

Reflection and application of the feedback model of Shiller

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Abstract. Shiller has made a great contribution to behavior finance through his feedback model. To gain an understanding of the problems emerging from it, this paper summarizes the main ideas of the feedback model of Shiller (2003) and takes overall comments on the feedback model. And nobody has probed into the question that in what settings may feedback model apply more strongly. Therefore, this paper discusses and demonstrates this problem and gives more examples of the feedback model in reality which Shiller doesn't mention in his paper.

Keywords: Behavioral finance; Feedback model; Market efficiency.

1. Introduction

In the 'Feedback Models' section, Shiller (2003) introduces a price-to-price feedback theory. It indicates that speculative rise of price, after attracting public attention, will promote people's enthusiasm and heighten their expectations for further price increases, and vice versa. In addition, the feedback will cause more rounds of processes like this if not restrained. However, in the absence of fundamental information, the bubble will finally burst which may not be related to any information about the fundamentals. Moreover, it will contribute to some risks to some extent. According to Shiller (2003), the feedback theory has a long history since the 1630s and is still employed frequently today in situations like the stock bubble in March 2000. Notably, it is also supported by many experiments in many areas. In the end, Shiller (2003) adds that the model is not serial correlated and there are other factors leading to the random walk of stock prices. However, Shiller doesn't mention the circumstances in which feedback models can apply more strongly. Therefore, this paper will make some remarks on the feedback model and take an overview of its applications.

2. Analysis of feedback model

Firstly, as Shiller (2003) maintains, the feedback model is out of fundamental information support, so the risk of a sudden reversal in the stock trend will increase with the rounds of such feedback. Consequently, it will exacerbate the risk of stock market volatility and even cause a stock market crash. Accordingly, people must be wary of such risks to avoid their loss.

Moreover, the price of a stock is obviously a random walk that is not always in the same direction. Hence, in the short term, it tends to have a non-serial correlation trend under the influence of feedback. Nevertheless, even though it is not serially correlated, it still has a trend, and the reason for this trend is related to human nature. Humans are rational but in some ways more emotional and this kind of sensibility often leads to many 'irrational' results brought about by feelings. Under this circumstance, they would not follow fundamental news but just push the stock price up based on some expectations and even rumors, which creates feedback effects. In the long run, such 'irrational' predictions are easily influenced by emotion and this emotion is very easy to be exploited by others. Hence, it also provides opportunities for those who attempt to manipulate information and the market. When they release heavy negative news or use other methods to maliciously make the stock price fall, the bubble will burst in a very tragic form. From a national perspective, this requires us to strengthen the supervision of the market order and eliminate the possibility of market manipulation. At the same time, as ordinary people, if one wants to make money in the stock market, he needs to make full use of this feedback mechanism and analyze it in combination with fundamentals. As Shiller (2003) points out in the passage, the feedback theory is proved by cognitive psychological experiments and natural experiments. And it is fully supported by experimental results.

Last but not least, although the stock market is the embodiment of the company's value, it must be realized that it is a place where people game with each other through inner activities. Although as Kamil Kladívko and Pär Österholm (2021) said, the random walk usually outperforms investors' forecast, investors should realize that, in addition to understanding the fundamentals, the thoughts of humans are equally important, which is called psychology in the academy. At the same time, to understand the market better, people must study and analyze historical experience, and draw conclusions based on the background at that time. Only then can ordinary investors truly profit from the stock market and not fall victim to feedback.

3. Applications

In some cases, this feedback effect can apply even stronger. For example, due to the duty of supervising the market, the state can't let this feedback effect always exist and run amok, causing the stock market to move too much. As a result, corresponding restrictions are often introduced. When regulation is relatively slack, the market can respond more freely to the past price and investors will blindly follow the trend without the guidance of the regulation. As a result, the positive feedback effect (which means the feedback during the rise of stock price) tends to be more pronounced. On the opposite, when there's fiscal restraint, the negative feedback (which means the feedback during the decrease of price) will be more obvious.

