Decision-making in Mutual funds

A study of non-experts' decision-making process when choosing between mutual funds and the impact of presentation format

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Abstract

The Swedish population has never been this invested in funds, as a means of saving for retirement as well as personal savings. Yet, there is a growing concern regarding people's (non-experts) capabilities in the investment scene. Previous research within economic psychology is divided regarding the concept of human rationality, and policy makers are spending vast amounts of money and resources on how to structure tasks to "nudge" or help people make better decisions. Yet, there is still little known regarding *how* we make decisions.

The purpose of this thesis was thus to explore the decision-making process in non-experts when choosing between a set of funds and furthermore study if presentation format has any influence. Verbal protocols were the chosen methodology and 13 non-expert participants took part in the study. The analysis was both quantitative and qualitative.

The primary findings are two-folded, the data supports the idea of bounded rationality in the decision-making process, in line with what is expected from non-expert. Furthermore, that presentation format seemed to have an effect on the decision. An unanticipated finding was that the general primary challenge for the participants was in understanding the technical language.

Key words: Non-expert, Fund choice, Decision-making process, Verbal Protocols, Presentation format

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DEFINITIONS

Decision-making process – Making choices by gathering information, assessing alternatives and forming a decision, the "black-box" between stimuli and decision.

Financial Literacy – Level of knowledge within three financial questions regarding compound interest, inflation and risk diversification. In this study used to divide the sample in two groups Higher and Lower Financial Literacy.

Judgment and Decision-making – A field of research, mainly overlapping Psychology, studying the reasoning underlying an agent's choices.

Non-expert – In this study, a non-expert is defined as a person who is not a practitioner nor have had any business training or business education.

Presentation format – Ways of presenting information, could be visually, in text or numerical.

Verbal Protocol - Is the study of verbalizations of decision-making behavior, in this study the corresponding analysis is both quantitative and qualitative.

1. INTRODUCTION

Policy makers are placing large investments in choice architecture for fund investments, yet little is still know regarding the process of decision-making in these tasks. This chapter addresses the current state in Sweden, the theoretical and empirical problematization along with the aim, purpose and contribution of this thesis.

Nearly all Swedes have savings in mutual funds (from now simply referred to as funds). In 1980, the share of funds in Swedish households' financial wealth amounted to less than 1 % and today, that current figure is just over 30 % including the collective retirement savings. Never before have the total fund assets in Sweden been at such high levels, a large part of it is through the Swedish Pension system although as many as 8 out of 10 Swedes invest their personal savings in funds as well (Swedish Investment Fund Association, 2016). The interest for funds as a means for saving has increased dramatically but it is not just Sweden. A global ageing population has forced policy makers in many countries to rethink and reform increasingly unsustainable social security systems like the public retirement schemes. The trend being that citizens are required to take more personal responsibility regarding their own future pension, hence the increasing interest for funds (Hedesström, Svedsäter & Gärling, 2007).

The Swedish Pension System, with a Premium Pension Scheme (PPS) was designed and rolled out in 2000 and the architecture of PPS, relies on investor autonomy and individual choice. Although the default choice, AP7 Såfa, (in popular speech "the idler"), has historically outperformed many of the alternatives there are still, as of March 2017, a list of 852 different funds to choose from (Swedish Pension Agency, 2017). However, with this many alternatives, there is bound to be some better than others. A recent scandal concerning consistently underperforming fund investment companies e.g. "Falcon Funds" and "Allra", has sparked a national debate concerning the future of PPS. The essence of the debate is ideological, ultimately regarding the protection of those who evidently are not equipped to choose wisely for themselves versus the right to choose and influence investment decisions of one's future pension.

Even though traditional economic theory stipulates that people are rational, have knowledge of all relevant aspects within the setting where they operate, today it is well documented within psychological research that this is simply not true. To exemplify, individuals often deviate from this rational ideal in decision-making, experts as well as non-experts, and it has been suggested that many households are not well suited to make complex financial decisions (Campbell, 2006). Furthermore, that investors often make judgment errors when they set up fund portfolios, and thus fail to match their preferences for risk and return (Benartzi & Thaler, 2002). And research by Diacon & Hasseldine (2007) found that the format in which information is provided, like fund value or percentage yields, significantly affected perception of risk, return and willingness to invest.

What more is the concept of financial literacy which refers to knowledge that allows an individual to make informed decisions, traditionally measured with three questions addressing compound interest, inflation and risk diversification. Almenberg and Säve-Söderbergh (2011) found, in a representative sample of Swedish adults, a relationship between financial literacy and retirement planning - the higher financial literacy, the better in planning for one's retirement. Recently in Sweden, Finansinspektionen (FI, 2015) voiced their sincere "worry" (p. 1) over the population's limited financial literacy after a domestic survey had revealed that as few as 60% were able to correctly answer all three questions.

1.1 PROBLEMATIZATION

The inevitable question thus starts to form, how capable is the population in handling a fund investment choice task? Not only do we, as humans, sometimes make seemingly irrational choices but the very nature of funds stipulates a variation of returns over time and different risk levels, hence the investment fund setting will naturally have to contain probabilistic information. The same information that we know from research (Khaneman & Tversky, 1971), individuals are not very good at interpreting and thus make logical errors. In an effort to curb these challenges, a growing body of research has emerged regarding choice architecture, or "nudging" which addresses how to best describe or structure a task to improve decision-making within populations. This can relate to for example the number of options available in a pension system or the existence and nature of a default option. Structuring includes presentation format design, like standardization to simplify comparison between alternatives. On an EU level, extensive policy has for the last decade been concerned with the investment fund setting, for example how the Key (Investor) Information Documents, i.e. K(I)ID (obligatory fund information) ought to be described and structured (DIRECTIVE 2009/65/EC). These choice architecture efforts have long been considered beneficial and only recently has there been a backlash concerning the paternalistic approach when "nudging" and limiting free choice (Gigerenzer, 2015). Furthermore, critique regarding shortcomings in the underlying research around choice architecture address that there has been (i) a lack of research in natural settings i.e. context and (ii) lack of process data.

There is still very little understanding regarding the *decision-making process*, addressing not what we decide, but *how* we make decisions. To exemplify, from experiments we know that it is better to visually express uncertainty in frequencies instead of probabilities to lay audiences (Spiegelhalter, 2011). Beneficial research to policy makers when designing financial information to the public. What we still know very little about though, is the decision-making process that takes place when an individual is given a set of actual fund fact sheets and faced with the decision to invest a certain amount of money and decide which one (s)he thinks is best. One of the greatest benefits of such process data is the ability to identify the root cause and provide important evidence of explanatory mechanisms (Rubinstein, 2003). For example, Almenberg and Säve-Söderbergh (2011) pointed out that parts of their results remain unclear, since it is not determined whether incorrect answers are due to a lack of understanding or an inability to perform the mathematical calculation. Secondly, the importance of representative stimuli (Brunswik,1955) i.e. studies on actual investment fund material concerns the applicability of social scientific findings on individual's natural settings has also been lacking within this area of research. The benefit from studying behavior in its "natural setting" concerns relativity. The above example on presentation format in frequencies instead of probabilities can be rendered meaningless to the same policy makers, if it is found that individuals do not use this information item at all in their decision-making. Regarding these two concepts, process and task environment, Simon (1990) stated:

"Hence, to describe, predict and explain the behavior of a system of bounded rationality, we must both construct a theory of the system's processes and describe the environments to which it is adapting […] Human rational behavior (and the rational behavior of all physical symbol systems) is shaped by a scissors whose two blades are the structure of task environments and the computational capabilities of the actor. The study of cognitive psychology is the study of computational capabilities in the face of diverse tasks."

Simon, 1990 (p.7)

Furthermore, empirically the problem remains that policy makers spend large amounts of money on public information, educational efforts, reforms and choice architecture, in addition, by the end of 2016, the total fund assets in Sweden reached new record levels of SEK 3 568 billion (Swedish Investment

Fund Association, 2016). The individual's own responsibility concerning retirement is expected to increase with an ageing population. There seems to be agreement concerning the importance of "good and rational" decisions for individuals in the investment fund setting, further questioning the lack of research in individual's decision-making process. Thus, studying the decision-making process when choosing between a set of funds would contribute with an understanding for how individuals make these decisions, how they search for information and (if anything) what seems to be most troubling, which would be a contribution to policy makers as well as theory.

1.2 PURPOSE, AIM & CONTRIBUTION

The aim and purpose of this study is to thus gain insight to and describe individuals' decision-making process when choosing between a set of funds, and to determine if presentation format has an effect within this choice. The contribution will thus exist in terms of (i) gaining an improved insight into the decision-making process of individuals when choosing between a set of funds, and (ii) shedding more light on the role of presentation format strengthened by the study's representativeness. The study thereby contributes both theoretically by applying proven theory in a new setting, methodologically with process data, and empirically to policy makers to improve regulatory effectiveness.

1.3 RESEARCH QUESTION

Exploring how individuals make decision will be addressed in three sub questions: (i) How do individuals search for information? (ii) What information is important? (iii) Can the theory of dominance structuring be applied to describe the process? The fourth question regards, (iv) Does presentation format influence the decision-making process?

1.4 DELIMITATION

In this study, the social context is disregarded, including interactions with friends and family but also experts such as bank advisors or other parties that might influence a fund choice and the decision-making process. Restrictions in time and resources called for these delimitations, emphasizing the complexity of such a study.

A further delimitation in the study is materials and aiding tools, for example the inability to looking up information they come across that they do not understand. Again, this is a restriction due to time, resources and also, an ambition to keep the amount of information identical between individuals.

Also, the setting is Swedish, along with a younger sample of participants (20-30 year-olds). Results may vary in other countries and with age. Furthermore, the focus of this study is on non-experts, disregarding experts and their decision-making process, which may differ. The chosen delimitation regards a natural focus on the individuals who, within the research of choice architecture is aiming to protect.

1.5 THESIS OUTLINE

The above situation, problematization and aim of this study will be explored using verbal protocols in a mixed quantitative and qualitative analysis of several case studies. The research questions presented will be addressed in sets of sub questions in addressing the overall aim to investigate the decision-making process. Three research questions shall be pursued: (i) How do individuals search for information? (ii)

What information is important? (iii) Can the theory of dominance structuring be applied to describe the process?

The fourth research question will be addressed through answers captured in the other research questions, namely how those are impacted by the different presentation formats in the study i.e. (iv) Does presentation format influence the decision-making process? Furthermore, to strengthen the validity of the study, and comparing to previous research, parts of Bouwman et al.'s (1987) research has been replicated. The last part concerns the qualitative findings. Results are presented in accordance to each of these sub questions, with a preceding discussion of possible implications. Finally, the main findings are tied back to the aim of the thesis and the principal conclusions are presented. For simplicity, the study is divided into five sections: (i) Introduction, (ii) Literature Review, (iii) Methodology, (iv) Results (v) Discussion and Closing comments.

2. LITERATURE REVIEW

This chapter presents a review of literature along with relevant theory. In order to legitimize the problematization, the literature review will present research within Judgment and Decision Making regarding the concept of rationality, along with relevant related fields of research of non-experts and presentation format. Shortly thereafter on policy relevant research fields. At the end, a conceptual model from the theoretical framework is presented.

2.1 BACKGROUND TO RESEARCH FIELD

The area of research for this thesis is within Economic Psychology with a focus on Judgment and Decision Making, both which are distinctive yet related and overlapping research topics. It is within the intersection that this study belongs as illustrated in Figure 1.
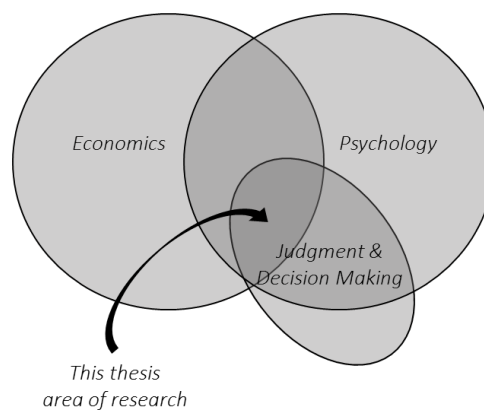
Figure 1. This thesis area of research illustrated as a Venn diagram.

