MASTER

Behavioral real estate and direct investing
behavioral opportunities and threats for private investors

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Behavioral Real Estate & Direct Investing

Behavioral Opportunities and Threats for Private Investors

Bram Petit
March 2007
Master's Thesis

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We are much more likely to act our way into new ways of thinking than to think our way into new ways of acting.

- Weick (1995) -


Preface

This thesis will provide more insight into the different aspects of irrational behaviors within the investment decision process of in particular Dutch private real estate investors. It will become clear that there has hardly been any research involving irrational behaviors within the field of real estate. The few studies that have been done mainly concern the valuation process or, in some extent, indirect investing in real estate. Yet studies that actually involve behavioral real estate do not seem to have taken place; let alone research that concerns direct investments in Dutch real estate by Dutch private investors. Therefore, I believe that a thesis like this does not come a moment to soon. In my opinion, people who are participating or going to participate in real estate investments can definitely benefit from understanding an investor’s way of thinking, especially if one is able to anticipate on it. In addition, an insight of one’s own investment behavior might be fruitful as well. To me, the importance of this subject has become very clear and I hope you will agree with me once you have read this thesis.

Enjoy your reading!

Bram Petit
Eindhoven, March 2007
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Summary

Studies of consumer behavior and behavioral finance have shown many times that irrational behaviors within the economy can bring negative outcomes. It would be expected that when investing in real estate, negative outcomes occur because of irrational behaviors as well. That a lot of research has been done within this field should therefore be almost obvious. However, this is not the case.

In order for real estate investors to make investment decisions in such a way that the negative consequences of the occurrence of irrational behaviors are set to a minimum, further research is considered necessary. Therefore this Master's thesis' aim is chosen as follows:

To compile an inventory of irrational investing behaviors, in order to examine if they are applicable to direct investing in Dutch real estate by Dutch private real estate investors, and if so, to highlight their possible consequences as a progression towards an optimal decision making process with regards to these behaviors in the future.

Based on this aim, the following problem definition has been formed:

Which irrational behaviors, already known within behavioral finance, are exhibited by Dutch private real estate investors while direct investing in Dutch real estate?

- Which irrational behaviors are already known within behavioral finance?
- Which irrational behaviors that are already known within behavioral finance, are applicable on direct investing in Dutch real estate by Dutch private real estate investors?

Which negative consequences are expected by the manifested irrational behaviors of Dutch private real estate investors while direct investing in Dutch real estate?

- Which consequences are expected by the manifested irrational behaviors of Dutch private real estate investors while direct investing in Dutch real estate?
- Which expected consequences, caused by the manifested irrational behaviors of Dutch private real estate investors while direct investing in Dutch real estate, are negative?

As visualized in the Practical Approach Method in the graph below, these questions will be answered by the use of two different methods. First, information will be found within the literature regarding behavioral sciences. This information is referred to as background information. Since this information is insufficient to answer all the questions, new information will be acquired via interviews. This is referred to as data collection.
Behavioral finance refers to the study of psychological and sociological influences on financial economy or financial behavior. The first studies involving the decision-making process started as early as in the 1930's and 1940's. From the many studies, it can be derived that people make financial decisions that are emotion-driven and that are, or appear to be, less useful or logical than the rational alternative. People, for example, frame their choices in terms of potential gains and losses related to a specific reference point, whereby they value losses 2.5 times as important as gains. A study on 26 internationally stock exchanges pointed out that sunny days outperform miserable weather days by 24.6 percent per year. And people put money on a savings account (with, for example, 4% interest) for a future house but at the same time they borrow money (with, for example, 9% interest) for a new car.

The real estate asset is most often treated as a financial asset, which has resulted in the setting of artificial boundaries on real estate research. Involving irrational behaviors within real estate, the relatively few studies that have been done mainly concern the valuation process or, in some extent, indirect investing in real estate. An exception is Genesove and Mayer (2001), who found that condominium owners subject to nominal losses:

1) Set higher asking prices of 25-35 percent of the difference between the property's expected selling price and their original purchase price;
2) Attain higher selling prices of 3-18 percent of that difference;
3) Exhibit a much lower sale hazard than other sellers.

A couple of authors have made an attempt to form strategies in order to prevent or eliminate the negative consequences of the many anomalies. However, most of these strategies seem to be "simple rules of thumb" that are derived from the consequences of the anomalies instead of the actual reason these anomalies occur in the first place.
Even to this day there are discoveries within behavioral sciences. The field is gaining acknowledgement and publicity in a tremendous speed, especially during the last (couple of) decade(s). However, there is still a lot to be done. It is recommended to (study how to) start using uniform definitions and explanations involving the different types of anomalies. In addition, it is suggested to search for the reason the irrational behaviors occur and what their consequences are. Furthermore, methods and strategies that are based on the reason the anomalies occur should be constructed in order to prevent or eliminate the negative consequences of these behaviors.

Data Collection

Interviews were held in order to find which irrational behaviors, already known within behavioral finance, are exhibited by Dutch private real estate investors while direct investing in Dutch real estate. After several test interviews, there were twelve private investors and eight people who are directly related to private investors (like real estate financiers) interviewed. This means that the number of interviews held is relatively small. In addition, it is recognized that the way the interview was set up, leaves open spaces for biases. Therefore, the value of the interviews is limited.

Eleven different types of irrational behavior have been discussed and it is indicated that they all occur while Dutch private real estate investors direct invest in Dutch real estate. These types of behavior are:

1) **Anchoring**, which refers to people anchoring on the first value they hear.
   
   Example: When bidding on an office block, an investor uses the listed price as a guide to estimate the value of the office block. As usual, he accordingly decides to bid seven percent under the listed price.

2) **Familiarity**, which points out that people have a preference for things they are familiar with. They have the feeling that they run less risk and are able to make more profit.
   
   Example: Investors will usually continue to invest in the same property type and region where they are familiar with.

3) **Herd Behavior**, which indicates that people tend to imitate the behavior of others, even when their own information or private signals are contradictory.
   
   Example: As “everyone” believes that the market conditions for a certain property type are good and will continue to be so, investors will invest in this segment, even when they expect that this market is already on its top.
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4) *House Money Effect,* which implies that people take much more risk while investing profit than while investing their savings.

   Example: An investor, who recently made a lot of profit, buys from the profit an object he normally would not buy because the risk would be too high.

5) *Loss Aversion,* which suggests that people consider not losing as more important than winning.

   Example: When making a profit, investors set a price close to the expected selling price, whereas investors facing a loss set a price much higher than the expected selling price.

6) *Mental Accounting,* which points out that people have the tendency to link expenditures with its presumed goal. Once this is done, the money will hardly ever be used for any other goal.

   Example: In November/December, investors quickly buy some objects, with the goal of not paying taxes. They are prepared to pay more for the object(s) than the actual market value.

7) *Myopic Expectations,* which refers to people having the tendency to make decisions based on the short term instead of the long term.

   Example: Despite the fact that investors bought a property for the long term, they will sell it after a couple of "bad years" as they become afraid of the future.

8) *Overconfidence,* which implies that people think their knowledge and their ability to do well on tasks is better than that of others.

   Example: Investors think that their knowledge about real estate properties is, on average, better than that of their competitors.

9) *Representativeness,* which indicates that people judge things as being similar, based on how closely they resemble each other at first sight.

   Example: Investors expect that investing in a qualitative good building in a good city equals a good investment.

10) *Risk Aversion,* which suggests that after experiencing a loss, people become less willing to take a similar risk.

   Example: An investor, who made a loss while investing for the first time in a specific property type, will not invest in that property type anymore.

11) *Sunk Cost Effect,* which points out that once people have made an investment, they have a tendency to continue it.

   Example: An investor, who spent a lot of time and money on an object, makes an offer which is 6 percent higher than he originally planned in order to obtain the object after all.
Another reason the interviews were held is to discover which negative consequences are expected by the manifested irrational behaviors of Dutch private real estate investors while direct investing in Dutch real estate. It is indicated that the occurrence of all eleven anomalies, except for risk aversion, could result in a lower return for the investor. This could especially be during a market decline (overconfidence), a market incline (anchoring), at the down point of the real estate cycle (familiarity, herd behavior and myopic expectations) or at the top of the real estate cycle (herd behavior, house money effect and myopic expectations). Furthermore, it appears that the occurrence of all eleven anomalies could result in a higher risk. This could especially be during a market decline (overconfidence, loss aversion and anchoring), at the down point of the real estate cycle (herd behavior and myopic expectations) or at the top of the real estate cycle (herd behavior, house money effect and myopic expectations). In addition there could be a concentration risk due to familiarity.

It is recommended to at least carry out an additional survey and statistical analyses to confirm that the eleven anomalies - as discussed during the interviews - occur while Dutch private real estate investors direct invest in Dutch real estate. Furthermore, it is suggested to start studying the anomalies in order of importance. Based on the interviews, that would be as follows:

1) Sunk Cost Effect;
2) Representativeness;
3) Overconfidence;
4) Herd Behavior;
5) Anchoring;
6) Risk Aversion;
7) Myopic Expectations;
8) Loss Aversion;
9) House Money Effect;
10) Mental Accounting;
11) Familiarity.

Once it has become clear that an anomaly actually occurs, a next step can be taken. Confirming the indications that are presented in this thesis could be that step. For example, are the consequences of the anomalies actually as presented in this thesis? And if so, are the majority of them indeed dependent on the real estate cycle? In addition, it is recommended to study the elements that have remained unclear, like:

- Does taking a higher risk, because of the house-money effect, mainly have positive or negative consequences overall for the investor?
- Are the consequences of familiarity, overall, positive or negative for the investor and is it dependent on property specialization and/or geographical specialization?
Overall

Once the occurrence of the anomalies is established, it is recommended to take further steps in order to strive for an optimal decision making process, as pointed out in the Practical Approach Method, for example. Additionally, it is recommended to also search for evidence of other anomalies that might occur within real estate, including their consequences. For educations and courses that involve real estate, it is recommended to implement the knowledge from the behavioral finance (or maybe even this thesis) in their programs.
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Introduction

Studies of consumer behavior and behavioral finance have shown many times that irrational behaviors within the economy can bring negative outcomes. A limitation of the return by treating profits and losses differently, making unnecessary costs by framing receipts and expenditures differently, and underestimating the risks because of biases, are just some examples. Taking this knowledge into consideration, it would be expected that when investing in real estate, negative outcomes occur because of irrational behaviors as well. That a lot of research has been done within this field should therefore be almost obvious. However, this is not the case. In addition, it also appears that the sporadic studies that have been done, mainly concern indirect investing in real estate or the valuation process.

In the report, "The Real Estate Investment Policy of the Dutch Private Investors 2005", 67% of the respondents (all Dutch private real estate investors) state that their own feelings take part while making decisions involving investing in direct real estate. Knowing that feelings form one of the main factors within behavioral finance, confirms the importance of research regarding the irrational behaviors of investors while direct investing in real estate.

In order for real estate investors to make investment decisions in such a way that the negative consequences of the occurrence of irrational behaviors are set to a minimum, further research is necessary. It is expected that this research might be accomplished via (at least) two different methods:

1) Practical Approach Method

<table>
<thead>
<tr>
<th>Current state</th>
<th>Which irrational behaviors occur?</th>
<th>Which irrational behaviors are desirable to eliminate/ reduce?</th>
<th>How can the occurrence of these irrational behaviors be eliminated/ reduced?</th>
<th>Optimal decision making process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible method: Use known information from behavioral sciences as starting point</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Possible method: Discover the consequences of the occurrence of irrational behaviors</td>
<td></td>
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</tr>
<tr>
<td>Possible method: Discover the reason why the irrational behaviors occur</td>
<td></td>
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</tr>
<tr>
<td>Possible method: Apply the findings of how to reduce/ eliminate the occurrence of irrational behaviors</td>
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2. Noted is that irrational behaviors that occur while direct investing in real estate, can produce both a positive as a negative outcome.
The first step of this method is to discover if irrational behaviors occur in the real estate investment decision process. It is expected that the easiest way to accomplish this is by using information that is already known within the different behavioral sciences, like behavioral finance and behavioral real estate.

The next step is to decide which irrational behaviors are desired to eliminate (or reduce). To do this, it is necessary to know the consequences regarding the occurrence of the different irrational behaviors. After all, it would not make sense to eliminate the occurrence of irrational behaviors if it would prevent having a positive outcome. The subsequent step is to discover how to eliminate (or reduce) the occurrence of the irrational behaviors with negative consequences. In order to accomplish this, it will be necessary to understand why these irrational behaviors occur. Once it is known how to eliminate (or reduce) these occurrences, investors can implement these methods (or strategies) in order to strive for an optimal decision making process (with regards to irrational behaviors).

2) Theoretical Approach Method

This method differs from the Practical Approach Method in the perspective that it first strives to discover the reason the irrational behaviors occur, before it considers if it is desirable to eliminate (or reduce) them. The advantage of this method is that it will provide a better insight into the different irrational behaviors before searching for its consequences. However, finding the reason the irrational behaviors occur is probably the most difficult and time-consuming element in both the Theoretical and Practical Approach Methods. By first pointing out the consequences of the occurrence of the irrational behaviors, investors (and/or researchers) can already be made aware of what is going on. Even though the solution might not be given yet, the investors (and/or researchers) can at least be made aware of the consequences.
This might already help the investors to improve their decision making process. In addition, it will show the importance of preventing (or reducing) the occurrences of the irrational behaviors, which might also be an extra stimulation for further research.

The goal of this thesis is eventually to help real estate investors make optimal decisions, with regards to irrational behaviors, by working out the Practical Approach Method. This method is chosen because its practical value is expected to be higher than the Theoretical Approach Method. However, since the method will be very complex and time-consuming, it would be merely an illusion to strive for completion regarding all of the steps within this thesis. Therefore this Master’s thesis’ aim is chosen as follows:

To compile an inventory of irrational investing behaviors, in order to examine if they are applicable to direct investing in Dutch real estate by Dutch private real estate investors, and if so, to highlight their possible consequences as a progression towards an optimal decision making process with regards to these behaviors in the future.

Based on this aim, a problem definition has been formed. The definition of the problem consists out of two main questions which are divided into several sub questions. The problem definition is defined as follows:

*Which irrational behaviors, already known within behavioral finance, are exhibited by Dutch private real estate investors while direct investing in Dutch real estate?*
• Which irrational behaviors are already known within behavioral finance?
• Which irrational behaviors that are already known within behavioral finance, are applicable on direct investing in Dutch real estate by Dutch private real estate investors?

*Which negative consequences are expected by the manifested irrational behaviors of Dutch private real estate investors while direct investing in Dutch real estate?*
• Which consequences are expected by the manifested irrational behaviors of Dutch private real estate investors while direct investing in Dutch real estate?
• Which expected consequences, caused by the manifested irrational behaviors of Dutch private real estate investors while direct investing in Dutch real estate, are negative?

In order to make sure that the aim and problem definition will be interpreted in the right way, it is necessary to define the terms used. Within this thesis, the term private investors refers to all Dutch real estate investors that finance with private money and have a minimum of €1,000,000 direct invested in Dutch real estate.
Direct investing can be described as investing in real property that, in principle, one self acquires in possession. By doing so, the investor has both a majority interest in the real property as well as the control over the management. Both the majority interest in the real property as well as the control over the management can be established via daughter companies.

Another term which needs to be clarified is irrational behavior. Within this thesis, it will be defined as emotion-driven behavior which is, or appears to be, less useful or logical than the rational alternative.

The last term that needs to be defined is behavioral finance. Behavioral finance refers to the study of psychological and sociological influences on financial economy or financial behavior.

This thesis is split up in three parts. In the first part, background information is given. In a historical timeline, the main discoveries within behavioral finance will be described. Studies that involve irrational behavior within real estate will accordingly be discussed. As pointed out in the Practical Approach Method, the background information will function as a tool in order to search for irrational behaviors that might occur while Dutch private real estate investors make real estate investment decisions.

In the second part, both the field research and the data analyses will be discussed in order to answer the questions as defined in the problem definition. In the third part, called conclusions and recommendations, all of these questions will be answered.
Part 1

Background Information
Introduction

In the traditional economic literature a lot of attention is given to models, theories and calculating important numbers. Among other things, portfolio theories, calculating net present values, returns, how much companies should borrow and how much risk companies should run are often discussed within this literature. An efficient market is assumed, whereas the human factor is usually disregarded. However, because people usually do not behave in a rational way, an efficient market is not applicable.

Especially during the last two decades, the public view has changed with regards to the traditional economic theory. Controlled laboratory experiments have emerged as a vital component of economic research and, in certain instances; experimental results have shown that basic postulates in economic theory should be modified. Terms like behavioral finance and consumer behavior have become unavoidable for investors.

In the year 2002, both psychologist Dr. Daniel Kahneman and experimental economist Dr. Vernon Smith won the Nobel Prize for Economic Sciences. Dr. Daniel Kahneman has received his prize for "having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty". Kahneman has demonstrated that the decision of individuals systematically can differ from the predictions made in the traditional economic theory. Dr. Vernon Smith received his prize for "having established laboratory experiments as a tool in empirical economic analysis, especially in the study of alternative market mechanisms" (nobelprize.org). That Kahneman and Smith received the Nobel Prize for Economic Sciences, confirms once again the importance of this field within the economy.

In this chapter, background information regarding the so-called behavioral finance and behavioral real estate will be given. This information will function as a tool in order to search for irrational behaviors that might occur while Dutch private real estate investors make real estate investment decisions, as previously explained with regards to the Practical Approach Method. The main happenings and results within the behavioral finance will be described in a historical timeline. The behavioral real estate will be discussed per anomaly. Note, however, that many more studies have been done and many more researchers deserve credit for the current knowledge within both fields.
1.1 Behavioral Finance

This section will describe that market efficiency cannot exist because people simply do not act rational on their own. It is presumed that because of this thought, behavioral finance found its existence.

"Open any contemporary text on the subject of corporate finance and you will discover that it is written in the context of The Fantasy from beginning to end."

- Haugen (1999)

The Fantasy (Haugen, 1999) refers to the market efficiency, which has been assumed in the traditional economic and financial literature. Market efficiency asserts that financial markets are "efficient" or that the prices on traded assets, e.g. stocks, bonds, or property, already reflect all known information and therefore are unbiased in the sense that they reflect the collective beliefs of all investors about future prospects. It implies that it is not possible to consistently outperform the market - appropriately adjusted for risk - by using any information that the market already knows, except through luck or obtaining and trading on inside information (www.en.wikipedia.org.com).

Market efficiency assumes the Homo Economicus. Homo Economicus is a term used for an approximation or model of homo sapiens that rationally acts to obtain the highest possible well-being for himself, given available information about opportunities and other constraints, both natural and institutional, on his ability to achieve his predetermined goals (www.en.wikipedia.org.com).

In other words, the traditional economic and financial literature assumes rational individuals that solely obtain the highest possible own gain or profit. However, as Simon (1947) states, actual behavior falls short in at least three ways of the objective rationality:

1) Rationality requires a complete knowledge and anticipation of the consequences that will follow on each choice. In fact, knowledge of consequences is always fragmentary.

2) Since these consequences lie in the future, imagination must supply the lack of experienced feeling in attaching value to them. But values can be only imperfectly anticipated.

3) Rationality requires a choice among all possible alternative behaviors. In actual behavior, only a very few of all these possible alternatives ever come to mind.
According to Lawson (1997) there are three types of inconsistencies between the theoretical perspectives and the actual practices. Lawson describes these types as follows:

1) Inconsistency at the level of method;
Economists frequently employ methods, practices and techniques of enquiry and modes of inference, that are inconsistent with the theoretical perspectives on method which they claim to draw upon.

2) Inconsistency at the level of social theory;
Although the reality of choice appears to be widely acknowledged by economists in their more informal discussions and public pronouncements, the exercise of choice is a phenomenon that is always absent from the formal substantive analyses that are conventionally reported. Instead, individuals are represented in such a way that, relative to their situations, there is almost always but one preferred or rational course of action and this is always followed. In other words, in formal models found in mainstream journals and books, human choice is ultimately denied.

3) Inconsistency at the level of methodology
While mainstream economists frequently conclude that “methodology” or “philosophy” is irrelevant to (progress in) economic science, and actively discourage it, these very same economists appear quite unable to refrain from explicit methodological discussion and enquiry themselves.

