

# Behaviour Financial Development (Literature Review Based on Connected Papers AI)

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**Abstract.** The aim of this research is to analyze the behavior of capital market investors, where initially it was stated that the market is efficient. The method used in this research is a literature review. Literature sources were obtained using Connected papers AI by entering the keyword "Investor Behavior", then several recommendations for paper titles will appear. The author chose the paper title "Investor sentiment in the theoretical field of behavioral finance" as the original paper. Then the linked papers create graphs related to previous research. The authors used articles based on these graphs for this literature review. The results obtained, research about behaviour financial, commonly discuss the topic of investor sentiment related to emotions, beliefs and market perceptions. Apart from that, in all of these studies discussing stock price volatility in the capital market, none has discussed how investor sentiment factors, especially emotional intelligence, influence investors in determining stock price predictions.

**Keywords:** Artificial Intelligence, Behaviour Financial, Connected Papers ai, Investor, Stocks volatility.

## 1 Introduction

Stocks are a type of investment that is traded in the capital market. Research on the capital market has been conducted since the 1900s. Initially, capital market researchers believed that the stock market was efficient (Sharpe, 1964; Fama, 1970; Samuelson, 1970). As the number of investors in the world increases, and the limited information in each company in the capital market, investors have emerged who make decisions without paying attention to the information of each company they will buy. This caused a high market anomaly. This high anomaly makes researchers believe that there is a psychological factor at play here, but there is no theory that consolidates irrational investor behavior and its influence on financial markets (Vianez. 2020).

De Bond and Thaler (1985) found that markets often "overreact" to new information. This article De Bond and Thaler (1985) greatly influenced financial science and behavioral economics. This leads to the idea that emotions, excessive beliefs, and past performance often affect the stock market. Markets do not always behave rationally and efficiently as described by the efficient conventional market model. Financial behavior can be defined as a knowledge

that studies how psychology influences financial decisions (Bond & Thaler, 1990; Nofsinger, 2005; Shefrin, 2001).

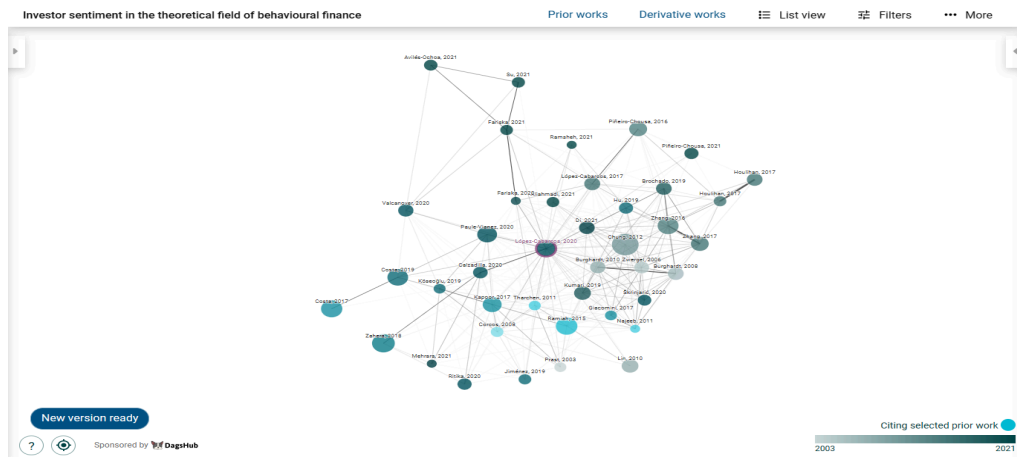
Through this article, the author tries to explain the research related to financial behavior that has been carried out, and see the advantages and disadvantages of each of the research results, then the author tries to explore what research questions can be done next to complement this financial behavior. The author maps the studies that have been carried out using connected papers. The forestry sector has an important role in the Indonesian economy. Wood products as raw materials and finished goods produced from the forestry sector have contributed to increasing economic growth through added investment value, increased export performance, state revenues through taxes and non-taxes, and creating business opportunities and employment [1]. International trade liberalization, decades of relatively steady economic growth, and increased demand for resources have encouraged the establishment of operations in these places. This development certainly implied the establishment of human settlements in these areas, built to gather a stable workforce to serve the needs of industrial projects [2].