2.2 THE CONCEPT OF RATIONALITY IN JUDGMENT AND DECISION MAKING

For simplicity, Judgment and Decision Making (JDM) can be viewed as the study of reasoning underlying an agent's choice and thus far the literature can be divided into two branches, normative and descriptive. Normative literature gives advice on how to make the most favorable decisions whereas descriptive literature aim to analyze how agents actually make decisions. The division is further emphasized by the different viewpoints on human rationality. Normative JDM research made assumptions such as complete preferences and logical consistency within choice (von Neumann & Morgenstern, 1947) who studied games and gambling to exemplify decision-making scenarios. Friedman and Savage (1948) also reasoned around gambling and introduced a subjective utility function that shifted depending on wealth and income levels. Important to note is that their ideas were presented as an *as if* theory, arguing that a theory's validity was all about predictive ability meaning that they had no actual descriptive ambitions in a cognitive sense, i.e. how individuals *actually* make decisions.

The common denominator of the normative branch is the view of humans as not only 'economic' but also 'rational' in line with traditional economics. This view was criticized by Simon (1955) and many others, where he argues that this 'economic (wo)man' is assumed to have knowledge of all relevant

aspects within the setting where (s)he operates. Furthermore, is assumed to, as well as having a well-organized and stable system of preferences, also be skilled in computing and calculating. Which in turn allows him/her to make the best possible decisions, given the preferences that (s)he may have. Someone, he argued, simply does not exist. The emergence of the idea that humans perhaps are not as rational as stipulated by economic theory shifted research from normative to descriptive which has been referred to as "the cognitive revolution" (Baars, 1986). One of the most prominent theorists, Herbert Simon, suggested that actual decision-making was characterized by satisficing (i.e. settling for 'good enough') rather than optimization. Accordingly, that rationality was bounded by incomplete knowledge, limited anticipatory abilities, and cognitive constraints.

Building on this view, Israeli psychologists Tversky and Kahneman and their colleagues e.g. (Kahneman, 2011; Kahneman & Tversky 1979), with the heuristics and biases program, argued that humans take shortcuts and use rules-of-thumb (heuristics) in their decision-making to the point that the decision-making can be described as irrational. Although they put forward that these "shortcuts" are harmless they also emphasized how the use of heuristics can "lead to severe and systematic errors", e.g. representativeness, availability, adjustment and anchoring and mental accounting. However, questioning some of the most fundamental findings of the heuristics and biases program, Gigerenzer and Hoffrage (1995) showed that what Kahneman and Tversky would call an 'error' like overconfidence bias could be eradicated by changing the presentation format. By using frequency based presentation formats instead of probabilities it facilitated the subjects' understanding, and could make cognitive illusions disappear. Gigerenzer and Goldstein (1996) brought forward a theory of fast and frugal heuristics, emphasizing the *ecological rationality*. Their main argument being heuristics' adequacy in complex environments. Furthermore, they would critique the heuristics and biases program for ignoring both context and task structure, conceptual vagueness, and methodological shortcomings. There is consensus on one thing though: that the economic (wo)man, the common denominator within normative JDM, simply does not exist. Or as Sen (1977) put it:

"The purely economic man is indeed close to being a social moron. Economic theory has been much preoccupied with this rational fool decked in the glory of his one all-purpose preference ordering." (p. 336)

To conclude, the descriptive era of JDM today is at a divide between the two opposing views, heuristics and biases and the fast and frugal heuristics programs. The first emphasize observed deviations from rationality, while the other argue the adequacy of simple thinking in complex environments.

2.2.1 THE SEARCH FOR DOMINANCE STRUCTURE THEORY

Following the above discussion on rationality, the theory of Search for Dominance Structure developed by Montgomery (1989) presents a model of how individuals make decisions given a set of alternatives. The main idea is that when and if it occurs, the individual structures information in such a way that one alternative is superior in comparison to the other alternatives, hence "dominance structure". This decision-making process does not correspond with the idea of rational behavior since it stipulates that all information is not carefully weighted and processed. Montgomery presents the model for this decision-making process as divided in four phases, shown in Figure 2.
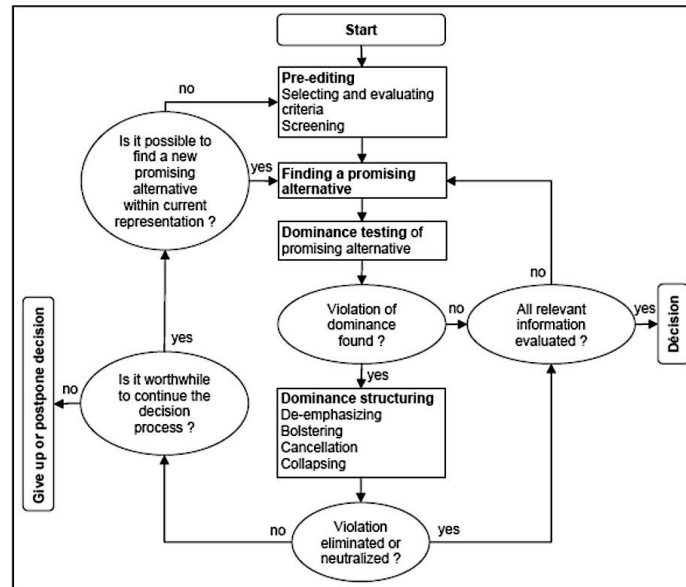
Figure 2. Model for decision-making process – Search for Dominance Structure (Montgomery, 1989)

In the first step of the decision-making process, the pre-editing phase, the individual separates important information from less important. They also select and evaluate attributes and screen for possible alternatives. The relevance and attractiveness of these attributes are subjectively defined, thus can be expected to be influenced by the individual's previous experience, personal preferences and so on. For example, a high risk measure on a fund fact sheet is an attribute that can generate both positive and negative reactions, depending on the individual's risk preference.

The next step is when the individual finds a favorable alternative, the finding-a-promising-alternative phase, with the hope that this alternative is better than all others. The promising alternative has at least one attribute that is superior to all other e.g. the alternative with the lowest risk measure (given a very risk or loss adverse individual).

The following step is when the individual tests if the promising alternative is indeed better than all others, the dominance testing phase, and is performed using various rules of two kinds; compensatory and non-compensatory. Compensatory decision rules can best be described as ranking of attributes and the promising alternative is thus chosen if it is considered to be superior all other alternatives on the most important attribute. Non-compensatory decision rules on the other hand disregard the ranking of attributes, and the promising alternative is chosen if it is considered superior in most of the attributes. For example, *"I choose fund D, since this is the alternative with the lowest risk-rating, and this is the only attribute that I am concerned about"*, compared to *"Well, fund D seems like the best choice for me, lowest risk rating, I like the investment profile, a bit expensive I must say but they seem to have been doing quite well the past years… Fund D is my choice!"*

The last step, dominance structuring phase, occurs when the previous step did not result in a decision. For example, instead of exclaiming *"… Fund D is my choice!"* the individual might have said *"… But again, it is very expensive compared Fund B and C…"* The individual continues the decision-making process by changing the structure to try to achieve dominance for the promising alternative. This can be done by cognitively cancelling attributes, merging criteria to make it more comprehensible, bolstering or de-emphasizing. For example: *"… But both C and B are SUPER risky alternatives, I will probably*

lose all my money with them. And besides D is not that expensive - you have to spend some to get some…" If this fails however, the individual goes back to previous stages and tries again to achieve dominance structure or postpones the decision.

Simplified one can argue that dominance structuring is "a search for good arguments", and that this is how decisions are made in order to, first of all know when one is ready to make a decision, but also feel confident in the decision made. As put forward by Montgomery (1989) and several other researchers, people have a tendency to want to justify decisions and reasons behind why they act as they do.

2.2.2 OTHER DECISION-MAKING MODELS AND THEORIES

Cognitive decision-making has been described and theorized by many and another alternative model to describe the decision-making process would have been to use the differentiation and consolidation theory by Svensson (1992). Similar to the Search for Dominance Structure theory, but focusing more on both pre- and post decision-making. For example, following a decision the theory aims to predict processes that act in favor of the chosen alternative. The process both pre- and post decision are interesting research topics, in addition to the decision process alone, however would require a lot more time and is outside of scope for this thesis. Apart from two questions in the evaluation form regarding satisfaction and confidence of the individual's choice, this is left to others to explore.

Furthermore, the Image Theory by Beach & Mitchell (1987) trying to explain the decision-making process as it actually occurs. However, the important component being different images that a person uses to evaluate options. These images can represent an individual's principles, goals etc. how they believe the world should exist. This theory requires a heavier focus on what alternatives to include rather than the decision-making process alone. Given the ambition to keep the study material as representative as possible, this theory would have been less interesting since the study material design is set.

2.3 NON-EXPERTS

The definition of a non-expert is not self-explanatory, Hoffman et al. (1995) would defined a non-expert as someone with little or no knowledge within the field of interest, and similarly DeGroot (1965) would suggest that task specific knowledge is the key determinant of expertise. In 2002, Shanteau et al. developed a combined index, CWS. Reviewing previous studies with the ambition to facilitate the definition of what a non-expert is and also contrary, an expert. The dividing line consisted of the ability to notice and act on subtle differences and repeat the decisions in other similar situations. Something that is usually missed (discrimination) by the non-expert, also lacking consistency in their decisions. Following this, the definition of a non-expert would be a low ability to discriminate and be consistent.

Simon (1990) attributed the divide to recognition capability, that tens of thousands of stored cues of associated knowledge allows the expert to solve problems seemingly intuitively. Recognition processes have been shown in research by Groot (1965), Simon (1990) to play a major role in various tasks such as playing chess and reading. By this, experts can reach solutions by using knowledge, skill and computation that is simply not cognitively possible for the non-expert. To further exemplify, this means that experts can rely on pattern recognition rather than mental calculation (non-experts) to make it possible to simplify complex problems, see the big picture and draw parallels. Furthermore, experts can easier sort between information, break down and simplify tasks and need less cues to make a decision (Shanteau, 1992). Camerer and Johnson (1991) would agree and conclude that experts are expected to know what information is relevant and can therefore be more efficient than non-experts. Building on

Bouwman (1984), in the case of non-experts processing financial information, a lack of industry knowledge as well as company or investment products typical behavior is expected, for example how the current interest rate in Sweden would affect the return of a bond fund.

Another important part of the decision-making process is the acquisition of information and how the individual treats it. Studies on information search behavior (Bouwman, 1984:1987) has shown that non-experts use a very different search strategy compared to experts, and that it differs along two dimensions, search for specific information and interruptability. The first dimension is explained by what drives the selection of information, either directed or sequential. A non-expert would be expected to have a "sequential" search strategy, taking in the information as it is presented rather than directed search where one is actively looking and jumping between topics. The second dimension is characterized by the ease which the search process can be halted in order to change direction and pursuit a new objective. Experts are expected to use an active search strategy, that makes them quickly changes objective and are able to follow up on specific information items. Compared to the non-expert's more methodological search strategy where they to a larger extent insist on completing a present goal before starting to pursue a new one. Furthermore, this implies that non-experts are expected to use more time.

Search for specific information

		High	Low
Interruptability of analysis	High	Active Directed	Active Sequential
	Low	Methodological Directed	Methodological Sequential

Figure 3. Information search strategies presented in a two by two matrix; searching for specific information and interruptability of analysis from Bouwman (1987).

This study by Bouwman et. al. (1987) is of importance as their work on the decision-making process of financial analysts is to be replicated, but using non-experts instead. By using verbal protocols, Bouwman et al. could describe the decision-making approach and they divided the process into five elements; Read and Examine, Reason, Goal setting, Memory codes and Comments. The first element is described as the individual reading and digesting the information, secondly reasoning and draw conclusions followed by setting different goals e.g. what they intended to look for next. The forth element describes when the individual recalls information from memory and lastly commenting regards general comments on the case. Replicating this can further increase the validity of this study and be used to determine information search strategies.

