

OVERCONFIDENCE AND DISPOSITION EFFECT: MAPPING LITERATURE AND AGENDA FOR FUTURE RESEARCH

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Abstract

A literature review based on 100 articles has successfully identified variables, countries, perspectives, and research methodology in the context of research on the disposition effect that has been carried out so far. The results of the study found that most of the disposition effect studies used a quantitative empirical approach. The experimental, survey, and combinative research methods are becoming more relevant to be used to provide a better picture of the disposition effect. Besides, future research regarding the disposition effect can use several variables that have a rare frequency of appearance, namely overconfidence, individual investor, and investor characteristics. Based on the analysis in Scopus-indexed journals (Q1 to Q4), another factor appears that plays a role in the disposition effect but is rarely used by researchers, namely Professional Advice.

Keywords: Overconfidence, Disposition Effect, Prospect Theory, Heterogeneous Theory, Systematic Review, Bibliometric.

JEL Classifications: G35 G32

INTRODUCTION

Research on the disposition effect was initiated by Tversky, (1979), the results of his research found Prospect theory. Prospect theory provides an explanation based on the concept of loss aversion. Loss aversion causes investors to sell stocks that are underperforming too early, and loss aversion makes investors hold too long stocks that are underperforming. Then Shefrin & Statman, (1985) develop research Tversky, (1979) and produce a disposition effect behavior. Research results Shefrin & Statman, (1985) revealed that investors prefer to realize capital loss because they do not want to lose the opportunity but they are willing to realize capital gain when they get a profit, this is known as asymmetric financial behavior. This means that investors realize trading profits too quickly and hold on to losing positions too long. Investors tend to hold on to loser stocks longer and quickly release winner stocks. There are two aspects of uncertainty in loss realization that are considered by Shefrin & Statman, (1985) namely the effect of selling winning stocks that are too fast and holding loser stocks for too long. Shefrin & Statman, (1985) show that there are investor psychological factors that can influence the disposition effect, namely mental accounting, regret aversion, self-control, and tax consideration. Further studies prove that tax considerations cannot explain the observed patterns of loss and gain realization. This proves that tax considerations cannot be separated

from the three elements of investor psychology to influence the disposition effect.

Prospect theory has the disadvantage of not providing an adequate description of individual choices (Camerer & Kunreuther 1989; Fishburn 1988; Machina 1987), prospect theory only explains the major violations of expected utility theory and the choice between risky prospects with meager returns (Kahneman & Tversky 1979; Kahneman *et al.*, 1974). Then Tversky & Kahneman (1992) develop prospect theory using cumulative decision weights and expand prospect theory. This theory is called the cumulative prospect theory. This theory applies to both uncertain and risky prospects.

This theory makes it possible to assign different weights to gain and avoid losses. Two principles, decreased sensitivity, and loss rejection are used to explain the characteristic curvature of the value function and the weighting function. The experimental results prove the behavior of investors towards risk, namely: risk aversion for-profit and risk-seeking for losses with high probability; seek risk for profit and avoid risk for loss with low probability. Until now, prospect theory is quite good at explaining the disposition effect, but this theory has weaknesses, leaving several questions unanswered.

Prospect theory fails to answer several questions, including what conditions determine investors to sell stocks with superior performance early? Are investors always responding to every increase in share prices with a decision to sell their superior shares? What conditions determine investors to hold for too long underperforming stocks? Are investors still willing to hold inferior stocks when the price decline continues, resulting in even greater losses? (Surya *et al.*, 2017).

To the best of our knowledge, no bibliometric analysis of the term 'disposition effect' has been performed. This paper aims to fill in the gaps by providing a broad bibliometric analysis of the literature related to this term to answer the following:

- 1) How are the disposition effect articles classified?
- 2) What is the disposition effect research trend? What research topics are the subject of more publication?
- 3) What are the topics of the disposition effect in the future that provide opportunities for further research?
- 4) What is the trend of research methodology in disposition effect research?

This research is organized as follows. The first part discusses the introduction of the study and research questions. Furthermore, Part Two describes the literature review, part three describes the methodology used in this structured study based on bibliometric analysis assisted by PoP and GS database software. The results and discussion regarding the results of grouping keywords displayed with VOSviewer are discussed in Part Four. The final section concludes the review by presenting limitations and recommendations for future studies.

LITERATURE REVIEW

Attention to the issue of disposition effect reflects attention to the information in interpreting information for making decisions to hold or sell shares. This information is loaded with topics, substance, and knowledge, both financial and non-financial, used by users in economic decisions, and is reflected in share prices. Ajzen & Fishbein, (1975) provides an overview of the importance of beliefs that are used to refer to an important perception of an individual's / person's attributes or as defining the characteristics of an object or determinants of individual attitudes. According to Miller, (1977), judgments by more optimistic investors will be reflected in share prices. As a result, a high (low) dispersion in expectations can predict low (high) stock returns in the future. The confidence level determines decision-making behavior. The role of information is to change beliefs. Therefore, decision-making behavior changes, when new information arrives to change beliefs. Research evidence that information can change investors' confidence in making investment decisions (Atmaz & Basak, 2018; Beaver *et al.*, 1989; Frazzini, 2006; Lewellen & Shanken, 2002; Longstaff & Wang, 2012).

Investors have a response to information but limited cognitive ability in interpreting the information received. According to Burns *et al.*, (1993), attention to investment matters reflects attention to the information in interpreting information for decision-making. For investors, information is a signal that serves as a stimulus that influences the cognitive process because it informs the company's financial performance, company prospects, uncertainty, expected values, and a means of management responsibility to stakeholders. Through the understanding center of information processing from its cognitive mental investment process occurs in investors, so that information signals can be considered good news or bad news.

The manifestation of good news and bad news is a manifestation of the perception of expected values (return) and risk and shows the attention of investors in making decisions to buy, hold, or sell shares. Investors have a response to information but have limited cognitive ability in interpreting the information they receive so investors act naive, irrational, and unsophisticated (unsophisticated), therefore, investors tend to base on rumors, issues, speculative, and mass behavior. , impulsivity, loss-control, and impatience (Burns *et al.* 1993).