Haugen (1999) states that in the field of investments, the underpinnings of Modern Finance (the term used for what is nowadays seen as “old finance”) are contained in three basic concepts:

1) It is possible to build stock portfolios that have the lowest possible risk, given your objective for expected return. Haugen refers this back to the MPT (Modern Portfolio Theory) by Harry Markowitz.

2) If everybody would use the MPT, then all portfolios put together to form a market index like the S&P500, the S&P, itself, will have the lowest possible risk, given its expected return. Haugen refers with this idea to the CAPM (Capital Asset Pricing Model).

3) The prices of all stocks reflect everything that is knowable and relevant about them. Haugen refers with this to the market efficiency or as he calls it “The Fantasy”.

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According to Haugen (1999) there is nothing wrong with the MPT other than the fact that almost no one uses it, except at asset allocation level where institutions such as pension funds use it to determine how much of their funds should be invested in asset classes like bonds and stock. Since there is hardly anybody who uses the MPT to squeeze unnecessary risk from their portfolios, the market index (if everybody would put all of their portfolios of stocks together, one would get the market index) will not have the lowest possible risk given its expected return. As a result, better portfolios can be built with the same expected return and lower risk.

Haugen (1999) also states that stock prices slowly overreact unlike the claim of the market efficiency that stock prices react to the revelation of new information very quickly and without bias. According to Haugen, investors tend to overreact to new information about stocks, and they do so with a considerable lag.

Besides Simon, Lawson and Haugen, there are many other people that have criticized the efficient market theory and/or the Homo Economicus. One of the sub-questions that is asked in the problem definition is which irrational behaviors are already known within behavioral finance. The answer to this question will be discussed in this chapter. The differences between the theoretical rational individuals that solely obtain the highest possible own gain or profit and the real humans in practice will become clear. In a historical timeline, various types of irrational behavior within the economic field will be explained, preceded by a brief introduction of the behavioral finance’s origination. In addition, there will be given an example along with each type of irrational behavior for a better understanding of the behavior. Note, however, that besides the studies described in this chapter, many more studies have been done and many more researchers deserve credit for the current knowledge within behavioral finance. As mentioned before, behavioral finance refers to the study of psychological and sociological influences on financial economy or financial behavior.

1.1.1 The Predecessor of Behavioral Finance

This section will describe the studies that according to some people are considered the predecessors of behavioral finance. In older, traditional economic studies, no distinction was made between enterprises and entrepreneurs, and it was assumed that the entrepreneurs had only one goal: profit-maximizing. The purpose of this classic and rather rudimentary theory of the firm was primarily to serve as a basis for studies of total market behavior and not of the behavior of the individual firms (nobelprie.org).

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3 Haugen (1999) mentions that some of the more quantitative managers do use what are called "risk factor models" to help them manage the potential for their portfolios to deviate from their benchmarks (usually the S&P500), but that these managers are not attempting to minimize portfolio risk as the CAPM defines it.
Influenced by the organizational research that was being conducted in other social sciences, economists in the 1930's began to look at the structure of companies and at the decision-making process in an entirely new way (nobelprize.org). Accordingly, World War II spawned something called operational analysis or operations research, the use of quantitative tools for managerial problem solving and decision making. Just after the war, a number of people were seeking to transfer these tools to peacetime industrial applications, and new tools (such as linear programming) were discovered. At about the same time, the behavioral sciences were flourishing and were being brought to bear on issues in organization and management (Simon 1991).

“It is impossible for the behavior of a single, isolated individual to reach any high degree of rationality. The number of alternatives he must explore is so great, the information he would need to evaluate them so vast that even an approximation to objective rationality is hard to conceive.”

- Simon (1991) -

Herbert A. Simon’s work is considered to be of utmost importance for this “new” line of development. In his book, Administrative Behavior (Simon, 1947), and in a number of subsequent works, he described the company as an adaptive system of physical, personal and social components that are held together by a network of intercommunications and by the willingness of its members to cooperate and to strive towards a common goal. What was new in Simon’s ideas is that most of all, he rejected the assumption made in the classic theory of the firm of an omniscient, rational, profit-maximizing entrepreneur. He replaced this entrepreneur by a number of cooperating decision-makers, whose capacities for rational action are limited, both by a lack of knowledge about the total consequences of their decisions, and by personal and social ties. Since these decision-makers cannot choose the best alternative, as can the classic entrepreneur, they have to be content with a satisfactory alternative. Individual companies, therefore, strive not to maximize profits but to find acceptable solutions to acute problems. This might mean that a number of partly contradictory goals have to be reached at the same time. Each decision-maker in such a company attempts to find a satisfactory solution to his own set of problems, taking into consideration how others are solving theirs. Because of his pioneering research into the decision-making process within economic organizations, Herbert A. Simon received the Alfred Nobel Memorial Prize in Economic Sciences in 1978 (nobelprize.org).
1.1.2 The 1970's, Where It All Began

In 1974, Amos Tversky and Daniel Kahneman published an article in Science (Tversky & Kahneman 1974) in which they described three heuristics of judgment (representativeness, availability, and anchoring) and a list of a dozen biases associated with these heuristics. They chose this magazine specifically, because they thought that the prevalence of systematic biases in intuitive assessments and predictions could possibly be of interest to scholars outside psychology. According to Kahneman, the article soon became a standard reference as an attack on the rational-agent model, and it spawned a large amount of literature in cognitive science, philosophy, and psychology. However, Kahneman also mentioned that the interpretation of their work as a broad attack on human rationality—rather than as a critique of the rational-agent model—attracted much opposition, of which some quite harsh and dismissive (nobelprize.org).

The first heuristic, which is discussed in the Science article, is the **representativeness heuristic**. Within this heuristic, probabilities are evaluated to the degree to which A is representative for B, that is, to which A resembles B (Tversky & Kahneman 1974). In other words, people judge things as being similar, based on how closely they resemble each other at first sight. This heuristic could be seen as judgment based on stereotypes (Nofsinger 2005).

**Example of Representativeness**
While investing in the stock market, investors confuse a good company with a good investment.

The second heuristic discussed in the article is labeled as **availability**. This heuristic refers to the frequency of a class or the probability of an event that will be assessed by the ease in which instances or occurrences can be brought to mind (Tversky & Kahneman 1974). In other words, it is a decision process that neglects to dig for more information and interpretation than those immediately available.

**Example of Availability**
Someone may assess the risk of making huge losses on the stock market, by recalling such occurrences among one's acquaintances.

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*4 Kahneman however, found out that this interest could not be taken for granted, as he learned in an encounter with an American philosopher. Almost as soon as Kahneman began his story the philosopher turned away saying, "I am not really interested in the psychology of stupidity" (nobelprize.org).*
The third heuristic, which is described by Tversky and Kahneman (1974), is the heuristic they labeled as anchoring. This heuristic refers to the fact that estimates are often based on the initial value. In other words, people anchor on the first value they hear.

Example of Anchoring
Mr. V was told that a friend bought shares from company S for €25.00 per share. Mr. V accordingly notices that they are now worth €23.00 per share. Since the price is €2.00 cheaper than his friend paid, Mr. V considers the shares cheap and therefore decides to buy them. Before buying the shares, Mr. V notices that the average price was €22.50 per share during the past year and that he has no hard evidence to believe it will go back to €25.00 again.

In 1974, Richard Thaler was working on his PhD dissertation at the University of Rochester. Thaler (1994) stated that he decided to see - as a diversion from running regressions - what would happen if he would just ask people some questions. He asked two questions. First, he asked people how much they would be willing to pay to eliminate a one in a thousand risk of immediate death. Second, he asked them how much they would have to be paid to willingly accept an extra one chance in a thousand of immediate death. According to the traditional literature, the answers to both questions should be exactly the same. However, in practice this was not the case. For instance, people asked $500,000 to run a risk of dying at 1:1,000, but they were only willing to pay $10,000 to prevent running that same risk (Thaler 1998). Thaler decided it would be better to keep the outcomes secret, if he ever wanted to graduate.

In 1979, Tversky and Kahneman published another article, this time in Econometrica, under the title, "Prospect Theory: An Analysis of Decision under Risk" (Kahneman and Tversky 1979). To many, this article is the true beginning of behavioral finance. In this article, Tversky and Kahneman introduce their Prospect Theory. This theory describes how people frame and value a decision involving uncertainty. It points out that people frame their choices in terms of potential gains and losses related to a specific reference point. Besides framing their choices, the theory secondly points out that people value their gains and losses according to an S-curve, a curve that was given the name Prospect Theory Value-function.
As shown in the graph on the right, the S-curve has a concave value for gains, but a convex value for losses. From this, it could be derived that suffering a loss feels bad, but suffering a loss that is twice as bad will not feel twice as bad. Besides that the value function is not linear for either gains or losses, they found that it is steeper for losses than for gains. Within behavioral finance, it is now seen as “common knowledge” that the feeling of a certain loss is 2.5 times as strong as the feeling of the same gain. Derived from this, it can be stated that people are loss averse, which is often labeled as loss aversion. In other words, people consider not making a loss as more important than making a gain. The Prospect Theory Value-function, as it is known today, is presented on the right.

In extent of the different usages of reference points, as pointed out by Tversky and Kahneman, Benartzi and Thaler (1995) stated that it is plausible to assume that investors monitor and remember their investments during the period of one year. This means that investors often regard the highest price of a stock during the subsequent year as a reference point.

**Example of the Prospect Theory Value Function**

People feel good when they gain € 500 and feel better when they gain € 1,000. However, people do not feel twice as good when they gain € 1,000 than when they gain € 500. In the S-curve, this is visible by the concave value for gains.

### 1.1.3 The 1980's, A Series of Discoveries

When Richard Thaler wanted to publish his first paper on anomalies, it was rejected by the leading economic journals. In 1980, he was finally able to publish his first article. Thaler (1980) discusses, among other things, the topics: endowment effect, sunk cost effect, regret and self-control. “I didn't have any data” Thaler admits, “it was stuff that was just true” (Lowenstein 2001).
With the *endowment effect* Thaler (1980) refers to the underweighting of opportunity costs. In retrospect to Kahneman and Tversky's prospect theory, he mentions that out-of-pocket costs are viewed as losses and opportunity costs are viewed as gains, where the former will be more heavily weighted. In addition, he mentions that goods that are included in the individual's endowment will be more highly valued than those not held in the endowment. Because of this, people demand higher selling prices for goods than they would be prepared to pay for them selves.

Example of the Endowment Effect
Mr. H mows his own lawn. His neighbour's son would mow it for $8. Mr. H wouldn't mow his neighbour's same-sized lawn for $20.

According to the traditional economic literature, historical costs should be irrelevant and only incremental costs and benefits should affect decisions. However, as Thaler stated in his publication, consumers fail to ignore sunk costs in their everyday decisions. It appears that once people have made an investment, they have a tendency to continue it. This is referred to as the *sunk cost effect*.

Example of the Sunk Cost Effect
A family pays €40 for tickets to a Chicago Bulls basketball game to be played 60 miles from their home. On the day of the game there is a snowstorm. They decide to go anyway, but note in passing that had the tickets been given to them, they would have stayed home.

As mentioned, *regret* is another topic discussed by Thaler (1980). In the article he states that whenever a choice can induce regret, consumers have an incentive to eliminate that choice. In addition, he writes that both guilt and responsibility can cause regret.

Example of Regret
Investors fear that once the price of their stock goes up, it will go down again without having the stock sold at the higher price. To avoid regret of not selling the stock for the higher price, they will sell the stock even though they believe the price will keep on rising. Shefrin and Statman (1985) prove that the investors sell their stock systematically too soon out of avoiding regret.
The topic self-control, as mentioned in Thaler’s publication, is described by Thaler and Shefrin (1981) a year later as the interaction between a person’s two selves: the “planner” and the “doer”. The doer wishes to consume now instead of later and procrastinates on unpleasant tasks. The planner, on the other hand, wishes to save for later consumption and complete unpleasant tasks now. This conflict between desire and willpower occurs because people are influenced by the rational concerns on the long-term and by more short-term emotional factors. Thaler (1980) states, that in order to prevent this from happening, people try to solve it by pre-committing themselves.

**Example of Self-Control**

Most people would rather get $50 immediately than $100 in 2 years, foregoing a 41 percent annual return. Alternatively, almost no one prefers $50 in 4 years to $100 in 6 years even though this is the same choice, albeit 4 years into the future.

The self-control anomaly might seem similar (at first sight) to myopic expectations. Myopic expectations refer to short-sighted expectations, for instance, simply assuming that today’s prices will continue into the future (Stiglitz 2000). The difference between both anomalies, however, is that myopic expectations is not a conflict between desire and willpower, but that people think today’s state of affairs will continue into the future.

**Example of Myopic Expectations**

An investor buys stocks for the long term, knowing that prices might go down during an economic crisis. Since the investor plans on keeping the stocks for at least fifteen years, he expects that after such a crisis, the market will make it worth waiting for. However, after a couple of “bad years” the investor sells the stock out of fear for the future.

Two years after Richard Thaler published his first paper, Akerlof and Dickens (1982) publish an article called “The Economic Consequences of Cognitive Dissonance”. In their article, one of the things they point out is how they have expanded the economic applications of cognitive dissonance by developing an economic model. The term cognitive dissonance is introduced by Festinger (1957), and refers to the tendency for individuals to seek consistency among their cognitions, which can be defined as any element of knowledge, attitude, emotion, belief or value, as well as a goal, plan, or an interest. When there is an inconsistency between attitudes or behaviors (dissonance), something must change to eliminate the dissonance. In the case of a discrepancy between attitudes and behavior, it is most likely that the attitude will change to accommodate the behavior.
Example of Cognitive Dissonance
In an experiment (Festinger and Carlsmith 1959), subjects were asked to perform for an hour the boring task of placing knobs on pegs, turning them, and then taking the pegs off again. After the task was completed, each experimental subject was told that the research assistant had not shown up and that the scientists needed the subject's help in telling other participants the experiment was enjoyable, interesting etc. Subjects were told they would receive either $1 or $20 for their assistance. After each subject convinced the new recruit, really a confederate of the experiment, that the task was fun, the subject was asked for a rating of how much s/he truly enjoyed the experiment. It appeared that those who were paid $1 rated the task much more favorably than those who were paid $20.

In 1985, Richard Thaler publishes an article in which he states that people have the tendency to put money in a mental directory. Once people have put their money into such an account, it is very hard to look at this money in another way. Thaler labeled this as mental accounting (Thaler 1985). Mental accounting is completely the opposite of what people should do according to the Modern Portfolio Theory (MPT), formed by Harry Markowitz (who won the Nobel Prize, in 1990, in Economic Sciences). The MPT states that all investments should be regarded within one portfolio. To implement this theory, three components should be taken into consideration: risk, return and the correlation between the separate investments. However, because of mental accounting, investors rarely use this correlation. As a result, investors often make the wrong judgment involving the risk they run with their investments. Shefrin and Statman (2000), state that many investors diversify their investments in different goals instead of using the MPT. Goals that investors want to achieve are, for example: having security, having a monthly/annually income, inflation correction and becoming wealthy.

Example of Mental Accounting
Mr. G saved €15,000 for his future house of which he hopes to buy in five years. He receives 4% interest over this amount. Mr. G bought a car this morning for €11,000 which he financed with a three-year loan at a 9% interest rate. He did not use the money he already saved, as that money was already placed in the mental directory 'future house'.
In 1985, Shefrin and Statman publish an article. In their article, they extend the knowledge of both Kahneman and Tversky's prospect theory and Thaler's mental accounting to see what the effect of it is on investment decisions. They describe the disposition effect, with which they refer to fearing regret and seeking for pride; which causes investors to sell winners too early and ride losers too long. One of the things they point out is that investors fear that once the price of their stock goes up, it will go down again without having the stock sold at the higher price. To avoid regret of not selling the stock for the higher price, they will sell the stock too soon (Shefrin and Statman 1985). Besides that, it also appears that the feeling for regret is stronger when taking a stock loss if the loss can be tied to an investor's own decision, as Nofsinger (2005) points out. However, as Nofsinger also states, if investors can attribute the loss to reasons that are out of their control (like a general market decline), then the feeling for regret is weaker (as people say, misery loves company).

Example of the Disposition Effect

Mr. D wants to invest in a certain stock, but does not have the disposal of sufficient cash to buy this stock. He decides to sell one of his two stock portfolios. Portfolio A has made a 20% return and portfolio B has made a 20% loss. Selling portfolio A will confirm that Mr. D made the right decision of buying it and therefore will make him proud. Selling portfolio B will confirm that Mr. D made the wrong decision and will cause regret. Therefore Mr. D will sell portfolio A. However, according to the traditional economic theory, he should, among other things, have considered the future expectations of both portfolios.

In 1987, the stock market crashes 23 percent in a single day. Many see this as a proof that the market is indeed not perfectly rational. More economists begin to investigate the data, and by the 90's there is rich literature of market anomalies documented, for example, that people can consistently make money on stocks that trade at low multiples of earnings, or on companies that signal changes by doing things like hiking dividends (Lowenstein 2001).

A year after the market crash, Samuelson and Zeckhauser (1988) publish an article in which they describe the status quo bias. They describe the bias as the tendency of people to keep whatever is given to them, instead of trading or selling it. According to the authors, this mainly occurs when the number of trading options is high. Samuelson and Zeckhauser (1988) state the effect of this anomaly may be seen as a consequence of three main categories:

1) Rational decision making in the presence of transition cost and/or uncertainty;
2) Cognitive misperceptions (such as loss aversion, the endowment effect and anchoring);
3) Psychological commitment stemming from misperceived sunk costs, regret avoidance, or a drive for consistency.
Example of the Status Quo Bias
Someone inherited a large sum of money and is considering different portfolios to invest in (moderate risk, high-risk etc.). However, when he would have inherited a portfolio mix, he would probably not have considered it, but he would have kept it the same.

1.1.4 The 1990's, The Decade after the Stock Market Crash

As mentioned in the previous section, the crash of the stock market was, to many, seen as evidence that the market was indeed not perfectly rational. Many people began studying the inconsistencies of the market in the 90's, just as they did in the late 80's. Most likely, the majority of the studies are, in one way or another, derived from the Kahneman and Tversky's prospect theory article, published in 1979.

Same goes for Thaler and Johnson (1990). In this article, they describe, among other things, the house-money effect and the trying-to-break-even effect. In short, the house-money effect refers to someone's willingness to accept a gamble after a prior gain. Because people do not tend to see a prior gain as their own money but as 'money of the house', a subsequent loss will not be seen as an actual loss but as a reduction on their prior gain. Consequently, people are willing to accept a higher risk than they normally would.

Example of the House-Money Effect
A company listed on the stock market is having large financial problems and therefore it could face bankruptcy. Because most investors know this, the price of its shares fluctuates between €0.01 and €0.03. An investor decides not to invest in this share, because of its high risk. However, when later that day the investor makes a lot of profit on other shares, he decides to invest in the high risk company after all. He does this because he does not see the profit he just made as his own yet. In other words, if he would lose the money with the reinvestment, the investor would only see it as a reduction on the profit he already made.

In their article, Thaler and Johnson (1990) also state that an initial loss will often induce risk-aversion, as people tend to feel they are out of luck. This is labeled as the risk-aversion effect or the snake-bite effect (Nofsinger 2005). Furthermore, they mention that when people are given the opportunity to break-even, a higher risk is found acceptable again. This is referred to as the trying-to-break-even effect or get-evenitis (Gross 1982).
Example of the Risk-Aversion Effect
An investor bought shares for the first time at €30 per share. Three days later, the stock declined to €28, and the investor panicked and sold the stock. Even though the stock went up to €75 later, the investor was too afraid to get back in the market.

Example of the Trying-To Break-Even Effect
After a day of betting on horses and losing money, gamblers are more likely to bet on the long shots. Odds of 15 to 1 mean that a €2 bet would win €30 if the horse wins. This behavior is most likely at the end of the day when gamblers can break even.

In Kahneman et al. (1993) is pointed out that a decision can depend on one’s own memory. The memory has an adaptive function, which determines whether a situation experienced in the past should either be desired or avoided in the future. However, this means that when the perception of a past experience is inaccurate, it can lead to poor decisions. When, for example, an experience is remembered as better than it really was, than it will produce an excessive motivation to obtain similar situations. The example, memory and decision making, presented below, proves that this might not always be the correct, rational choice.