2.3.1 OTHER RELEVANT RESEARCH ON FUND CHOICE AND NON-EXPERTS

What is a "good" choice given a set of fund alternatives i.e. which funds are best and how should one invest a lump sum of money? A study on Swedish mutual funds by Dahlquist, Engström and Söderlind (2000) found that low-fee funds outperform high-fee funds which is in line with earlier results by Carhart (1997) who studied U.S. mutual funds and found a negative correlation between fees and performance. Furthermore, Carhart (1997) was critical towards active fund managers value adding abilities and suggested three rules-of-thumb for mutual fund investors. First, to (i) avoid fund that persistently

perform poorly, (ii) high returns have a larger chance of performing well the following year, but not after that and (iii) that investment costs all have direct and negative impact on performance. Explaining why most actively managed funds do not beat their benchmark.

On the other hand, Engström (2004) studied active portfolio management and found evidence supporting the opposite, a positive alpha for the average portfolio manager pursuing an active management strategy. Furthermore, the study suggests that there is a positive relationship between trading activity and value created. Fröberg (2016) in her dissertation investigates how fund managers seek information for their actively managed equity funds, and found that fund managers who had direct contacts with companies performed systematically better than the other active managers, and managed to create added value. However, there is not a one-size-fits-all option, since personal preferences like willingness to accept risk and other similar variables differ between individuals.

2.4 PRESENTATION FORMAT

Research on presentation format has often been concerned with how to best present information. Bertin (1983) would argue that presenting information in a way that improves the individual's information processing could also enhance the accuracy of decision-making. Accordingly, he argued the most suitable presentation format for information is the one with the least cognitive effort, explained by a higher degree of relevant information being processed should lead to higher accuracy in decision-making. (Beach & Mitchell, 1978; Payne, 1982) The practitioners and non-experts' different results can be explained by what we know about the cognitive difference between experts and non-experts, that experts are able to make extensive use of recognition processes, based on stored knowledge to handle their everyday tasks (Simon, 1990).

Another relevant research area is risk communication. Spiegelhalter (2011) studied ways of visually presenting uncertainties in terms of probabilities, which, according the author, is notoriously difficult to communicate effectively to lay audiences. Although the effectiveness of some graphics clearly depends on the relative numeracy of an audience earlier research by Hall and Hanna (2004) showed that the use of contrasting colors leads to easier readability, which is to prefer. Spiegelhalter (2011) further argues that the more *attractive* a depiction is made, not only is it preferred it is also believed to be more truthful. Finally, he argues that there is limited experimental evidence on how infographics are understood and that the most suitable choice of presentation format to illustrate uncertainty depends very much on the audience, what context of communication and the presenter.

Rubatelli et. al. (2005) studied numerical information format on investment decisions and found evidence of a strong absolute magnitude effect (the tendency to perceive numerical value according to absolute magnitude instead of statistical meaning) on investment decisions. Rationally, it should not make a difference, whether historical returns are expressed as percentages (actual value and buying value) or as a monetary difference, yet studies repeatedly showed that it did. To exemplify, the study objects perceived that their fund had gained more when the absolute magnitude of the numbers was high e.g. 24%, compared to when it was low e.g. $0.24.

2.5 OTHER POLICY RELEVANT RESEARCH

The following section presents policy relevant research to add to the final discussion.

2.5.1 CHOICE ARCHITECTURE

Returning to research on Judgment and Decision Making, a controversial conclusion from the heuristics and biases program would be that since individuals behave "irrationally", they are in need of expert's assistance in order to help them make better decisions. Ideas like this has recently come to develop into somewhat of a *prescriptive* body of research within Judgment and Decision Making, giving rules, directions and instructions about how individuals should do and act. This 'ideology' has come to be known as "nudging", coined and popularized by Thaler and Sunstein (2008) who advocates active design of task structure in decision-making. This choice architecture is argued to be a means for policy makers to help regular citizens improve their lives (health, wealth etc.) by facilitating for individuals to make 'good' decisions. Benartzi and Thaler (2001; 2004) for example in their research aimed to improve the diversification of the average saver's stock portfolio and to improve levels of retirement savings among corporate employees. As pointed out in the introduction chapter, only recently has these prescriptive endeavors been criticized. Gigerenzer (2015) refers to choice architecture as libertarian paternalism and points out several flaws that have yet to be addressed e.g. that (i) research has been under-emphasizing moderators, meaning how individual differences interact with the nudges (lack of process data in natural settings) and (ii) that the ethical aspect of various manipulations and task architecture has not been thoroughly addressed.

2.5.2 FINANCIAL LITERACY

Financial literacy is one of the current topics for policy makers in regards to a populations' financial decisions and subsequently financial well-being, and is increasingly debated in international finance and politics. The OECD (2011) definition states: a combination of awareness, knowledge, skill, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial well-being. It is tested on populations using three multiple choice questions, addressing the issues of inflation, compound interest and risk diversification (Lusardi & Mitchell, 2011). Consequently, Gerardi et al. (2010) argues the lack of basic financial knowledge is one of the explanations behind global financial crisis in 2008, a result of the heavy investment in complex financial products. Furthermore, a study by Foster et. al. (2015) showed that financial literacy and numeracy skill helped improve accessibility and assessability of evaluating financial statements, supporting the agenda of regulators to invest in increasing individuals' financial literacy and numeracy. Again, coming back to the introduction chapter, the Swedish study by Almenberg and Säve-Söderbergh (2011) showed higher financial literacy was correlated to better retirement planning skills. Why policy makers would be interested in increasing financial literacy levels.

However, to complicate things, the study by Foster et. al. (2015) also showed that the effect (of improved financial literacy) was only true if the individual had moderate numeracy skill to start with. Furthermore, they found a similar effect when improving the presentation format instead, hence they argue that there is a need for further investigation. Fernandes, Lynch, and Netemeyer 2014, would agree that there is yet not enough research on the actual effects of financial literacy intervention, especially important since educational interventions are expected to be in the billions of dollars annually.

2.6 PREDICTIONS TO THESIS & THEORETICAL RESEARCH GAP

The above review of previous research points to a research gap lacking of process data, more specifically non-experts' decision-making process in financial decisions. Furthermore, as put forward by Gigerenzer (1991) there is a need for experimental studies with representative stimuli, which will be beneficial not only to add to the theoretical field within Judgment and Decision Making but also empirically to policy makers. The theoretical framework for this study is illustrated in a conceptual model below, see Figure 4.

Based on previous studies on non-experts, individuals in this study are expected to behave as non-experts usually do, meaning "irrational" behavior. Participants in this study are expected to follow a dominance structuring in their decision-making and the rationale behind is that due to a lack of industry knowledge and cognitive constrains e.g. seeing the bigger picture and ability to simplify a problem, they will resort to satisficing instead of optimizing. Furthermore, based on previous studies on presentation format, this is expected to influence individuals decision-making. Although, the information is presented differently the underlying assets are exactly the same, thus according to economic theory, this should not affect the decision-making significantly. The prediction is thus that presentation format is expected to influence the decision, although the study has yet to determine to what extent and which format is preferred.
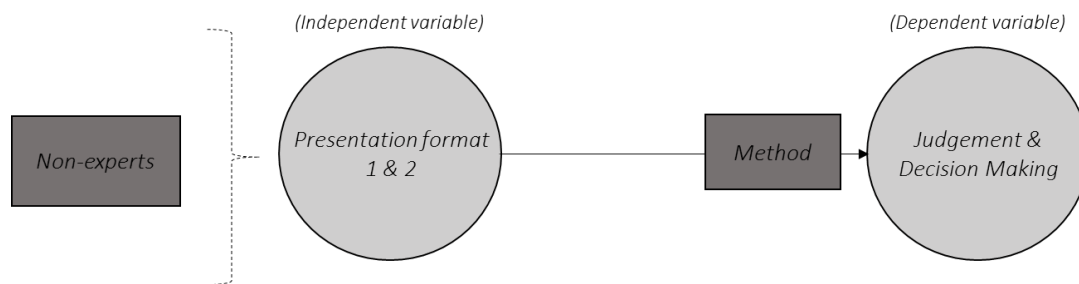
Figure 4: Illustration of theoretical framework in a conceptual model, an adaptation of Almqvist (2016) conceptual framework.

3. METHOD

This following chapter will denote the methodological approach chosen for this thesis. First presenting the method and considerations thereof, second the main study is thoroughly explained along with the following analysis. Lastly quality of the data is discussed.

3.1 METHODOLOGICAL CONSIDERATIONS

Reflecting upon the main objective of this study, the purpose is trying to describe the non-expert's decision-making process when choosing between different funds. However, when studying decision-making processes there are important aspects to consider when deciding upon a suitable method, mostly due to cognitive limitations of research objects. Hence the choice of methodology was thoroughly considered.

Lack of self-awareness in one's decision-making process makes in-depth interviews a poor fit of a method. They have been shown to limit reliability and validity in the study of decision-making (Ericsson & Simon, 1993), meaning the results are hard to replicate and the method does not describe very well what is aimed to investigate. Furthermore, individuals have a tendency to rationalize their thoughts and way of reasoning if data is collected after the decision is made. Rational factors are overemphasized and emotional factors underemphasized, as shown by Barlas (2003). Methods on self-assessment give less reliable data, and the results may subsequently be hard to replicate wherefore it is important to use a method based on actual observed behavior. The alternative of using a survey-based methodology for this thesis was consequently disregarded.

The objective can thus be explained by gaining insight into the "black box" of a human brain, after information stimuli but before the decision is articulated. When exposed to stimuli the heeded, or noticed, information goes into working memory. However, working memory has a limited capacity and the information is held there only briefly and can disappear as soon as new thought patterns supersede it (Ericsson & Simon, 1980). Why it is important that data on the decision process be captured while an individual actually makes the decision and not afterwards (Andersson, 2001).

Proven methods for investigating mental processes are verbal protocols and registration for information seeking processes such as eye-tracking, brain scanning, information display boards and skin conduct response (Andersson, 2009). The latter is a reliable method since the cognitive process is untampered with. It is well suited for short term memory studies like information search and acquisition of information (Biggs, Rosman, & Sergenian, 1993). However, this is also the limitation - it only records what information is registered and in what order. Verbal protocols, on the other hand, can give an understanding of *how* information is acquired and used. For these reasons and keeping in mind the objective of this study, verbal protocols were finally considered the most appropriate method to use.

3.2 VERBAL PROTOCOLS

Verbal protocols (also known as verbal reports, protocol analysis and think-aloud-method) is the study of verbalizations of decision-making behavior. A tape recorder registers the participant's verbalized thoughts, e.g. what they are looking at, thinking, doing, and feeling. It gives the observer insight into the participant's cognitive processes. Compare to surveys where one solely get insight into what the

participants answer, not how. The recorded material is then transcribed, coded, and analyzed. Due to the heavy workload for each participant's protocol, the number of participants are usually small, hence this method should be classified as a case study according to Andersen (1998) and the lack of a control group makes it quasi experimental. Participants performed the tasks independently, making each participant a separate case, a so called multiple case study. Compared to other studies using verbal protocol the number of participants in this study (13) is to be considered on par e.g Bouwman (1987) (12) and Nordemalm & Pütz (2004) (10). Strictly used, verbal protocol is a quantitative method (Andersen, 1998) although it can also be used as a combination of both quantitative and qualitative methods (Andersson, 2001). In this study, the analysis is a combination, with an overweight towards quantitative. Even though verbal protocols do not provide a complete representation of the thought process, but rather a subset of it, validity and reliability are considered to be good when used with care e.g. mindful of conducting study in a familiar setting and formulating realistic problems (Eriksson & Simon, 1993)

There are two types of verbal protocols, concurrent and retrospective. In the former the participant is prompted to verbalize his or her thoughts occurring *whilst* (s)he carries out a certain task. The thoughts should be verbalized as they appear, without analyzing nor trying to "improve" them (Svensson, 1989) and ideally without having to remind the participant to "please think a-loud". Although verbalization (and reminders thereof) can to some extent alter the cognitive process, it is not considered to disturb significantly (Eriksson & Simon, 1993). Concurrent verbal protocols are preferred when the tasks are long and cognitively complex, such as a medical physician making a diagnosis. In retrospective protocols on the other hand, the cognitive process will be undisturbed since the participants are asked to explain what (s)he was doing *after* completing a task (Ericsson & Simon, 1993). It is useful when decisions are intuitive or concurrent protocols are not practically possible e.g. a trauma surgeon in the midst of critical care surgery. However, when the decision-making process is longer than 10 seconds, the participant is assumed to not reliably be able to report his or her thoughts afterwards (Ericsson & Simon, 1993).