## 2 Research Design

This study is a systematic review research using co-citation and bibliographic incorporation based on Connected Papers AI. Connected papers ai is an artificial intelligence that is useful for visualizing publications (Liu, 2022). On the connected papers ai page, it is explained that are a unique visual tool that can be used to help researchers and applied scientists find and explore papers that are relevant to their field of work. The way connected papers ai work is to create a graph by analyzing the sequence of 50,000 articles and selecting a few dozen titles that have the strongest relationship to the original paper. Furthermore, in the graphs that have been formed, the papers are arranged based on their similarities. The similarity metric is targeted at the concept of co-citation and bibliography. Connected papers ai are connected to the semantic scholar paper corpus.

Connected papers ai were used in this study, starting with entering the keyword "Behavioral Investor", then some recommendations for paper titles came out. The author chose the title of the paper "Investor sentiment in the theoretical field of behavioural finance" (Ángeles, 2020) as the original paper. The following is a graph displayed by connected papers ai based on the title.

Figure 1. Graphs based on connected papers



Research in this area can be divided into three main directions based on the distance between the document group and the node shown in the visualization chart of figure 1 above. To summarize previous research in this area, the authors then used the previous work function of Connected papers ai to identify the ten most frequently cited papers in the chart. These papers cover a total of ten papers, which can be seen in Table 1.

Table 1. Most frequently cited papers

bibliometrik		Edit Settings					
★	●	📄	Authors	Title	Year	Published In	Added
★	●		Fama, E	EFFICIENT CAPITAL MARKETS: A REVIEW OF THEORY AND EMPIRICAL WORK*	1970	Journal of Finance	10:45am
★	●		Tversky, A; Kahneman, D	Judgment under Uncertainty: Heuristics and Biases	1974	Science	10:45am
★	●		Kahneman, D; Tversky, A	PROSPECT THEORY: AN ANALYSIS OF DECISION UNDER RISK	1979	Econometrica	10:45am
★	●		Bondt, W D; Thaler, R	Does the Stock Market Overreact	1985	Journal of Finance	Econometrica
★	●		Shefrin, H; Statman, M	The disposition to sell winners too early and ride losers too long	1985		10:45am
★	●		Long, J D; Shleifer, A; Summers, L; Waldmann, R	Noise Trader Risk in Financial Markets	1990	Journal of Political Economy	10:45am
★	●		Barberis, N; Shleifer, A; Vishny, R	A Model of Investor Sentiment	1997	Behavioral & Experimental Fi...	10:45am
★	●		Daniel, Kent; Hirshleifer, D; Subrahmanyam, A	Presentation Slides for 'Investor Psychology and Security Market Under and Overreactions'	1998	CSN: Business (Topic)	10:45am
★	●		Cliff, Michael T; Brown, Gregory W	Investor Sentiment and Asset Valuation	2001	FEN: Behavioral Finance (Topic)	10:45am
★	●		Baker, Malcolm P; Wurgler, Jeffrey	Investor Sentiment and the Cross-Section of Stock Returns	2003	SPGMI: Compustat Fun...	10:45am

Furthermore, the papers are used by the author to present the development of behavioral investors and the psychological factors that influence them.

### 3 Discussion

The stock market is an important part of the global economy, and the decisions made there play an important role in determining a person's wealth and the value of a business. Eugene Fama (1970) in his work entitled "Efficient Capital Markets: A Review of Theory and Empirical Work" created the theory of efficient capital markets, which according to him is a market in which the price of an asset reflects all available information. In other words, the price of stocks in the efficient capital market will reflect the actual intrinsic value of the asset, and there will be no arbitrage opportunity to make easy profits. At the beginning of its development, economic theory showed that investors are rational and logical, which means that every investor will behave the same every time they receive information in the capital market. However, over time, researchers have found that there are investors who behave differently to market reactions.

