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The Behavioural Theory Relevance of Mental Accounting for the Investment Decisions

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Abstract. At first, investors in investing not only used estimates of investment instruments, but psychological factors had also determined the investment. In fact, various parties state that the psychological factor of this investor has the biggest role in investing. This study is an experiment on financial option pricing. Arbitrage-free option pricing is tested against three hypotheses based on mental accounting. The purpose of this study is to identify and confirm the theory of mental accounting on informed decisions and investor considerations in investing in the capital market to determine investment decision choices.. This research was conducted by using a questionnaire to 100 respondents of capital market participants with purposive sampling method. The method used in this research is descriptive analysis. Based on the respondent's response data, it shows that the respondents have divided the income they receive regularly every month, allocated to several different accounts. Data analysis techniques used are descriptive statistics, t-test, and regression. T-test and regression are results show The results of this study indicate that there are two conclusions, namely the first research results show that investors are mentally accounting biased. The second conclusion is that mental accounting affects investors' investment decisions in stocks

1. Introduction

The development of digital information technology has a positive impact on the use of technology, this is reflected in the fact that so many people use technology for investment. Changes in people's behavior are visible, from the way they transact online to become an option. This trend also occurs in capital market transactions. Currently, the number of capital market investors (stocks, mutual funds, bonds) has increased sharply compared to the previous year. Especially with the online application for investing. In simple terms, investment can be interpreted as an activity to save money with the aim of getting a return with a certain purpose and period of time. The amount is very dependent on the ability of capital owned by a person. Investment can also be interpreted as a person's sacrifice in the form of delaying spending with the aim of making profits in the future. Everyone has their own preferences and standards or calculations in managing income, there are plots on different accounts such as the basic needs section, cashflow, emergency funds, insurance, investments and debt. Mental accounting is a person's tendency to make or assess economic decisions by grouping assets or sources of money into separate (non-fungible) accounts. Here is a real example of this bias in our daily lives. Mental accounting also has a relationship with demographic factors which include gender, age, and income. Individual perceptions and attitudes tend to have differences with differences in gender, age, and income. Men and women's perception of money will be different, as well as age and income factors affect financial decisions.

In behavioral life cycle theory according to [1] it is assumed that a person groups assets (wealth) in three accounts, namely current income, current assets, and future income. Furthermore, it is assumed

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that a person's tendency to use current income more than future income. . Examples are stock and mutual fund investments [2]. According to [2], behavior and psychology affect individual investors and portfolio managers regarding the process of returning financial decisions in terms of risk assessment, and framing problems. [2]. describes behavioral finance as an interaction between psychology and financial activities and practitioner performance. Shefrin also stated that one investor's mistakes can be another investor's gain.

The theory of reasoned action was developed by by [3]**.** that behavior is carried out because individuals have the intention to do so. Causes of behavior are based on assumptions.

Behavioral investors begin a process of forming a behavioral portfolio by dividing their portfolio into levels in a pyramid. This pyramid is separated based on the risk of investment. The pyramid consists of two levels, namely downside protection (low risk) and upside protection (high risk). The first level, namely downside protection, is an asset that is intended to protect or protect the assets we have. Examples of assets at this level are insurance, deposits, and bonds. The second level, namely upside potential, is an asset that is used to increase wealth

2. Literature Review

2.1. Investment behavior theory

Everyone has their own preferences and standards or calculations in managing income, there are plots on different accounts such as the basic needs section, cashflow, emergency funds, insurance, investments and debt. Financial management behavior is one indicator that causes someone to be successful or not in terms of financial management. Financial Management that has been carried out by . [4]. states that there are three factors that influence Financial Management Behavior or also called a person's financial behavior including: First, a person's self to whatever happens in life or called Locus Of Control. Second, one's financial knowledge of things related to money or Financial Knowledge. Third, the level of income [5]. explain that behavioral finance is an interdisciplinary of three studies (Integrate behavioral finance) namely psychology, sociology and finance. Furthermore, Ricciardi and Simon (2000) explain "when studying the concept of behavioral finance, traditional finance is still the centerpiece. However, the behavioral aspects of psychology and sociology are integral catalysts within this field of study". Taking into account the opinion of [5]. it is clear that behavioral finance does not get rid of traditional finance, but complements the study by adding the fields of sociology and psychology.

The behavioral factors of an investor are very influential on their investment decisions. According to [7] behavioral finance is the science of how behavioral factors influence financial behavior. So that it can be said that behavioral finance is a science that examines how humans make investment decisions based on the response of the information they get. Another thing, when viewed from the Prospect theory, was developed by [6] This theory originated from research conducted by [6] regarding human behavior that is considered strange and contradictory in making decisions. In short, it can be said that prospect theory describes several statements that affect a person's thought process when making decisions. The involvement of emotions, preferences, traits and various kinds of things inherent in humans often causes humans to not always behave rationally in making decisions. In addition, this theory explains how a person makes decisions in uncertain conditions

Individual investors who using analysis and trading technical options often make decisions bad portfolio More continued [9] stated that individual investors which uses technical analysis that disproportionately tend to have speculation on (1) market development short-term stock as a goal their main investment, (2) holding more portfolio on higher level, (3) less tend to bet on the reversal phase, (4) choose the risk that displays a ratio higher than unsystematic risk to total risk, (5) engage in more trading options, and earn lower yield.