If possible, a combination of approaches is recommended by Ericsson & Simon (1980, 1993). However, there are benefits and drawbacks to each approach, to summarize: concurrent protocols are more complete but retrospective have less chance of interfering with the cognitive process. Taking into account the complex nature of the task and the decision-making process expecting to exceed 10 seconds, the choice fell on using concurrent protocols solely. Like all scientific methods, concurrent verbal protocol has benefits and limitations. The most obvious limitation is that they are tricky to analyze risking subjectivity when coding. They are also time consuming, which results in a smaller sample of participants. On the other hand, concurrent verbal protocols have a high degree of validity and reliability and the subsequent data is rich and quantifiable.

3.3 PARTICIPANTS

In this study 13 students took part and will hereafter be referred to as participants. When describing a particular participant, (s)he will be referred to as P1 to P13. The sampling of participants was a convenience selection, where some were acquaintances of mine or acquaintances of acquaintances, with the criteria of being a student (recent graduates were accepted as well) and they could *not* be business students. The participants were offered a cinema voucher or a free lunch to partake in the study.

The mean age of the participants is 26,5 with the oldest participant being 36 and the youngest 21 years old. The participants have university background in various fields such as journalism, civil engineer,

pedagogy (see Appendix 1 for further details). Furthermore, the split between gender is even, 7 are men and 6 are women and 10 of the 13 participants stated that they invest their personal savings in funds.

Although the participants who were contacted represented a convenience sample, the participants self-selected if they wanted to participate or not and all accepted. This may have introduced potential bias, however given the exploratory character of this research, the selection of subjects was not critical.

3.4 PREPARATORY WORK

The preparatory methodological work of this study consisted of two main areas, namely (i) practicing think-aloud method (ii) pilot testing of the study material - dry run.

3.4.1 PRACTICING THINK-ALOUD METHOD

Being an inexperienced experimental leader and given that the think-aloud method is quite specific, one big part of preparing for the main study was to practice the method live a number of times. The sample used for that were old colleagues were none had any higher education. This was important for three reasons, firstly, to practice being the experimental leader and fight the natural urge to neither encourage nor acknowledge what the participant was saying. Secondly, to gain experience in how participants react when recorded and how to remind participants to "please think-aloud" when silent for too long. Furthermore, to gain insight into how to make the participant feel comfortable when thinking aloud, and not mind being recorded.

What was learned, which was not anticipate, was how uncomfortable the participants were when having to think-aloud working with financial material and voicing their thought process and decision-making. Also, commenting on the experimental leader being a business student made them more uncomfortable increasing their perception and fear of "saying dumb things". This was very restrictive to the method, therefore it was decided to change the participants for the main study to students or newly graduates (no background in Business) and to ask acquaintances or acquaintances of acquaintances to participate. Furthermore, learning to emphasize when explaining about the experiment, that there are no right or wrong answers. It was also decided to sit next to, or on the side of the participant looking busy working or taking notes as to not encourage the participant to look at the experimental leader for affirmation or feel intimidated. Finally, the smartphone recording in close perimeter to the participant was not considered disturbing.

3.4.2 PILOT TESTING OF THE 'FINAL' STUDY

A final pilot test of the study material was made a week before the first scheduled experiment, to gain insight into first of all, how much time should be expected to be allocated to one participant's experiment. Second, to test the wording that it is understandable. Tweaks were made after the pilot, changing the number of funds from five to seven since this was deemed not too few to be challenging enough nor too many to be too time consuming. The lump sum of money to invest was set at SEK 70 000, approximately two-three months' salary in Sweden. The rationale behind being that it was a reasonable and relatable sum, large enough for the respondent to respect the amount and make an effort, but still relatable and not perceived as "monopoly money" i.e. a random high amount of fake money. Furthermore, the wording of the tasks was improved as to not frame the questions.

3.5 STUDY MATERIAL

The study material of seven mutual funds was selected at random from the list of 852 mutual funds available in the PPS. Limiting the sample to that of the funds available in the PPS was done for two reasons, firstly, that sample is chosen, or approved by the Swedish Pension Agency and secondly, they are readily available to almost all Swedes.

The final sample for this study consisted of seven funds; 5 stock funds, 1 mixed fund and 1 bond fund. It is a stratified sample from the funds available in the PPS according to their distribution. "Generation funds" were discarded due to its reliance on age of the investor. The final sample of seven funds was also controlled for household names of fund management companies, e.g. the main Swedish banks or commonly known insurance companies. When detected (subjective decision), they were discarded and a new sample was made. This was done in order to avoid bias of a familiar name in the study. The final sample was tested for familiarity in the pilot study and none was detected. One of the participants in the main study stated that (s)he knew about one of the funds, and another participant stated that (s)he recognized two company names, but had no opinion or further knowledge about them. The study material is presented in Table 1 below:

Table 1. The Study material comprising of seven different funds, a random stratified sample from the funds available in the PPS.

Exhibit	A	B	C	D	E	F	G
Fund name	Evli Mix Finland	Catella Sverige Index	Öhman Etisk Index Sverige	Alfred Berg Hållbar Penningmarknadsfond	F&C Portfolio Fund - European Small Cap A	Placeringsfond UB Global REIT	Allianz US Equity Fund
Fund type	Mixed	Stock	Stock	Bond	Stock	Stock	Stock
Investment Focus	Stocks & bonds, Finland & Europe	Swedish Index Fund	Swedish Index Fund	Short-term interest rate fund	European SMEs stocks	Global real estate stocks	Stocks in USA
Ethical focus			Yes	Yes			
Risk (scale 1-7)	4	6	6	1	5	5	5
Return, 5Y (%)	8,84	13,58	12,46	0,33	15,17	12,42	16,43
Return, 10Y (%)	4,71	7,36	6,75	1,32	4,86	3,43	(X)
Annual fee (%)	1,83	0,62	0,5	0,35	1,9	1,4	1,84
Deposition fee (%)	0	0	2	0	5	1	5
Withdrawal fee (%)	1	0	2	0	0	1	0
PPS fee (%)	0,55	0,29	0,22	0,18	0,75	0,59	0,75
PPS Sharpe ratio, 5Y	1,3	1,1	1	-0,1	1,2	1,1	(X)

Moreover, in order to investigate the presentation format, the seven funds were presented in two different formats. First as fund fact sheets i.e. standardized KIID-sheet and second as web print-outs from the Swedish Pension Agency's website. Hereafter referred to only as KIID-sheets (material for Task1) and web print-outs (material for Task 2). The KIID-sheets were chosen for three reasons, first of all, the information is standardized and regulated by the EU, second, they are relevant as they are currently being discussed if they should be updated. Lastly, in Sweden they are required information when promoting or discussing funds to private investors. Also, see Appendix 5.

The web print-outs from the Swedish Pension Agency's website was chosen to contrast the KIID-sheets in information presentation, they do both contain the same topics of information, i.e. Objectives, Risk-Reward, Fees, Historical Returns and Other practical information, although presented differently. As well as the KIID-sheets, the information presented originates from policy makers rather than private businesses like banks or interest groups e.g. fondkollen.se. Furthermore, the information on the Swedish

Pension Agency's website has an ambition to be available and understandable to all Swedes, which makes it an interesting basis for this study. One main difference however is that in the web print-outs in Task 2, the funds come with a discount (as part of the PPS) Meaning that the fees are not comparable between the two tasks although they are still relative within their own task, meaning they are still task-relatively "cheap" or "expensive". The main objective of having an experiment comprise of two separate tasks is thus to identify if presentation format influences the decision-making process and the final decision for a participant. See Appendix 6 for details.

When presented to the participants, the material was offered in the same, randomized order to ease comparison – from A to G. In order for the material to be as representative as possible as prompted by Brunswick (1955) and in line with research by Bowman (1987) both the KIID-sheets and the web print-outs were undisguised i.e. the name and the company name were showing. All information was presented in Swedish (original language) in order to avoid language barriers. Finally, the amount of material (7) in line with previous laboratory experiments (Larcker & Lessig, 1983).

3.6 PROCEDURE

The data was collected during two weeks in March and April of 2017. Each experiment took place either at Stockholm School of Economics, the participant's workplace or at home, whichever was most convenient for the participant in order to establish a comfortable setting (Eriksson & Simon, 1993). Each participant was met with individually and promised anonymity to further feel comfortable talking aloud.

The entire study comprises of 13 experiments (one participant per experiment), and each experiment in six steps whereof two main tasks. The study is illustrated in Figure 5 below. The two tasks are identical, apart from the study material: the participant was to examine the study material of seven exhibits (one fund per exhibit) one at a time and based on this where to make a decision on (i) which fund they though was the best and (ii) how to invest SEK 70 000.

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Experiment: Participant 1	Warm-up questions (Financial Literacy)	**Task 1: KIID-sheets**	Evaluation 1	Demographic questions	**Task 2: web print-outs**	Evaluation 2

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Experiment: Participant 2	Warm-up questions (Financial Literacy)	**Task 1: KIID-sheets**	Evaluation 1	Demographic questions	**Task 2: web print-outs**	Evaluation 2

STUDY

Experiment: Participant ...

Figure 5. Illustration of study design where each experiment can be described in six steps, where step two and five are the main tasks (1 and 2), one participant per experiment.

To begin with, the participant was given verbal instructions of the experiments and then given a pen and a hand-out with written instructions, questions and evaluations of the experiment. See Appendices 2-4.

The study started with a set of warm-up questions, as recommended by Ericsson & Simon (1993), to accustom the participant to think-aloud and to detect if the participant had misunderstood the purpose of the method. The three warm-up questions were traditional financial literacy questions, which was not disclosed to the participant. After having completed the warm-up questions the participant was asked to proceed to the next page of their hand-out and Task 1 could begin.

When ready, the participant was given exhibit A (i.e. Fund A), and were instructed to spend as much time on it as they wanted. Whenever they felt ready to move on, they were handed the next exhibit in alphabetic order. If the participant was silent for long periods, (s)he was reminded to "please think aloud". After the participant had decided and answered the two questions: (i) which fund they though was the best and (ii) how to invest SEK 70 000, Task 1 was considered completed and they could move on to the evaluation form and control questions. The purpose of these to gain insight into how the participant perceived the task, what information they found most helpful and control questions gathered demographic information about the sample.

Next, Task 2 could begin with the exact same procedure, however the exhibit A to G were web print-outs from the Swedish Pension Agency instead. Having answered the same two questions (i) which fund they though was the best and (ii) how to invest SEK 70 000, and filling in the associated evaluation form (2), the entire experiment was at end.

The average time spent by the participant on the entire experiment was 72 minutes and it ranged from 45 minutes to 94 minutes. Three of the 13 participants were done within 60 minutes (P1, P9, P13), and three took more than 90 minutes (P8, P10, P12). The other seven participants completed the study between 60-90 minutes. The mean number of words used by the participants in total was 3700, ranging from a low of 2200 to a high of 6300.

The participant's statements were recorded with a smartphone, transcribed and later codified. The code system used to categorize the statements was prepared beforehand and independent of the actual protocols, so called *a priori* methods. Various types of code systems can be used for the analysis, all depending on the objective of the thesis. There are different methods to measure frequencies, statements, processes etc. meaning the verbal protocols are static but the analysis is not. Compared to interviews and surveys where the method is more tied to what is being studied. Below a conceptual model of the study's design is presented.
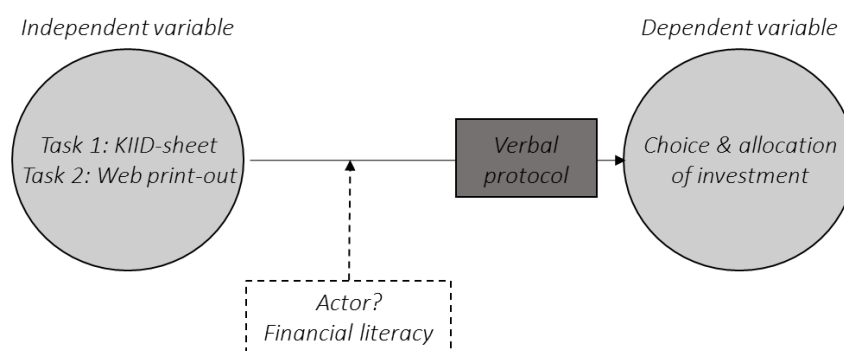
Figure 6. Illustration of the study's conceptual design

3.7 CODING

The first step of protocol analysis (once the recordings are transcribed) is to split the protocol into "topic lines" (from now on simply referred to as lines) i.e. manageable pieces of text that deal with a single action, a single item of information. The idea is to find verbal traces of behavior that were produced as the participant was thinking out loud. The resulting protocols came down to a total of 4377 statements or lines. Split between the tasks, the first task produced the most material: 2675 in Task 1 compared to 1702 lines in Task 2. The average number of lines in Task 1 came down to 206 (low 131 and high 388) and the second task averaged 131 lines per participant (low 102 high 189). One outlier could be argued for in one of the two studies; P12 in Task 1, who spent the longest and produced most lines of code and used the most words. The gap to P4 (second most words, time and lines in Task 1) shows that P12 used 20-30 % more of the units above.