Daniel Kahneman and Amos Tversky in their research conducted in 1979 originated the Prospect Theory, which studies how people make decisions in situations involving risk and uncertainty, especially in terms of financial decision-making. Prospect theory offers a different perspective from the rational decision models often assumed in traditional economics. In the prospect theory initiated by Daniel Kahneman and Amos Tversky, there are the following important points:

1. Emphasis on relative losses and gains. According to prospect theory, people tend to see advantages and disadvantages in relative relationships rather than absolute values. In other words, they are more sensitive to changing conditions than their final grade. This means that people are more affected by losses than driven by profits when making decisions.
2. In Prospect Theory, utility functions, or the way people perceive value, have an S shape or an S curve.
3. Loss Suppression Effect. According to Prospect Theory, there is a "loss-suppression effect", which suggests that people tend to worry more about losses than gains when making decisions; This can lead to conservative behavior, where people tend to avoid things that could result in loss.
4. End Effect and Status Quo Effect. In this theory, there is the idea of the tip effect, where people tend to judge very poor or very good results with high intensity. In addition, there is the idea of the status quo effect, where people tend to maintain the current situation or decision if they are comfortable with it.
5. Implications for financial decision-making. In finance, Prospect Theory can explain why investors may become more discouraged when deciding to sell a stock when its price is falling (to avoid losses) than when its price is rising. This may also explain why investors may prefer to "stick" to investments they already have even though there are better opportunities elsewhere.

The Theoretical Outlook described above has several advantages and disadvantages. The advantages of theory are able to describe how humans make real economic decisions by considering emotional and psychological aspects. This theory is closer to reality than the rational notion of behavior used in conventional economic theory. In addition, the theory further explains asymmetry in decision-making by saying that people behave differently towards risk and uncertainty depending on whether the situation involves gain or loss. The shortcomings in the prospect of this theory are pointed out by several experts through their research as follows: many involve mathematical formulas and curves that are difficult for

non-academic individuals to interpret. Another drawback, according to some critics, is that the theory can be very sensitive to the effects of scaling effects in the representation of value and risk. This can lead to very different results.

Hersh Shefrin and Meir Statman in their 1985 work "The Disposition To Sell Winner Too Early and Ride Losers Too Long: Theory and Evidence" discuss further about one of the most significant and unique features of Kahneman and Tversky's approach to choice in conditions of uncertainty is the aversion to the realization of losses. This paper by Hersh Shefrin and Meir Statman discusses two aspects of this feature. First, it puts this pattern of behavior into a broader theoretical framework regarding the general disposition of selling winner stocks too early and holding on to loser stocks for too long. This framework includes other elements, namely mental accounting, reluctance to regret, self-control, and tax considerations. Second, their paper discusses evidence showing that tax considerations alone cannot explain the observed patterns of profit and loss realization, and that they are consistent with the combined effects of tax considerations and the other three elements of their framework.

In addition to Hersh Shefrin and Meir Statman, De Bond and Thaler (1985) found that markets tend to "overreact" to new information or events. Financial science and behavioral economics are heavily influenced by this article. The article was written in 1985. In detail, the article discusses the concept of overreaction. The study, conducted by Bond and Thaler, aims to test whether there is evidence that the stock market has a tendency to "overreact" to new information, which means that stock prices often react too quickly to new events or news. The results of this study found that there is evidence that the market tends to "overreact" to new information. The researchers found that portfolios referred to as "losers" (stocks that had underperformed before) tended to experience a significant increase in performance within a year of formation, while portfolios referred to as "winners" experienced a decline in performance. In other words, stock prices that previously experienced significant declines tend to "undergo a correction" with better performance, and vice versa.