Based on literature studies and phenomena that occur, accounting information can also influence the heterogeneous beliefs of investors, causing a disposition effect, namely Post-Earning Announcement Drift (Fama 1997). Yield variants and accounting risk measurement, with the accounting data used in the form of current ratios, debt ratios, profitability ratios (Lipe 1998), earnings announcements (Frazzini, 2006), and stock returns, volatility, and trading volume (Goetzmann and Massa 2008).

Apart from accounting information, recent studies have shown that nonaccounting information can also influence the heterogeneous beliefs of investors. The impact is that investors not only consider accounting information but also other information in making investment decisions, namely information on the economic condition of a country (Hughes 2000; Sharma & Bhagwat 2006), and recent studies show that environmental information, namely air pollution, can lead

investors to a disposition effect (J. (Jie) Li *et al.* 2019). Li *et al.*, (2019) inspired by the health science findings that air pollution affects mental health and cognition, thereby intensifying the cognitive bias observed in Chinese financial markets. The results of the study found that air pollution significantly increases the disposition effect of investors.

In particular, investors are thought to use all available information to form rational expectations about the future in determining the value of a firm and its economic health. As a result, stock prices should accurately reflect fundamental values and will only move up and down when there is unexpected positive or negative news, it can be concluded that the financial market is stable and efficient, stock prices follow a random walk and the economy as a whole tends towards general equilibrium. But in reality, investors do not think and behave rationally. Conversely, driven by greed and fear, investors speculate on stocks between their highs and lows (Shiller, 1999). Differences in investor confidence can cause stock prices to deviate from fundamentals, which will lead to market inefficiencies. Company managers will exploit these opportunities and make financial decisions for their benefit (Paino, Ismail, and Smith 2014; Baker *et al.*, 2006; Siganos *et al.*, 2017; Niu *et al.* 2018).

Several theories have been proposed to explain the existence of investor confidence. One of the most influential theories is heterogeneous theory. Heterogeneous theory suggests the use of investors' irrational assumptions that occur simultaneously with institutional friction that causes abnormal behavior. The heterogeneous theory assumes that some investors are overconfident and believe in their signals, which in turn results in disagreements; when there are differences of opinion and short selling is not allowed, the market price reflects an optimistic investor's judgment because short-selling constraints prevent negative information from being revealed in the market (Hong and Stein 2003). Heterogeneous beliefs have an impact on stock prices with short selling constraints (Harrison & Kreps 1978; Miller 1977). Theory Hong & Stein, (2003) argued that short selling constraints with heterogeneous beliefs caused prices to be too high. Next, theory Hong & Stein, (2003) show that if optimistic investors leave the market, the initially pessimistic group will become marginal buyers and learn more about negative signals. Thus, the accumulation of hidden information is revealed during a market downturn, and returns are more likely to be negative with high trading volumes, which is a proxy for heterogeneous confidence levels.

The positive relationship between negative asymmetry and heterogeneous confidence levels is an implication of the study Hong & Stein, (2003). Chen, Hong, & Stein, (2001) found that higher detrended turnover, a proxy for heterogeneous confidence levels, predicts daily returns. Thus, they found evidence to confirm the theory put forward by Hong & Stein, (2003). Boyer, Mitton, & Vorkink, (2010) found the same result by showing that companies that have high turnover usually have negative returns. Not all evidence points to the same conclusion. Charoenrook & Daouk, (2011) found that higher detrended turnover predicts more negative returns. Jordan *et al.*, (2014) found that returns increase when stocks are not allowed to short sell and decrease when stocks are allowed to short sell.

Based on the phenomenon of the decline in the Composite Stock Price Index (IHSG) and the occurrence of the disposition affect behavior, the spread of coronavirus disease-2019 (COVID-

19) can affect humans. This is consistent with the heuristic findings of recent health science literature that air pollution and environmental health have a major impact on health (World Health Organization, 2016). This is because air pollution and environmental health can affect human food, cognition, and mental well-being i.e. affect mood, cognition, and mental well-being i.e. increase the risk of anxiety, depression, and cognitive decline. (Block and Calderón-Garcidueñas 2009; Fonken et al. 2011; Mohai *et al.* 2011; Weuve *et al.* 2012; Weir *et al.* 2012), in addition to its more recognizable effects on respiration, vascular health, and mortality (Paus 1989; Peters *et al.* 2011). Given that investors' trading behavior is influenced by their mental state (Kamstra *et al.*, 2003; Kamstra *et al.* 2003) and brain function (Frydman and Rangel 2014) and that limited cognitive resources are known to be biased (Kahneman *et al.*, 1974; Hirshleifer 2015). Although the cause of the disposition effect is still under debate (Barberis & Xiong 2009; Ben-David & Hirshleifer 2012; Henderson 2012; Li & Yang 2013; Frydman & Rangel 2014; An 2016; J. (Jie) Li *et al.* 2019), the cause is usually seen as one of the investors' trading mistakes that stem from cognitive bias (Hirshleifer, 2015).

Zheng & Kahn, (2013); Zivin & Neidell, (2013), surveyed the environment in urban China and concluded that economic growth has caused major environmental problems. On the other hand, environmental problems are known to affect human health, reduce the welfare and effectiveness of individuals participating in economic activities, thereby affecting economic growth. Therefore, there is a relationship between the environment and economic activity, so it is important for policymakers and academic researchers to fully understand the interplay between the two.

Besides, personal information held by investors is included in the market price. Following positive (negative) information, there are buying (or selling) activities that can increase (decrease) the stock price. Investors who exhibit a disposition effect tend to distort this process. Investors sell shares following capital gains and hold shares after losses. A market where many traders are affected by dispositions, and there are limits to arbitrage (Shleifer & Vishny 1997), Such distortions can result in insufficient buying (selling) pressure, thus driving prices up or down. As a result, there was a market reaction (Frazzini 2006; Dacey & Zielonka 2008), and markets become less efficient.

Market prices adjust slowly due to the presence of personal information, and the disposition effect has a clear role in this process. Also, different signal types can imply different trading dynamics. Unlike in the case of public information, informed traders have a distinct advantage over information from uninformed traders. Investors develop trading strategies that can hide information and take advantage of the information advantage as long as possible. Such trading strategies can lead to a potentially stronger reaction when signals are private and not public. It is interesting to see whether and to what extent personal information affects the disposition effect (Andersen *et al.* 2020).