Next, the lines are coded and classified according to a scheme that suits the task and the research objective. Codes are assigned only on the basis of explicitly recorded protocol behavior and according to strictly formalized rules, to avoid any temptation to add subjective interpretation in the coding process. Such interpretations would jeopardize the reliability of the analysis. To further minimize this risk, the codes have been scrutinized by another student, independent of the first coding to get a second opinion. Any differences were discussed and agreed upon. The objective is to develop a complete set of codes, a set that captures the protocol behavior so as to increase access to decision-making processes and strategies. It is not critical to achieve this objective fully. If assumed behavior does not occur, the corresponding codes simply are not used. Those lines were mostly unrelated statements to the experiment, e.g.: "Can I borrow this pen?" or noises and mumbling, e.g: "Eeeh", and the amount was not considered extensive.

For the purpose of this study on decision-making process and the role of information, each topic line is assigned the following four codes wherever applicable:

1. Exhibit code - what exhibit, or fund, the participant is talking about.
2. Information item code - identifies what item is being processed.
3. Activity code "Bouwman et al." - which classifies the decision-making process that is displayed in that line, a replication of the work by Bouwman et al. (1987)
4. Activity code "Svensson" - which classifies the decision-making process that is displayed in that line, in accordance with the work by Svensson (1989) and the search for dominance structure according to Montgomery's theory.

All in all, the verbal protocols came down to 15 932 codes.

To start with, the exhibit code referred to which fund the participant is talking about and this is indicated with the corresponding letters; "A" to "G". When comparisons were made, this was noted in another column. Secondly, information item codes indicate where on the exhibit the statement is attributable to. For Task 1 there are five codes, for Task 2 there are ten, divided according to the topic headlines on each of the different fund fact sheets. During the analysis an eleventh code for Dictionary was added. The codes are presented in Table 2 below (see also Appendix 5 and 6 for clarification on topic headlines).

Table 2. Information items in Task 1 and 2 presented along with the corresponding codes.

Task 1: KIID-sheets

Information Item	Code
Objectives	O
Risk-Reward	RR
Fees	F
Historical return	HR
Practical info	PI

Task 1: Web print-outs

Information Item	Code
Investment focus	IF
Fund Facts	FF
Fees	F
Objectives	O
Type of security	ToS
Target group	TG
Holding	H
Stats. Performance & Risk	St.PR
Other Facts	OF
Ten largest	TL
(Dictionary)	D

Thirdly, Activity code "Bouwman et al." referrers to codes retrieved from the study by Bowman et al. (1987), used to capture the decision-making process, presented in the Table 3. There are in total 22 codes, where one is added to the original set. The code "Deciding" under "Other" was added separately, inspired by the thesis by Nordemalm & Pütz in 2004. The codes are categorized by element; Read & Examine, Goal setting, Comment, Reason, Memory codes and Other.

Lastly, the second activity code category is retrieved from Svensson (1989) and used to investigate occurrence of dominance structure according to Montgomery's theory, a simpler code system compared to Bouwman et al. where there are five times as many codes. The aim is to study the emergence of a dominant alternative and among the seven fund the participant has to choose from. This is done by coding the statements as either positive or negative in character, and the idea is that once the participant has identified a promising alternative (s)he will argue for this alternative in order to create this dominance structure. This can be done both by highlighting positive sides and play down any negative aspect. See Table 4 for details.

Table 3. Activity codes from Bouwman et al. (1987)

Read & Examine		Comment	
ID	*Identify information item*	**COM**	*Comment on task content*
R	*Read/examine the information*	**MC**	*Comment on problem solving process*
PAR	*Paraphrase*		
TREND	*Identify trends*	**Reason**	
COMP	*Calculating*	**SUM**	*Summarize evaluations*
C	*Compare two items*	**I**	*Infer*
CI	*Compare with internal norm*	**EXPL**	*Explain*
CA	*Compare with industry average*	**AS**	*Make assumptions*
		Q	*Formulate question*
Goal setting			
SG	*State goal*	**Memory codes**	
FG	*State potential future goal*	**SF**	*Stress a specific observation*
GR	*Select specific information*	**RET**	*Retrieve information from memory*
GI	*Select a certain infomartion item*		
		Other	
		D	*Deciding*

Table 4. Activity code Svensson (1989), when ambiguous statements were found a higher hierarchical level was chosen. Positive/Negative statements are coded according to the exhibit (fund) it is directed towards.

Hierarchical level	Code	Description
1	Crit	*Discussion regarding what criteria to use*
2	COMP	*Comparing alternatives*
3	A+	*Positive statement regarding fund**
	A-	*Negative statement regarding fund**
4	Inf	*Information regarding the task*
5	O	*Other statements*

To clarify, Figure 7 illustrates how the different codes are used in an extract from P2's protocol.

Row nr	Statments R2	Information item	Exhibit (Fund)	Activity code: Bouwman et. al. (1987)	Activity code: Svensson (1989)
25	Okey, Practical Information feels like a lawyer's text.	PI	A	COM	INF
26	I want to leave it immediately. It is too cluttered.	PI	A	MC	O
27	Okay, now that I've seen Historical Returns and this 4 risk indication, and gone from Fees and Practical Information, I might check out Objectvives a bit more..		A	SUM	INF
28	*Mumbling while reading*	O	A	R	O
29	Well, now I leave this and proceed to B.		A	GS	O
	……….				
30	This is more friendly towards me, it's not as cluttered. A little bit bigger.		B	COM	O
31	It is structured in the exact same way.		B	COM	O
32	I check out Risk-Reward directly, and see that there is a higher potential return.	RR	B	R	A+
33	This does not feel as "banking" as the previous one.		B	C	O
34	Okey, so now I'm looking at fees... And here it says, black on white, no deposit fee, no withdrawal fee.	F	B	R	INF
36	It's 100 times more clear. I understand it and I like it! Free of charge!	F	B	EXPL	A+
38	Annual fee and performance fee do not tell me much, what does it mean..?	F	B	Q	INF
39	But I still take it with me that there is no deposit or withdrawal fee, so that feels good.	F	B	EXPL	A+
40	This feels strange to me that there is a "higher possible return" …	HR	B	SF (RR profile)	INF
41	But it has performed exactly as the benchmark, whatever the benchmark is …	HR	B	TREND/C	INF
42	That's something I would like to know, what is the benchmark index?	HR	B	Q	O

Figure 7. Extract from P2's protocol illustrating the coding.

3.8 ANALYSIS OF DOMINANCE STRUCTURE

Analyzing dominance structure has previously been done in two ways; (i) Montgomery and Svensson (1989) divided the verbal protocol in the middle in two equally large parts and (ii) Estrada et al. (1997) split the protocol in three according to a set of rules. In this analysis both sets are used.

Montgomery and Svensson (1989) split the verbal protocol in two parts, according to number of statements or topic lines. It is expected to be a predominance of positive statements regarding the promising alternative in the second half of the protocol. The second way of analyzing is presented by Estrada et al. (1997) studying physicians stating a diagnosis. Estrada et al. split the protocol according to set rules with two breaking points ending up with three "phases": information seeking, promising alternative and decision phase.

The protocol starts with information seeking as soon as the participant starts to think aloud. The first breaking point occurs when a promising alternative can be discerned, meaning the participant is talking about a preferred choice, using rules such as downplaying negative sides etc. and by that entering the promising alternative phase.
Most participants made both positive and negative remarks about the funds during their first impression of them, however this was usually not considered part of the decision-making process but rather the information gathering phase since they had not evaluated all options yet. The second breaking point is when the promising alternative is definitely detected, and the participant enters the last phase - decision phase.

To clarify, these rules are not static and the placement is subjectively defined, even though, this should give a better view of dominance structuring if it occurs or not compared to the rougher division by Svensson (1989). To further clarify the analysis of dominance structure, extracts from P5's protocol is shown, with the three phases and the two associated breaking points. The protocol begins with information seeking phase as soon as P5 starts talking aloud. The first breaking point is discerned first at row 144 when P5 states:

"I think this was quite reasonable, F…"

This is an example of dominance structuring rule, where a positive remark is made regarding fund F, the final choice, whilst looking at all and sorting them after which one (s)he likes the most. Furthermore, is statement 185 and 186 to be viewed as dominance structuring:

"Oh no, I might think F is best." and
"A 4-5, how big difference can it be?"

P5 is comparing the promising alternative F, to fund A, and especially looking at the different risk levels A=4 and F=5. Lower risk is preferred by the participant, but P5 is now downplaying the risk level of the promising alternative.

The second breaking point occurs at row 189 with the statement:

"Ah, but maybe F is probably the best I think."

This statement indicates that the promising alternative has been found and P5 is starting to formulate the decision and anchoring the choice.

Row nr	Statement lines R5
1	Okay.. God, huh difficult. Eh..
	...
↓	...
	...
40	Annual fee and fees taken, okey..
41	The total fee, it has money there?
42	Okay..
43	Wondering what happened in 2011? 2008?
44	Practical information. Okay, just things that you usually know.. or?
	...
↓	...
	...
141	Oh, ah, I'm looking at all of them..
142	What it was..
143	Sort them by .. Whichever seems most nice.
144	**I think this was quite reasonable, F..**
145	Interest rate fund.. Sustainable, right, this was 1.
	...
↓	...
	...
183	If it is best based on.. Well.. For me specifically, it feels that it is the A Fund, and otherwise I would probably say..
184	.. this one also feels like..
185	Or no, I might think F is best.
186	A 4-5 how big difference can it be?
187	That's right, it was this that was the A-series, and growth series, what did it cost?
188	Deposition fee 0.
189	**Ah, but maybe F is probably the best. I think.**
190	Or it feels like it, maybe.. Real estate investment company, okay risk and has performed ..
191	... not as bad as the others..
192	I think perhaps.. F..
193	**I think, if I answer this question, "Which Fund do you think is best?", then surely it is F, I think... for myself..**

Information seeking — *Promising alternative* — *Decision phase*

Figure 8: Example of dominance structuring in P5's protocol according to Estrada et. al.'s division.

3.9 DATA QUALITY

Before moving on to the results of this study, it is important to address data quality, where common concerns regard reliability and validity (Bryman & Bell, 2011).

3.9.1 RELIABILITY

Reliability has to do with the quality of measurement, and can best be described as a study's accuracy and credibility hence, if the study is replicable (Jacobsen, 2002). Aside from the actual decisions the participants made, this study should be possible to replicate since the theory of searching for dominance structuring should not depend on the study material or the selected participants. Furthermore, actions taken to ensure data reliability has been to conduct each experiment in a similar way with all participants, everything has been recorded and transcribed thus it is possible to go back and verify everything in terms of the data. Thorough preparatory work was performed, in terms of practicing using the method of verbal protocols and pilot testing.

An important note regarding reliability is that the method used was almost identical to that used by Bouwman et al. (1987), with that, very similar results were obtained which indicates good replicability of this study as well.

3.9.2 VALIDITY

Internal validity refers to how well what is measured, in this case the experiment, is consistent with what was intended to be studied. To study and observe the participants' decision-making process using verbal protocols as a method, as previously mentioned, are not limiting to the internal validity.