Example of Memory and Decision Making
During a psychological study, students experienced pain by putting their right hands in ice water (temperature of 14°C). Their left hands were then dipped into the water for 90 seconds. However, after the first 60 seconds at 14°C, the water temperature was increased to 15°C (unbeknownst to the subjects) for the final 30 seconds. Seven minutes later, the students were offered the choice between both experiments. Almost 70% chose for the longer experiment (Kahneman et al. 1997). It appeared that the memory of the pain was the average of the peak level of pain and the level of pain at the end of the experience (Barber and Odean 1999). Since the pain at the second experiment was less severe, most students chose this experiment, even though the peak level was equal for both experiments.

In 1999, Barber and Odean (1999) publish an article in which they describe overconfidence. In their article, they point out that many studies have discovered that people tend to overestimate the precision of their knowledge and that such overconfidence has been observed among many professionals. It appears that people overestimate their ability to do well on tasks (sometimes labeled as self-deception (Hirshleifer 2001)) and that people are unrealistically optimistic about future (pure chance) events. They expect good things to happen to them more often than to their peers. Most individuals see themselves as better than the average person, and as better than others see them. In addition, it appears that people overestimate their contributions to past positive outcomes; they recall information related to their successes more easily than information related to their failures.
Example of Overconfidence

Stock investors have the perception that, even without having any information, the stocks they own will perform better than the stocks they do not own. Obtaining a stock however, only gives the illusion of having control over its outcome. Furthermore, overconfident investors appear to trade too much.

1.1.5 The New Millennium, Behavioral Finance Becomes a Trend

In the present decade, the topic behavioral finance seems to become a trend. Classes in behavioral finance are given in many economic and business courses and the demand for information among investors grows by the day. Even though more studies are done and more information becomes available, this development also has its downsides. More than ever, recent published books and articles, as well as given lectures, are just summaries of former studies. However, because the sources used for these summaries are often not the actual articles or studies but summaries of those articles or studies, the presented data is not always correct. Details especially tend to get lost; that, for instance, the study only had been done among a class of 30 students and that the heuristic therefore does not necessarily have to apply in general, will be hardly ever mentioned. In addition, a lot of present studies just confirm prior study results. For example, Mauro Mastrogiacomo did a study for the Centraal Planbureau (CPB), in which he states to be surprised that families talk about a "huge increase" when they became almost €10,000 wealthier that year, while the same families talked about a "huge drop" when their financial status dropped €3,500 (Mastrogiacomo 2006). However, taken the prospect theory into consideration, this would make perfect sense, as people weigh a loss about 2.5 times heavier than a gain.

Luckily, in the present decade, many useful studies have been presented as well. Unfortunately, this also means that people exhibit even more irrational behaviors than was already known. For example, Wärneryd (2001) writes a book in which he describes herd behavior. With this behavior, he refers to people who tend to do as other people do, at least if they are exposed to information about others' behavior. They imitate behavior and, in the typical terms of economists, disregard their own information or private signals, which for some people are supposedly contrary to the current information from others. According to Wärneryd (2001), this behavior seems to increase when people are in a state of uncertainty and confusion. In addition, Brunes (2004) writes that there are two other aspects that can trigger this behavior in investment decisions. He states that the reputation of the managers is one of them. Managers are afraid to deviate from the average manager. They are afraid that their contrasting behavior will damage their reputation, and their career concerns, as sensible decision-makers. Moreover, in times of uncertainty, an unprofitable decision is not so bad when others are making the same mistake: they are "sharing the blame". Brunes bases this last argument on Scharfstein and Stein (1990).
The second aspect which, according to Brunes (2004), triggers herd behavior in investment decisions is called the managerial labor market. If managers have relatively unattractive labor opportunities, herding is more likely to occur.

Example of Herd Behavior
From mid-1998 to mid-1999, a total of 147 publicly traded companies changed to a new name with a dotcom or dotnet ending, or a name that included the word 'internet'. During the three weeks after a name change announcement, these firms' stock beat the market by an average of 38 percent as "everybody" believed that this would be a good investment. Nowadays, this is seen as one of the biggest bubbles on the stock market ever.

Solomon Asch showed a group of people a line on a card and asked them to find a matching line from a group of three lines on another card, one of which was pretty obviously the right choice. The catch was that all except one person in the group were collaborators and chose the wrong line. When it came to the victim's turn; in a range of experiments, 76% of them followed suit. The presence of just one supporter reduced this to 18%. (changingminds.org)

In 2003, Hirshleifer and Shumway (2003) publish their study in which the impact of the misattribution bias becomes clear. The term misattribution bias refers to the background feelings or mood that may influence someone's financial decisions. If someone is in a good mood (for example because the sun is shining), that person will see the future in a brighter perspective than someone who is in a bad mood (for example because it is raining). Therefore, someone in a good mood will often invest more in riskier stocks than someone in a bad mood.

Example of the Misattribution Bias
Fenner and Beane (1939) published the results of their survey showing that strong bull tendencies prevailed in security prices during fourteen of the fifteen summers from 1924 to 1939.

Wachtel (1942) shows several charts of seasonal fluctuations and concludes that the seasonal curve is well worth watching when formulating an actual investment policy.

Hirshleifer and Shumway (2003) performed a study on 26 internationally stock exchanges from 1982 to 1997, in which they found that sunny days outperform miserable weather days by 24.6 percent per year.
In 2003, Norman Strong and Xinzhong Xu (2003) present evidence that funds managers show a significant relative optimism towards their home equity market. It appears that people have a preference for things they are familiar with. If, for example, people have the choice in a bet between two options and they are familiar with one of the choices, they often choose the option they are most familiar with. This will sometimes happen even when the odds of that familiar option are worse. In addition, investors are often too optimistic about the risk and returns of the stocks they are familiar with, whereas they often are too pessimistic about the stocks that they are unfamiliar with. This anomaly is labeled as the home-bias effect or familiarity.

**Example of Familiarity**
American employees, who have to pick stocks for their pension funds, often choose their company’s stocks, just because they are familiar with them.

Closely related to the herd behavior, is the anomaly social interaction and investing, as described in Nofsinger (2005). With this anomaly, Nofsinger refers to the idea that people in peer groups often tend to develop the same tastes, interests and desires to live the same lifestyle. He states that within such a group, social norms are developed, and that investing can be a part of those norms. These norms could sometimes also be seen as social pressure. Not participating or following the pattern of the group could make someone an outsider. In order to prevent that from happening, people “follow” the group.

**Example of Social Interaction and Investing**
Mr. A has always invested in direct real estate and never in stocks, due to the higher risks and fluctuations in the value of the stocks. Because Mr. A’s friends all invest in stocks and regularly discuss the (both positive and negative) outcomes, Mr. A feels left out regarding this subject. Therefore, even though Mr. A still considers the risks and fluctuations of the stocks much higher than real estate, he decides to start investing in stocks after all.
1.1.6 An Attempt to Organize the Behavioral Finance

There have been hardly any attempts to organize all of the different anomalies known within behavioral finance. Shefrin (2002), however, made an attempt by organizing the discoveries into three different themes. These themes are:

1) **Heuristic driven bias** - People use rules of thumb called heuristics to process data.
2) **Frame Dependence** - People’s perceptions of risk and return are highly influenced by how decision problems are framed.
3) **Inefficient markets** - Heuristic-driven bias and framing effects cause market prices to deviate from fundamental values.

When addressing the anomalies as discussed in this chapter into Shefrin’s three themes, one might come to the conclusion that this is not that easy. Anchoring, overconfidence and representativeness for example are mentioned in both the first theme as in the third. Prof. dr. F.M. Tempelaar (professor of Finance at the Rijksuniversiteit Groningen, the Netherlands), mentioned during an interview that it might be possible to distinguish several aspects, but because of the complexity of human beings it will be impossible to separate them. In addition, he mentions that the literature does not use the same terms for the same aspects. In reference to the three themes of Shefrin, Tempelaar states that he considers the third theme as a consequence of the other two. Therefore, he does not use this theme, but he added another theme called **self deception** instead. With this theme, Tempelaar refers to people who do not like to see themselves as too unfavorable. Tempelaar, however, acknowledges that this theme is also influenced by frames and heuristics and that one should see it as nothing more but an attempt to organize the extraordinarily complicated coherence as a whole. In addition, he mentions that he has quite often challenged students to make an attempt. However, since he still uses his own three themes, it is expected that these students have not been able, at least according to Tempelaar, to organize all the aspects of behavioral finance.

Stracca (2004) distinguishes five different categories in which anomalies are grouped. The anomalies are organized by the reason they occur, which besides a categorization, also provides a better insight in the anomalies itself. The categories that are considered are as follows:

1) **Decision heuristics**

With this category, Stracca (2004) refers to people making use of shortcuts and simple rules of thumb in making decisions, because they do not (and cannot) solve a (complex) problem, mainly reflecting deliberation and optimization costs. A problem of using such shortcuts and simple rules of thumb is that it may lead to poor decision outcomes and involve “blunders” which might be eliminated with a more “rational” analysis. Stracca (2004) categorizes these “blunders” as follows:
a) The misperception of the laws of probability

This category is referred to, among other anomalies, availability, as described in section 1.1.2. Stracca (2004) describes that people, for example, systematically over-infer from small samples and underrate the importance of population parameters. People systematically tend to overvalue the sample evidence and tend to undervalue the a priori probabilities. This tendency may have an aggregate market implication if people misperceive fluctuations in prices which are simply due to chance with a reversion to a mean.

b) The representativeness bias and anchoring effects

Decision heuristics may be influenced by factors such as representativeness (as described in section 1.1.2) and vividness, which should have little to do with an optimal decision. According to Stracca (2004), another factor that has little to do with an optimal decision, is anchoring to representative values. Stracca (2004) states that these anomalies make it easier for people to solve decision problems even when, if looked at carefully, they should not have the influence they actually have. An example of this tendency is that the status quo or the prevailing price is often regarded as a “normal” or “equilibrium” price level, even if people have no idea of what an “equilibrium” or “fair” price might be and future developments show that the market price was plainly wrong (Stracca, 2004).

c) Limited attention and saliency

Stracca (2004) refers to Shiller (2001) when stating that people are confronted with a confusing array of (sometimes conflicting) information, which encourages them to focus only on salient information. According to Stracca (2004), this makes the average human being (the average investor) particularly subject to fads and to manipulation by others. At the same time, people take time (due to limited processing capability) to digest new information, even when it is actually relevant, which may lead to conservatism bias. Stracca (2004) accordingly states that Shiller (1984, 1998, 2000a, 2001) stressed that attention and saliency may have a social basis, which is the reason why past price increases may attract attention to a certain financial asset and determine a self-fulfilling spiral of rising price and increased optimism.
d) Credulity

Credulity refers to people who do not adequately account for the incentives of others in manipulating and presenting information, due to limited computational capabilities. According to Stracca (2004), Klibanoff, Lamont & Wizman (1999) state that it has been documented that firms tend to present positive information in a salient way, while they normally report negative information in a highly non-salient manner, but that investors do not seem to take this factor into account. In other words, the way information is presented matters.

e) Ambiguity aversion

Stracca (2004) states that “objective” probabilities are rarely known to decision-makers. In addition, Stracca (2004) claims that there is evidence that people dislike “ambiguous” situations (i.e., situations in which the probability distribution is unknown) more than “risky” situations (where at least the probability distribution of the event is known). People are normally willing to pay to avoid ambiguity. According to Stracca (2004), Heath and Tversky (1991) have suggested that the aversion to ambiguity is particularly strong if people feel that knowable information is missing (people prefer to bet on events on which they feel competent about, and shy away from bets they feel to have little knowledge about).

2) Emotions and visceral factors

Section 1.1.5 described that misattribution bias refers to the background feelings or mood that may influence someone’s financial decisions. Stracca (2004), states that emotional and visceral factors play an important role in individual decision-making. In addition, he claims that according to Loewenstein, Weber, Hsee and Welch (2001), the role of emotions may be particularly important in situations of risk and uncertainty.

According to Stracca (2004), some anomalies related to emotional states are based on a trade-off between the need of the situation (i.e. making optimal decisions in a forward-looking manner) and the necessity to protect self-esteem and confidence as well as the emotional well-being. One such anomaly could be the disposition effect. In section 1.1.3, it is mentioned in reference to this anomaly, that whenever investors can attribute a loss to reasons that are out of their control (like a general market decline), their feeling of regret is weaker. In other words, they will attribute the disappointing outcome to something else, just for the sake of their self-esteem. According to Stracca (2004), it is the reluctance to “declare” losses to oneself (fearing a loss of self-esteem), which pushes people to hold losing assets too long. In addition, Stracca (2004) states that Rabin & Schrag (1999) claim that people tend to look for additional support for initial hypotheses, so they do not have to recognize that they have been wrong.
This could be seen as a form of cognitive dissonance: when we know something, we cannot imagine ever thinking otherwise (Stracca, 2004).

Another anomaly that might find its existence in the protection of self-esteem is, according to Stracca (2004), overconfidence, as people draw some emotional gains from the perception of being smarter than others. Stracca (2004) refers to Griffin & Tversky (1992), when stating that the idea that people learn from past mistakes may be doubted if learning implies a painful loss of self-esteem and the recognition not to be smarter than others. In addition, Stracca (2004) refers to Odean (1998a) when stating that overconfidence leads people to react in a distorted manner to information. It appears that especially information which is abstract, statistical, and difficult to interpret is generally dismissed, however; information which is salient, anecdotal and easy to interpret is overvalued.

Another aspect that is mentioned by Stracca (2004) is peoples' weighing of probabilities. This aspect is already discussed by Stracca (2004) in the first category, however; in this case the reason for people to weigh objective probabilities subjectively is not because of anchoring, but because of emotions, especially on whether events are “pallid” or “vivid” in peoples' perception.

According to Stracca (2004), in most contexts small probabilities tend to be over-weighted, while large probabilities tend to be under-weighted. However, for very small probabilities, it becomes indeterminate and both over-weighting and under-weighting is possible.

Stracca (2004) claims that when people suffer a pain deriving from a loss (or wrong decision), they have less “emotional reserves” to tolerate further losses, while they can “stockpile” a cushion of emotional strength after a gain. In other words, past developments and experiences matter in determining people's preferences and therefore their decisions. According to Stracca (2004), this leads to several anomalies:

- the **Endowment Effect** (described in section 1.1.3);
- the **House-money Effect** (described in section 1.1.4);
- the **Status-quo Bias** (described in section 1.1.3);
- **Regret** (described in section 1.1.3);
- the **Sunk-cost Effect** (described in section 1.1.3).

Another anomaly that might be added to this list is familiarity. As mentioned in section 1.1.5, people have preferences for things they are familiar with. These preferences might exist because people do not want to take the risk of choosing something they are not familiar with and then have to find out that it was not smart to take that risk. In other words, people are risk aversive in order to prevent regret and to protect the self-esteem. The same might go for herd behavior.
In section 1.1.5, it is mentioned that this behavior seems to increase when people are in a state of uncertainty and confusion. If an investor does not know what choice to make, it is easier to follow the group as the investor will than be able to share the blame. By sharing the blame, s/he can protect his/her self-esteem better.

3. Choice Bracketing

Stracca (2004) defines choice bracketing as “a series of local choices that each appears to be advantageous but which collectively lead to a bad global outcome”. Under choice bracketing/narrow framing, people typically maximize utility\(^3\) locally (for a narrowly defined decision problem) in an optimal manner, but by doing so they may come to a disastrous global outcome (in terms of overall welfare). The example of mental accounting described in section 1.1.3 illustrates this.

According to Stracca (2004), a main form of narrow framing is procrastination. Procrastination is another word for the anomaly self-control as mentioned in section 1.1.3. As described before, it refers to people acting on the basis of rational calculations at intervals that are irrationally short. Thus, while they maximize their utility in the short-term, they may end up in very unsatisfactory and sub-optimal situations over a long horizon (Stracca, 2004). Stracca (2004) states, that this kind of behavior signals that human patience is not independent of the horizon and that preferences are not time-consistent. In addition, Stracca (2004) claims that people’s impatience is steeper for near-term trade-offs than for long-term trade-offs.

Stracca (2004) presumes that cognitive limitations and deliberation costs play a major role in explaining why people tend to frame their decision problems so narrowly and why they tend to neglect the correlations among different aspects or time horizons in their lives. In addition, he states that people frame their investment decision more narrowly in a horizon of approximately one year.

4. Stochastic and Context-dependent Preferences

According to Stracca (2004), Loomes & Sugden (1995) postulate that instead of a set of well-defined and deterministic preferences that underlie peoples’ decisions, rather stochastic and context-dependent preferences should be considered, especially when it involves the future.

\(^3\) In economics, utility is a measure of the happiness or satisfaction (gratification) gained consuming commodities (goods and services). (Source: http://www.investorwords.com)
That stochastic preferences should be considered is, according to Stracca (2004), because (especially future) preferences are not fully known to the person who must make a decision. In addition, Stracca (2004) does claim that context-dependent preferences should be considered because according to Starmer (2000), in general, preferences seem to depend to a large extent on the way a certain (economic) decision problem is presented to people. Preference reversals may imply that the principle of transitivity (if x is preferred to y and y is preferred to z, then x is preferred to z) may be violated (x is preferred to y and y is preferred to z, but z is preferred to x, for instance if it is presented in a different manner than x).

According to Stracca (2004), a commonly observed tendency is for people systematically to underestimate the degree to which they will adapt to a new situation, leading them to exaggerate the utility gain or loss deriving from a certain outcome different from the status quo. In addition, Stracca (2004) claims that remembered utility may play an important role in forecasting future tastes (and so in decision utility), but that memory can also play tricks. The example of memory and decision making, showed in section 1.1.4, confirms this point of view. Furthermore, Stracca (2004) states that according to Elster & Loewenstein (1992), utility may be derived from memory in its self, again, imparting a backward-looking orientation to peoples’ decisions. Stracca (2004) argues accordingly that Caplin & Leahy (2001) mention that the expectation of future experienced utility is not always assessed only cognitively, but is also accompanied by strong anticipatory feelings such as anxiety. Moreover, preferences evolve over time, for instance with age, but people seldom take this factor into account in their decisions (Stracca, 2004).

5. Reference Dependent Models

According to Stracca (2004), people’s preferences for consumption and other variables (including risk) seem to depend on “reference points”. Section 1.1.2 described that these reference points are a part of the prospect theory. Stracca (2004) claims that this theory is based on three foundations:

a) Organisms habituate to steady states (adaptation)

According to Stracca (2004), people do not look at wealth - or variables of similar economic significance - per se, but rather compare with a reference point.
b) The marginal response to changes is diminishing

As a second key assumption of the theory, Stracca (2004) states that people evaluate departures from the reference point in either direction with diminishing sensitivity. For example, people perceive more strongly a change from 0% to 1% – positively or negatively – than a change from 30% to 31% if the reference point is zero, irrespective of whether the change is a loss or a gain (Stracca, 2004). This might be a reason why **myopic expectations** occur. As described in section 1.1.3, people make decisions based on the short-term instead of on the long-term because they think that today's state of affairs will continue into the future. It might be possible that people use the current situation as a reference point and that the response to changes involving this reference point is diminishing.

\[ \begin{align*}
\text{c) Pain is more urgent than pleasure} \\
\text{The third key assumption of the theory refers to the loss aversion anomaly, as discussed in section 1.1.2. As pointed out in this section, the feeling of a certain loss is 2.5 times as strong as the feeling of the same gain.}
\end{align*} \]

Stracca (2004) argues that in the prospect theory the choice is represented by a two-stage process:

First, the problem is “edited”, possibly using a form of decision heuristic and in the context of a narrow framing. For example, the person will narrow-frame the problem “how to invest a certain amount of money” and construct a reference point around which to evaluate gains and losses (for instance, the initial level of wealth). The person will not look at the correlations between this particular decision and other aspects of his life, because of deliberation costs or limited information processing capabilities (Stracca, 2004).

In a second stage, the person takes the decision (e.g., how much wealth to invest in equity) so as to maximize the Prospect Theory Value function, as described in section 1.1.2. In addition, Stracca (2004) claims that the curvature of this function shows that the representative person is **risk averse** for large-probability gains and small-probability losses, but risk-loving for small-probability gains and large-probability losses. This feature of the theory, according to Stracca (2004), might be able to explain why people tend to take risks in some contexts (e.g., lotteries) but to avoid risk in others (e.g., portfolio allocation).