Information can affect the speed at which stock prices move (Chen *et al.*, 2007; Barber *et al.* 2007; Merkley *et al.*, 2017; Gârleanu & Pedersen 2018; Bao *et al.* 2019). This research follows a theoretical framework (Barberis & Xiong 2009; J. (Jie) Li *et al.* 2019; Andersen *et al.* 2020). Variations in risk beliefs and appetites correlate with individual traits such as gender and age

(Dhar & Zhu 2006; Rau 2014), education, income, and wealth (Willis *et al.*, 2011; Giglio & Xiu 2016). Individuals with high expected returns (i.e., optimistic beliefs) are more likely to be male, have higher education, and have higher income and wealth, consistent with (Willis *et al.*, 2011; Giglio & Xiu 2016), and literature on inflation expectations and macroeconomics (Armantier *et al.* 2015; Das *et al.*, 2019). The risk appetite was higher among the rich and higher among men, consistent with (Croson & Gneezy 2009; Charness *et al.*, 2012). There is a positive correlation between expected returns and the portfolio fraction allocated to risk assets, consistent with previous findings using survey data (Ameriks *et al.* 2019; Giglio & Xiu 2016; Andersen *et al.* 2020).

Investors who suffer from mood disorders are caused by environmental health information, namely the spread of coronavirus disease-2019 (Covid-19) without realizing it feel a loss. Instead, investors try to realize profits to offset the negative effects of a bad mood, so investors have a disposition effect. The goal is to bring a bad mood back to a comfortable level (Robert *et al.* 1994; Weir *et al.* 2012; J. (Jie) Li *et al.* 2019) revealed that environmental information, namely air pollution, significantly increases the disposition effect of investors.

Barro & Ursua, (2020), argues that the economic downturn occurred from 1918 to 1920 during the Spanish Flu Epidemic. This explains that there are economic consequences from the spread of COVID-19. Gormsen & Kojien (2020), uses the performance of the United States futures market during the COVID-19 outbreak to infer future economic growth. Baker *et al.*, (2020) revealed that the COVID-19 pandemic is the first infection of the disease outbreak mentioned in the press which is linked to daily market movements.

Other than that, Steel & Taras, (2010) suggests that Hofstede's cultural dimensions can predict emotions at the individual level. Because emotions can explain the disposition effect (Kaustia 2010). While further studies have documented the disposition effect across different countries, a direct comparison of the magnitude of the effect, and the possible reasons for variation across countries and different cultures (Kaustia 2010). National culture has underlying disposition effects at the individual level, such as loss avoidance (Wang *et al.*, 2017) and the accounting mentality (Banerjee *et al.* 2019). People from different cultures vary in disposition effect due to differences in emotions (Breitmayer, Hasso & Pelster 2019). The cultural dimension is related to the disposition effect (Hofstede, 2001; Breitmayer *et al.*, 2019).

METHODS

A literature review is carried out using systematic, explicit, and reproducible methods (Garza-Reyes 2015), or mind mapping methods that emphasize the limits of knowledge (Tranfield *et al.* 1995). Bibliometric reviews are generally used in scientific disciplines and focus on the quantitative study of journals, books, or other types of written communication (Heersmink *et al.* 2011).

The data were analyzed using a bibliometric technique based on the bibliometric analysis protocol of (Fahimnia *et al.*, 2015; Setyaningsih & Indarti 2018) which consists of a) determining search keywords; b) get initial search results; c) improve search results; d) collect

initial data, and e) analyze data. Bibliometric techniques are used to represent the quantitative side of research results in the form of journal articles, books, or other types of written communication. (Heersmink *et al.* 2011; Raan, 2003).

Furthermore, to obtain a more comprehensive analysis, the article content was identified and grouped based on objectives, variables, countries, and methodology in the MsExcel workbook format. This study is based on a structured or systematic review method to produce a systematic summary related to various studies on the theme of investor belief and disposition effect.

The structured review method used is based on two criteria to filter articles containing the topic of the disposition effect. The determination of this aspect of the criteria is what distinguishes it from conventional literature reviews.

Some of the criteria used are:

- 1) Selection of appropriate and relevant keywords to find articles in electronic databases. The keywords "investor belief" and "disposition effect" were used to filter each article. This is done to ensure that the articles obtained follow the theme raised in this study, namely regarding the disposition effect.
- 2) The type of article chosen for the data analysis process is only using articles published by international peer-reviewed journals in English. This study does not use articles from the thesis, dissertation, or book conference because it guarantees the currentness of the study.
- 3) Articles from across fields or multi-disciplines are used to open opportunities for articles outside the science and social fields to increase the diversity of perspectives.

The stages of bibliometric analysis are described in detail in the following subsections.

Determine research keywords

The first step in carrying out a bibliometric analysis is to browse articles according to the disposition effect topic. This article search process lasts for 2 (two) months, with the help of Publish or Perish (PoP) software. This software was developed by Professor Anne Will Harzing from Tarma Research Software Pty Ltd-Melbourne (Bensman 2011). The database for the data collection process in this study uses Google Scholar by considering aspects of accessibility and completeness of data sources. The keywords used are "investor belief and disposition effect". Then for further research, the researcher determines that the article title must contain the words disposition effect. Apart from the search terms, other conditions such as the year of publication were used as criteria.

Search Result

The search results with keywords described in point 2.1 get 312 articles as initial data. These articles were published in the period from 1983 to 2020. This was done because the disposition effect research in the field of finance was pioneered by Tversky, (1979), the results of his research found Prospect theory. Besides, to the author's knowledge, from 1979 to 1982 there were no studies regarding the disposition effect. The following are the results of journal data

collection from Publish or Perish (PoP).

Table 1: Journal of Data Collection Results

Indicator	Result
Query	Journal, <i>investor belief</i> and <i>disposition effect</i>
Source	Google Scholar
Years	1979-2020
Papers	312
Citations	8590
Cites_Year	232,16
Cites_Paper	27,53
Authors_Paper	2,13
h_index	39
g_index	90
PoP hI norm	32
PoP hI annual	0,86

Note:

The names of the components in the indicator (e.g. query, source, etc.) still use the English version according to the results of the PoP.

Based on Table 1, the search process using PoP software resulted in 312 articles published over 37 years (1983 to 2020), for a total of 8,590 citations or the equivalent of 232.16 citations/year.

Improve search results

The next step in the bibliometric analysis is to separate articles based on article sources such as journals, books, proceedings, and others. The details can be seen in Table 2.

