers to agents have the ability to buy them under a certain price. So, the information supply in a given period is not equal to the full society information stock. Information supply is restricted not only by its cost and demand, but also by development of information market itself. Generally, market mechanisms

are more developed, the more information is be delivery, the lower information delivery cost, the stronger timeliness of information; on the contrary, market mechanisms are less developed, information needs must be propagated by non-market ways, so the stock information cannot be translated into effective information supply. It means that the information supply in market is insufficient. Information supply insufficient means that the information supply can not fully meet the information needs under the conditions of unlimited demands in the incomplete financial markets. Stiglitz (1993) [1] thought that the market of information product is usually inefficient. That is, the information supply on the markets is inadequate. The insufficient information supply means that the information supply cannot fully meet the information needs under the conditions of unlimited demands in the incomplete financial markets. Then agents have motivation to obtain information as possible as they can, and that means the insufficiency of information product can be improved by agents’ information creation. Well then, what is information creation? What effect does it have [2]?

The next parts of this paper are as follows: the second part expounds the implication of the insufficient information supply, the third part discusses the implication of information creation, the fourth part studies the effects of information creation, and the fifth part is the conclusion of the article and further studies about this problem.

2. The Means of Insufficient Information Supply

Information supply (more precisely, effective information supply) refers to information suppliers provide information to financial market in a given period and a certain price. It includes two aspects of qualification: the first is information suppliers who are willing to offer, the second is information suppliers can sell out all of their information under a certain price. Information supply is restricted not only by its cost and demand, but also by development of information market itself. Generally, market mechanisms are more developed, the more information is delivery, the lower information delivery cost, the stronger timeliness of information; on the contrary, market mechanisms are less developed, information needs must be propagated by non-market ways, so the stock information cannot be translated into effective information supply [3].

The real world is complex, and the price system itself is not so simple, for example, there exist nonlinear price (e.g. quantity discounts) and the same product in several different price; if the information structure is different, the status of economic operation are also different. Then, the "information" contained in price is not important. A well-operating economy needs more information than them contained in the price system. Therefore, in order to find the equilibrium price, agents must know the other variables other than price (information), such as the behavior of the total number of people and the market excess demand [4,5].

Then agent certainly needs the information contained in the price in order to obtain the right decision, but that was not enough, he also must know the other aspects of the economic environmental knowledge and information. So the price does include a lot of, but not all, economic information the information! Stiglitz [1] also believes that if the information has value, the market price is only an imperfect response to insiders' information. That means that agents must need the information the more the better, that is to say, the need of information is infinity. And hence, there do not really exist too much information supply, more reasonable relative to information needs, the information supply seems to be always inadequate and agent has the motivation to obtain information as possible as he can. It can be called insufficient information supply.

We can learn the problem from the following three aspects. The first aspect is agents' limited abilities of information acquisition and processing. Information acquisition process does not just simply duplicate the external information to the people's memory, but rather a complex process about the recognition on external information's. Many studies have shown that agents often have cognitive bias in their decision-making process in

the incomplete financial markets.

The second one lies in the agents' limitations of information understand ability. The process of interpreting information is the process that people give information to some kind of meaning or significance. People access the accuracy of the information is not only with the information content, but also with people who understand the information. Agents' perceptual set is also influence to the derivation of information organization category among the impact factors of investors' interpreting information. All these phenomena show that people has limited cognitive ability.

The third is determined by information stickiness in the process of information dissemination. Information stickiness refers to such a phenomenon in the economy: it is a gradually process for economic information to disseminate into economic environment, play a role and access to people. Resulting in "information gradual spread" includes information acquisition cost and the agents' re-optimization cost of decision-making. The pricing decisions based on the information are not always present information in both cases, although the price is always changing. And more, agents often interpret the information with their own attributes; the different agent has the different ways to interpret the same information. Therefore, the impact of the signal may not be homogeneous for agents and information in response to the price is a gradual process [4-6].

3. On Information Creation

Agents' limited abilities on acquiring, understanding, and processing information, and information stickiness, all these made information has private value.

Stiglitz (1981) [7] studied the realization forms on the private value of information. He pointed that private benefits of information produce, including created, and spread and layered information, takes two species forms: first, direct consumption effect, which makes the information gainer get a more suitable investment portfolio; the second is the market value effect, which means that if information dissemination caused the value changes of securities market, agents can get excess earnings by group-buying auction before the information dissemination, and then release the information out. Of course, if they want to achieve the market value effect of information, agents must have: 1) before the information released, they must own or have access to assets, 2) there must be incentives of information dissemination to the market value adjustment reaction information, and 3) in order to make people believe that the information being transmitted, it must be a credible information.