Our understanding of stock market behavior depends heavily on this research. The results support the idea that investors often act too quickly when they get new information, which can lead to unnatural stock price uncertainty. It also supports the idea of a "momentum effect", which is when stocks that have shown positive or negative results in the short term tend to follow the trend. This article has become one of the most important discoveries in behavioral economics and provides the basis for further research on the phenomenon of "overreaction" in the capital markets.

The next research that developed the concept of investor financial behavior that showed that the market was inefficient was a study conducted by Andrei Shleifer and Robert W. Vishny written in 1997. This article examines the concept of "noise trader risk". In the article, it is explained that noise traders are investors who make trading transactions without sufficient information about fundamental analysis and other relevant information. They make reactions to news, gossip, or market emotions, and make trading decisions not based on rational data or analysis. In this article, we will find the difference between "noise traders", who trade based on non-fundamental things such as expectations and emotions, and knowledgeable traders, who trade based on relevant analysis and information.

Studies show that the behavior of "noise traders" can lead to irrational market volatility. They can significantly affect the price of stocks and other financial assets even when there is

no major change in fundamental information. As a result, there is a risk of sound traders, i.e. the risk that investors may lose money due to price changes caused by "noise traders". In the article, a model was also developed to measure the risk of "noise traders" and their impact on stock prices.

Nicholas Barberis, Andrei Shleifer, and Robert Vishny, published in 1997, also discuss market behavior like the articles discussed earlier. If Shleifer and Robert W. Vishny put more emphasis on "noise traders risk" and their models, this article develops a theoretical model that explains the role of investor sentiment in their decisions to transact in the capital market. Investor sentiment studied by the researcher is emotions, beliefs and market perceptions. Previously, financial experts and their theories tended to ignore these psychological factors. In this study, it was found that investors' behavior is not always logical and their sentiments can lead to market volatility that is not always effective. This impacts the formation of market trends, price volatility, and the risks associated with volatile sentiment.

Research on psychological factors was subsequently reviewed by Kent Daniel, David Hirshleifer and Avanidhar Subrahmanyam in 1998. In the results of its research, it was stated that they showed excessive confidence implies negative long-term autocorrelation, excessive volatility, and predictability of returns that depend on public events when management actions are associated with stock price errors. Although biased self-contribution increases short-term autocorrelation, there is a negative correlation between future returns and previous long-term stock market and accounting performance.

Research conducted by Gregory W. Brown in 2001 also discusses investor sentiment. The difference with the previous study is that this study is related to asset valuation and market pricing. In his research, it was found that the market pricing error shown by the independent valuation model was positively related to sentiment. Future yields over a period of several years are negatively related to sentiment.

Baker and Wurgler in 2003 also conducted research on investor sentiment and return rates. In their research, they examined how investor sentiment affects stock returns in a cross-sectional manner. The theory predicts that a broad wave of sentiment will disproportionately impact stocks whose valuations are highly subjective and difficult to arbitrate. They tested this prediction by studying how the cross-section of subsequent stock returns varied with the proxy of investor sentiment at the beginning of the period. When sentiment is low, subsequent returns will be relatively high in small-cap stocks, high-volatility stocks, unprofitable stocks, non-dividend payers, extreme growth stocks, and depressed stocks, consistent with underpricing of these stocks. Conversely, when sentiment is high, these patterns weaken or reverse completely. The results are consistent with predictions and do not appear to reflect alternative explanations based on systematic risk compensation.

## **4 Conclusion**

The studies discussed in the previous chapter show that behavioral and psychological factors of investors affect stock price volatility in the capital market. In psychology-related studies, it only discusses the topic of investor sentiment related to emotions, beliefs and market perceptions. In addition, in these studies, all of which discuss stock price volatility in the capital market, no one has discussed how investor sentiment factors, especially emotional intelligence, affect investors in determining stock price predictions. Therefore, in the future,

the author feels the need to conduct research on the influence of emotional intelligence on stock price prediction.

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