Table 2: Number of Articles by Type / Source of Publication

Number	Type / Source	Number of Articles
1	Journal*	
	Journal Q1	48
	Journal Q2	37
	Journal Q3	13
	Journal Q4	2
	Unranked Journal	111
	Not identified / not accessible / Non-English	3
2	Books / Reports / Reviews	3
3	<i>Conference Proceedings</i>	19
4	<i>Working paper/Thesis</i>	11
5	Not identified / cited / rejected website	65
Total		312

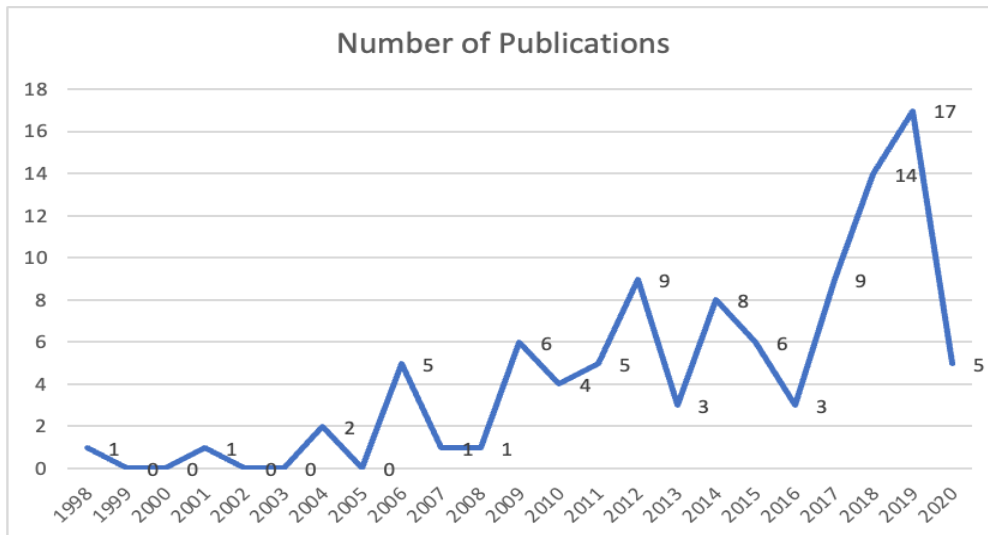
* ranking based on Scimagojr data

After obtaining 312 articles, then the article selection process was carried out so that 100 articles were published in reputable international journals. Of the 312 articles, 101 came from books, proceedings, and others that were discontinued for analysis. Then as many as 100 articles met the criteria consisting of articles published in reputable journals (Q1 to Q4) based

on the list released by Scimagojr. The remaining 111 articles were published in journals that were not registered with Scimagojr.

Improve search results

As previously described, the search process using PoP software resulted in 312 articles published during the period 1983 to 2020. All of these articles were then summarized into MsExcel format containing general information, such as title, author, year of publication, and journal specifications (name journal, tier, and publisher). Besides, the need for a more in-depth analysis to answer research questions, this study also uses specific information related to variables, perspectives, methodologies, and the country where the study was conducted. The results of data collection use relevant journals, namely journals published in reputable journals (Q1 to Q4). The following is a picture of the distribution of articles published in the disposition effect per year, from 1998 to 2020. Figure 1 describes the number of research publications on disposition effect in reputable journals from 1998 to 2020.

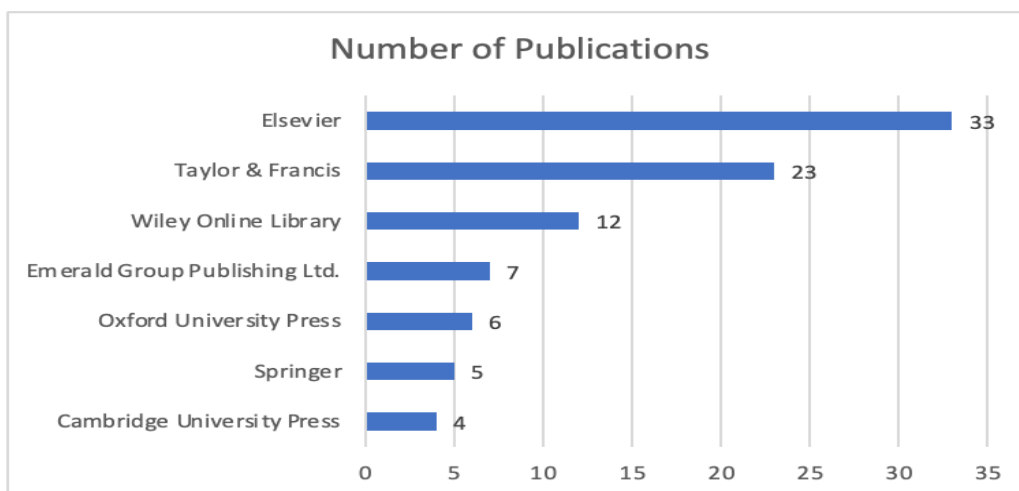


Source: Author's computation.

Figure 1: Number of reputable disposition effect journal publications (Q1 to Q4) per year (1998-2020)

The results of data collection indicate that the trend of disposition effect studies is still small. From 1983 to 1997 there was no research on the disposition effect, but then from 1998 to 2005, there were one to two articles published per year. The number of articles published increased significantly in 2006, but then decreased again until 2009, then increased again in 2010 until now with the highest number of articles published with the theme of the disposition effect in 2019. Based on publication sources, 100 articles were reviewed that come from international journals published by leading publishers such as Emerald, SAGE, Wiley, and others. The 100 registered journals are top-tier journals, which are classified in the Q1 to Q4 ranking by Scimagojr. In more detail, the following shows the distribution of international journals that