There are probably many possibilities to categorize all within behavioral finance - known irrational behaviors. Therefore the categories made by Stracca (2004) could be considered arbitrary, especially since there may be some considerable overlaps among them. Nevertheless, this attempt appears to be the best one so far. Behavior finance is still considered very complex and it still needs a lot of research. Perhaps when more information involving this field is available, better categorizations can be made.
1.1.7 Summary

As mentioned before, one of the sub-questions that is asked in the problem definition is which irrational behaviors are already known within behavioral finance. In this chapter, this sub-question is answered by discussing studies in which these different types of irrational behaviors are introduced or described. It has become clear that in the traditional economic literature an efficient market was assumed but that many studies have proven that this is not the case in practice. In addition, it is pointed out that people show many sorts of behavior that is not considered rational.

Even though many anomalies, heuristics and biases are discussed within this chapter, it is most likely that there are many more. Behavioral finance is a field that is gaining acknowledgement and publicity at a tremendous speed, especially during the last (couple of) decade(s). However, there is still a lot to be done, starting with establishing general terms and explanations, organizing the different types of behavior, finding the consequences and finding methods and strategies in order to prevent or eliminate the negative consequences of the irrational behaviors.

Stracca (2004) distinguishes five different categories in which the anomalies are grouped, namely:

1) Decision Heuristics

Within this category, Stracca (2004) refers to people making use of shortcuts and simple rules of thumb while making decisions, because these individuals do not (and cannot) solve a (complex) problem, mainly reflecting deliberation and optimization costs.

2) Emotional and Visceral Factors

Stracca (2004), states that emotional and visceral factors play an important role in individual decision-making. In addition, he claims that according to Loewenstein, Weber, Hsee and Welch (2001), the role of emotions may be particularly important in situations of risk and uncertainty.

3) Choice Bracketing

Stracca (2004) defines choice bracketing as “a series of local choices that each appears to be advantageous but which collectively lead to a bad global outcome”. Under choice bracketing/narrow framing, people typically maximize utility\(^6\) locally (for a narrowly defined decision problem) in an optimal manner, but by doing so they may come to a disastrous global outcome (in terms of overall welfare).

\(^6\) In economics, utility is a measure of the happiness or satisfaction (gratification) gained consuming commodities (goods and services). (Source: http://www.investorwords.com)
4) Unknown Preferences

According to Stracca (2004), Loomes & Sugden (1995) postulate that instead of a set of well-defined and deterministic preferences that underlie peoples’ decisions, rather stochastic and context-dependent preferences should be considered, especially when it involves the future.

5) Reference Dependence

According to Stracca (2004), people’s preferences for consumption and other variables (including risk) seem to depend on “reference points”.
1.2 Behavioral Real Estate

In the beginning of this thesis, it is explained that the first step according to the Practical Approach Method is to discover which irrational behaviors occur in the real estate investment decision process. In the previous chapter, it has become clear that the knowledge within behavioral finance could be seen as a helpful tool in order to accomplish this step. However, this knowledge is not sufficient enough to actually complete this first step. Therefore, it will be necessary to find other methods to do so. In this chapter, the information that is known within behavioral real estate will be described. This information is considered an additional tool as a progression towards finalizing the first step in the Practical Approach Method.

"The same forces of human psychology that have driven the stock market over the years have the potential to affect other markets."

- Shiller (2005) -

Black, Brown et al. (2003), claim that academic and professional real property research in the United States has finance as its primary focus, and that the real estate asset is most often treated as a financial asset. In addition, they state that even though the link to finance has proved to be a beneficial one that has produced much quality research, it has also resulted in the setting of artificial boundaries on real estate research. In order to "break" these artificial boundaries, Black, Brown et al. (2003) propose the lowering of disciplinary boundaries. They point out that disciplines like economics, finance, law and architecture should be taken into account when thinking about the domain of real property. According to the authors, the unifying factor of all these disciplines is that they ultimately derive their existence from human behavior. Cash flows are, for example, created by the actions of human beings making decisions to consume space over time and financial assets must be subjected to the management process to achieve the desired goals of owners, renters and other consumers of the space.

That human behavior forms such an important factor (in real estate) and that people are subjected to many anomalies (as shown in the previous chapter) amplifies the importance of research involving human behavior in real estate. According to Black, Brown et al. (2003), an interested real estate researcher can find a wealth of information in the popular press, as well as academic management journals and academic journals dealing with information technology. In other words, there are opportunities to expand the boundaries of real estate research; the question however is why these opportunities seem to remain unused.
Fortunately, Black, Brown et al. (2003) do not only point out this shortcoming, but they also make some suggestions by which they hope to encourage researchers to expand these boundaries. It is mentioned, for example, that real estate can be conceptualized and analyzed as a cognitive tool of the organization, by considering both the work organization and the space it occupies as networks, each mapped onto each other. Another suggestion that is made is that consumer behavior models can be used to understand:

- The influence of internal and external factors on individual and business consumers' decisions;
- The process consumers use to make a decision regarding real estate purchase, financing, operation and sale.

Black, Brown et al. (2003) also claim that there is a need for empirical studies in real estate journals to quantify the links among space usage, human resources and technology in the workplace. More suggestions have been made by the authors and the key issue is clear: the field of real estate has a lot to explore.

Human behavior in real estate is sometimes referred to as Behavioral Real Estate. The actual definition of this term is elaborated on in the investment figure presented below.

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Wofford (1985)
As visible in the figure, there are, in general, three important factors in order to form real estate investment decisions. The first factor is the goal of the investor. This could, for example, be to achieve a minimal net return of 10% with a minimum risk. The second factor is the external environment. This could be the demand and supply, the interest rates, taxes, plans of the government, regulations etc. The last factor involves the results of the previous investment decisions. With this factor, the investor will be able to see if former investment decisions should be adjusted, obtained or avoided. By the help of these three factors, a perception can be formed. However, when these factors come together, they will go through filters in the investors mind. These filters consist out of heuristics, biases, attitudes, beliefs, mood etc. The same filters then influence the expectations. Based on the expectations, the real estate investment decision will be made. These decisions accordingly form as feedback on the goals and results. Behavioral real estate refers to the filters within this real estate investment decision process.

In this chapter, the relatively few studies that involve irrational behaviors within real estate will be discussed. The behaviors will be described per anomaly, which are set in alphabetical order. As mentioned in the beginning of this section, this information will function as an additional tool in finding which irrational behaviors occur in the real estate investment decision making process.

1.2.1 Anchoring

Anchoring is probably the most studied and described heuristic within the field of real estate. In particular, anchoring during the valuation process of properties is relatively often studied. For example, Gallimore (1994) states that appraisers may inappropriately give the greatest weight to the most recently considered information. Diaz and Wolverton (1998) found that appraisers have the tendency to use their own previous value judgments as anchoring reference points. In addition, they describe that the appraisers insufficiently update their previous value judgments, that they anchor to their previous valuations and that they tend to make adjustments to these previous valuations, which are insufficient in light of the available market evidence. Baum, Crosby et al. confirm this by finding that valuations are based upon the previous valuation plus or minus a perception of change. In addition, they state that the perceived changes, unless a subject of very reliable transaction evidence, will be conservative.

In property negotiation, it seems that the asking price plays an important role as does anchoring, according to Northcraft and Neale (1987), Black and Diaz (1996), Black (1997) and Diaz et al. (1999). In addition, Brunes (2004) states that besides the asking price, previous valuations also play an important role as anchoring in property negotiation.
1.2.2 Confirmation Bias

Gallimore (1996) searched for the confirmation bias in the valuation process of members of The Royal Institution of Chartered Surveyors. Gallimore states that the only principal hypothesis to be sustained was bringing together the tendencies to arrive at an opinion of value early and to limit the search for comparables. In addition, he mentions that the failure to link those tendencies with that involving "value-fixation" might be attributable to a weakness in the instrument used to measure the latter, which resulted in an unbalanced set of responses. However, as Gallimore acknowledges, without stronger corroboration these findings remain susceptible to explanation in other ways. The conclusion of the survey therefore was that for the present, at least, the case for confirmation bias remained unproved.

1.2.3 Familiarity

Eichholtz et al. (1997) states that Shukla & Inwegen (1995) show that local fund managers outperform foreign managers; which suggests that specialized knowledge can help to outperform the market. In addition, Eichholtz et al. (1997) mentions that Eichholtz, Koedijk & Schweitzer (1996) claim that domestic property companies, with easy access to non-public information, have a better performance than international property companies. This indicates that specialization gives access to private information, which enables managers to generate persistent out performance.

Eichholtz et al. (1997) studied the effects of specialization by property type and by geographic region of US Real Estate Investment Trusts (REITs). They used the handbooks of 1990-1996 of members of the National Association of Real Estate Investment Trusts as data. Within these handbooks, the size and composition of the real estate portfolio was given by the number of properties in the different states and real estate categories. The authors found that property specialization leads to an out performance of the market, whereas geographical specialization leads to an underperformance. Therefore, they suggest real estate investors to purchase stocks from REITs specialized in one property type, with geographical diversification.
1.2.4 Herd Behavior

Diaz (1997) discovered no evidence that expert real estate appraisers operating in geographic areas familiar to them were influenced by the previous value judgments of anonymous experts. However, Diaz and Hansz (1997) show that subjects were so influenced. The crucial difference between the subjects of these two studies was that those in Diaz (1997) were familiar with the subject area whereas those in the study of Diaz and Hansz (1997) were not. Diaz and Hansz (1997) state that therefore these two studies seem to point to the conclusion that the increased uncertainty of geographic unfamiliarity may trigger use of reference points which would otherwise be given little or no credence.

1.2.5 Loss-aversion

Genesove and Mayer (2001) noticed that the Boston condominium market exemplifies a strong cyclical pattern. Between 1982 and 1989 nominal prices rose about 170 percent, then fell more than 40 percent in the next four years, stabilized over the next two, then rose again, eclipsing their previous peak by the beginning of 1998. These swings in prices were accompanied by significant movement in the sales and listing behavior of sellers. By the help of data on individual property listings in the Boston Condominium market at weekly intervals between 1990 and 1997, Genesove and Mayer (2001) proved that, at least in the 1990’s, loss aversion determined seller behavior in the downtown Boston housing market. They discovered that condominium owners subject to nominal losses:

1) Set higher asking prices of 25-35 percent of the difference between the property’s expected selling price and their original purchase price;
2) Attain higher selling prices of 3-18 percent of that difference;
3) Exhibit a much lower sale hazard than other sellers.

The list price results are twice as large for owner-occupants as investors, but hold for both. Furthermore, they found that constrained sellers (i.e., with less than 20 percent equity) were more likely than unconstrained sellers to ask above market prices, and that this resulted in an inverse correlation between prices and time-to-sale.
1.2.6 Myopic Expectations

Gallimore (1994) found evidence of anchoring and a recency effect. An experiment was processed in a questionnaire and was completed by 221 appraisers. It appeared that these appraisers give greatest weight to more recent information. Gallimore (1994) acknowledged that the experiment contexts are simplified representations of the valuation process. As a result, they cannot be accepted as unquestionable measures of what actually happens in practice. However, as Gallimore states, the relatively high response rate coupled with the interest and constructive comment from numerous respondents, is supportive of the practical validity of the settings used for the experiment.

1.2.7 Self-control

Ashenfelter and Genesove (1992) compare condominium prices paid in face-to-face bargaining with the prices fetched for identical condominium units sold at auctions. They found that auction prices for identical condominium units were 13 percent higher than for units subsequently sold in face-to-face bargaining. According to the authors, these high prices that auction bidders paid for the condominium units, opens up the possibility that they were subject to the winners curse (in which buyers construct point estimates of the value of a property and fail to shade their bids in anticipation of estimation error).

1.2.8 Market bubbles

"... But one of the first lessons of economics should be that there are many factors that seem sometimes to "explain" speculative prices, too many for us to analyze them comfortably. We have to resist the temptation to oversimplify by singling out only one. ..."

- Shiller (2005) -

Shiller (2005) presents a list of twelve potential factors that propelled market bubbles in the stock markets from 1982 to 2000 and the housing markets from the late 1990's onward. Factors like cultural and political changes, new information technology, expansions in media reporting of business news and the rise of gambling opportunities are discussed. Shiller (2005) accordingly claims that these factors were amplified by mechanisms involving investor confidence, investor expectations for future market performance, and related influences on investor demand.
Shiller (2005) states that he and his colleague Karl Case asked recent homebuyers in the cities Boston, Los Angeles, Milwaukee, and San Francisco if they thought that real estate is the best investment for long-term holders, who can just buy and hold through the ups and downs of the market. It appeared that in the boom cities Boston, Los Angeles and San Francisco, more homebuyers strongly agreed that this was the case, than in Milwaukee where there was nearly the same path of steady prices it had been for decades. In addition it appeared that in Los Angeles, the city with the highest rate of increase in home price at the time, the amount of people who strongly agreed was the highest.

Shiller (2005) points out that investor confidence is reinforced by feedback. In feedback loop theory, initial price increases (caused for example by cultural and political changes or new information technology) lead to more price increases as the effects of the initial price increases feed back into yet higher prices through increased investor demand. This second round of price increases feeds back again into a third round, and then into a fourth, and so on. In other words, the initial impact of the precipitating factors is amplified into much larger price increases than the factors themselves would have suggested (Shiller 2005).

1.2.9 Summary

In the beginning of this chapter, it is mentioned that the knowledge involving irrational behaviors within real estate is considered an additional tool as a progression towards finalizing the first step in the Practical Approach Method. The first step is to discover which irrational behaviors occur in the real estate investment decision process. However, the knowledge involving these behaviors appears to be insufficient for finalizing this first step. It appears that relatively little research has been done involving irrational behaviors within real estate. The few studies that have been done, mainly concern the valuation process or, in some extent, indirect investing in real estate. However, studies that involve the actual behavioral real estate, as defined in the beginning of section 1.2 do not seem to have taken place; let alone research that concerns direct investments in Dutch real estate by Dutch private investors.
1.3 Investment Strategies

There have been many studies involving irrational behaviors while making economic or real estate decisions. Many of these studies show evidence, that this can have a negative (financial) outcome. However, how to prevent having a negative outcome or how to improve the decision making process, is relatively rarely discussed. Investment strategies that attempt to prevent a negative outcome or to improve the decision making process with regards to irrational behaviors will be presented in this chapter. These strategies are considered a tool in the progression towards an optimal decision making process, as defined in the Practical Approach Method.

1.3.1 Wofford’s Seven-Step Personal Financial Management Process

Wofford (1985) presents the Seven-Step Personal Financial Management Process for making real estate investment decisions. Wofford acknowledges that the financial management plan does not treat real estate exclusively, but states that it does help to assure that real estate investments fit the decision maker’s personal investment goals, criteria, and rules, including financial and nonfinancial considerations. The plan is as follows:

Step 1 – Develop a personal philosophy that includes saving and investing.
Decide your short-term and long-term goals and objectives and the cost of producing the assets necessary to satisfy them.

Step 2 – Perform a personal situation audit.
Assess your financial and personal situation. Analyze income, wealth, and present portfolio. This step also requires a thorough self-analysis.

Step 3 – Refine your personal philosophy in view of the personal situation audit.
Compare your desires and your financial ability to satisfy them. Adjustments may be necessary to bring the two into balance.

Step 4 – Develop a strategy for portfolio building.
Decide what types of investments will be sought and what criteria will be used to evaluate them in light of your investment philosophy. The strategy should be a portfolio strategy that considers the relationships among all your investments. Developing criteria and rules at this point is a critical step for addressing the problem that started this discussion.
Step 5 – Assemble a team of professionals.
Investments are too complicated for most people to be knowledgeable of every necessary area. Therefore, it is advisable to assemble a team of professionals that includes an accountant, tax advisor, insurance specialist, securities advisor, real estate counselor, and others. These experts can make the difference between success and failure in achieving your investment goals.

Step 6 – Implement the strategy.
Once the strategy is complete, it must be implemented. This is a continuous process that includes identifying suitable investments, monitoring and evaluating their performance, and revising the portfolio when necessary.

Step 7 – Adapt the plan to changes.
Personal and financial situations change over time. As they do, the personal financial management plan should be adapted to fit the new conditions. This step closes the system and provides for evaluating conditions and updating the plan so that it is never too outdated.

1.3.2 Bazerman’s Four Strategies

Bazerman (1994) describes four alternative and complementary strategies for making better decisions than those that can be expected without adjusting one’s intuition. These strategies are as follows:

1) Acquire experience and expertise
By acquiring experience and expertise, Bazerman (1994) refers to the optimistic possibility that experts or experienced decision makers making important decisions might be far less affected by biases. Together with the strategy, he describes studies with evidence that people hardly learn from their mistakes, even when full feedback is given. The author mentions that it is therefore important that when developing expertise one avoids the danger of “mindless” learning. Constant monitoring and awareness of the decision making process would hereby be essential, as well as not relying upon the feedback of uncertain, uncontrollable, and often delayed results.
2) **Debias judgment**

The second strategy, debiasing judgment, refers to a procedure for reducing or eliminating biases from the cognitive strategies of the decision maker. Bazerman (1994) states that evidence is given that debiasing is quite difficult; however, that feedback on individual’s own decisions is an important ingredient to successful judgment improvement. Individuals are often risk averse and prefer the certain outcomes of known behavior to the outcome of innovative behavior. In order for change to occur and last over time, an explicit unfreezing process needs to take place. Concrete evidence that leads to questioning an individual’s current judgment strategies is essential. Once the individual is unfrozen from past behaviors and is willing to consider alternatives, the individual needs to change. Bazerman (1994) states that there are three critical pieces of the change process:

- a) Clarification of the existence of specific judgmental deficiencies;
- b) Explanation of the roots of these deficiencies;
- c) Reassurance that these deficiencies should not be taken as a threat to the individual’s self-esteem. It is critical that the individual understands that virtually everyone has biases and that having them does not imply that one is a poor decision maker, only that room for improvement exists.

Once the change takes place, it is according to Bazerman (1994) still easy for the individual to revert back to past practices. The new procedures are foreign and must develop their place as intuitive strategies. This takes place with practice over time. Therefore the individual will need to knowingly use the new knowledge in multiple applications. Frequent application and repeat training are necessary if the change is to last and become institutionalized as part of the individual’s intuitive strategies. Bazerman (1994) states that, for refreezing to occur, one must continue to examine his or hers decisions for biases. Scheduled routine checkups to evaluate recent important decisions are also essential.

3) **Use linear models based on expert judgment**

Bazerman (1994), claims that one alternative mechanism for debiasing consist of using an expert’s knowledge to build a linear model that simulates judgment in making future decisions. He describes successful examples of the statistical technique regression analysis in order to prove his point. According to Bazerman (1994), the problem of multiple regression analyses is how to integrate information. With the same data, people will not always make the same decisions, as they are affected by mood, subjective interpretation, random fluctuations and the like. In contrast, a linear model will always make the same decisions with the same inputs. For a full discussion of the procedures, Bazerman (1994) refers to Slovic and Lichtenstein (1971), Dawes and Corrigan (1974), and Dawes (1979).
4) **Adjust intuitive predictions**

With the strategy 'adjusting intuitive predictions' Bazerman (1994) refers to the five-step procedure of Kahneman and Tversky (1982). This procedure is described as follows:

a) **Select a comparison group.** This step consists of selecting the set of past observations to which the current decision or forecast is to be compared.

b) **Assess the distribution of the comparison group.** The next step involves assessing the characteristics of the past observations to which the current decision is being compared.

c) **Incorporate intuitive estimation.** This step calls for identifying the decision or forecast of the expert.

d) **Assess the predictability of the analyst's forecast.** This is the most difficult step in the corrective procedure. It consists of determining the correlation between the decision or forecast and the comparison group data.

e) **Adjust the intuitive estimate.** This step calculates the adjustment that reduces the bias error of the initial decision or forecast.

However, especially the last strategy is at least arguable. The problem with this strategy is how to choose your data. How does one for example select a comparison group? Does one use all the data of last year, last 2 years or only a part of the data but than from the last 5 years? In other words, this strategy is already influenced by anomalies (like representativeness).