Because there are information acquisition costs, decision-making re-optimization cost, bounded rationality, and other restrictions during the process of information

dissemination, information editing (or understanding) and information use, all these factors have resulted the information stickiness and made that agents can not be exactly same in the information utilization, methodologies, understanding and other aspects. Therefore, no matter from information providers, or from the actual needs of information are concerned, they always play an important role in the process of information generation, information dissemination and information use. This article called it as information creation that agents 1) produced new information, 2) reduced the information stickiness, increased information accuracy and speed of information dissemination, 3) re-edit the original information which resulted in a new signal in the process of information production, dissemination and use [8].

In the current financial literatures, researchers' main emphasis is the new information emergence, so it is called "Information Produce" in literatures, for example, Stiglitz, James, Diamond, Prescott, Gorton and Morrison *et al.* [7]. This paper argues that it must be a long process for a message to be used from its generation to final use by agents in their decision-making, due to many reasons and restrictions necessary. And in this process, agents are not in a passive "acceptance" process but in a process of personal subjective initiative to play. Individual subjective initiative plays a great role in the information used by the financial markets. The financial market participant is an "individual" in the final analysis, even if a financial institutions' decision-making is by one or several "individuals" to make. In the process of information dissemination, information stickiness made the information available on the market information is the past information more or less. If we lower the "friction" in the information dissemination process, that is, reduce the stickiness of information or reduce the costs of information acquisition or decision-making re-optimization, and increase the quality and communication speed of information. All of these will greatly enhance the efficiency of information usage; it is equivalent to increasing the information supply of financial market. Therefore, not only the generation of new information, and the dissemination and use of stock information, it is great significant for financial markets. In this sense, this article calls the process of new information generation, transmission and processing as "information creation", and not a process, in which agents only produce new information.

4. Two Effects of Information Creation

Information supply scarcity in the incomplete market, as well as the agents' high demand for economic information, that generally makes agent create positive information in the competitive and consummate market. When they use these information, agents will not deliberately distort information or wanton manipulation them. They

should use this information in an objective manner. In such of situation, these new information, produced by information creation, reduce information stickiness, offset market information supply insufficient, and increase market prices of information effectiveness in some degree, then reduce systemic risk of financial markets; and improvement of market information effectiveness does not appear that situation pointed out by No Transactions Theorem and G-S Paradox, instead, following these new information appears, there will be produced some new market opportunities, that should prompt agents' transactions in order to optimize their Endowment allocation or their portfolio, that actions actually increase market transaction volume. The increase supply of market information makes it possible for agents to pay costs to access needful information, thus they promote their means and capacity avoiding market risks, which enhance the wealth effects of the financial markets and the effective market. This is a hi and happy effects for all, each market and the majority of market participants pray such effects appear, we call this effect as the positive effect of information creation. From the long term, the positive effects can improve market effectiveness.

However, whether from actually or theory is not able to completely foreclose the other case contrary to the positive effects, and this will make the market more inefficient. The one hand, the creator with bounded rationality can not produce information are all the positive information, and because of information stickiness and time limit of information dissemination process, it objectively cannot guarantee these positive information is still positive information in the process of dissemination to the market, for the market is always changing. From this perspective, this new information, arising from the information creative, includes some disturbance factors. These disturbance factors mainly include some errors produced in the process of information creation and bias arising in the course of the information dissemination, reception and usage. The other hand, from the practical situation of the world financial markets, whether it is mature or the developing markets, there are information manipulations and information fraud, which will generally increase the market speculation, market manipulation, financial bubbles and increase financial risks in the short term. This effect is called the negative effects of information.

In incomplete financial markets, the market competition itself is incomplete, so competition cannot be completely excluded negative effects of information creation from the market, that is, there is market failure in information creation. What is more, because the information has private value, one can use his private information to make super profits, so agents produce negative information is a rational behavior, therefore it is not able to fully solve this problem in the market system. Whether agent

creates negative information or not, depending on his trade-off between the costs and benefits of the information creation, or depending on his game between the available gains from the using these negative information and the punishment. If he thinks that he can get net income with using these negative information, he must be used them. In these aspects, it does not be established at least in theory that prompts people actively to create positive information by so-called “moral constraints”, or the effect of “moral constraints” is very limited and even powerless in elimination negative information created, and then, attempt to “to de treatment city” just is a dream, or a whimsical thing. We must seek solutions outside the market in order to increase the cost of negative information creation, so as to eliminate negative information creation behavior as possible to create behavior. The program is the economic legal system. Perfecting the legal system and strict implementation them can greatly increase the costs of negative information creation and using them [7].