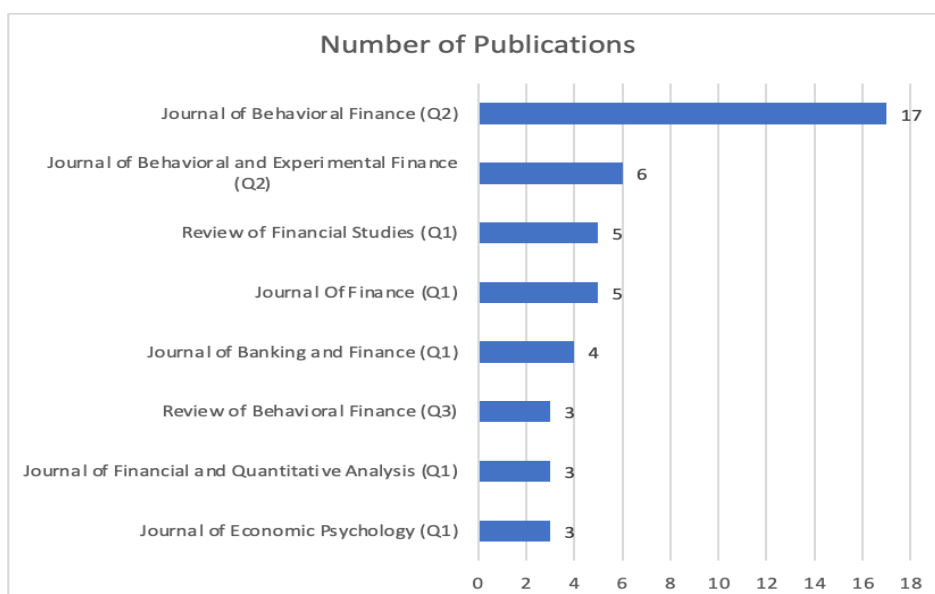
published more than three articles on the topic of the disposition effect. Figure 2 describes the number of scientific publications on research about the disposition effect in reputable international publishers.



Source: Authors' computation.

Figure 2: International journal publishers with the topic of the disposition effect

Based on Figure 2, there are thirty-three (33) articles published by Elsevier and twenty-three (23) articles published by Taylor and Francis. Then other publishers, namely Wiley Online Library, Emerald, JSTOR, and Springer published articles with more than three (3) articles. In more detail, here are the international journals that publish articles of more than two (2) articles. Figure 3 describes the list of international journals containing more than one article about the disposition effect based on reputable international journals.



Source: Authors' computation.

Figure 3: List of international journals containing more than two articles

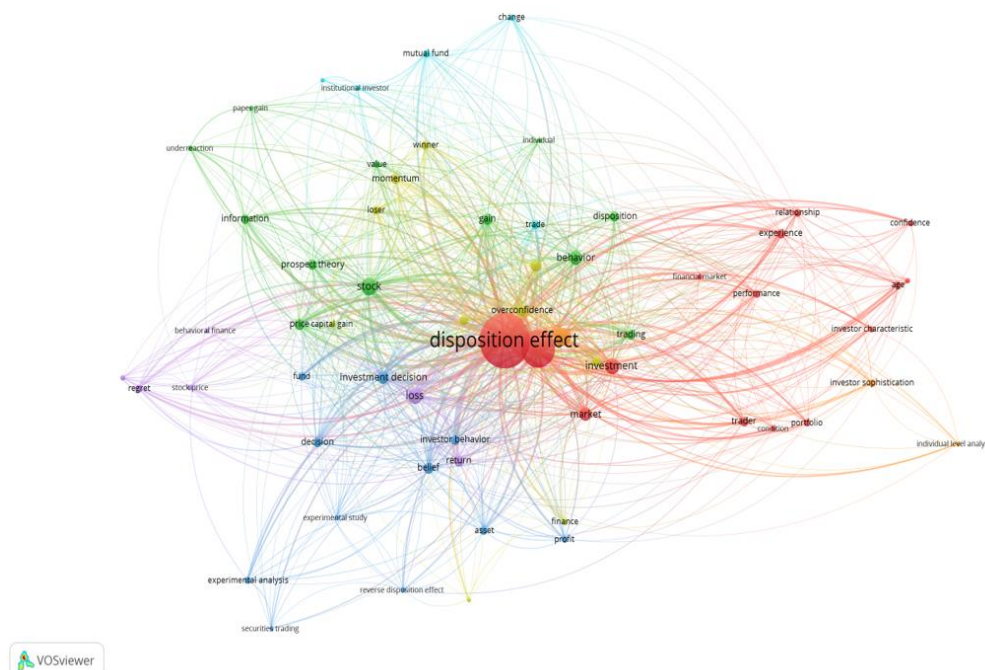
Figure 3 shows that there are seventeen (17) articles published by the Journal of Behavioral Finance (Q2) and the Journal of Behavioral and Experimental Finance (Q2), followed by a Review of Financial Studies (Q1) and Journal of Finance (Q1) respectively. -Each published more than four (4) articles.

Data analysis

The final stage of bibliometric analysis is analyzing data with the help of Mendeley software. This tool is used to manage the information needed in the analysis process, such as abstracts, keywords, and references. The data from Mendeley is then transferred to the RIS format so that it can be processed by the VOSviewer software. This process is carried out to obtain keyword clusters (terms) and a visualization map that describes the flow of research in the field of disposition effects. The summary of information recorded on MsExcel is also used to obtain information regarding the variables, country, and research methodology of the articles being analyzed. The following shows the visualization results based on keywords.

Keyword Information from All Articles

The following is a visualization map image based on keywords from the entire article. Figure 4 describes the visualization of research models regarding the disposition effect as well as the visualization of keywords that appear relatively rarely in previous studies.