### 1.3.3 Nofsinger's Five Strategies

Nofsinger (2005) describes five strategies that are especially meant for stock investors and are as follows:

1) **Understand the biases;**

   Recognizing the biases in one self and in others is an important step in avoiding them.

2) **Know why you are investing;**

   Establish specific goals and ways to meet them. Instead of a vague notion of wanting to travel after retirement, define what that means and how much money it will require.

3) **Have quantitative investment criteria;**

   Having a set of quantitative investment criteria allows one to avoid investing on emotion, rumor, stories, and other psychologically based biases.
4) **Diversify;**

It is not likely that one will diversify in a manner suggested by the Modern Portfolio Theory. However, some simple diversification rules are suggested:

- Diversify by owning many different types of stocks. One can be reasonably diversified with 15 stocks that are from different industries and are of different size companies.
- Own very little of the firm you work for.
- Invest in bonds too.

5) **Control investing environment.**

To control one's environment, one needs to limit the activities that magnify one's psychological biases. Some ways to control the environment are:

- Check one's own stock once per month.
- Make trades only once per month and on the same day of the month.
- Review one's portfolio annually to see how it lines up with one's specific goals.

In addition to the five strategies, Nofsinger (2005) also presents some rules of thumb to shield from psychological biases. One of these rules is before placing a trade on a stock that does not meet one's criteria, to remember that it is unlikely that one knows more than the market. The question is, if one is sure to know more. Another rule of thumb is to review the psychological biases annually. This action will reinforce the understanding and the recognition of the biases in oneself and in others.

### 1.3.4 Other Strategies

According to Bazerman and Neale (1983) and to Lichtenstein and Fischhoff (1980), personalized feedback is moderately effective in improving judgment that was biased by overconfidence.

Mintzberg (1987) states that strategies for organizations could be like horses having blinders on: the blinders make sure the horses will walk forward; however, the blinders limit the horses' peripheral sight. When an organization concentrates her efforts and the attention focuses on every part of the integrated whole, there is a chance that a strategy can not be changed anymore when necessary. When in strange waters one sets out a course in advance, one could easily have a collision with an iceberg. In other words, sometimes it is better to take small and well considered steps and not to look too far ahead, so adjustments can be made in time.
According to Shefrin (2002), people should learn to recognize heuristic-driven bias and frame dependence in themselves and in others. In addition, Shefrin states that the smart-money investor:

- Distinguishes luck from skill;
- Recognizes that the mistakes of other traders produce an extra source of risk as well as a potential profit opportunity;
- Knows that only some risks are worth taking.

Even when someone would act in a completely rational way, he should be aware that the people around him are most likely not. According to Makridakis (1990) it is impossible to predict irrationality.

Most of the strategies mentioned above seem to be “simple rules of thumb”, which do not apply for the (real estate) investment decision process in particular. In addition, it appears that most of the presented strategies seem to be derived from the consequences of the anomalies instead of the actual reason these anomalies occur in the first place. This proves the importance of approaching the field of irrational behaviors step by step, as pointed out, for example, in the Practical Approach Method (see graph below).

The Practical Approach Method shows that in order to find out how to eliminate or reduce the occurrence of undesired irrational behaviors, it is necessary to first discover the reason why these behaviors occur in the first place. Here lies an area within behavioral finance and behavioral real estate that still seems to be quite unexplored, but would be essential in order to improve the decision making process. In addition, it is important to realize that, as mentioned before, rational behaviors do not always result in a positive outcome; nor do irrational behaviors always result in a negative outcome. Besides the investor’s own behavior, there are more factors that influence the outcome of an investment. To prove this point, two examples will be given.
Example of Raven
In January 1999, a chimpanzee named Raven was given the task of using a dartboard. On this dartboard, each of the 133 partitions represented another stock. Raven was given 10 darts and had to throw them onto the dartboard. Eventually, this became the Wall Street sensation because it appeared that at the end of the year, the selection Raven made gained 213 percent in value. The chimpanzee took the 22nd place on a list of about 6,000 American stock experts.

Example of Jacko
A group of researchers let a gorilla pick a portfolio of ten share funds at the first of January 2000. The gorilla chose the portfolio by eating 10 out of 75 labelled bananas. On the second of November 2000, it appeared that this portfolio had a return of 55.1%, this in contrary to the AEX index which rose with 1.2% in the same period. In addition, in the year 2004 Jacko beat the market for the 5th year in a row. While the AEX index in 2004 rose with 3%, the gorilla’s portfolio rose with over 25% in value.

1.3.5 Summary

In this chapter several strategies are discussed that are meant to improve one's decision-making process. These strategies could be summed up as follows:

- Analyze the personal (financial) situation;
- Acquire external advice;
- DeBias judgment; by doing this, get feed-back (from external advisors) and have scheduled routine evaluation checkups;
- Perform data-analyses;
- Diversify;
- Develop and implement quantitative investment criteria and strategies; specify (long-term and short-term) goals and objectives including its necessities while doing this;
- Take small and well considered steps while carrying out these strategies and adapt and adjust whenever necessary.

Most of the presented strategies seem to be "simple rules of thumb" that are derived from the consequences of the anomalies instead of the actual reason these anomalies occur in the first place. This points out the importance of approaching the field of irrational behaviors step by step, as pointed out in the Practical Approach Method, for example. The method suggests first discovering the reason why these behaviors occur, before finding out how to eliminate or reduce the occurrences of these behaviors.
In addition, it is noted that even though the strategies that are discussed in this chapter are meant to help an investor perform better, it does not automatically mean that s/he actually will. As mentioned before, rational behaviors do not always result in a positive outcome; nor do irrational behaviors always result in a negative outcome.
Part 2

Data Collection
Introduction

In this part of the thesis, both the design of the field research and data analysis will be discussed. The design of the field research will discuss which information will be searched for and which method will be used to do so. The data analysis will describe the outcome of 20 interviews held with people that are either Dutch private real estate investors or people that are directly related to them from a financial point of view (like their financial advisors).

2.1 Design Field Research

In this chapter, the design of the field research will be described. First an inventory of the information required to answer the questions, as discussed in the problem definition, will be made. Explaining why Dutch private real estate investors are chosen as the research unit is shown accordingly. Then, the choice for the data collection method will be discussed, followed by a description of the interview guide. Accordingly, the pilot studies will be argued. After that, the samples and the field work will be discussed. The field research will be closed with a discussion.

2.1.1 Required Information

As one can read in the problem definition, there are several goals to be achieved. The first goal is to see which irrational behaviors are already known within behavioral finance. As already mentioned, this is described in the previous chapter by the hand of existing literature.

The second goal is to see which irrational behaviors, already known within behavioral finance, are applicable on direct investing in Dutch real estate by Dutch private real estate investors. Even though there have been some studies of irrational investing behavior in real estate, as described in the prior chapter, it appears that there have not been any studies that involve direct investing in real estate, let alone direct investing in real estate by Dutch private real estate investors in particular. Therefore, it will be necessary to acquire this data through another method than through a literature study.

Another goal to be achieved is to find the consequences that are expected by the manifested irrational behaviors by Dutch private real estate investors while they direct invest in Dutch real estate. In addition, it is questioned which of these consequences are negative. Since there does not seem to be any information in the existing literature that would make it possible to obtain these goals, this information will need to be acquired through another method.
2.1.2 Choice for Data Collection

Baarda and de Goede (1997, 2005) claim that there are three different ways to acquire data:
1) Making use of existing information;
2) Acquire data through observation;
3) Acquire data through written or verbal interviews.

Since most goals of this thesis can not be achieved by making use of existing information, it will be necessary to acquire this data through one of the other two methods. Irrational behavior could be seen as unwanted behavior; therefore, acquiring data through observation might not be the most sensible way. Thus, it is decided to acquire data through interviews.

As mentioned before, there are two types of interviews, namely written and verbal interviews. The decision is made to conduct the interviews verbally. During these interviews it will be possible to elaborate and give more information when required. In addition, there will be a possibility to continue asking questions when given answers are superficial. It is expected that by having an interaction, there can be more (relevant) data obtained.

When conducting verbal interviews there is the possibility to have individual interviews and group interviews. According to Baarda and de Goede (2005), the advantage of group interviews is that remarks of other participants could work inspiring on other respondents. It might give participants ideas or feelings that they would not have by themselves otherwise. On the other hand, there is the risk that people let themselves get influenced by the group. They might say things in order to make an impression on the group, or they might not say other things because of shame. Since irrational behavior could be seen as unwanted behavior, the decision made is to only have individual interviews. This way the answers might be more sincere.

2.1.3 Research unit

Troostwijk Makelaars O.G. classifies real estate investors in the Netherlands into five different groups:
1) Foreign investors;
2) Institutional investors;
3) Listed real estate funds;
4) (Limited) partnerships;
5) Private investors.
The group ‘foreign investors’ consists out of all kind of different investors like German institutional investors, Swedish private investors, American partnerships etc. Since this group is so diversified, it is very hard to talk about the irrational behavior this group shows in general. It is most likely that, for example, a large British pension fund will make their investment decisions in a completely different way than a relatively small operating German private investor. Therefore, it is decided not to use foreign investors as research unit for this thesis.

Listed real estate funds, institutional investors and (limited) partnerships are obligated to justify their actions to at least their shareholders. Furthermore, it is not allowed for an institutional investor to invest with a high risk, as there is too much at stake. After all, institutional investors are responsible for the capital of their members. It is expected that listed real estate funds, institutional investors and (limited) partnerships will not make their investment decisions purely based on their feelings and believes. Instead, it is assumed that they rely much more on calculations, which, as a result, means that they might be less subjective to irrational behavior. In addition, the money these investors invest is not (entirely) their own, which might also result in a more rational way of making investment decisions. With that said, it is decided not to use the listed real estate funds, the institutional investors or the (limited) partnerships as research unit for this thesis.

Dutch private investors on the other hand are different. In general, they do not have to justify their actions in the same way as the institutional investors, (limited) partnerships or listed real estate funds. Therefore, they can completely rely, if they choose to do so, on their feelings and beliefs without making any calculations. It is expected that this happens quite regularly. Besides that, these investors are investing their own money. Making a loss or a profit will have an immediate impact on their financial status. Because of these reasons, it is expected that private investors are in general the most subjective to irrational behaviors while investing in (Dutch) real estate within the five different groups of real estate investors in the Netherlands. Therefore, this group has been selected to use as the research unit. As already stated in the introduction of this thesis, Dutch private real estate investors refers to all Dutch real estate investors that finance with private money and have a minimum of € 1,000,000 direct invested in Dutch real estate.

2.1.4 Interview guide

In the part entitled Background information it is apparent that there are many different anomalies discovered within behavioral finance. The question, however, is which irrational behaviors, already known within behavioral finance, are applicable to direct investing in Dutch real estate by Dutch private real estate investors. Before starting the interviews a pre-selection is made.
Different aspects of irrational behavior can be found in (almost) every decision one makes. For example, whenever a choice can induce regret, people have an incentive to eliminate that choice. Consider the following example:

**Example of Regret**

Members of the Israeli Army display a resistance to trading patrol assignments, even when it would be convenient for both individuals to do so. If two men trade assignments and one is killed, the other must live with the knowledge that it could or should have been him.

The example shows that regret is not an anomaly that only occurs while investing or making financial decisions. It is an anomaly that takes place during every day, life decisions. Besides regret, there are many more anomalies that occur on a daily basis and that are not specifically applicable on investment decisions. Pride, memory and decision making, and cognitive dissonance are just some other examples. Since these anomalies occur during our daily lives, it is more than likely that they take place while people invest in real estate as well. However, this makes it very hard for the respondents to actually see the direct consequences of these anomalies. It is probable that they would not only answer the questions related to investing in real estate, but also in relation to every day, life decisions. Consequently, the reliability of the answers would be questionable. In order to prevent this, these every day, life anomalies will not be taken into consideration for the rest of this study.

During the interviews it is necessary that the respondents understand both the explanations and the questions. Anomalies that look quite similar might confuse the respondents and could therefore have an impact on the reliability. In order to prevent this, there is either a single anomaly picked out of several (at first sight) similar looking anomalies or anomalies that are closely related are therefore combined into a single anomaly.

After this pre-selection, there are eleven different anomalies remaining that are suitable for the interviews.

Before the actual interviews start, a brief introduction is given to the respondents. During this time it is mentioned that within the economic field a lot of research has been done involving the behavior of both consumers and investors in stocks. In addition, it is also mentioned that involving the behavior of investors in real estate, there has hardly been any research conducted and that this is the main motivation for these interviews. Furthermore, the introduction explains that the interview is about Dutch private real estate investors overall and a definition of this term is given. It points out specifically that the questions are mainly about the explanation of the behavior and less about the given example self.
Within the interviews there are a total of eleven different anomalies including examples on real estate investment presented to the respondents. After an anomaly is presented, the respondents will be asked if they think this occurs among Dutch private real estate investors and if so, how often. With that said, they will be asked about the consequences of this anomaly and, if applicable, about possible strategies. In conclusion, the respondents will be asked if there would be a difference between the subjectivity to a particular anomaly by investors with less than 5 years experience and investors with over 20 years experience. The interview guide can be found in appendix I.

### 2.1.5 Pilot Studies

Before the start of the actual interviews, several test interviews were held. These test interviews were done with both Dutch private real estate investors and with people who are directly involved with Dutch private real estate investors (in a financial advisory way). The test interviews resulted in making some of the questions more specific as well as eliminating two questions.

### 2.1.6 Samples and Report Field Work

As stated before, the research units are the Dutch private real estate investors. When starting the interviews, it was anticipated that the best respondents would be the investors self. It could be that the investors were best able to recognize the irrational behavior within themselves and/or with other private investors. Therefore, twenty Dutch private real estate investors were chosen to be interviewed.

It is taken into consideration that there might be a difference between investors based on their experience being more or less. More experienced investors might have witnessed a crisis and might therefore be more careful. In order to see if this would be the case, the decision to choose ten investors with five or less years experience and ten investors with over ten years experience (or preferably even more) was made.

During the interviews however, it became clear that the investors might not be the right people to interview after all. Most of the investors only considered their own way of dealing with the presented behavior. They often mentioned that they had problems estimating the behavior of other investors and therefore could only discuss their own behavior. During the pilots, there were a couple of people interviewed who were directly related to private investors. These people appeared to have a better view on the behavior of private investors in general and were therefore better capable of answering the questions. With this in mind, not only private investors are chosen to interview, but also people who are directly related (in a financial advisory way) to these investors.
Finding people to interview was very easy. Every person who was approached to interview accepted the invitation, except for one private investor. However, in return most respondents demanded the final report or at least a summary of it.

The interviews were held from Monday the 26th of June through Tuesday the 18th of July. In total there are twelve private investors interviewed and eight people who are directly related to private investors (relationship managers, risk managers and managing directors within the field of real estate financing, and property brokers for large scale investments). Due to a shortage of time, one interview with someone directly related to private investors could not be finished in time. The given answers will be integrated in the data-analyses; however this will mean that for some anomalies there have been 19 respondents used while for other anomalies there have been 20.

2.1.7 Discussion

Even though acquiring data through verbal interviews is seen as the best way to acquire information at this current point for this thesis, it is acknowledged that the outcome of the interviews will not be sufficient to make actual statements. Diaz (1999) states that for exploring behavioral aspects on the market, a study of the investors' behavior should be made by experiments, surveys and interviews. Brunes (2004) has done a study about the overbuilding in office markets where he used this technique. In his article he presents Diaz’s idea by the hand of the figure presented below.

When implementing this figure in the Practical Approach Method, it will become clear that the first step - to discover which irrational behaviors occur within the real estate investment decision process - can not be finalized by just using interviews and the knowledge from different behavioral sciences. The graph below provides a visual perspective.
From this figure could be derived that in order to make actual statements about the behavior of Dutch private real estate investors, there is a need for an additional survey and a statistical analysis. Therefore, it is recommended that in further studies this will be done in order to be able to make actual statements.
2.2 Data Analyses

The data analysis will be described in this section. This will be done for each anomaly separately. Furthermore, the given answers of the respondents and the existing literature will be searched for both similarities and differences. As mentioned before, there are both private real estate investors (P) and people directly related to these investors (NP) interviewed. The similarities and differences between these two groups will also be discussed.

2.2.1 Interviews

As mentioned in section 2.1.6, there are twelve private investors interviewed and eight people who are directly related to private investors (like real estate financiers). Due to a shortage of time, one interview with a NP could not be completed. Because of this, for some anomalies there have been 20 respondents used while for other anomalies there have been 19.

The interview guide and the given answers can be found in appendix I (Interview Guide) and appendix II (Interview Results).

This thesis is written in combination with the report “The Real Estate Investment Policy of the Dutch Private Investors 2006”. The report was written for Troostwijk Makelaars O.G., ING Real Estate and the Technical University of Eindhoven. A summary of this report is described in appendix IV (Current Market Situation) in order to provide a better insight of the market situation under which the interviews are held.

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7 This title is translated from the original Dutch title: “Het vastgoedbeleggingsbeleid van de Nederlandse professionele particuliere beleggers 2006”.

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2.2.2 Anchoring

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

**Explanation of Anchoring**
People anchor on the first value they hear.

**Example of Anchoring**
When bidding on an office block, an investor uses the listed price as a guide to estimate the value of the office block. As usual, he accordingly decides to bid seven percent under the listed price.

The Occurrence among Private Real Estate Investors while Investing

There seems to be a difference between how the P's and the NP's think about the occurrence of anchoring. Most P's think that this anomaly does not happen among the investors or at least not with themselves. Most NP's, on the other hand, think that this does take place while the investors make their investment decisions. The majority of the respondents that believe the anomaly occurs believe it happens often (as shown in the chart below). Remarkably, four of the P's who mentioned that the anomaly does not take place (among themselves) also stated that they use the rental price or the gross initial yield to determine how much an object is worth. Only using this data in order to determine the value of an object might be seen as anchoring as well.
Consequences of Anomaly Occurrences for the Private Real Estate Investor

Five P’s and three NP’s mention a (bigger chance on a) lower return (because of paying too much for an object) as a consequence of anchoring. Two P’s consider this as a consequence that is negative and independent on the real estate cycle. One of these P’s considers the consequence of neutral importance while the other considers it as important. The three NP’s who mentioned the lower return as a consequence of anchoring; all consider the consequence as negative. One NP adds that this consequence is very important and that the return will drop more in a declining market. The two other NP’s do not consider the lower return as a consequence of the real estate cycle. According to one of these NP’s, the consequence is important; another states that it is very important.

According to one P, anchoring does not have any consequences. One P mentions a higher return, because the investor would buy an object “too cheap”. One NP thinks the investor will make a good deal because of anchoring. In addition, the NP mentions that the investor will make an even better deal in a declining market. One NP states that anchoring will have the consequence that the return will be unknown for the long term. Another NP states that the consequence is that the investor will not become the buyer. The NP considers this as an important, negative consequence that is independent on the real estate cycle. Another NP mentions a higher risk as a consequence of anchoring. According to the NP, this is a very important, negative consequence that is independent on the real estate cycle.

Differences between Investors with Over 20 years and Less Than 5 years Experience

Two P’s and five NP’s mention that there is a difference in the number of years of experience and on how these investors deal with the anchoring anomaly. One P and three NP’s think that the more experienced investors will ground their choices better and will value the listed price as less important. On the other hand, there are two NP’s who say that less experienced investors will usually have a better education and will therefore rely more on data. As a consequence, they expect that these “young” investors will be less subjective to the anomaly. One P says that an investor with less than 5 years experience will anchor less because (s)he is not bounded by knowledge (about former prices). There is one NP who thinks there is no difference in the number of years of experience and how subjective an investor is to the anomaly.
Strategies

There are several strategies mentioned in order to either prevent or minimize the anchoring anomaly. One strategy, mentioned by two NP’s, is to acquire external advice. Another strategy, brought up by one P and two NP’s, is to rely more on data, like market rent, quality rental contracts etc. One NP mentions that in order to understand the data or to know how to deal with it, following an education might be suggested.