It is not opposing on stressed the importance of improving economic system and the market competition mechanism, but complementary, dialectical unity, parallel. Economic legal system is effectively contributed to the establishment of effective market competition mechanism, and effective market competition mechanism can promote the perfection of the economic legal system. Under the both factors combined effecting, on the one hand, we can greatly increase the cost of negative information creation, decrease the possibility of negative information creation to a minimum limit; on the other hand, although in the short term, agent can be obtained net profits by private information, but in the long run, prices will eventually make a return to its basic values.

In short, the effect of information creation has dual character: the one is that it has positive effect to improve market efficiency in long term; the other is that it has negative effects to aggravate the market speculation and manipulation, cause financial bubble, and amplify financial risk in short term.

5. Conclusions and Further Research

This paper analyzes information supply and demand in the incomplete financial markets; consider that information has private value from the perspective of information supply and demand that is people can use their advantageous position with private information to obtain excess returns. Therefore, incomplete financial markets there cannot be really exist insufficient information demand, but insufficient information supply. Because of information supply in incomplete markets, resulting in incomplete financial market prices do not fully reflect economic information; due to incomplete financial market prices can not fully reflect the economic information,

which results in incomplete financial markets is non-fully effective.

From the phenomenon that the price does not fully reflect economic information, this paper discusses the reason of insufficient information supply can be attributed to three aspects, that is limited information processing abilities, the limitations of human ability to interpret information, and information stickiness. Thus, from the objective information itself, information stickiness was stronger under the influence of information acquisition costs and the cost of re-optimization decision-making and other reasons, considered the joint effect of agents' bounded rationality and other internal factors; it is these factors that cause insufficient information supply in incomplete markets.

Insufficient information supply is therefore tremendously significant to financial market. Naturally, driven by profits pursuit motive and risk-averse motive, agents are athirst for market information because of inadequate supply of information, so it has the necessity and possibility of financial markets to boost the information effective supply.

Start from the research of information supply and demand in the incomplete financial market, this article holds that, as far as information supply, because of the fact that the agent's bounded informational acquisition and understanding capability, limitations of informational treatment capability, and information stickiness, make information supply scarcity in the financial market. Since the fact that the information supply scarcity, the market price can not sufficiently react economic information; and since the price can not sufficiently react economic information, it makes the financial market is not sufficiently efficient. The intention that the agent maximize its benefits and its desire of risk aversion, that provide the agent the first incentive force to create information by producing new information, cutting down the information stickiness, increasing information accuracy, and speeding up the information propagated and its research, that is, information creation. So, the information supply scarcity in the incomplete financial market is the logical starting point of this article.

Then, what effects does information creation have? It is decided by information accuracy, information propagated velocity and the agent's information treatment capability, and so on. Very evidently, it is very different for market been in the distinct state that the effect is also distinct. The present article holds that information creation has dual character to incomplete financial market: the one is that it has positive effect to improve market efficiency in long term; the other is that it has negative effects to aggravate the market speculation and manipulation, cause financial bubble, and amplify financial risk in short term.

Firstly, agents cannot separate multi-period risk. Consequently, they regulate their portfolio in order to utilize risky securities to disperse different risk embodied in their endowment. It accelerates, in fact, market trade. After information arriving at the market, and even to known publicly at once, agents also update their belief, even if agents are perfect rationality and there is no liquidity intention. Yet, if only the market is incomplete, not only there might be greats of quantity trades, but also this is one of manifestations of rationality. So, under costly private information, whether the market is informational efficient or not, new economic information is valuable for some agents, and there exist a partially revealing rational expectation equilibrium with information creation. Hence, if market mechanism is establish on the base of valid incentive, participator might be able to create information, and further cause entire economy and market price is operating more informational efficient.

But the process of information acquisition in incomplete financial market is a tatonnement, agents cannot guarantee en post that it must be able to improve their expectation welfare, or avert all kinds of risks. Even in normally competitive market, agents with bounded rationality can create inaccurately, even wrong information, and incorrectly utilize these information, etc. Then it maybe exist lots of risks for agents to acquire and utilize these new information. If these elements come into contagion one another among agents, it can increase market risk. So in these sense, the information creation has the other probability, namely, it may intensify the market speculation, deepen the market manipulation, and promote asset pricing bubble on economy and its crush in the end, that is, enhance the risk of incomplete financial market.

Such research is only a qualitative study about information creation and its effect in incomplete financial market, there are a number of issues has not yet commenced, and there is not a research paradigm of mathe-

matical economics, so it should still continue to deepen for these studies.

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