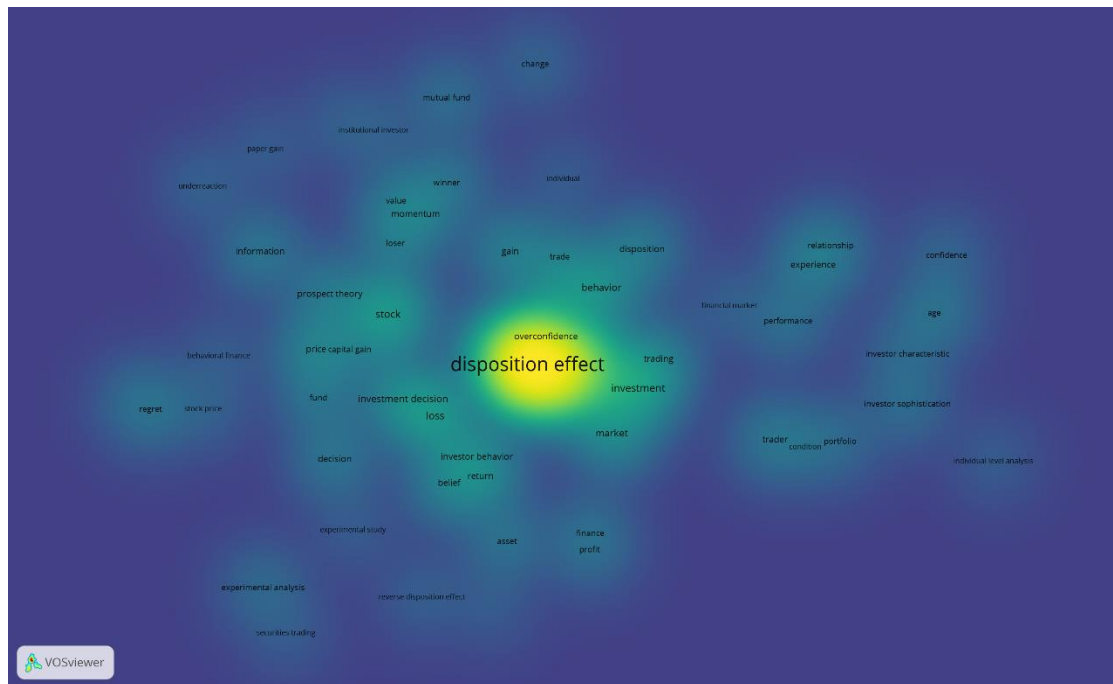


Source: Authors' computation.

Note: The different colors indicate the cluster of commonly used terms

Figure 4: Visualization map based on keywords from all articles

Figure 5 illustrates the density of research models about the disposition effect as well as keyword visualization that appears relatively rarely in previous studies.



Source: Authors' computation.

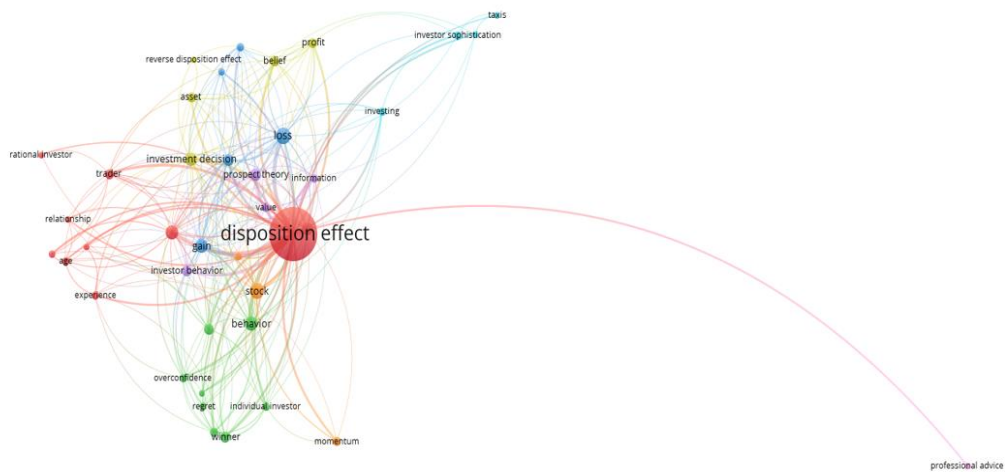
Note: The different colors indicate the cluster of commonly used terms

Figure 5: Keyword density map of all articles

Based on the data analyzed from 312 articles, some keywords that are relatively rarely used in the disposition effect research stream are the expression of belief using experimental study. Then there are other keywords, namely individual investor, and investor characteristics. Besides, there are still many other research opportunities regarding the disposition effect.

Keyword information from Scopus Indexed Journals (Q1 to Q4)

The following is a visualization map image based on keywords from the Scopus Indexed Journal (Q1 to Q4). Figure 6 illustrates the visualization of research models regarding the disposition effect as well as the visualization of keywords that are relatively rare in Scopus-indexed journals (Q1 to Q4).

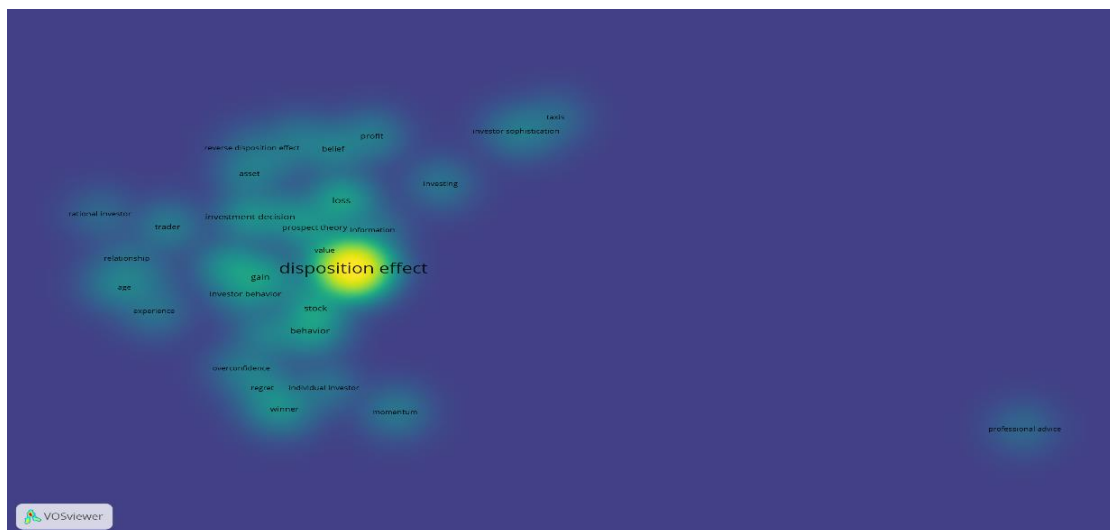


Source: Authors' computation.

Note: The different colors indicate the cluster of commonly used terms

Figure 6: Map of visualization based on keywords from Scopus-indexed journals (Q1 to Q4)

Figure 7 describes the density of research models regarding disposition effect as well as the relatively rare visualization of keywords from Scopus indexed journals (Q1 to Q4).



Source: Authors' computation.

Note: The different colors indicate the cluster of commonly used terms.