Similarly, information about fundamentals will also affect the trend of stock prices and people's emotions to some extent. The feedback effect is mainly caused by people's herd mentality and the information will affect their minds in some way, so maintaining a stable external environment and ensuring that serious bad news that is contrary to the current stock price trend will not appear on the information surface as much as possible to weaken this positive feedback effect. On this basis, the enthusiasm of investors will be further ignited causing them to become more 'irrational'. According to Victor Ricciardi (2008), investors' perception of risk in the stock market will be influenced by many behavioral finance theories and concepts. The bubble will expand further from this base (in the case of feedback from rising stock prices).

Another point is that as the bubble grows, the adequacy of capital outside the stock market is the basis for further expansion of this feedback. Because to lift the stock price up, new investors are needed to buy the stock which means money outside pouring in. This requires a loose monetary policy and fiscal policy. On the contrary, in the case of the feedback of the stock price falling, it requires relatively little capital outside the stock market, and most of the capital is all tied up in the stock market. In that situation, most people will not sell their stocks until they can't afford the loss because they don't want to suffer it and expect a rebound. Finally, when the capital is released from the stock, the feedback effect is also nearing its end.

Of course, these are premised on the free market to ensure its sufficient liquidity. In addition to these, other factors can enhance the feedback effect. Because any other factor that can make the stock price fluctuate will also affect the feedback effect to a certain extent. These are the conditions that I can think of to promote the feedback effect, given that I have not yet fully identified these factors.

4. Examples of feedback effect

In reality, there are so many examples in life-related to feedback models, because people are sometimes 'irrational'. At the same time, many behavioral finance patterns, including the 'feedback', are so deeply rooted in human behavior that they are difficult to overcome by learning (Menkhoff, Nikiforow, 2008) Similar to what the author (Shiller, 2003) mentioned in the article, during the epidemic in the past few years, the US stock market and even the global stock market have shown a very obvious trend just like the feedback model. When the epidemic broke out and the global economy suffered a severe setback, stock prices rose reversely against the trend. Because of the loose monetary and fiscal policy, people feel confident about the market. When the price kept rising, it

attracted more people to participate, which caused the price to up. Now that this feedback model is working, the stock market has come to a stage of very high valuations, and the burst of the bubble appears to be imminent someday in the future. Again, in the stock market, there are other similar examples. A very typical case is the ‘circuit breaker mechanism’ in the US stock market. The circuit breaker mechanism refers to measures adopted by stock exchanges to temporarily halt trading to avert panic selling after the stock index has fallen a certain percentage. When the stock price plunges, the panic of investors will lead to a severe feedback effect. Accordingly, the circuit breaker mechanism is to smooth this effect in avoidance of a further plunge. These are very typical examples of feedback models. At the same time, these examples show phenomena that are quite anomalous. In these cases, people's judgment of reality lacks a certain rational judgment, so it is very easy to cause the bubble to burst and cause huge losses.

5. Implications and conclusion

To conclude, it is worthwhile to learn about something of behavior finance like the cases above. The feedback effect is one of the theories of behavioral finance. The article takes an overview of the feedback effect and learns about the situations when it applies more strongly. To gain more knowledge of the feedback model, the basis of behavioral finance plays a great role. Finance studies the laws of financial society, while psychology studies the laws of human behavior. Behavioral finance is the intersection of psychology and finance. It analyzes the influence of people's psychology, emotions, and behaviors on people's financial decisions, prices of financial products, and financial market trends. Behavioral finance attempts to explain what investors invest, why, and how to invest from the perspective of human psychology and behavior. Therefore, behavioral finance is good at investing in actual combat and is closer to the real situation of the financial market and the actual behavior of people. It can be said that to be a qualified investor, one should understand behavioral finance. Behavioral finance not only provides another complete set of financial thinking methods but also influences people's judgments and decisions on financial markets in a more effective way. Therefore, if we want to understand capital markets and financial markets more than the feedback model, it is very important to fully study behavioral finance.

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