

## The Role of Information: Analysis of Organizers' and Investors' Behavior in Ponzi Scheme

Zhaoyang Ji

School of Economics, Shanghai University, Shanghai, PR China

Email: aoidi@163.com

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**Abstract.** Ponzi schemes often cause huge losses to investors and result in serious social impacts. This paper analyzes the behavior of organizers (fraudsters) and investors in Ponzi scheme from an information perspective. A Ponzi scheme is a process in which investors receive various kinds of information from organizers and then respond to it. The behavior of organizers is mainly trust creation, and the behavior of investors is primarily information processing and the subsequent decision-making and actions.

### Introduction

Ponzi scheme, also known as Ponzi game, was named after Charles Ponzi who led a notorious scam in the United States in the 1920s. Ponzi scheme is definitely not new and comes in different forms. Its essence is to lure investment with low-risk or risk-free and high-return commitments, and then pay the earnings of existing investors with new investors' input.

Ponzi scheme is defined by the U.S. Securities and Exchange Commission (SEC) as an investment scam that involves the payment of purported returns to existing investors with the funds of new investors. Ponzi scheme organizers often drum up new investors by claiming opportunities with high returns and little risk or no risk. In many Ponzi schemes, fraudsters focused on attracting new money to pay promised returns to early investors to create the illusion that they were profiting from legitimate business.

The problem is that although Ponzi schemes have been repeatedly exposed, they are still happening constantly. The losses of investors are huge and the social impact is serious. Other than financial losses, Freshman (2012) even analyzed the psychological losses of Ponzi scheme victims.

This paper analyzes the behavior of organizers (fraudsters) and investors in Ponzi scheme from an information perspective.

Shiller (2000) called financial market bubbles out of the economic fundamentals as "naturally occurring Ponzi schemes". They are natural because they are spontaneously formed instead of artificial, and they are Ponzi scheme because the profit of existing investors depends on the continuous participation of new ones. Minsky (1982) defined "Ponzi finance" when the interest expense of an enterprise exceeds the cash flow and the existing debt is paid by issuing new debt. These two cases are not analyzed in this paper.

### The Cause of Ponzi Scheme

Kindleberger (1989) argued that fraud followed Keynes' law which was demand-determined, it was greed that created "fools" who were deceived by "professionals"; Nooteboom (2002) believed that fraud had reflected people's abusive use of trust; Trahan et al. (2005) studied the influence of social culture on fraud victims' behaviors and found under the same values, investors tended to have similar motivations and behaviors. "The American Dream is a catalyst that makes people vulnerable to fraud. American culture instills a tendency toward victims in favor of fraudsters, thus most Americans have a deep-rooted motive that leads them to be frauded." Mervyn et al. (2012) deemed that the faults of investors were they had trust wrong guys, the cause might lie in the characteristics of the scammer and the nature of his plan; Chan et al. (2015) found that online social network users consider their public relations circles as a buffer to mitigate economic losses, thus increasing their financial risks; Baucus et al. (2016) warn that crowd funding may create new opportunities for

fraudsters to launch Ponzi schemes; Cortés et al. (2016) discussed the correlation between fraudster's expected return and the possibility of conviction; Albrecht et al. (2017) analyzed an Internet Ponzi scheme from the point of supervision deficiency. Along with technological progress, Ponzi schemes are also evolving. Bartoletti et al. (2017) analyzed the high-tech Ponzi scheme based on the intelligent contract platform Ethereum; the research of Bosley et al. (2018) showed that Ponzi schemes were usually targeted at specific groups, and group with higher education level in the process of economic expansion might be more likely to be the victims of Ponzi schemes.

But not all Ponzi schemes are absurdly high rewarding. Many investors were attracted by the safety and stability promised by fraudsters, such as the Bernie Madoff case which caused a record high loss of \$65 billion to investors. Fraudsters often pretend to be successful businessmen. Fraudulent behaviors often occur when there were bubbles in financial markets. At this time, the promised profits were rarely questioned, and its business model was unlikely to be verified.

It is necessary to distinguish between Ponzi scheme and pyramid-selling here. Their structures are similar but the former only requires participants to contribute money and participants generally do not realize they are in a risky situation, while the latter requires more, such as purchasing products and recruiting downlines.