Figure 7: Density map based on keywords from Scopus-indexed journals (Q1 to Q4)

The following is a table of the frequency of occurrence of keywords from Scopus-indexed journals (Q1 to Q4).

Table 3: The frequency of occurrence of keywords

No.	Variable	Occurrences	Relevance
1	Professional Advice	3	12,30
2	Tax	3	12,30
3	Reverse Disposition Effect	3	1,13
4	Capital Gain	3	1,03
5	Stop Loss	3	0,56
6	Stock Price	3	0,55
7	Relationship	3	0,41
8	Rational Investor	3	0,38
9	Investor Charactersitic	4	0,77
10	Regret	4	0,39
11	Experimental Analysis	4	0,30
12	Disposition	4	0,27
13	Investor Sophistication	5	2,62
14	Individual Investor	5	0,69
15	Age	5	0,56
16	Investing	5	0,55
17	Experience	5	0,51
18	Overconfidence	5	0,41
19	Reference Point	5	0,37
20	Information	5	0,34
21	Momentum	6	1,99
22	Loser	6	0,71
23	Value	6	0,29
24	Profit	7	0,51
25	Asset	7	0,38
26	Trader	7	0,30
27	Winner	8	0,68
28	Investor Behavior	8	0,40
29	Belief	8	0,36
30	Stock Market	8	0,27
31	Trading	10	0,27
32	Prospect Theory	11	0,23
33	Price	11	0,15
34	Investment Decision	13	0,25
35	Behavior	15	0,25
36	Investment	15	0,23
37	Gain	15	0,13
38	Stock	17	0,15
39	Loss	20	0,17
40	Disposition Effect	197	0,19

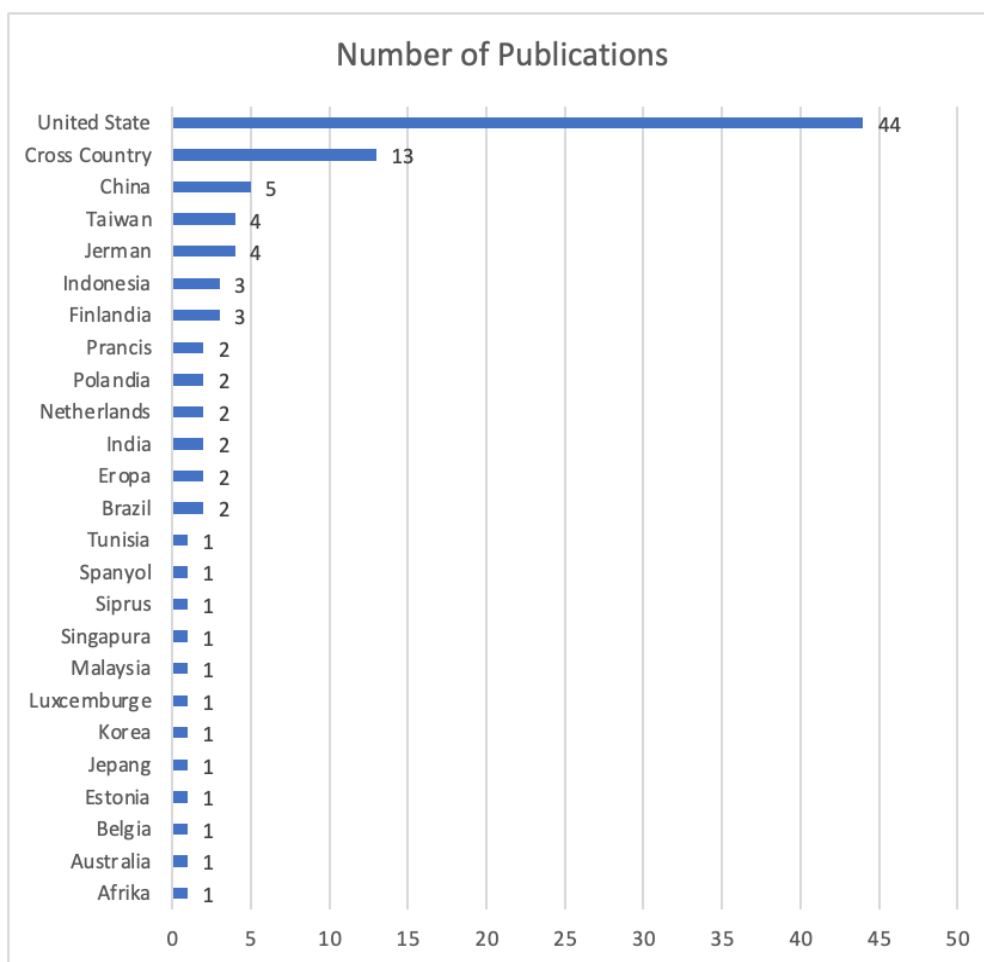
Source: Authors' computation.

Based on data analyzed from 100 articles, the results are like the analysis of all articles regarding the disposition effect. The results of the analysis show that several keywords that are relatively rarely used in the disposition effect research stream are belief expressions using experimental study. Then there are other keywords, namely individual investor, and investor characteristics. Based on the analysis in Scopus-indexed journals (Q1 to Q4), another factor appears that plays a role in the disposition effect but is rarely used by researchers, namely Professional Advice.

The country where the study was conducted.

The following is a graph of the frequency of the countries where the study was conducted.

Figure 8 explains the number of publications regarding the disposition effect on the country where the research was conducted from Scopus-indexed journals (Q1 to Q4).



Source: Authors' computation.

Figure 8. The graph of the number of articles based on the country of research from Scopus-indexed journals (Q1 to Q4)

Based on the data analyzed from 100 articles, the United States is the largest country where research on the disposition effect was conducted, namely 44 articles, then 13 articles using cross-country as the object of research. The disposition effect research in Indonesia consists of 3 studies.

RESULT

This section discusses the results of the disposition effect study which will be presented in two sub-sections. The two subsections cover aspects, namely a) The perspective used in the topic of the disposition effect and b) the research methodology.