3.9.2.1 INTERNAL

On the other hand, the validity of the evaluation may be limited due to lack of self-awareness of the participants. Though this would have minor effects on the entire study since the use of it is limited and the results point in the same direction. For this study, the problem with internal validity regards the coding process, to ensure and increase this validity codes were used that was decided on beforehand, *a priori* method. Furthermore, helped by another student to get a second opinion on the codes limited subjective interpretation. To increase internal validity further would have been to hire a student or post-graduate student with no knowledge of the purpose of the study to code the protocols. Furthermore, data analysis was triangulated in order to further enhance internal validity, e.g. content from the protocols were analyzed using both number of lines and codes, supplemented with questions asked in the evaluation.

3.9.2.2 EXTERNAL

External validity, on the other hand, regards whether the results correspond with the population studied. In this case, this regards how well the participants in this study corresponds to the average 20-30 year-old Swedish (non-business) student's decision-making process. The external validity is limited by two factors (1) the experiment design i.e. that participants were in an experiment like situation and (2) that the selection of participants was done by convenience and the sample is small. Even though the number of participants in this study is limited, 13, it is in line with previous studies using verbal protocols, where there are usually no more than 12 participants (Bouwman et al., 1987). This has to do with the time consuming and cumbersome works of gathering and analyzing the data.

The experiment design can arguably have impeded how realistic the two tasks were. Especially regarding access to information and the possibility to look up words and phrases they (participants) did not understand, as well as social interactions with friend, family or bank advisors. However, for the number of funds to choose from, there were practical reasons to keep mainly the number of pages down so that the amount would not be excessively high for participants. Nevertheless, all participants stated that they were motivated during both tasks and all but one participant deemed the case realistic or very realistic, P6 did not find it probable to ever be asked to invest that amount of money. Most participants stated that the amount of information was sufficient, whenever not, they rather lacked an understanding of the subject.

3.9.2.3 ECOLOGICAL

On a last note, ecological validity, the question of whether or not social scientific findings are applicable to people's everyday, natural, social settings (Bryman & Bell, 2011) has been thoughtfully treated. Brunswik's (1955) emphasis on representative design was carefully considered, as the study material can be viewed as representative stimuli i.e. the fact sheets are actual KIID-sheets and web format print-outs from the Swedish Pension Agency. The funds were chosen at random from those available in the PPS, hence all participants could theoretically invest in the funds today if they want to.

4. RESULTS

The following chapter presents the results of the study and is sectioned as follows:

1. Information search strategies – presents how participants search for information.
2. Level of importance of information – triangulation is used to determine what information participants use and hence the importance.
3. Dominance structuring – presents if there is support for dominance structuring in the decision-making process.
4. Decision – impact of presentation format – presents the decisions participants made, if presentation format had an impact. A comparison between Task 1 and 2.
5. Replication of Bouwman et. al. (1987) – a replication of the study by Bouwman et. al. (1987), to paint a picture of the activity in the decision-making process.
6. Individual challenges (Qualitative) – presents individual challenges and choices, a qualitative analysis of the protocol.
7. Responses to evaluation – answers to the evaluation forms are discussed.
8. Summary of results – a short summary of the results and main findings are presented.

The results in the study are the outcome of each of the 13 participant's experiment. Each experiment comprises of two tasks and they will be simultaneously discussed under each section. For the reader's convenience, under each section Task 1 is always presented before Task 2. The same for tables and figures wherever applicable.

4.1 INFORMATION SEARCH STRATEGIES

Looking at the participants' information search strategies is part of explaining how the participants search for information. First, the order they search for information items is presented to identify if it is directed or sequential. To exemplify, the search order for P4 is presented in Table 5 below:

Table 5. Presenting the information item search order in P4's protocols, Task 1 and 2.

		Fund						
		A	**B**	**C**	**D**	**E**	**F**	**G**
	1	O	O	O	O	O	O	O
	2	RR	RR	PI	RR	RR	RR	RR
Task 1 *Ranking*	*3*	HR	F	RR	F	F	HR	HR
	4	PI	HR	F	HR	HR	F	PI
	5			HR			PI	F
	1	D	IF	IF	St.PR	OF	St.PR	IF
	2	IF	ToS	OF	TL	O	H	St.PR
	3	F	FF	TL	FF	St.PR	ToS	TG
Task 2 *Ranking*	*4*	St.PR	F				TG	
	5	O	St.PR				FF	
	6	OF	O					
	7	H	TL					
	8	FF						

Looking at Table 5, P4 may have revisited Risk-Reward (RR) as a 7th item for example, but the tables have been clear for repetitions for two reasons, first to make the table comprehensible, second to find the ranking of the information items. In other words, if information item O was examined before information item RR, which was examined before information item PI and so on. A fair assumption is that after the first examination of an information item, no new information is found and that they go back to information items to remind themselves.

The difference between Task 1 and 2 is palpable, the order of information items looks more orderly in Task 1 compared to Task 2. This could reasonably be explained by the different presentation formats; where the study material in Task 1 has a clear sequential order of the information items whereas in Task 2 all information is presented on one sheet where topic headlines are dispersed. For further illustration, see study material in Appendix 5 and 6. Not only does the ranking not seem to be as similar in Task 2, it seems to be more gaps in the table as well. Further explanation to this may be that Task 2 preceded Task 1, where a certain learning curve after Task 1 is expected. Furthermore, the participants spent less time on Task 2, this could be that they are also impatient to finish the experiment, in addition, there are twice as many information items in Task 2. Because of this it is expected to find more support for a certain search order in Task 1 than Task 2.

To avoid a cumbersome and extensive presentation of all 13 participants' 14 search orders, the mean value was calculated for each participant's search order in the two tasks. This was done by adding the search order number (ranking) for an information item, and dividing it by the number of times it had

been referred to. For example, P4 presented in Table 6, Task 1, information item "Risk and Reward" (RR) was calculated as: (2+2+3+2+2+2+2)/7 = 2,1. The results are presented in Table 6 below.

Table 6. The mean value of search order for each information item and participant, calculated from 7 observed search orders (each exhibit). Mean value across all participants is presented along with ranking, used to calculate Pearson's correlation, (n>30).

				Participants												
	Item	Mean	Ranking	1	2	3	4	5	6	7	8	9	10	11	12	13
Task 1	O	1,5	**1,0**	2,3	3,8	1,0	1,0	1,0	1,0	1,0	1,4	1,1	1,1	2,9	1,0	1,3
	RR	1,8	**2,0**	1,1	1,1	2,5	2,1	2,0	2,0	2,1	1,7	1,9	1,9	1,0	2,0	1,8
	F	3,0	**3,0**	3,1	2,6	2,4	3,7	3,1	3,0	3,2	3,1	3,3	3,0	2,4	2,8	3,3
	HR	3,6	**4,0**	3,3	2,9	3,5	3,7	4,0	4,0	4,0	3,0	3,7	4,0	3,7	3,0	3,4
	PI	4,5	**5,0**	4,5	4,0	4,5	3,8	4,3	5,0		4,8				5,0	4,5
	ρ (mean value)			0,91	0,44	0,92	0,88	0,96	0,99	0,97	0,97	0,99	0,99	0,60	0,96	0,99
	ρ (ranking)			0,82	0,31	0,97	0,90	0,98	1,00	1,00	0,95	0,98	1,00	0,46	0,96	0,98

	Item	Mean	Ranking	1	2	3	4	5	6	7	8	9	10	11	12	13
Task 2	IF	1,9	1,0		3,3	1,5	1,3	3,0	1,3	1,5	1,5		2,0	1,5	4,3	3,3
	TG	2,0	2,0		5,3		3,5	2,5		2,5	4,5				4,6	2,7
	ToS	2,3	3,0		5,0		2,5	3,0			5,0			4,0	5,5	4,3
	F	2,3	4,0	2,3	4,3	1,0	3,5	4,0		2,0	3,2	2,4	2,0	1,4	3,0	1,0
	St.PR	2,5	5,0	1,4	1,9	1,5	2,7	2,7	3,5	2,4	3,4	1,1	2,0	3,5	2,7	3,5
	FF	2,5	6,0	2,2	5,5	1,0	4,8	2,0	1,4	2,7	2,4	2,5		3,4	3,3	1,6
	D	2,6	7,0	3,0	2,0	3,0	1,0	3,0		1,0	3,3		1,0	4,0	7,0	5,0
	OF	2,8	8,0		5,5		3,0	2,0	3,0		4,2		4,0	4,8	3,5	6,0
	O	2,8	9,0	3,0	4,0		4,3		3,0		10,0				9,0	3,0
	H	3,4	10,0	2,7	4,0	3,0	4,5	1,0	2,6	1,0	8,0	3,0	1,3	5,0	4,5	3,5
	TL	3,7	11,0		4,3	4,0	4,0	2,5	4,0	6,0	7,7	3,0	2,3	3,5	3,5	3,7
	ρ (mean value)			0,41	0,01	0,82	0,50	-0,53	0,69	0,51	0,68	0,67	0,03	0,57	-0,01	0,21
	ρ (ranking)			0,67	-0,01	0,81	0,50	-0,56	0,67	0,40	0,71	0,70	0,08	0,66	0,18	0,26

Table 6 can seem somewhat heavy on information, therefore the correlation coefficient (ρ) was calculated, both between the average search order (ρ mean value) and the expected, sequential search order (ρ ranking). The mean value correlation indicates degree of relationship between the average search order and the participant's individual search order, and for Task 1 there is a strong positive relationship in 11 out of 13 cases. For the remaining two, P2 and P11, the most prominent difference is that they examine "Risk and Reward" before "Objectives". For Task 2, there is a strong relationship in 1, moderate in 6 and no relationship in 6 and 1 participant (P5) has a moderate negative relationship, meaning (s)he search for information in quite the opposite direction. Hence, as expected, among the participants there seems to be a similar way of searching for information in Task 1 but not in Task 2.

Next, the ranking correlation demonstrates the relationship between the order the information is presented, and the participant individual search order. For Task 2, this value bears little interest due to the lack of a natural sequential order of information items (see Appendix 6 for illustration). For Task 1 on the other hand, the findings are again that the same 11 out of 13 participants have a strong correlation to the sequential ranking i.e. the order of information items as they are presented. This points to the fact that the participants search for information in a sequential way.

To conclude, due to the limitations of the presentation format in the study material and the experiment design, the results from Task 2 are of little interest. However, Task 1 clearly indicates that the participants use a similar to each other search order and that they search for information in a sequential way. In other words, in a passive way as the information is presented.

4.2 LEVEL OF IMPORTANCE OF INFORMATION

Next, is to determine what information is most (and least) important. To find this, the method of triangulation is used in order to approach the question from three directions. The objective is to verify the data and be more confident in the result. Triangulation facilitates this validation through cross verification, i.e. different methods lead to the same result. In order to determine what information is most important, three aspects will be addressed:

1. Weight of self-estimated use of information item
2. Weight of number of lines attributable to the information item from verbal protocol
3. Weight of positive/negative remarks

Finally, by comparing the results, a comprehensive picture of the information items' importance is painted.
To start, each participant was asked to fill in and estimate their weight of use of information in the evaluations directly succeeding the respective tasks. These results are presented in Table 7.

Table 7. Self-estimated weight of use of information, presented in decimal form individually and as percantage for the mean value of all participants. Task 1 and 2 are presented separately.