### **The Behavior of Organizers**

Ponzi schemes usually begin with organizers' (fraudsters) storytelling, creative idea, or business model which can be easily understood and justified by investors. For example, Charles Ponzi's profit model was stamp arbitrage, and Ponzi schemes in recent years are marked by internet, finance, spot transaction, investment, etc. The study of Reber&Schwarz (1999) showed that the easier to process information or the more fluent the information is, the more likely it is to be considered as true. But "familiarity" does not mean investors really understand these things, and the feel of "familiarity" is probably unconscious. Fraudsters name their companies close to legitimate institutions such as an exchange, treasure, finance, or holding because people are familiar with and tend to trust these institutions for granted, e.g. Charles Ponzi's office was named as "the Security Exchange Company".

The information from fraudsters is straightforward: the principal is safe and the return is specific. Words like endorsement, guarantee, and recourse were not uncommon. Tversky (1995) found that when people evaluate both clear and ambiguous information at the same time, the aversion and evasion of vagueness appeared, and they were reluctant to take action on low-level knowledge.

The success of Ponzi scheme depends largely on how fraudsters create and maintain investors' trust. Fraudsters must not only create trust for the initial stages, but must also maintain a lasting trust relationship for some time. Various types of methods are used by fraudsters to gain trust of individuals and institutions. Fraudsters send out reliable information (platform, experience, commitment, capability, certification, reports, etc.) to demonstrate their trustworthiness through various media. Bacharach's (2001) model shows that fraudsters create false but convincing trust signals by "imitation", and that fraudsters' "reputation" is gradually established in repeated games with investors.

The cost of supporting these phony signals is extremely high, for instance, elegant facade, luxury lifestyle, bounteous employee welfare, advertising, marketing activities, celebrity advocacy, etc. Arkes&Hackett (1989) supposed that the repetition of information will affect people's judgment of its authenticity. Repetition can deepen familiarity, and familiarity will make people feel real. Fraudsters often hire "professional" investment advisers to drive their "business". The role of these advisers is to build trust with investors to overcome their hesitation in investing.

Perri&Brody (2012) noticed that fraudsters often had "projection bias", and some fraudsters mimic the characteristics of victims. This signal (information) made victims thought that the fraudster was a member of their side.

In summary, due to information asymmetry, all sorts of information (strategies) designed to prevent accurate evaluation of their businesses were employed by fraudsters to manipulate investors' insight of their companies or related individuals.

## The Behavior of Investors

**Information Processing and Decision-making.** For investors, the investment is a process of information collecting, filtering, organizing, analyzing, and decision-making. Information affects the behavior of investors. The process and interpretation of the same information would be varied even investors receive it simultaneously. In a world that is constantly flooding with new information, the power of human brain is limited. People tend to pay attention to information that confirms their beliefs, which is called confirmation bias. This selective thinking anchors people's attention to the input incentives (information), i.e., high returns, low risk or no risk. Schwarz's (2004) research showed that the easier the motivation is to deal with, the more positive people's evaluation of it will be. Good information will arouse people's positive emotions, which in turn increases the reliance on information processing fluency in decision making, Koch&Forgas (2012). On the other side, Ariely&Norton (2011) argued that too much information could also lead to poor decision-making because of the paralyzed and weakened psychological process.

The information sent by fraudsters caters to the ideal that investors are looking for good opportunities and it will inspire investors' imagination. According to Tversky&Kahneman (1974), under uncertainty and risky conditions, people often tended to overestimate the probability of what they preferred because of imaginative bias. People subconsciously think that they are lucky enough. When there is information indicates that they have such an opportunity, they tend to believe this may be true. Kahneman's two-system model shows that system 1 is fast, intuitive and prone to errors, system 2 is slow and deliberate. For the most part, system 1 dominates the cognitive process. In such cases, feeling or intuition replaces facts and becomes the basis for judgment and decision. Shiller (2000) also believed that most of the ideas that lead to people's behavior were those that came in the form of storytelling and rationalization, namely moral anchors.

Investor preferences derived from fraudster's information can also influence the decision-making process of investor. Tversky&Kahneman (1981) argued result framework was often used to evaluate one's behavior, because this framework simplified evaluation and reduced cognitive pressure, and also reflected an intuition that the consequences should have a causal relationship with behaviors and match the characteristics of hedonic experience. Investors tend to divide investment into good and bad: good for high returns and low risks, bad for low returns and high risks. Compared with the risk-return framework, the above one cannot accurately describe the relationship between risk and return, and investors in Ponzi schemes thus bear more potential risks.