The perspective used in the topic of the disposition effect

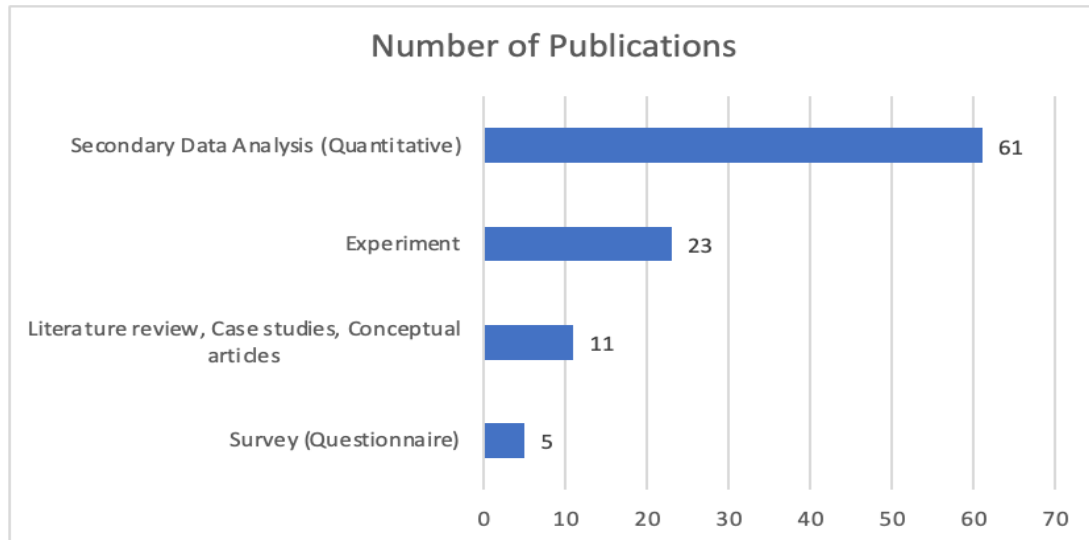
The disposition effect refers to the tendency of investors to sell winner stocks rather than to sell loser stocks. Since the research conducted by Shefrin & Statman, (1985), few studies have confirmed the disposition effect empirically (Barber *et al.* 2007; Dhar & Zhu, 2006; Odean, 1998) and experimentally (Chang *et al.* 2016; Chang *et al.* 2016; Weber & Camerer, 1998). However, the causative factors for the disposition effect are still a puzzle (Odean 1998). Various approaches to measuring the disposition effect have been proposed, but they often lead to different results (De Winne 2020).

Weber & Camerer, (1998) measure the disposition effect as the difference in sales between a winner and loser stocks by an investor which is normalized by the total number of sales, whereas Odean, (1998) calculates the disposition effect of the difference between the proportion of realized gains and losses. The two measurement results range from -1 to +1 (where +1 means that investors always sell winner shares and never sell loser stocks), so researchers can use different methods with different results. Odean, (1998) does not provide strong arguments when implementing variants of the method itself. Barber *et al.* (2007); Barber & Odean, (1999); Odean, (1998) discloses that gains and losses are calculated daily as long as the sale occurs in a portfolio containing two or more shares. De Winne, (2020) conducted research using simulated and empirical data to prove the method of measuring the disposition effect. The results showed that the size Odean, (1998) performs better than the approach Weber & Camerer, (1998). Formula Odean, (1998) The disposition effect is the difference between the proportion gain realization (PGR) and the proportion loss realization (PLR). If the disposition effect produces a positive value, then the individual investor prefers realized gains over losses. Odean, (1998) revealed that the proportion gain realization (PGR) at the end of the year has decreased. This means that investors have realized losses at a high level compared to the realized gains in December. De Winne, (2020) revealed that the estimated disposition effect is very sensitive to the profit and loss that is calculated daily or only on the days when the sale is made, especially for investors who do not frequently monitor their portfolios.

The research methodology used in the field of disposition effects

This subsection discusses various research methodologies that include the research approach or method and the research context used in the disposition effect study. Figure 9 shows the various research methodologies used in the disposition effect articles reviewed. Figure 9

explains the number of publications regarding the disposition effect based on the theory used in the journal.



Source: Authors' computation.

Figure 9: Research methods in the disposition effect study

Based on Figure 9, it can be seen that the majority of disposition effect studies use an empirical approach (89 articles) than theoretical ones (11 articles). In the realm of the empirical approach used, most studies used a secondary data approach (61 articles), experiments (23 articles), and surveys (5 articles).

CONCLUSION

A literature review based on 100 articles has successfully identified variables, countries, perspectives, and research methodology in the context of research on the disposition effect conducted so far. This study found that most disposition effect studies are still mostly carried out in developed countries, namely the United States as the main object of research.

Based on the research methodology aspect, most of the disposition effect studies use a quantitative empirical approach. The experimental, survey and combinative research methods are becoming more relevant to be used to provide a better picture of the disposition effect. Besides, future research regarding the disposition effect can use several variables that have a rare frequency of appearance, namely belief, individual investor, and investor characteristics. Based on the analysis in Scopus-indexed journals (Q1 to Q4), another factor appears that plays a role in the disposition effect but is rarely used by researchers, namely Professional Advice.

Based on the phenomenon of the spread of the coronavirus disease-2019 (COVID-19) which caused a decrease in the Composite Stock Price Index (IHSG) and the occurrence of a disposition affect behavior, this is following the heuristic findings of the recent health science literature that air pollution and environmental health have an impact. health care (World Health

Organization, 2016). Zheng & Kahn, (2013); Zivin & Neidell, (2013), revealed that environmental problems are known to affect human health and reduce the welfare and effectiveness of individuals participating in economic activities, thereby affecting economic growth. Therefore, there is a relationship between the environment and economic activity, so this is an opportunity for further research.

Future studies can examine the disposition effect with a heterogeneous trust-based approach. Barber *et al.*, (2007) stated that investor confidence in the average return can lead to a disposition effect. So far, empirical studies, Chui & Chui, (2014) have not designed a measure of investor confidence. Some evidence Barber *et al.*, (2007) revealed that investors' purchasing decisions are not consistent with belief in average returns. To date, there are still few studies that link heterogeneous beliefs to the disposition effect. Future studies can use laboratory experiments to test heterogeneous beliefs about the disposition effect. Furthermore, future research can expand the baseline disposition effect model using investor characteristics, namely investor personal information, culture, information on the economic condition of a country, and information on the spread of the Covid-19 coronavirus using prospect theory (Daniel Kahneman and Amos Tversky 1979) and *heterogeneous theory* (Hong & Stein 2003).

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