Task 1 — Information Item

Participants	Objectives	Risk-Reward	Fees	Historical return	Practical info
1	0,02	0,20	0,30	0,45	0,03
2	-	0,05	0,20	0,75	-
3	0,15	0,20	0,40	0,20	0,05
4	0,40	0,25	-	0,25	0,10
5	0,20	0,15	0,30	0,30	0,05
6	0,30	0,30	0,05	0,30	0,05
7	0,40	0,20	0,15	0,20	0,05
8	0,20	0,20	0,10	0,40	0,10
9	0,10	0,40	0,40	0,10	-
10	0,25	0,35	0,25	0,15	-
11	0,15	0,20	0,50	0,15	-
12	0,10	0,10	0,40	0,40	-
13	0,20	0,30	0,20	0,20	0,10
Mean	**19%**	**22%**	**25%**	**30%**	**4%**

Task 2

	Investment focus	Fund Facts	Fees	Other	Type of security	Target group	Holding	Stats. P&R	Objective	Ten largest
1	-	0,10	0,30	-	-	-	0,06	0,40	0,04	0,10
2	-	-	-	-	-	-	0,05	0,90	-	0,05
3	0,05	0,05	0,30	0,05	0,20	-	0,05	0,25	-	0,05
4	0,05	-	-	-	-	0,05	-	0,80	-	0,10
5	-	0,05	-	-	-	-	-	0,90	-	0,05
6	0,20	0,10	-	-	-	0,30	-	0,30	-	0,10
7	0,20	-	-	0,05	-	0,15	-	0,60	-	-
8	-	0,05	0,20	0,05	0,15	0,05	-	0,30	0,10	0,10
9	-	0,10	0,20	-	-	-	-	0,40	-	0,30
10	-	0,10	0,20	-	-	-	0,40	-	-	0,30
11	0,10	0,15	0,40	0,10	0,05	-	-	0,10	-	0,10
12	-	0,03	0,20	-	0,03	0,03	0,03	0,50	-	0,20
13	0,10	0,10	0,05	-	0,10	0,20	0,05	0,10	0,20	0,10
Mean	5%	6%	14%	2%	4%	6%	5%	43%	3%	12%

Information Item — Participants

For convenience, a mean value of all participants is calculated for each of the respective information items. From Task 1, it is clear that there seems to be a somewhat even split of weight between Historical Return, Fees, Risk-Reward and Objectives, in that order, where Objectives are the least important and Historical Return the most. Perhaps unsurprisingly, there is a consensus regarding the supposed unimportance of Practical Information given a small percentage of the total weight. With a majority procedure, the same estimation can be seen; six participants had Historical Returns as the most important, five had Fees and four had Risk-Reward, three chose Objectives and non-estimated Practical Information the highest weight of information use. Note that three of the information items were given a 0, by one or more participants. Only Historical returns and Risk-Reward were given weight by all participants. From this it seems that the following ranking of the importance of information item is:

1. Historical Return
2. Fees
3. Risk-Reward
4. Objectives
5. Practical Information

In Task 2, there is one information item in particular that stands out, Stats. Performance & Risk, with a mean value close to half the estimated total weight, and 9 out of 13 participants estimated this is the most important. In addition, together with Ten Largest, all but one participant gave them weight. This is in contrast to the least important information items, where estimated weighted importance was given only by a handful of participants. The following ranking of importance of information items for Task 2 is thus:

Three most important:
1. Stats. Performance & Risk
2. Fees
3. Ten Largest

Three least important:
1. Type of Security
2. Objectives
3. Other

Table 8 presents the number of lines attributable to an information items, gathered from the codes in the verbal protocols. This is described along with a percentage of that same item to ease the comparison.

Table 8. Actual use of information, presented individually and across the information items and the two tasks. Information is presented as a frequency (f) i.e. number of lines attributable to that specific information item for each participant, and as weight of use (%) presented in decimal form. The mean value is calculated and presented as a percentage.

Task 1

	Objectives		Risk-Reward		Fees		Historical return		Practical info	
	f	%	f	%	f	%	f	%	f	%
1	18	0,16	19	0,17	35	0,31	37	0,33	3	0,03
2	10	0,08	17	0,14	30	0,24	61	0,49	7	0,06
3	37	0,45	12	0,14	21	0,25	10	0,12	3	0,04
4	101	0,49	37	0,18	17	0,08	45	0,22	8	0,04
5	62	0,42	33	0,22	24	0,16	22	0,15	8	0,05
6	48	0,40	26	0,21	18	0,15	26	0,21	3	0,02
7	30	0,33	17	0,19	20	0,22	22	0,24	1	0,01
8	65	0,33	50	0,26	41	0,21	26	0,13	14	0,07
9	27	0,29	15	0,16	33	0,35	18	0,19	0	-
10	100	0,50	31	0,16	33	0,17	35	0,18	0	-
11	33	0,35	15	0,16	32	0,34	15	0,16	0	-
12	123	0,46	23	0,09	52	0,19	65	0,24	7	0,03
13	32	0,30	24	0,23	21	0,20	21	0,20	8	0,08
Mean	35%		18%		22%		22%		3%	

Task 2

	Investment focus		Facts		Fees		Other		Type of security		Target group		Holding		Stats. Performance		Objectives		Ten largest		Dictionary	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
1	4	0,06	10	0,15	5	0,08	0	-	0	-	0	-	1	0,02	40	0,62	2	0,03	0	-	3	0,05
2	32	0,23	14	0,10	8	0,06	2	0,01	11	0,08	5	0,04	9	0,07	33	0,24	10	0,07	10	0,07	3	0,02
3	8	0,12	8	0,12	14	0,22	0	-	0	-	0	-	1	0,02	16	0,25	0	-	7	0,11	11	0,17
4	14	0,18	6	0,08	2	0,03	10	0,13	2	0,03	4	0,05	4	0,05	24	0,31	5	0,06	6	0,08	1	0,01
5	1	0,01	6	0,09	1	0,01	3	0,04	2	0,03	2	0,03	2	0,03	35	0,52	0	-	6	0,09	9	0,13
6	9	0,14	8	0,12	0	-	2	0,03	0	-	3	0,05	8	0,12	24	0,36	1	0,02	5	0,08	6	0,09
7	7	0,10	5	0,07	4	0,06	1	0,01	0	-	5	0,07	1	0,01	37	0,54	0	-	2	0,03	6	0,09
8	4	0,05	13	0,16	8	0,10	7	0,09	2	0,02	8	0,10	1	0,01	31	0,38	1	0,01	3	0,04	4	0,05
9	0	-	6	0,08	7	0,09	0	-	0	-	0	-	2	0,03	48	0,64	0	-	12	0,16	0	-
10	6	0,09	6	0,09	7	0,10	3	0,04	0	-	0	-	9	0,13	13	0,19	0	-	23	0,33	2	0,03
11	6	0,08	15	0,19	14	0,18	5	0,06	2	0,03	0	-	3	0,04	21	0,27	0	-	7	0,09	6	0,08
12	8	0,07	11	0,10	12	0,11	2	0,02	6	0,05	16	0,14	3	0,03	20	0,18	3	0,03	21	0,18	12	0,11
13	3	0,04	21	0,25	4	0,05	2	0,02	3	0,04	15	0,18	7	0,08	12	0,14	1	0,01	6	0,07	9	0,11
Mean	9%		12%		8%		4%		2%		5%		5%		36%		2%		10%		7%	

Looking at the actual use of information with the same procedure, a similar pattern appears in both tasks. For Task 1, there is the same somewhat even dispersion of estimated weight between all but Practical Information, however, a notable difference is that Objectives is now the most referred to information item, and Historical return second. Given that Objectives is the first information item presented in Task 1 might explain this difference between estimated and actual use of information. From this analysis, the following order can be seen:

1. Objectives
2. Historical Return *(same weight as Fees, though more participant referred to Historical Return the most)*
3. Fees
4. Risk-Reward
5. Practical Information

In Task 2 when looking at the lines in the verbal protocols, Stats. Performance & Risk is still the most referred to information item and Objectives, Type of Security and Other the least important. Fees are not as referred to as what was estimated in the previous, but Facts are instead. A difference this time, is that Dictionary was added when participants referred to the Dictionary that was provided along with the fact sheet, between 0 and 17% of the statements for each individual can be attributable to the Dictionary. All but one participant used it at some point. The order for Task 2 from this analysis:

Three most important:
1. Stats. Performance & Risk
2. Facts
3. Ten Largest

Three least important:
1. Type of Security
2. Objectives
3. Other

To see the correlation between the participant's estimated weight of use of information, and their actual use, a correlation test was performed. This is practical to identify the usefulness of the information. This is presented in Table 9.

Table 9. Spearman's test – non parametric correlation of the participants' self-estimated weight of information and actual use of lines in protocol.

Task 1		O	RR	F	HR	PI
	O	0,54				
	RR		0,12			
	F			0,63		
	HR				0,45	
	PI					0,65

Task 2		IF	FF	F	O	ToS	TG	H	St.PR	OF	TL
	IF	0,366									
	FF		0,532								
	F			0,844							
	O				0,136						
	ToS					0,16					
	TG						0,806				
	H							0,235			
	St.PR								0,356		
	OF									0,223	
	TL										0,504

However, simply referring to an information item does not deem it important. Why the third and last part is relevant: weight of positive/negative remarks attributable to an information item. This data was gathered from the verbal protocols and is presented on an aggregated level in Table 10.

Table 10: Aggregated data of positive and negative statements attributable to information items. The first row presents frequency (f) of number of lines in the verbal protocol that are either positive or negative statements, illustrated as (+):(-). This data has been cross-referenced according to information item (columns). The second and third row indicates weight of positive and negative statements in decimal form. And the last row presents the weight of total positive or negative statements, presented as a percentage.

Task 1

Information Item

	Objectives	Risk-Reward	Fees	Historical return	Practical info
f	62:28	28:31	41:68	47:73	1:2
% (+)	0,35	0,16	0,23	0,26	0,01
% (-)	0,14	0,15	0,34	0,36	0,01
Total	**24%**	**15%**	**29%**	**31%**	**1%**

Task 2

Information Item

	Investment focus	Facts	Fees	Other	Type of security	Target group	Holding	Stats. Performance & Risk	Objectives	Ten largest
f	15:10	9:4	13:19	11:1	0:0	7:4	6:2	76:65	1:0	18:14
% (+)	0,10	0,06	0,08	0,07	-	0,04	0,04	0,49	0,01	0,12
% (-)	0,08	0,03	0,16	0,01	-	0,03	0,02	0,55	-	0,12
Total	**9%**	**5%**	**12%**	**4%**	**0%**	**4%**	**3%**	**51%**	**0%**	**12%**

Looking at Table 10, Historical Return is again perceived as the most important, followed by Fees and Objectives. Risk-Reward does not seem to induce as many positive nor negative statements as was expected. However, for Practical Information it is again the least important with only 1 % of all positive and negative statements. From this analysis the order is as follows:

1. Historical Return
2. Fees
3. Objectives
4. Risk-Reward
5. Practical Information

In Task 2, Stats. Performance & Risk produced the most positive and negative statements, secondly Ten Largest and Fees. The lest positive or negative statements attributable to an information item is Type of Security, followed by Objectives, Holding and Other.

Three most important:
1. Stats. Performance & Risk
2. Fees together with Ten Largest

Three least important:
1. Type of Security
2. Objectives
3. Holding

Another relevant variable to look at would have been time spent on each information item. However, it was practically not possible to collect this data during the experiment. It could have been done while transcribing, however, was considered too subjective of an interpretation. Furthermore, within the time frame of this thesis, the number of lines, instead of time spent per information item, was to be considered equivalent, hence lines instead of time is the option used.

In conclusion, while taking into account all three methods it is apparent that for Task 1, the most important information item is Historical returns, and the least important being Practical Information. Regarding Objectives, Fees and Risk-Reward there are mixed signals, although it seems that Fees are more important than Objectives, which is more important than Risk-Reward. For Task 2, Stats. Performance & Risk is the most important information item, followed by Fees and Ten Largest. The least important information items are Type of Security, Objectives, Other. Most importantly there seems to be a pattern in the weight of use and importance of information items.

4.3 DOMINANCE STRUCTURING

From applying the code system used by Svensson (1989), the division by Montgomery & Svensson (1989) along with the division by Estrada et. al. (1997) this analysis clearly indicate a presence of dominance structuring.

Starting with the division by Estrada et. al. and the three phases of information seeking, finding a promising alternative and decision, split across the decision-making process. This process is illustrated in Figure 9.