The marginal transformation level (MRT) there are opportunities for investment. which is indicated by the line The tangent to point A has the highest slope and can represent the highest rate of return on investment as well. if someone has a resource (yo, yi) that has utility U_1 can use the opportunities on the line set at point B, while the indifference curve is tangent to show the maximum utility that can be achieved, U_2..

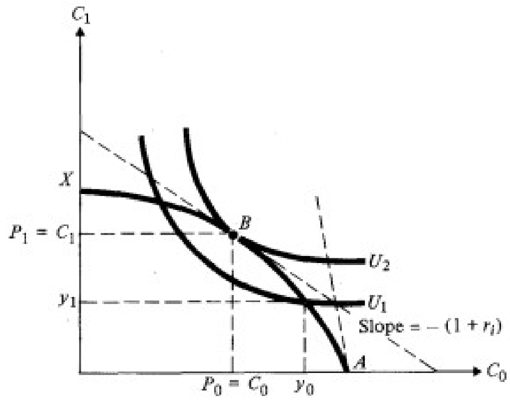

Figure 1
The production opportunity set

A Robinson Crusoe economy is characterized by the fact that there are no opportunities to exchange intertemporal consumption among individuals. What happens if instead of one person many individuals are said to exist in the economy? Inter temporal exchange of consumption bundles will be represented by the opportunity to borrow or lend unlimited amounts at r, a market-determined rate of interest.

2.2. The impact of mental accounting to Invesment Decision

States that an individual will invest if there is an opportunity that according to calculations has a high chance of getting a higher rate of return compared to other levels of preference [10] According to by [7]behavioral finance is the science of how behavioral factors influence financial behavior. So that it can be said that behavioral finance is a science that examines how humans make investment decisions based on the response of the information they get. Another thing, when viewed from the Prospect theory, was developed by [6]. This theory originated from research conducted by by [6] regarding human behavior that is considered strange and contradictory in making decisions. In short, it can be said that prospect theory describes several statements that affect a person's thought process when making decisions. The involvement of emotions, preferences, traits and various kinds of things inherent in humans often causes humans to not always behave rationally in making decisions. In addition, this theory explains how a person makes decisions in uncertain conditions.

Furthermore, by [11]components of this prospect theory are: mental accounting, regret aversion, and loss aversion. Mental accounting explains how a person performs the accounting process which can be learned by observing a person's behavior or concluding the rules that apply in society. According to by [12], investors who have mental accounting in making decisions when transacting are investors who consider the costs and benefits of the decisions taken. that way investors will feel safe. Mental accounting has a purpose, one of which is to become a tool for an investor to be able to control himself to think rationally so that he can make better decisions and help someone to be able to see investment problems better.

Investors have the behavior and considerations when selling assets are not happy if the price of the asset is lower than the price when purchased which is a loss aversion behavior[14],. Meanwhile, according to Shefrin and Statman [15]investors also have a tendency to sell their assets faster if according to the calculations the investor makes a profit and will make other considerations and will hold back in selling their assets if the assets they have have not received optimal profits

Mental accounting categorizes the recording of activities on different accounts. On mental concepts, a person's behavior tends to assign a code of income and expenses and sort them into certain

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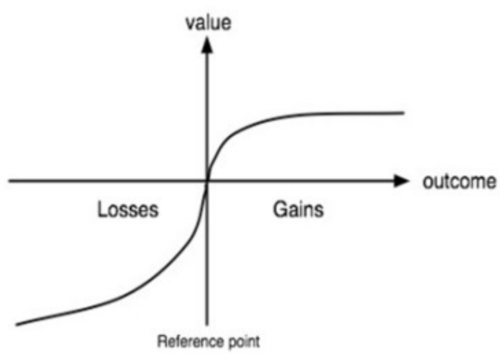
accounts, such as regular income versus gifts, basic needs versus the need for fun/recreation[16]. In addition, there is a possibility that someone will spend money that comes from routine income differently from gifts [15]. Furthermore[15], through behavioral life-cycle theory group assets (wealth) into three mental accounts, namely: current income, current assets and future income. They predict that someone will use more of the fortune or bonus earned if it is entered into a current income account than if it is put into a savings account (current asset), and is used at least for consumptive activities if it is included in a future income account. In addition to this, [14] and argues that why someone uses mental accounting is because it allows transactions to be evaluated separately from other transactions

Prospect Theory was developed by [6] in the early 1980s which basically covers two fields of science, namely psychology and economics (psychoeconomics) which is an analysis of a person's behavior in making economic decisions between two choices. Prospect theory focuses on how real decisions are made (descriptive approach). Starting with [6]research on human behavior that is considered strange and contradictory in making a decision. The same research subjects were given the same choices but formulated differently, and they exhibited two different behaviors. By[6], this is referred to as risk-aversion and risk-seeking behaviour.