Discussion

In section 1.5.1, it is mentioned that anchoring takes place in order to make it easier for people to solve decision problems. Furthermore, section 1.2.1 described that there is evidence in the literature that anchoring plays an important role in the property negotiating process. The same section discussed that anchoring also takes place during the valuation process. Therefore, it is expected that anchoring occurs while Dutch private real estate investors make their investment decisions as well. Most NP’s share this opinion; however, most P’s do not. That most P’s disagree is quite remarkable, since four P’s, who mentioned the anomaly does not occur (among themselves), did say that they either use the rental price or the gross initial value to determine the value of an object. When private investors would only use this data in order to determine the value of an object, than this could be seen as an indication of anchoring, but just on a different value than the listed price. That these four P’s mention another value than the listed price, makes it plausible to assume that respondents answered the questions in reference to the given example and less to the general explanation. This points out that the way the questions are asked narrowed the view of the respondents (unintentionally). This would mean that the goal to represent a general image to the respondents during the interviews has therefore, unfortunately, not been accomplished completely.

Most respondents consider the consequences of anchoring during the real estate investment process independent on the real estate cycle. There does not seem to be any evidence that anchoring is dependent on the real estate cycle either. Appraisers will anchor on their previous valuations. Investors will anchor during their investment decision process and also during the property negotiating process anchoring seems to take place, no matter the market conditions. However, this does not automatically mean that the consequences of anchoring are also independent on the real estate cycle. In fact, it is expected that the consequences of anchoring are dependent on the real estate cycle. This will be elaborated on within the following example:
Suppose an investor decides to sell an object from his portfolio. He decides to ask his appraiser to estimate the value of the object in order to set a listed price consistent with the market. Since it is very likely that the appraiser will base his estimate on his previous valuation and will adapt this previous valuation in a conservative way, it will be very likely that the estimate is not conforming to market prices. In an inclining market, the estimate of the appraiser will probably be too low, where as in a declining market the estimate of the appraiser might actually be too high. In the graph below this principle is visualized.

From the graph, it can be derived that the appraiser’s anchoring could have two different consequences for the investor. During a market incline, the investor will obtain less money for the object than the actual market price. On the other hand, during a market decline, the investor will set a listed price which is too high, with as a possible consequence that the object will not be sold.
2.2.3 Familiarity

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

Explanation of Familiarity
People have a preference for things they are familiar with. They have the feeling that they run less risk and are able to make more profit.

Example of Familiarity
Investors will usually continue to invest in the same property type and region where they are familiar with.

Occurrence among private real estate investors while investing

The P’s and NP’s seem to agree on the occurrence of the familiarity anomaly, as every respondent, except for one NP, thinks it takes place among private investors while direct investing in real estate. As visible in the graph below, the majority think that familiarity either happens often or very often.

Consequences of Anomaly Occurrences for the Private Real Estate Investor

Five P’s and six NP’s mention better (local) knowledge as a consequence of familiarity. Nine of these respondents consider that as either positive or at least, as one P mentions, not negative. This consequence is either seen as very important (1 P and 3 NP’s) or as important (1 P and 2 NP). Only one of the eleven respondents, who mentioned this consequence, thinks it depends on the real estate cycle.
According to the NP, the better (local) knowledge will be less important at a down point of the cycle. One P and four NP's state the consequence is not dependent on the real estate cycle.

According to one P and three NP's, another consequence of familiarity is a lower risk. One NP considers that as a very important consequence. Two other NP's consider it as being important. Two NP's state that this is a positive consequence that is not dependent on the real estate cycle. One NP thinks that the lower risk will be less important at a down point of the cycle.

Two P's and one NP state that familiarity can result in a higher return, because the investor might be able to buy cheaper. The P's consider this as a very important positive consequence which is not dependent on the real estate cycle. The NP considers it as an important positive consequence which is not dependent on the real estate cycle.

According to three NP's, it is another consequence of familiarity that the investor will have a better network. Two NP's consider that as an either very important or important positive consequence which is not dependent on the real estate cycle.

One NP mentions that having all the property in the same region will make it easier for the maintenance of the objects. The NP considers that as an important consequence.

Not only positive consequences are mentioned by the respondents. Three P's and two NP's mention a concentration risk. One P thinks it is a significant negative consequence and mentions that the risk will be even higher during a declining market. The two other P's state that the consequence is not dependent on the real estate cycle and in addition one P mentions that the concentration risk is a negative consequence. One NP mentions that the consequence is important, on the other hand, it is less important at a down point of the real estate cycle. Another NP considers it as a negative but neutral consequence which is not dependent on the cycle.

Lastly, one P mentions that because of familiarity, the investor will have fewer chances to buy good objects and because of that, the investor will pay too much. The P considers this as an important negative consequence.
Differences between Investors with Over 20 years and Less Than 5 years Experience

Three P's and five NP's mention a difference in the number of years of experience and on how the investors deal with familiarity. Two P's and three NP's think that an investor with less than five years experience will diversify more than someone with over twenty years of experience. One of the NP's mentions that this is because the investor with the least amount of experience has yet to see the importance of the local knowledge or the local contacts that is out there. According to one P and one NP, investors with over twenty years of experience will diversify more than investors with less than five years of experience. One NP mentions that someone with over twenty years experience will be able to make better choices within the region.

Strategies

Four P's, mention a strategy in order to prevent or eliminate the consequences of familiarity. According to one P, private investors, who invest on the long term, should invest anti-cyclic. In addition, the investor should consider other opportunities, like investing in leisure. Three P's, mention that investors should diversify more. One P adds that this could also be within the same market segment. Another P mentions that the investor should invest beyond his own region and that this also includes the rest of Europe. One P seems to agree, by mentioning that Dutch private investors should invest in foreign countries.

Discussion

Every respondent, except for one NP, thinks familiarity occurs while Dutch private real estate investors direct invest in Dutch real estate. As mentioned in section 1.1.6, familiarity might exist because people do not want to take the risk of choosing something they are not familiar with and than have to find out that it was not a smart thing to take that risk. In other words, familiarity might exist because people are risk averse and want to prevent having regrets in order to protect their self-esteem. The question is whether familiarity has positive or negative consequences. Most consequences that are mentioned by the P's and NP's are positive. If these P's and NP's would be right, than the investors should not change anything about their investment behavior when it comes down to this anomaly. Therefore, it would be interesting to see if the P's and NP's are right. In section 1.2.3, it is mentioned that Eichholetz et al. (1997) found among the US REIT's that property specialization leads to an out performance of the market, whereas geographical specialization leads to an underperformance of the market.
This means that, at least for the US REITs, diversifying could have both positive and negative consequences. In other words, there does not seem to be any evidence that is either in favor or against the influence of the anomaly.

A vast majority of the respondents stated that the consequences of familiarity are not dependent on the real estate cycle. It is expected that the occurrence of the anomaly is not dependent on the real estate cycle. However, it might be plausible to assume that the consequences of the anomaly are dependent. An investor, who only invests in one city because of familiarity, will feel the impact of the real estate cycle much more than an investor with a diversified portfolio over several cities or countries. In other words, the amplitude of the real estate cycle will become larger, as visible in the graph below. An investor, who for example only owns offices in Amsterdam, can make a lot of profit when the market inclines. However, once the market will decline, the impact could be disastrous. Once again, it would be interesting to see if these consequences overall are either positive or negative.
2.2.4 Herd Behavior

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

**Explanation of Herd Behavior**
People tend to imitate the behavior of others, even when their own information or private signals are contradictory.

**Example of Herd Behavior**
As “everyone” believes that the market conditions for a certain property type are good and will continue, investors will invest in this segment, even when they expect that this market is already on its top.

**Occurrence among Private Real Estate Investors while Investing**

Like the familiarity anomaly, the respondents also seem to agree on the occurrence of the herd behavior anomaly. Almost every respondent thinks the anomaly takes place among the investors. There is only one P who mentions that the anomaly does not apply to him, however, he noticed that this does not automatically mean that it would not happen among private investors on the whole. None of the respondent mentioned that herd behavior occurs very often among the investors. Most NP’s think it happens often. Three P’s claim to not know how often herd behavior would occur among the private investors.
Consequences of Anomaly Occurrence for the Private Real Estate Investor

Six P’s and four NP’s mention a lower return as a consequence of herd behavior. According to one P, this is a very important negative consequence. The P adds that the value of the rental extensions could become much lower during a declining market, which will mean that there will be an even lower return. Another P states that the consequence is not dependent on the real estate cycle; however, the consequence is important and negative. One P mentions that even though the consequence is negative, it is unimportant. Three NP’s consider a lower return as a consequence of herd behavior and consider it important and either negative (2 NP’s) or neutral (1 NP). These three NP’s agree that the consequence is dependent on the real estate cycle. Two of the NP’s mention a higher risk at the top of the cycle. The third NP states that during an inclining market, the investor will still have a possibility to sell the object.

Another consequence of herd behavior, mentioned by one P and three NP’s, is the higher risk. According to one P and two NP’s, this is both important and negative. They disagree however, if the consequence depends on the real estate cycle. The P thinks it does not, however, the two NP’s think that the risk will be even higher at the top of the cycle.

According to one P, herd behavior will have the consequence that an investor will buy property in a segment of which he will have too little knowledge. As a consequence, the investor will pay too much.

One NP states that because of herd behavior, the investors will overvalue good investment categories and undervalue less investment categories.

One NP mentions that the consequences of herd behavior also depend on who the investor follows. If the investor would, for example, follow Rodamco or Corio, than the investor might have a chance on a bigger return and a lower risk. However, if the investor would follow his “random” neighbor, than it could have the opposite effect. The NP states that in general the consequences are important and negative. In addition, the NP mentions that the risk will be even higher at the top of the real estate cycle, but again, this also depends on who the investor follows.
Differences between Investors with Over 20 years and Less Than 5 years Experience

Four P's and six NP's mention a difference in the number of years of experience and on how the investors deal with herd behavior. According to four P's and five NP's, investors with over twenty years experience rely more on their own data and strategies because of a better sight on the real estate cycle, than investors with less than five years experience. One NP disagrees by mentioning that someone with less than five years of experience will rely more on his own data and strategies, because he had a better education or training. According to one NP, there is no difference in the number of years of experience and on how the investors deal with herd behavior.

Strategies

Three different strategies are mentioned by both P's and NP's in order to prevent or eliminate the consequences of herd behavior. Six P's and two NP's mention that the investors should follow their own data and strategies while keeping reason above emotion. One P and two NP's agree that the investor should acquire external advice. According to one P and one NP, the investors should do more research.

Discussion

Almost every respondent thinks herd behavior occurs while investors make their investment decisions. In section 1.2.4, it is mentioned that Diaz and Hansz (1997) found that herd behavior occurs more in the case of an increased uncertainty of geographic unfamiliarity. This seems to correspond with what is described in section 1.1.6. In this section, it is discussed that if an investor does not know what choice to make, it is easier to follow the group as the investor will than be able to share the blame. However, if the investor is sure about his/her choice, it is unlikely that s/he will follow the group (unless the investor has the same opinion as the group). In addition, it is expected that people (unconsciously) choose the option that protects their self-esteem the best.
A majority of the respondents consider the consequences of herd behavior dependent on the real estate cycle. It is expected that especially during the top of the real estate cycle, the risk will be higher for the investor that follows the group. If investors keep buying properties at the top of the cycle and the market will decline short after the purchase, the investors can make big losses. In addition, if investors keep selling their property at the down point of the real estate cycle, they can make unnecessary losses as well. In the graph below, the discrepancy between the actual market price and the expected market price of investors who are subjective to herd behavior is visualized. Because of this discrepancy, investors might under perform the benchmark, especially during turning points in the real estate cycle.
2.2.5 House Money Effect

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

**Explanation of the House Money Effect**
People take much more risk while investing profit than while investing their savings.

**Example of the House Money Effect**
An investor, who recently made a lot of profit, buys from the profit an object he normally would not buy because the risk would be too high.

**Occurrences among Private Real Estate Investors while Investing**

Generally speaking, the respondents seem to agree about the occurrence of the house money effect while direct investing in real estate by private investors. Of the 19 respondents who answered the question, there are 16 who think the effect happens. However, in regards to how often the effect takes place, is something the respondents do not seem to agree on (as visible in the graph below). There were four P's and one NP who did not make an estimation of how often the house money effect would occur while the private investors direct invest in real estate.
Consequences of Anomaly Occurrences for the Private Real Estate Investor

Six P’s and six NP’s mention a higher risk as a consequence of the house money effect. Of the two P’s who mention this is negative, one P states that the consequence is important and not dependent on the real estate cycle. One P mentions that the higher risk is an unimportant and neutral risk, since it will not occur often during a declining market and if it happens during an inclining market, than the market will cover that risk. One P mentions that the risk will be less during a market incline than during a market decline. One P states that the higher risk, as a consequence of the house money effect, could be both positive and negative. Two NP’s seem to agree. One of them mentions that the market could change at the point that the investor just took a higher risk. The other NP states that during a market incline the profit will be higher, whereas during a market decline the risk will be higher. This NP considers the higher risk important; two other NP’s agree. However, these NP’s consider it as negative. One of these two NP’s states, that if the risk is taken at the bottom of the real estate cycle, it can have a positive outcome. However, when the higher risk is taken at the top of the cycle, it can then bring a negative outcome. The other NP claims that the higher risk, because of the house money effect, is independent on the real estate cycle.

One P and two NP’s think the house money effect will cause a lower return. The P considers this as an important negative consequence which is independent of the real estate cycle. One of the NP’s agrees that it is independent of the real estate cycle, however, the lower return is unimportant but positive since it will always generate some money. The NP states that this will not be the case if the investor would pay his taxes.

One P mentions that an object that is bought because of the house money effect will be harder to sell afterwards. Another P states that the house money effect will bring more opportunities. A NP states that because of the effect, the investor will have a chance on a higher return. The NP mentions that this is an important consequence, but that it depends on the return if it is either a positive or negative. The NP thinks that the profit will be higher in a market incline but that there will be a bigger loss during a market decline.
Differences between Investors with Over 20 years and Less Than 5 years Experience

Four P's and three NP's mention a difference in the number of years of experience and on how the investors deal with the house money effect. According to four P's and two NP's an investor with over twenty years of experience will be more risk averse than an investor with less than five years of experience. One NP disagrees while mentioning that the opposite is the case, because someone with less than five years of experience has a better education. One P and two NP's state there is no difference in the number of years of experience and on how the investors deal with the house money effect.

Strategies

Several strategies are mentioned by both P's and NP's in order to prevent or eliminate the consequences of the house money effect. One P mentions that the investor should use objective criterions while making investment decisions. According to another P, there is nothing that can be done about it, since it is human nature to deal with it as such. One P states that the investor should make his investment decision on the same grounds as he would usually do. Two NP's agree that the investor should stick to his investment policy. One of the NP's adds that an investor should have a specified mission and vision and should follow this while making investment decisions. According to one NP, there is nothing that needs to be done in order to prevent or eliminate the consequences of the house money effect as long as the investor is aware that he does it.

Discussion

In reference to real estate, it appears that there have been no studies that involve the house-money effect. In section 1.1.4, it is mentioned how Thaler and Johnson (1990) describe this anomaly in reference to the economic field and how they notice the willingness of people to accept a higher risk after a prior gain. In addition, section 1.1.6 discussed that people can “stockpile” a cushion of emotional strength after a gain. Even though the reason the anomaly occurs might seem clear and most respondents think the house-money effect occurs while investors make their investment decisions, the consequences of it are less obvious. During the interviews, a higher risk is mentioned most frequently as a consequence of the anomaly. However, since this higher risk could create both a higher return and a bigger loss, it does not really seem to be clear whether this consequence is positive or negative.
As six respondents already mentioned during the interviews, there is a chance that the (consequences of the) house-money effect might be dependent on the real estate cycle. Since it is most likely that profits are made more often during market inclines than during market declines, it is expected that the anomaly especially takes place while the market prices increase. If during that period more risk is taken, the investor might be able to make an even bigger profit; that is if the market keeps on going well. However, if that higher risk is taken at the top of the real estate cycle, the consequences might be less fortunate, as visible in the graph below. But again, if taking a higher risk has either positive or negative consequences for the investor overall, remains unclear.
2.2.6 Loss Aversion

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

**Explanation of Loss Aversion**
Not losing is more important than winning.

**Example of Loss Aversion**
When making a profit, investors set a price close to the expected selling price, whereas investors facing a loss set a price much higher than the expected selling price.

**Occurrences among Private Real Estate Investors while Investing**

It appears that the respondents also agree on the occurrence of the loss aversion anomaly while the private investors direct invest in real estate, as every respondent except for one P, thinks it takes place. The P, who did not say it would occur, stated that he did not know if it would happen among the investors. As visible in the graph below, the respondents are diversified about how often loss aversion would happen during the investing process. There were three P’s and one NP who did not make an estimation on how often the loss aversion anomaly would occur while the private investors direct invest in real estate.
Consequences of Anomaly Occurrences for the Private Real Estate Investor

Nine P's and five NP's mention a lower return, because of either keeping the object too long or not being able to sell it at all, as a consequence of loss aversion. Three of the nine P's stated above believe that the consequence is independent on the real estate cycle. Two of them add that they consider it as negative and important. One other P considers it as important as well and two other P's consider it as negative. One NP states that the lower return is a very important negative consequence, but that during an inclining market everything will work out fine. Two other NP's consider the lower return as important. One of them states that it is a negative consequence that mainly occurs in a declining market. The other NP mentions that the consequence could be both positive as negative, depending on how long the object will be for sale for. Another NP states that an investor should sell in a declining market in order to prevent having monthly costs as a consequence of void. This NP considers the lower return as negative. One NP mentions that everything will work out fine in an inclining market and that a lower return could therefore be seen as a neutral consequence.

One P mentions that loss aversion will result in a loss of return on the short term, but that everything will work out fine on the long term because of an inclining market. The same P states that the problem is, however, that the money will be stuck and this will block new initiatives. Another P states that the investor will keep the object and will have to rent it out at a high risk. That P considers this as negative. A NP states that a very important and negative consequence is that the investors will keep his bad objects, but that this will work out fine during an inclining market.

Difference between Investors with Over 20 years and Less Than 5 years Experience

Seven P's and four NP's mention a difference in the number of years of experience and on how the investors deal with loss aversion. According to seven P's and three NP's, investors with over twenty years of experience will be less subjective to loss aversion than investors with less than five years of experience. One NP disagrees and also mentions it is the opposite. According to one NP, there is no difference in the number of years of experience and on how the investors deal with loss aversion.
Strategies

Several strategies are mentioned by both P’s and NP’s in order to prevent or eliminate the consequences of loss aversion. Four P’s and four NP’s state that the investor should set a realistic price and accept the loss. One P and two NP’s believe that the investor should not sell but instead he should keep the object(s) for a long term period. According to one P, there is nothing the investors can do because especially the small investors have no other possibility. One P states that the investor should be aware of this behavior and keep reason above emotion. One NP states that the investor should change his property broker and project manager and then draw up an external report. In other words, the NP thinks that the people who dealt with it should be replaced since they failed. In addition, the “new” people will be able to look at the situation in a more objective way so they might be able to make better decisions.

Discussion

As discussed in section 1.2.5, Genesove and Mayer (2001) found that condominium owners were subjective to loss-aversion. Section 1.1.6 describes that Stracca (2004) claims this anomaly comes from pain being more urgent than pleasure. It is also mentioned how problems are first “edited”, possibly using a form of decision heuristic and in the context of a narrow framing. In a second stage, the person takes the decision so as to maximize the Prospect Theory Value function.

All respondents, except for one, mentioned that loss-aversion occurs while Dutch private investors make their investment decisions. It is expected that the anomaly mainly occurs during declining markets. During this period, there is a bigger chance that investors will make a loss. In order to prevent making a loss, the investor will set a higher selling price and/ or will postpone the sale of the property. This has as a consequence that there might be a discrepancy between the actual market price and the listed market price, as visible in the graph below. Because the listed price will not match the market price (i.e. the investor is asking too much), the investor might have a possible selling problem.
2.2.7 Mental Accounting

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

Explanation of Mental Accounting
People have the tendency to link expenditures with its presumed goal. Once this is done, the money will hardly ever be used for any other goal.

Example of Mental Accounting
In November/December, investors quickly buy some objects, with the goal of not paying taxes. They are prepared to pay more for the object(s) than the actual market value.