There were cases that some smart investors still participated even they knew it was a scam. Huberman (2001) suggested that these investors believed they had better information and could get away a step before others. However, arbitrage is risky and limited arbitrage is also one of the two pillars of behavioral finance.

**Information Asymmetry and Herd Behavior.** Relative to fraudsters, investors are at a natural information disadvantage. Under uncertain conditions, people collect information through social networks and due diligence to reduce information asymmetry, Nash&Bouchard (2018). Investors who rely on social relationships to make investment decisions have a much lower likelihood of due diligence. The greater the uncertainty, there would be more risk of relying on social relationships to balance information asymmetry. Social relations are also a factor in engendering herd behavior. Pressman (1998) believed that conducting due diligence may also bring about investors into a false sense of security because he was unaware of the forged information.

Avery&Zemsky (1998) showed that the higher the ratio of market participants holding low-precision information, the more they would ignore their own information and copy the behavior of other participants. Uninformed investors will follow the movement of so-called informed insiders. For many Ponzi scheme investors, those who are making quick buck around them consist of the most powerful evidence to convince themselves to participate. The significance of such evidence even exceeds the true judgment of the scam.

When others are believed to have information (knowledge) useful for making decision, the impact of society is enormous. When fraudsters themselves or their background or celebrities or stars they employed are so influential that investors completely ignore their private information to

make decisions, there would be information cascade. They are the “leader” that triggered such herd effect. Whenever there is a group of creatures, whether animals or human, they instinctively place themselves under the rule of a leader.

In addition, Shiller (2000) believed that the most fundamental characteristic of human being is the continuous exchange of information. Driven by inner emotions, talking is most people’s favorite thing. Face-to-face communication is the most effective way, and useful information is the fastest spread. In Ponzi scheme, when the previously involved investors did get the promised return, news spreads quickly, more investors will follow, and the scale of the scam will increase rapidly. The herd behavior makes the Ponzi scheme spread at a high speed and this is the key to reducing the interest burden (to realize the returns of existing investors).

## **Conclusion & Discussion**

Belief is the core to understand the behavior of investors in Ponzi schemes. Scams could even be reduced to a conversion from information to belief. Belief, once formed, will be insisted by people for a fairly long time. Due to the considerable stability of belief, people are not willing to look for or accept evidence that contradicts their belief. Wishful thinking is a common phenomenon manifested in belief or action, which could well explain why Ponzi schemes repeatedly occur and why some victims still convinced after the debacle of the scam.

Fraudsters have been distributing returns on a regular basis before the scam collapses. This information (signal) can lead to a representative bias among investors. Investors believe that the returns will continue to be honored, and tend to increase their tolerance for risks after obtaining large gains, and often reinvest the proceeds. From a methodological point of view, this conforms to Bertrand Russell’s metaphor of the inductivist turkey. “The whole problem with the world is that fools and fanatics are always so certain of themselves, and wiser people so full of doubts.” According to Plato, “simple ignorance” were those merely be lack of information and “double ignorance” were those actually had no knowledge but express the delusion of having genuine knowledge.

David Hume had questioned the rationality of inductive inference from experiences; Immanuel Kant’s answer to Hume was that causal connection could not be inferred from experience; the experimental results of “Skinner Box” had also showed that inductive generalization superstition is difficult to break. Inductive methods based on empirical information are undoubtedly incomplete, but it is abused to a large extent by Ponzi scheme investors.

There is no free lunch. Investment is risk-taking, and high-yield means high risk. Different Ponzi schemes reflected same weakness of human nature. Seeing people around making money and getting rich, one also has the desire to do the same thing. To avoid Ponzi schemes, one should always alert to investments that are too good to be true, and one also needs to constantly enhance investment knowledge and improve the understanding of oneself and the reality of society. Some red flags to Ponzi scheme are provided by the U.S. SEC: high returns with little risk; consistent returns regardless of market conditions; investments unregistered; vague details of investment; clients facing difficulties receiving payments; secretive and/or complex strategies.

Lao tze once said “It’s better to let it be than to always hold it; when the house is full of gold and jade, it’s virtually impossible to retain it for good and all.” It is worthwhile for one to learn from the wisdom of ancient sages.

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