Sumber : http://en.wikipedia.org/wiki/Prospect_theory

Figure 2

The Prospect Theory

The figure above shows a reference point dividing the area where someone is at a loss and the area that shows someone is at an advantage. The shape of the curve above the reference point represents risk aversion, while the bottom line of the reference point represents risk-seeking behavior. The point is from the research conducted by [6]What is very important from the study of [6]is their experiment which shows a different attitude or behavior when faced with risk facing gain with attitude about risk facing loss. This prospect theory is widely used when someone makes an investment by looking at the phenomenon of human behavior in various areas of life, especially in the investment decision-making process. This theory is also a reference in measuring the behavior of people or organizations in making decisions

Behavioral Portfolio Theory shows that investors view their portfolios not as a whole, but as consisting of different levels in the asset pyramid. Each level in the pyramid has a specific purpose and has varying risks also. Modern portfolio theory (MPT) was developed by Harry Markowitz during the same period to identify how rational actors would construct a diversified portfolio across multiple asset classes to maximize the expected return for a given level of risk preference. The resulting theory constructs an “efficient boundary”, or the best portfolio mix for any risk tolerance. Modern portfolio theory then uses these theoretical constraints to identify the optimal portfolio through the mean-variance optimization (MVO) process. According to the Behavioral Portfolio Theory, investors divide their money into two levels, the lower level or downside protection aims as portfolio protection, while the upside potential or upper level aims to maximize investor wealth. Investors who apply Behavioral Portfolio Theory, perfectly, will divide the money they have into various levels that have different goals and levels of aspirations[15]

The purpose of this study was to analyze the relationship between mental accounting factors and decisions in investment. The respondents' data used in this study were gender, age, and income. This research takes sample of investors who frequently conduct investment transactions on the Jakarta Stock Exchange. while to analyse primary data, the researcher uses the chi-square test as a tool.

4. Findings

4.1. The impact of mental accounting to Invesment Decision

The data studied are primary data, namely data obtained directly by distributing questionnaires to respondents who become samples of respondents' opinions can be explained in table 1:

Table 1. Recapitulation of respondents' responses

No	Items	Frequency of respondents response:					mean
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
1	allocate funds to several account	7	7	42	34	10	3.43
2	different treatment fixed monthly income and bonuses	3	3	22	62	10	3.72
3	always allocate investment funds and costs every month	4	6	37	37	7	3.48
4	always allocate towards bonus	3	1	9	51	36	4.12
5	always calculate the return on investment	8	3	17	49	23	3.67

Based on data from respondents' responses, it shows that respondents have divided the income they receive regularly every month, which will be allocated to several accounts. based on the average respondents stated that investment is influenced by mental accounting in their investment. And mental accounting which tends to divide its income into certain accounts or categories.

Table 2 : Regression analysis results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	27.259	0.2828	92.859	0.0000
MA	0.2207	0.0889	27.181	0.0002
R-squared	0.1227	Mean dependent var		27.701
Adjusted R-squared	0.1157	S.D. dependent var		0.5555
S.E. of regression	0.5122	Akaike info criterion		15.201
Sum squared resid	257.222	Schwarz criterion		15.722
Log likelihood	-750.051	Hannan-Quinn criter.		15.512
F-statistic	128.252	Durbin-Watson stat		17.175
Prob(F-statistic)	0.0002			

Predictors: (Constant), MA (mental accounting). Dependent variable is IK (investment decision).

Table 2. shows that based on the results of the regression analysis of mental accounting (MA) variables on investment decision making. shows the MA coefficient of 0.22 and it can be interpreted that MA can have a significant effect on investment decisions or mental accounting has an effect on investment decisions.

This means that it can confirm that from a psychological approach, the accounting mindset also affects the mindset of market participants in making transaction decisions. Mental accounting also occurs when someone divides accounts based on sources of income. Some put it in a different account, some made it virtually, some were in their records. The source of money turns out to affect how the money will be used later

These results are in line with the opinion of Thaler (1980) who first initiated this mental accounting phenomenon, where someone makes thoughts that resemble the way an organization or company makes an accounting system to manage financial decisions that will be made. The accounting treatment of the company apparently affects individuals in making financial decisions . Mental accounting apparently also occurs in stock transaction activities, both trading and investing.

These results can also be said that if market participants think more clearly and are able to override this mental accounting phenomenon, of course their investment decisions will be better and have greater profit potential.

5. Conclusions

The results of this study indicate that there are two conclusions, namely the first research results show that investors are mentally accounting biased. The second conclusion is that mental accounting affects investors' investment decisions in stocks

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