Occurrences among Private Real Estate Investors while Investing

In general, most respondents seem to agree about the occurrence of mental accounting while private investors direct invest in real estate. There was only one P who believed that it would not happen. However, about how often the anomaly would occur is something the respondents do not seem to agree on. The range of how often this anomaly would occur is maximal, unlike most of the other anomalies.
Consequences of Anomaly Occurrences for the Private Real Estate Investor

Five P's and five NP's mention a lower return, because of paying too much for an object, as a consequence of mental accounting. Three P's mention, that this consequence is independent on the real estate cycle. One of the P's previously mentioned states that the lower return is negative and is also very important. One of the other three P's however, claims that the consequence is very unimportant and positive. Also, another P thinks the consequence is positive. One P mentions that the lower return is important and negative. Four NP's, state that the consequence is negative. Two of the NP's think it is an important consequence and one considers it very important. One NP thinks that the lower return is unimportant and positive. Four out of the five NP's mention, that the consequences are dependent on the real estate cycle. Two of the NP's think that paying too much for an object during an inclining market is less problematic. One NP states that buying at the top of the cycle could cause a serious loss of return and the fourth NP mentions that mental accounting will occur more during inclining markets because the investors will make more profits at that point.

Two P's and one NP mention a higher risk as a consequence of mental accounting. One P thinks the importance of the risk is neutral and independent on the real estate cycle. The NP however, thinks that this consequence is very important and negative. In addition, the NP thinks that paying too much for an object during a market incline is less problematic than during a market decline.

Another consequence of mental accounting, mentioned by one P and one NP, is that investors might buy properties they usually would not buy or they do not even really want to own. The P thinks this is not dependent on the real estate cycle.

Differences between Investors with Over 20 years and Less Than 5 years Experience

Two P's and two NP's mention a difference in the number of years of experience and on how the investors deal with mental accounting. According to them, someone with more than twenty years of experience will be less subjective to mental accounting. According to two P's and two NP's, there is no difference in the number of years of experience and on how the investors deal with the anomaly.
Strategies

Several strategies are mentioned by both P’s and NP’s in order to prevent or eliminate the consequences of mental accounting. One P mentions that investors should pay their taxes after all, or should try to find other fiscal alternatives. One NP states that the investors should spread his acquisitions over the entire year. Another NP states that investors should follow their mission and vision. One NP states that investors should not be too scared paying taxes.

Discussion

In section 1.1.6, it is mentioned that according to Stracca (2004) people typically maximize utility locally (for a narrowly defined decision problem) in an optimal manner, but by doing so they may come to a disastrous global outcome (in terms of overall welfare). Stracca (2004) presumes that cognitive limitations and deliberation costs play a major role in explaining why people tend to frame their decision problems so narrowly and why they tend to neglect the correlations among different aspects or time horizons in their lives. In other words, people in general do not seem to be capable of having a total overview and because of that, they will frame their decision problems.

In reference to real estate, it appears that there have been no studies that involve mental accounting in particular. However, according to most respondents, this anomaly occurs while Dutch private real estate investors make investment decisions. Considering Stracca’s explanation of the reason that this anomaly occurs, it is quite likely that the respondents are right.

In reference to the dependence of the consequences of mental accounting on the real estate cycle, four respondents stated that buying too expensive during a market incline is less problematic than during a market decline. This might be true. Paying too much might be “corrected” during a market incline and not during a decline; however, in both cases it will limit the investor’s return. In other words, in the case of the given example, where the investor buys property too expensive in order to prevent paying taxes, it is expected that the investor will structurally pay too much. This is visible in the graph below.

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8 In economics, utility is a measure of the happiness or satisfaction (gratification) gained consuming commodities (goods and services). (Source: http://www.investorwords.com)
It is very likely that mental accounting will have more consequences than just paying too much for an object in order to prevent paying taxes. Because there is currently no insight in these other consequences, it is hardly impossible to estimate if mental accounting is dependent on the real estate cycle.
2.2.8 Myopic Expectations

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

**Explanation of Myopic Expectations**
People have the tendency to make decisions based on the short term instead of the long term.

**Example of Myopic Expectations**
Despite the fact that investors bought a property for the long term, they will sell it after a couple of "bad years" as they become afraid of the future.

**Occurrences among Private Real Estate Investors while Investing**

Similar to most of the other anomalies, the respondents seem to agree that myopic expectations happen while the private investors direct invest in real estate. There is only one P who believes that it does not occur. Still, the respondents do not seem to agree on how often the anomaly takes place in the investing process. A small majority of the NP’s think it happens often and none of the respondents think it occurs very often, but the rest of the answers are quite diversified, as visible in the graph below.
Consequences of Anomaly Occurrences for the Private Real Estate Investor

Eight P’s and seven NP’s mention a lower return as a consequence of myopic expectations. Five P’s and all seven NP’s state that this is negative. Two P’s consider the lower return as a very important consequence and one of these P’s states that the anomaly occurs more in a declining market. One P, who also believes the anomaly occurs more during a declining market, considers the consequence as important, so do two other P’s. However, these P’s do not mention anything involving the dependence of the consequence on the real estate cycle. There are two P’s who think the lower return is independent from the real estate cycle. Two NP’s mention, that the lower return is a very important consequence. In addition, they state that myopic expectations occur more during declining markets. One NP agrees that it occurs more during declining markets; however, he thinks that the lower return is an important consequence. Two other NP’s also consider the consequence important. One of them states that the consequence is independent on the real estate cycle. Two other NP’s think the lower return is dependent on the real estate cycle. One of the NP’s thinks that is because the return depends on the moment of acquisition and disposition. The other NP mentions that in a declining market the investor should sell in order to prevent having monthly costs like void.

Difference between Investors with Over 20 years and Less Than 5 years Experience

Seven P’s and five NP’s mention a difference in the number of years of experience and on how the investors deal with myopic expectations. According to seven P’s and four NP’s, investors with over twenty years of experience will be less subjective to this anomaly. One NP states the opposite is the case. Another NP thinks there is no difference in the number of years of experience and on how the investors deal with myopic expectations.

Strategies

Several strategies are mentioned by both P’s and NP’s in order to prevent or eliminate the consequences of myopic expectations. Four P’s and four NP’s mention that the investor should hold on to his long term strategy. One NP states that the investor should form a long term strategy that includes the moment of selling at a desired return, which is determined in advance. One P claims that the investor should acquire external advice. Two other P’s state, that the investors should keep reason above emotion. According to one P, the investor should keep the money that is necessary on the short term liquid. One NP thinks the investors should form their portfolio in such a way that they are less subjective to the real estate cycle.
One NP states that the investor should change his property broker, project manager and should draw up an external report. In other words, the NP thinks that the people who dealt with it should be changed since they failed. In addition will the “new” people be able to look at the situation in a more objective way, so they might be able to make better decisions.

**Discussion**

It seems to be plausible to assume that myopic expectations occur in the investment decision process. As mentioned in section 1.2.6, Gallimore (1994) found evidence of anchoring and recency. In addition, most respondents stated that myopic expectations occur while Dutch private real estate investors make investment decisions.

The only consequence that is mentioned by the respondents in reference to this anomaly is a lower return. In addition, five respondents stated that the consequences of myopic expectations occur more during declining than during inclining markets. It is expected that the consequences of myopic expectations are dependent on the real estate cycle. However, that they would actually occur more during declining than during inclining markets is not that obvious. During a declining market, investors will foresee a declining market and base their decisions on it. On the other hand, investors will foresee an inclining market during the period the market is inclining. A problem is that a turning in the market, whether it is downwards or upwards, might be seen too late. Decisions will be made on the perspective that the current market situation will continue, as visible in the graph below. In other words, objects might be bought at the top of the market or sold at the bottom of the market because of a “short-sighted” view. Therefore, potential losses could occur especially during market turns because of myopic expectations.

![Graph showing the consequences of myopic expectations](image-url)
2.2.9 Overconfidence

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

**Explanation of Overconfidence**
People think that their knowledge and their ability to do well on tasks is better than that of others.

**Example of Overconfidence**
Investors think that their knowledge about real estate properties is on average better than that of their competitors.

**Occurrences among Private Real Estate Investors while Investing**

The majority of the respondents state that overconfidence is an anomaly that occurs among private real estate investors. There are two P’s who disagree and one P who mentions that he is not overconfident himself. The majority of the respondents think the anomaly either occurs often or very often. As visible in the graph on the right, the range of the occurrence does seem to be relatively narrow, compared to most other anomalies.
Consequences of Anomaly Occurrences for the Private Real Estate Investor

Five P's and four NP's mention a lower return as a consequence of overconfidence. One P considers this consequence negative, important and independent on the real estate cycle. Two other P's also think the consequence is independent on the real estate cycle and one of them adds that the consequence is negative. One P thinks that it is dependent on the real estate cycle, as an inclining market would give the investor confirmation of his self-image, with as a result that it will occur more during the inclining market. All four NP's, who mentioned a lower return as a consequence of overconfidence, consider the consequence as negative. One of the NP's adds that he thinks this consequence is independent of the real estate cycle. The other three NP's disagree and state that an inclining market would give the investor confirmation of his self-image, with as a result that it will occur more during this market. However, how important the consequence is, is something these three NP's disagree on. One considers it as very important, one as important and one as neutral.

One P and two NP's mention a higher risk as a consequence of overconfidence. The P mentions that an inclining market would give the investor confirmation of his self-image, with as a result that it will occur more during this market. One NP agrees. In addition, this NP states that the higher risk is an important and negative consequence of overconfidence. One P considers the higher risk neutral and very important, but not dependent on the real estate cycle.

Differences between Investors with Over 20 years and Less Than 5 years Experience

Two P's and one NP mention a difference in the number of years of experience and on how the investors deal with overconfidence. One P and one NP think that investors with less than five years of experience will be less subjective to overconfidence than investors with over twenty years of experience. One P thinks it is the opposite. According to one P and four NP's, there is no difference in the number of years of experience and on how the investors deal with overconfidence.
Strategies

Several strategies are mentioned by both P’s and NP’s in order to prevent or eliminate the consequences of overconfidence. One P states that the investors should stay professional and critical. Two NP’s suggests that investors acquire external advice. One of them adds that this should at least include an independent appraiser. One NP states that an investor should determine his profile and should make sure that all the required information is only available at the required level of that profile. One NP states that the investors should go to congresses, follow an education and should read specialist literature. According to one P and one NP, there is nothing that can be done to prevent or eliminate the consequences of overconfidence.

Discussion

In section 1.1.6, it is mentioned that overconfidence might find its existence in the protection of self-esteem, as people draw some emotional gains from the perception of being smarter than others. It is described that in particular information which is abstract, statistical, and difficult to interpret generally is dismissed by people; however, that information which is salient, anecdotal and easy to interpret is overvalued by people.

In reference to real estate, there do not appear to be any studies that involve overconfidence. However, according to most respondents, overconfidence occurs while Dutch private real estate investors make investment decisions. Additionally, during the interviews many P’s and NP’s stated that the private investors are, in general, better than other types of investors, especially compared to institutional investors. This might be true; however, the higher return the Dutch private investors seem to make is most likely also linked to a higher risk profile. Not acknowledging that might be dangerous, as it is likely that it would enlarge the overconfidence anomaly among the investors. And as mentioned before, most respondents considered the consequences of overconfidence negative.

Six respondents expected that the consequences of overconfidence are dependent on the real estate cycle. This might be true. During an inclining market, an investor might get the idea that s/he must be doing the right thing since s/he is making a profit. During a declining market, the investor might make losses and because of that become less secure about him/her self. This will have the consequence that during inclining markets, investors might take more risk the longer the market keeps going well. However, whenever the market declines, investors might take less risk the longer the market keeps going poorly. This is made visible in the graph below.
2.2.10 Representativeness

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

**Explanation of Representativeness**
People judge things as being similar, based on how closely they resemble each other "at first sight".

**Example of Representativeness**
Investors expect that investing in a qualitative good building in a good city equals a good investment.

**Occurrences among Private Real Estate Investors while Investing**

All the respondents seem to agree that the representativeness anomaly occurs while the private investors direct invest in real estate. The majority of the respondents think it happens often, as visible in the graph on the right.
Consequences of Anomaly Occurrences for the Private Real Estate Investor

Two P's and five NP's mention a higher risk in the consequence of representativeness. One NP considers this consequence negative and important, but not dependent on the real estate cycle. The four other NP's think the higher risk is dependent on the real estate cycle. They mention that an investor can only buy property that looks good at first sight during an inclining market. If the investor would do this during a declining market, it will bring negative consequences. That the higher risk is negative is something the NP's seem to agree on; however, how important this is, is not something they agree on. One NP considers it very important, another considers it important and one more considers it unimportant.

Two P's and four NP's mention a lower return as a consequence of representativeness. One P considers this consequence important and independent on the real estate cycle. The other P mentions that the consequence is negative. Two NP's think the lower return is an important and negative consequence, which is independent on the real estate cycle. Two different NP's mention, that the consequence is dependent on the real estate cycle. According to these same NP's, an investor can only buy property that looks good at first sight during an inclining market. If the investor would do this during a declining market, it will bring negative consequences. One NP adds that the lower return is a negative and very important consequence.

One P mentions that the given example is the way an investor should handle it. According to the P, this will create an extra profit. Another P mentions that there are no consequences as long as the investor pays a good (local) market price. According to one P, the consequence of representativeness is that the investor will buy a nice object at the wrong location. One NP thinks the investor will miss other opportunities with better risk/return ratios. The NP considers this as a negative consequence which is independent on the real estate cycle.

Differences between Investors with Over 20 years and Less Than 5 years Experience

Four P's and three NP's mention a difference in the number of years of experience and on how the investors deal with representativeness. According to four P's and two NP's, investors with over twenty years will experience be less subjective to representativeness than investors with less than 5 years of experience. One NP states the opposite is the case. According to two P's and three NP's, there is no difference in the number of years of experience and on how the investors deal with the anomaly.
Strategies

Several strategies are mentioned by both P’s and NP’s in order to prevent or eliminate the consequences of representativeness. One P and six NP’s, mention that the investor should perform a proper desk research. One P and two NP’s think the investor should acquire external advice. Three P’s mentioned that the private investor should keep reason above emotion. One NP states that the investors should follow an education.

Discussion

In reference to real estate, it appears that there have been no studies that involve representativeness. According to all respondents, the representativeness anomaly occurs while private investors direct invest in real estate. A higher risk and a lower return are especially mentioned as a consequence of the anomaly.

It is expected that the consequences of representativeness might be dependent on the real estate cycle. During the interviews, six NP’s mentioned that the consequences would be less severe during a market incline than during a market decline. The market could make up a mistake if market prices are developing in a positive way. On the other hand, in case a mistake is made during a market decline, the impact could be disastrous. When just considering this perspective, the graph below can be constructed. When mistake 1 (or 3) is made, the investor is still able to make a profit. This profit however is less than the benchmark, as a result the investor will not be able to make the top of the real estate cycle. Mistake 2 (or 4) is made at the point that the market is already declining. It is visible that the loss the investor makes is much larger than the benchmark. Because the investor does not make any other mistakes during that market decline, he will be able to get on track of the benchmark again once it goes up.
2.2.11 Risk Aversion

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

Explanation of Risk Aversion
After experiencing a loss, people become less willing to take a similar risk.

Example of Risk Aversion
An investor, who made a loss while investing for the first time in a property type, will not invest in that property type anymore.

Occurrences among Private Real Estate Investors while Investing

Like with most other anomalies, almost every respondent states that risk aversion does occur while private investors direct invest in real estate. There is only one NP who thinks it does not happen. The majority of the P's think it happens either often or very often. One P mentions that the occurrence depends on the size of the loss. According to the P, it will happen less often when there would be a small loss than when there would be a big loss.
Consequences of Anomaly Occurrences for the Private Real Estate Investor

Three P's and two NP's mention that risk aversion has the consequence that investors will let opportunities pass by. One P considers this consequence neutral and independent on the real estate cycle. One P states that the investor could have made the decision to buy the object at the wrong moment of the real estate cycle, with as a consequence that there does not have to be anything wrong with the object itself. One NP agrees. In addition, this NP does mention that the consequence of letting opportunities pass by is unimportant. One NP states that the consequence is important and negative. Furthermore, the NP thinks that it will occur more often during a declining market.

Two P's and one NP mention a higher risk because of less diversification as a consequence of risk aversion. One P considers this consequence negative, but of neutral importance. The NP considers the consequence negative, important and dependent on the real estate cycle. According to the NP, the investor could have made the decision to buy the object at the wrong moment of the real estate cycle, which as a consequence that there does not have to be anything wrong with the object itself.

One P thinks that risk aversion will bring the positive consequence of a higher return. Another P mentions that a consequence could be that the investor will make fewer losses. According to one P, risk aversion will have a consequence that the investor will keep changing between his strategies. The P considers this as a positive consequence of neutral importance that is independent on the real estate cycle. One NP states that a consequence of risk aversion is that an investor will not learn from his mistakes. In addition, the NP mentions that the investor might switch to another segment where he would know even less about, with as a consequence that his loss will be even bigger. The NP considers this as an important negative consequence.

Difference between Investors with Over 20 years and Less Than 5 years Experience

Five P's and three NP's mention a difference in the number of years of experience and on how the investors deal with risk aversion. According to three P's and two NP's, investors with over twenty years experience will be less subjective to risk aversion than investors with less than 5 years of experience. Two P's and one NP state the opposite is the case. One P and three NP's think there is no difference in the number of years of experience and how the investors deal with risk aversion.
Strategies

Several strategies are mentioned by both P’s and NP’s in order to prevent or eliminate the consequences of risk aversion. Four P’s and three NP’s think the investor should try to find out what went wrong and what can be improved. One P and two NP’s state the investor should acquire external advice. One NP states the investor should have a mission and vision and should continue with something if it fits within the policy.

Discussion

In section 1.1.6 it is described how Stracca (2004) claims that when people suffer a pain deriving from a loss (or wrong decision), they have less “emotional reserves” to tolerate further losses, while they can “stockpile” a cushion of emotional strength after a gain. In addition it is mentioned that people are risk averse in order to prevent regret and to protect the self-esteem.

There do not appear to be any studies that involve risk aversion in reference to real estate in particular. According to almost every respondent, risk aversion occurs while Dutch private real estate investors make investment decisions. However, the respondents seem to be diversified about the consequences of the anomaly. Therefore it would be interesting to see what the consequences of risk aversion are and if they are dependent on the real estate cycle.
2.2.12 Sunk Cost Effect

During the interviews, first an example of the anomaly is given followed by the general explanation. The given example and explanation are presented below.

**Explanation of the Sunk Cost Effect**
Once people have made an investment, they have a tendency to continue it.

**Example of the Sunk Cost Effect**
An investor, who spent a lot of time and money on an object, makes an offer which is 6 percent higher than he originally planned in order to obtain the object after all.

**Occurrences among Private Real Estate Investors while Investing**

Most respondents state that the sunk cost anomaly occurs while the private investor directs invests in real estate. Only one P mentions that it does not happen. The majority of the P’s think the anomaly occurs often and half of the NP’s who answered this question agree.
Consequences of Anomaly Occurrences for the Private Real Estate Investor

Nine P’s and six NP’s mention a lower return (because of paying too much for an object) as a consequence of the sunk cost effect. According to two P’s, this consequence is important, negative and independent on the real estate cycle. One P agrees, except that he considers this consequence as very important. One P mentions that the lower return, as a consequence of the sunk cost effect, will occur more during an inclining than during a declining market. This P considers the consequence as important and negative. According to one P, the consequence is of neutral importance. All six NP’s who mentioned a lower return as a consequence of the sunk cost effect, consider it as negative. Five of the NP’s add that they consider the consequence as important. According to three NP’s, the consequence is independent on the real estate cycle. One NP states that the lower return as a consequence of the sunk cost effect will occur more during an inclining than during a declining market. Another NP mentions that the return will be less low during an inclining market than during a declining market.

Two NP’s mention that high risk is a consequence of the sunk cost effect and consider it as an important negative consequence.

Difference between Investors with Over 20 years and Less Than 5 years Experience

Five P’s and five NP’s mention a difference in the number of years of experience and on how the investors deal with the sunk cost effect. According to four P’s and four NP’s, investors with over twenty years experience will be less subjective to the sunk cost effect than investors with less than 5 years of experience. One P and one NP state the opposite is the case. One P thinks there is no difference in the number of years of experience and on how the investors deal with the sunk cost effect.

Strategies

Several strategies are mentioned by both P’s and NP’s in order to prevent or eliminate the consequences of the sunk cost effect. Two P’s agree that the investor should hold on to his original point of view. One P mentions that the investor should keep reason above emotion. Five NP’s state, that investors should set a price range and then stick to it. This price range could be combined with a risk/return ratio. According to one P and one NP, there is nothing the private investor can do to prevent or eliminate the consequences of the sunk cost effect.
Discussion

In reference to real estate in particular, it appears that there have not been any studies that involve the sunk cost effect. However, according to most respondents, the sunk cost anomaly occurs while Dutch private investors direct invest in Dutch real estate.

In section 1.1.6 it is mentioned that when people suffer a pain deriving from a loss (or wrong decision), they have less “emotional reserves” to tolerate further losses, while they can “stockpile” a cushion of emotional strength after a gain. In addition, it is described that past developments and experiences matter in determining people’s preferences and therefore their decisions. In general, people simply do not want to (acknowledge to) be wrong, in order to protect their self-esteem. By stopping a project where an investor has put time, money and/or effort in, the investor will have to admit that s/he has been wrong by starting the project in the first place. However, continuing the project, even if it would be better to stop the project out of a financial point of view, will feel better for the self-esteem of the investor.

Most respondents stated that the consequences of the sunk cost effect are not dependent on the real estate cycle. Suppose this would be the case and assuming that investors will make less profit because of the anomaly, then these investors will structurally pay too much and therefore structurally under perform the benchmark. In that case, the consequences of the sunk cost effect could be visualized as in the graph below. Based on this graph, the consequences of the sunk cost effect do not appear to be dependent on the real estate cycle. However, if an investor pays too much during a market incline, there might be a possibility that s/he will still make a profit. If the investor would pay too much during a market decline, this “market correction” would apply less. So from that perspective, the consequences of the sunk cost effect are dependent on the real estate cycle.

![Graph showing the relationship between Value, Sunk Cost Effect, Actual Market Price, and Time with a note about paying too much during market incline and marketplace correction applying less during market decline.]

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2.2.13 Overall Discussion

During the interviews there were eleven different anomalies discussed. As indicated, all eleven anomalies seem to occur while Dutch private real estate investors direct invest in Dutch real estate.

It is already explained throughout this dissertation that the traditional economic literature assumes an efficient market whereas the human factor is usually disregarded. However, because people usually do not behave in a rational way, an efficient market is not applicable. It is expected that this is also visible in the real estate cycle. Because of the presence of many anomalies, the real estate cycle has an amplitude that is much larger than the efficient market theory would hold possible. In other words, if all investors would act completely rational on all information that is available, the real estate cycle would most likely be much flatter.

The respondents were asked to give an estimate on how often an anomaly would occur while the investors make their investment decisions. To realize that there is a difference between the number of investors who would be subjective to a specific anomaly and the value the investors' portfolios would represent, is important for interpreting this question. For example, 80 percent of the investors might be subjective to an anomaly; however, there is a possibility that these investors might only represent 20 percent of the invested capital.

When comparing each anomaly, a ranking of importance can be concluded. It is chosen to base this ranking on the combination of the occurrence and the consequences of the anomalies\(^9\). This combination is seen as essential since an anomaly with major negative consequences that never occurs will quite likely have less impact, on average, than an anomaly with less important consequences that occurs during almost every investment decision.

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**Example of Ranking Anomalies by Importance**

Suppose anomaly X occurs, on average, once a year and will cost investor A an additional 10% on its expenses. Anomaly Y happens during every investment decision and will cost the investor an additional 1% on its expenses each time. Investor A made fifteen investment decisions in the year 2005. In total, he spent an additional 10% on its expenses because of the occurrence of anomaly X and an additional 15% on its expenses because of the happening of anomaly Y. In other words, even though the impact of anomaly Y seems less important at first sight, it is its occurrence on more frequent bases that makes the impact on the long term greater.

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\(^9\) See appendix III for the construction of the ranking of anomalies by importance.
The ranking should be seen as an intention to estimate the importance of the occurrence of each anomaly during investment decisions of Dutch private real estate investors. It is acknowledged that this ranking should be tested both in practice and in theory. As mentioned in the goal of this thesis, the intention of this study is to make a progression towards an optimal decision making process of Dutch private real estate investors with regards to irrational behaviors in the future. The ranking should be seen in this perspective and therefore as nothing more but a list of priorities for further research. As mentioned before, the first step for further research should be to confirm that these anomalies actually occur. Only once these occurrences are established, its consequences (and importance) can be confirmed. In this perspective, the following ranking is suggested:

<table>
<thead>
<tr>
<th>Consequences</th>
<th>Negative</th>
<th>Positive</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sunk Cost Effect</td>
<td></td>
<td></td>
<td>-4,3</td>
</tr>
<tr>
<td>2 Representativeness</td>
<td></td>
<td></td>
<td>-3,7</td>
</tr>
<tr>
<td>3 Overconfidence</td>
<td></td>
<td></td>
<td>-3,6</td>
</tr>
<tr>
<td>4 Herd Behavior</td>
<td></td>
<td></td>
<td>-3,4</td>
</tr>
<tr>
<td>5 Anchoring</td>
<td></td>
<td></td>
<td>-2,9</td>
</tr>
<tr>
<td>6 Risk Aversion</td>
<td></td>
<td></td>
<td>-2,8</td>
</tr>
<tr>
<td>7 Myopic Expectations</td>
<td></td>
<td></td>
<td>-2,5</td>
</tr>
<tr>
<td>8 Loss Aversion</td>
<td></td>
<td></td>
<td>-2,4</td>
</tr>
<tr>
<td>9 House Money Effect</td>
<td></td>
<td></td>
<td>-1,3</td>
</tr>
<tr>
<td>10 Mental Accounting</td>
<td></td>
<td></td>
<td>-1,1</td>
</tr>
<tr>
<td>11 Familiarity</td>
<td></td>
<td></td>
<td>4,5</td>
</tr>
</tbody>
</table>

From the table, it can be derived that since the occurrence of the sunk cost effect appears to have the most negative consequences, it is suggested to confirm the occurrence and consequences of this anomaly first. Only once it is made clear that this anomaly actually occurs and that its consequences are (mainly) negative, one can decide if it is desirable to eliminate/reduce the occurrence of the sunk cost effect. Since this ranking is nothing more but an indication, it is recommended to also study the familiarity effect, even though it appears to have positive consequences.

From the interviews it became clear that some investors make decisions entirely based on their feelings. They do not perform a data-analysis or just settle with a gross initial yield. However, they do seem to make a lot of profit. Therefore, it would be interesting to know how these feelings are developed and if these feelings can be taught. Even though this is a completely opposite strategy than the goal for this thesis, it might be very profitable for real estate investors to look into it.
Part 3

Conclusions and Recommendations
Introduction

In this part of the thesis, the main conclusions and recommendations will be discussed.

3.1 Conclusions

In the beginning of this thesis, the following goal was set:

To compile an inventory of irrational investing behaviors, in order to examine if they are applicable to direct investing in Dutch real estate by Dutch private real estate investors, and if so, to highlight their possible consequences as a progression towards an optimal decision making process with regards to these behaviors in the future.

Based on this goal, a problem definition consisting out of two main questions, has been formed. In this chapter, the answers to these questions will be presented.

It is explained that the goal of this thesis would be accomplished by partially working out the Practical Approach Method, as visualized in the graph below. First, information was found within the literature regarding behavioral sciences. This information is referred to as background information. Since this information was insufficient to answer all the questions, new information was acquired via interviews. This is referred to as data collection.

![Practical Approach Method Diagram]

Practical Approach Method
Background Information

The first studies involving the decision-making process started as early as in the 1930’s and 1940’s. From the many studies, it can be derived that people make financial decisions that are emotion-driven and that are, or appear to be, less useful or logical than the rational alternative. People, for example, frame their choices in terms of potential gains and losses related to a specific reference point, whereby they value losses 2.5 times as important as gains. A study on 26 internationally stock exchanges pointed out that sunny days outperform miserable weather days by 24.6 percent per year. And people put money on a savings account (with, for example, 4% interest) for a future house but at the same time they borrow money (with, for example, 9% interest) for a new car.

The real estate asset is most often treated as a financial asset, which has resulted in the setting of artificial boundaries on real estate research. Involving irrational behavior within real estate, the relatively few studies that have been done mainly concern the valuation process or, in some extent, indirect investing in real estate. An exception is Genesove and Mayer (2001), who found that condominium owners subject to nominal losses:

1) Set higher asking prices of 25-35 percent of the difference between the property’s expected selling price and their original purchase price;
2) Attain higher selling prices of 3-18 percent of that difference;
3) Exhibit a much lower sale hazard than other sellers.

A couple of authors have made an attempt to form strategies in order to prevent or eliminate the negative consequences of the many anomalies. However, most of these strategies seem to be “simple rules of thumb” that are derived from the consequences of the anomalies instead of the actual reason these anomalies occur in the first place.

Data Collection

Interviews were held in order to find which irrational behaviors, already known within behavioral finance, are exhibited by Dutch private real estate investors while direct investing in Dutch real estate. After several test interviews, there were twelve private investors and eight people who are directly related to private investors (like real estate financiers) interviewed. It is however, acknowledged that the outcomes of these interviews, and therefore this thesis, should not be seen as actual facts. First of all, the number of interviews held is relatively small. In addition, it is recognized that the way the interview is set up, leaves open spaces for biases. For example, it is expected that some respondents answered the questions based on the example that was given, instead of on the general explanation of the anomaly.
People probably do this because they do not have sufficient time to think about a topic where they hardly know anything about. In addition, the given example might be something the investor is subject to. The consequence could be that the investor will have to admit that s/he is doing something wrong, while pointing out the negative consequences of the behavior.

As stated before, people do not want to admit that they are wrong. Therefore, the investor will (unconsciously) not see (or say) the negative consequences. This indicates the limited value of the interviews. Furthermore, it is mentioned in section 2.1.7 that according to Diaz (1999), for exploring behavioral aspects on the market, a study of the investors' behavior should be made by experiments, surveys and interviews. Since only one of these three methods is carried out and the interviews have a limited value, the outcomes of this thesis should not be seen as anything more but an indication.

Eleven different types of irrational behavior have been discussed during the interviews and it is indicated that they all occur while Dutch private real estate investors direct invest in Dutch real estate. These types of behavior are:

1) **Anchoring**, which refers to people anchoring on the first value they hear.
   
   **Example**: When bidding on an office block, an investor uses the listed price as a guide to estimate the value of the office block. As usual, he accordingly decides to bid seven percent under the listed price.

2) **Familiarity**, which points out that people have a preference for things they are familiar with. They have the feeling that they run less risk and are able to make more profit.
   
   **Example**: Investors will usually continue to invest in the same property type and region where they are familiar with.

3) **Herd Behavior**, which indicates that people tend to imitate the behavior of others, even when their own information or private signals are contradictory.
   
   **Example**: As "everyone" believes that the market conditions for a certain property type are good and will continue to be so, investors will invest in this segment, even when they expect that this market is already on its top.

4) **House Money Effect**, which implies that people take much more risk while investing profit than while investing their savings.
   
   **Example**: An investor, who recently made a lot of profit, buys from the profit an object he normally would not buy because the risk would be too high.
5) **Loss Aversion**; which suggests that people consider not losing as more important than winning.
   
   **Example:** When making a profit, investors set a price close to the expected selling price, whereas investors facing a loss set a price much higher than the expected selling price.

6) **Mental Accounting**; which points out that people have the tendency to link expenditures with its presumed goal. Once this is done, the money will hardly ever be used for any other goal.
   
   **Example:** In November/December, investors quickly buy some objects, with the goal of not paying taxes. They are prepared to pay more for the object(s) than the actual market value.

7) **Myopic Expectations**; which refers to people having the tendency to make decisions based on the short term instead of the long term.
   
   **Example:** Despite the fact that investors bought a property for the long term, they will sell it after a couple of "bad years" as they become afraid of the future.

8) **Overconfidence**; which implies that people think their knowledge and their ability to do well on tasks is better than that of others.
   
   **Example:** Investors think that their knowledge about real estate properties is, on average, better than that of their competitors.

9) **Representativeness**; which indicates that people judge things as being similar, based on how closely they resemble each other at first sight.
   
   **Example:** Investors expect that investing in a qualitative good building in a good city equals a good investment.

10) **Risk Aversion**; which suggests that after experiencing a loss, people become less willing to take a similar risk.

   **Example:** An investor, who made a loss while investing for the first time in a specific property type, will not invest in that property type anymore.

11) **Sunk Cost Effect**, which points out that once people have made an investment, they have a tendency to continue it.

   **Example:** An investor, who spent a lot of time and money on an object, makes an offer which is 6 percent higher than he originally planned in order to obtain the object after all.
Another reason the interviews were held is to discover which negative consequences are expected by the manifested irrational behaviors of Dutch private real estate investors while direct investing in Dutch real estate. It is indicated that the occurrence of all eleven anomalies, except for risk aversion, could result in a lower return for the investor. This could especially be during a market decline (overconfidence), a market incline (anchoring), at the down point of the real estate cycle (familiarity, herd behavior and myopic expectations) or at the top of the real estate cycle (herd behavior, house money effect and myopic expectations). Furthermore, it appears that the occurrence of all eleven anomalies could result in a higher risk. This could especially be during a market decline (overconfidence, loss aversion and anchoring), at the down point of the real estate cycle (herd behavior and myopic expectations) or at the top of the real estate cycle (herd behavior, house money effect and myopic expectations). In addition there could be a concentration risk due to familiarity.

**Overall**

With the conclusions as described above, all the research questions are answered. Therefore, it is concluded that the aim of this thesis has been successfully fulfilled.
3.2 Recommendations

This thesis has provided more insight into the different aspects of irrational behavior within the investment decision process of Dutch private real estate investors. As mentioned several times before, there has hardly been any research involving the irrational behavior within the field of real estate, except for this thesis. The few studies that have been done, mainly concern the valuation process or, in some extent, indirect investing in real estate. However, studies that involve the actual behavioral real estate, as defined in the beginning of section 1.2, do not seem to have taken place; let alone research that concerns direct investments in Dutch real estate by Dutch private investors. Even though the conclusions of this thesis can not be seen as anything more than an indication, these indications do, however, seem to be worthy of carrying out more research within this field.

Background Information

First the information that is known within behavioral sciences was studied. This is considered a good starting point for the goal of this thesis. However, a problem was that there is sometimes no uniformity within behavioral finance involving a type of behavior and its definition. For example, both the definitions of risk aversion and snakebite effect refer to people becoming less willing to take a similar risk after experiencing a loss. This can sometimes make behavioral finance even more difficult than it already is. To simply search for literature involving a particular type of behavior, one will first need to study the possible definitions the behavior could actually have. Therefore, it is recommended to (study how to) start using uniform definitions involving the different types of anomalies.

In addition, even when writing this thesis, it appeared impossible to keep being updated with the many articles and books that were published. It is without a doubt that at the time this thesis comes out more information will be available. Therefore, further research is recommended to update the information that is presented within this thesis.
Data Collection

After consulting the literature, interviews were held. As mentioned before, the number of interviews held was relatively small. Furthermore, the way the interview was set up, left open spaces for biases. Therefore, the value of the interviews is limited. In addition, as pointed out in the Practical Approach Method, in order to acquire new information, it is also necessary to have statistical analysis and to take surveys. Since these steps have not been taken within this thesis, it is recommended that further research will take these steps. In case one should choose to only focus on one or various different anomalies, it is suggested to start studying the anomalies in order of importance. In other words, it is suggested to first study the occurrence and consequences of the anomalies that appear to have the most negative consequences. Based on the interviews that would be as follows:

1) Sunk Cost Effect;
2) Representativeness;
3) Overconfidence;
4) Herd Behavior;
5) Anchoring;
6) Risk Aversion;
7) Myopic Expectations;
8) Loss Aversion;
9) House Money Effect;
10) Mental Accounting;
11) Familiarity.

Once it has become clear that an anomaly actually occurs, a next step can be taken. Confirming the indications that are presented in this thesis could be that step. For example, are the consequences of the anomalies actually as presented in this thesis? And if so, are the majority of them indeed dependent on the real estate circle? In addition, it is recommended to study the elements that have remained unclear, like:

- Does taking a higher risk, because of the house-money effect, mainly have positive or negative consequences overall for the investor?
- Are the consequences of familiarity, overall, positive or negative for the investor and is it dependent on property specialization and/or geographical specialization?
- What are the consequences of risk aversion and are they dependent on the real estate cycle?
- How are the feelings, that some investors who do not perform any data-analyses but still seem to make a lot of profit, developed and can those feelings be taught?
Most respondents believe there is a difference between investors with over 20 years of experience and investors with less than 5 years experience and their biases to a particular anomaly. The majority of the respondents mentioned that investors with more experience will be less subjective to a particular anomaly, with familiarity and overconfidence as the exceptions. Particularly, experiencing the downside of the real estate cycle and having learned from mistakes are the reasons why the more experienced investors are less subjective to an anomaly, according to this majority of respondents. As said by this majority, the less experienced investors have only experienced good market conditions and these investors are therefore less aware of the risks. The minority of the respondents (who think the opposite is the case), mentioned that normally these respondents have a better education and will rely more on hard data. Therefore, it is recommended for further research to discover if there is a difference between investors with over 20 years of experience and investors with less than 5 years experience and their biases to a particular anomaly.

Furthermore, it is recommended to search for evidence of other anomalies, including their consequences. During the interviews, it appeared that pride is an especially important factor in the decision making process. Investors mentioned, for example, that they would be willing to pay much more than the actual market value for an object that lies in the same street as other objects they own. While studying other anomalies, one should keep in mind that one of the problems during the interviews was that (some) people anchored on the given examples. This might be due to insufficient knowledge about the topic and/or due to a shortage of time to actually think about the topic. Therefore, it is recommended that, for further research, to refrain from discussing the eleven anomalies with a respondent who is unfamiliar to the subject and definitely not within a one hour time restraint. Instead, a discussion about just one or two anomalies might have a better outcome; especially if the respondent is explained thoroughly what the anomaly is about and multiple examples are presented.

Overall

As mentioned above, once it has become clear that an anomaly actually occurs, a next step can be taken. As pointed out in the beginning of this thesis, following the steps as presented in the Practical Approach Method is one option. However, there might be other ways to accomplish the final goal - having an optimal investment decision process with regards to irrational behaviors - as well. The Theoretical Approach Method, as described in the beginning of this thesis is just another example. The main point is that further research is necessary to accomplish the goal. Therefore it is recommended that further research picks up the current knowledge and continues on it.
For educations and courses that involve real estate, it is recommended to implement the knowledge from behavioral finance (or maybe even this thesis) in their programs. During the master track: Real Estate Management and Development at the Technical University of Eindhoven (NL), for example, theories and models like the MPT (Modern Portfolio Theory) are taught, but its practical value is underexposed and sometimes even left out completely. Same goes for real estate courses at the UWE (University of the West of England) in Bristol (UK). Since no evidence is found of studies that involve irrational behaviors while making investment decisions within the field of real estate, it is expected that these two universities are not an exception. Therefore, the recommendation is to close the gap between theory and practice by implementing knowledge from behavioral finance (or maybe even this thesis) in real estate related programs and possibly even perform studies in behavioral real estate.

"If, for example, theory cannot be followed in practice, or if practice achieves something which in theory is impossible, then the theory, at least, stands in need of revision."

- Lawson (1997) -
References


Baum, Andrew & Crosby, Neil & Gallimore, Paul & McAllister, Patrick & Gray, Adelaide, ‘The Influence of Valuers and Valuations on the Worlins of the Commercial Property Investment Market’ The University of Reading, Nottingham Trent University.


http://nobelprize.org, 2006, May

http://www.investorwords.com, 2006, March


http://changingminds.org, 2006, April


PropertyNL, 2006, 12 January


Behavioral Real Estate & Direct Investing


Svenson, Ola, 'Are We All Less Risky and More Skillful Than Our Fellow Drivers?', Acta Psychologica, vol. 47, pp. 143-148.


Thaler, Richard, 1998, VPRO TV interview for Noorderlicht