Task 1

Task 2
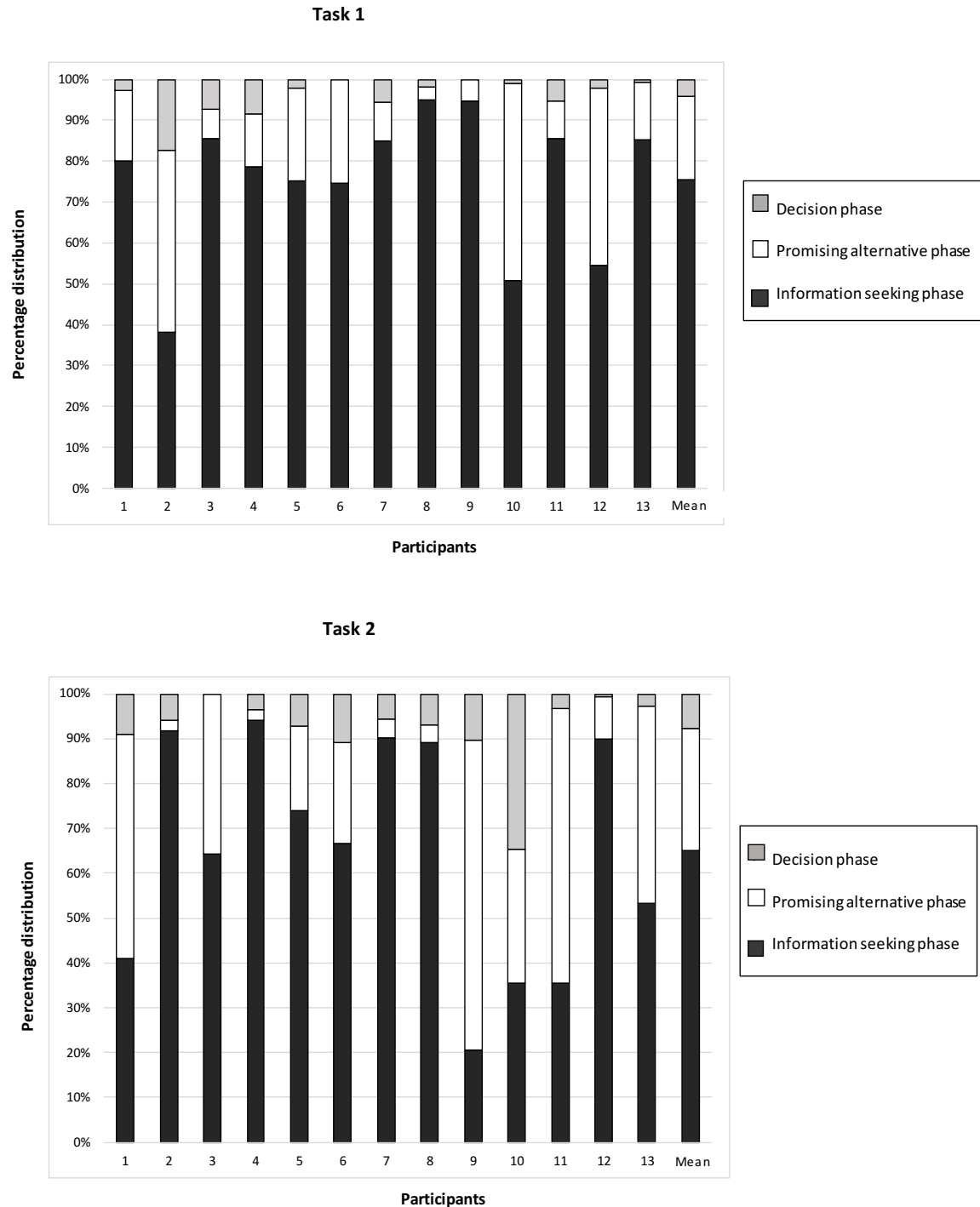
Figure 9. Graphical illustration of decision-making process according to the division by Estrada et. al. (1997)

Figure 9 shows that in Task 1, all but one (P2) spent less than 10 % on the decision phase and P2, P10 and P12 spent between 40-50% of their protocol on the promising alternative. P2 starts comparing while examining the material the first time, important to note is that the first breaking point does not usually occur when the participants says something positive about the promising alternative while looking at it the first time, however, with P2, (s)he made obvious comparison throughout the rest of the protocol, in contrast to the other participants who started fully comparing after having viewed all alternatives. P10

starts with question two i.e. how to invest SEK 70 000 instead of question one and answers question one right by the end, while P12 is having a hard time to decide (longest protocol in entire study).

In Task 2 on the other hand, four participants found a promising alternative before half the protocol had passed P9 can be viewed as an outlier as (s)he has found a promising alternative 20 % into the decision-making process, and spent almost 70% on figuring if it was the best alternative. This was the same case as with P2 in Task 1, that (s)he starts comparing while still examining the material the first time. P10 again, starts with question two instead of question one and P11 is also noteworthy as (s)he, after having examined the fund (s)he chooses, starts verbalizing negative comments regarding the following four funds (no positive or negative comments prior).

The following Table 11 show the same division according to Estrada et. al. (1997), where the statements (or lines in the verbal protocol) has been coded as described in the Method chapter. On an aggregated level there is a clear predominance in the second (promising alternative) and third phase (decision-making) for the fund that is later chosen as the best, compared to the first phase (information seeking). In Task 1, for all participants in phase 2+3 there are more positive than negative statements, as well as throughout the protocol (phase 1+2+3). On an individual level, the sum of statements when comparing phase 2+3 to phase 1 are positive, for all but P3 and P6 who have a negative sum of statements. To exemplify: P3 = (5-0) – (11-1) = -5. This indicates that for those two participants there were more positive and/or less negative statements in phase 1 compared to phase 2+3.

The same pattern can be seen in Task 2, where on an aggregated level, there are more positive than negative statements, on an individual level this is true for all 13 participants. Again when comparing phase 2+3 with phase 1, there is one outlier, this time P12, who has a negative sum of statements.

Table 11. Dominance structuring according to Estrada et. al.'s (1997) division. Number of positive and negative statement are illustrated as (+):(-).

Task 1

Participant	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
Best fund	B	B	G	C	F	C	D	A	A	F	B	B	F	
Phase 1	7:4	8:1	11:1	14:5	2:3	4:1	4:2	5:6	6:3	5:9	12:7	23:11	9:6	110:59
Phase 2	7:1	13:4	3:0	7:3	7:7	9:7	3:3	2:0	4:1	33:20	5:0	32:23	5:2	130:71
Phase 3	4:0	11:0	2:0	6:0	5:0	X	6:0	3:0	X	4:0	6:0	5:0	2:0	54:0
Phase 1 + 2+3	18:5	32:5	16:1	27:8	14:10	13:8	13:5	10:6	10:4	42:29	23:7	61:34	16:8	294:130
Phase 1	7:4	8:1	11:1	14:5	2:3	4:1	4:2	5:6	6:3	5:9	12:7	23:11	9:6	110:59
Phase 2 + 3	11:1	24:4	5:0	13:3	12:7	9:7	9:3	5:0	4:1	37:20	11:0	38:23	7:2	184:71
Σ Statements	7	13	-5	1	6	-1	4	6	0	21	6	3	2	

Task 2

Participant	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
Best fund	B	B	C	B	F	A	B	F	A	F	C	B	C	
Phase 1	1:0	10:6	13:2	1:3	4:6	3:1	2:0	4:9	1:3	3:3	1:1	22:11	7:4	72:49
Phase 2	1:1	1:0	20:1	2:0	1:2	8:2	1:1	2:0	13:16	10:6	19:1	6:2	8:7	92:39
Phase 3	3:1	10:0	X	4:0	5:0	4:2	4:0	7:0	9:0	6:9	2:0	2:0	4:0	60:12
Phase 1 + 2+ 3	5:2	10:6	33:3	7:3	10:8	15:5	7:1	13:9	23:19	19:18	22:2	30:13	19:13	224:100
Phase 1	1:0	10:6	13:2	1:3	4:6	3:1	2:0	4:9	1:3	3:3	1:1	22:11	7:4	72:49
Phase 2 + 3	4:2	11:0	20:1	6:0	6:2	12:4	5:1	9:0	22:16	16:15	21:1	8:2	12:7	152:51
Σ Statements	1	7	8	8	6	8	2	14	8	1	20	-5	2	

Using Montgomery and Svensson's (1989) more simple division, where they divided the protocol in half, there is again a predominance in the second half of the protocol compared to the first. This division and the results is illustrated in Table 12.

For Task 1, on an aggregated level, there are more positive than negative statements in Part 2 compared to Part 1. Furthermore, on an individual level, this is true for all 13 participants. In Task 2, there are also more positive than negative statements in total for Part 1 compared to Part 2. And on an individual level, this is also the case for 12 participants, the exception is P10. This can be explained by an early finding of a promising alternative and a long decision phase where (s)he has a moment of uncertainty regarding the choice.

Table 12. Dominance structuring according to Montgomery & Svensson's (1989). Number of positive and negative statement are illustrated as (+):(-).

Task 1

Participants	1	2	3	4	5	6	7	8	9	10	11	12	13	Total	
Best fund	B	B	G	C	F	C	D	A	A	F	B	B	F		
Part 1	3:4	11:2	6:1	10:5	1:2	4:1	4:1	3:3	0:2	5:9	4:4	22:9	6:2	79:45	124
Part 2	16:1	23:3	10:0	17:3	13:8	9:7	9:4	7:3	10:2	37:20	19:3	37:25	10:6	217:85	302
Total	**19:5**	**34:5**	**16:1**	**27:8**	**14:10**	**13:8**	**13:5**	**10:6**	**10:4**	**42:29**	**23:7**	**59:34**	**16:8**	296:130	

Task 2

Participants	1	2	3	4	5	6	7	8	9	10	11	12	13	Total	
Best fund	B	B	C	B	F	A	B	F	A	F	C	B	C		
Part 1	1:1	3:4	7:2	0:1	1:2	1:0	0:0	1:5	7:10	10:6	6:2	11:6	5:4	53:43	96
Part 2	4:1	18:2	30:2	7:2	9:6	14:4	7:1	12:2	16:19	9:11	16:0	19:7	14:7	175:54	239
Total	**5:2**	**21:6**	**37:4**	**7:3**	**10:8**	**15:4**	**7:1**	**13:7**	**23:29**	**19:17**	**22:2**	**30:13**	**19:11**	228:107	

In summary the above results point to the existence of dominance structuring within the participants' decision-making process. This has been shown by the existence of dominance structuring rules and a promising alternative. Furthermore, the division of the protocols was done first as inspired by Estrada et al. (1997) and second in accordance to Montgomery and Svensson (1989). Both methods yielded the same indication, though Estrada et. al, gives a more comprehensive view of the decision-making process than the simpler method by Montgomery and Svensson (1989). However, given the subjective nature of determining the breaking points for Estrada et. al's method, compared to splitting a protocol in two equal parts, a combination of the two methods is to be preferred.

4.4 DECISION – IMPACT OF PRESENTATION FORMAT

The following section is dedicated to the decisions the participants made, to investigate the impact of the different presentation format on the decision. The first question regarded: Which fund do you think is the best? And second, how would you like to invest SEK 70 000? Figure 10 shows a graphic depiction of the weight of all participants' total investments across each fund for both Task 1 and 2. In Table 13 this information is presented across each participants and the two questions. Both the amount of money the participant chose to invest in each fund and which fund they though was best.
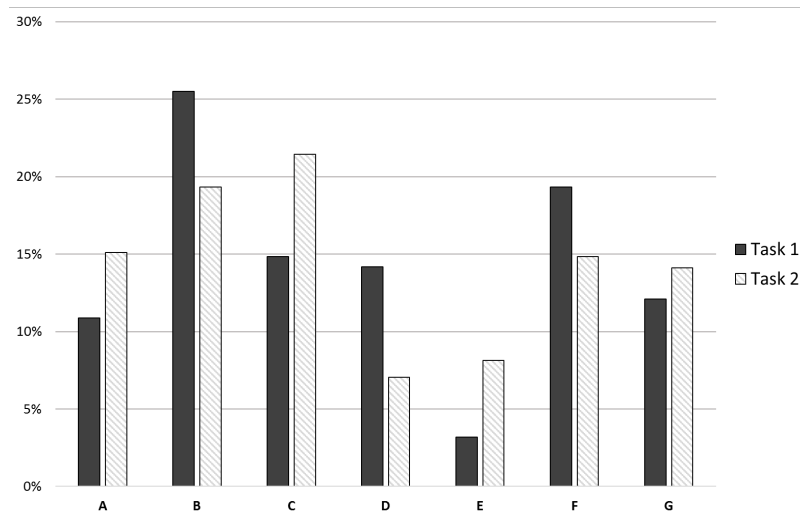
Figure 10. Graphical presentation of the participants' total investments in each fund, split between Task 1 and Task 2.

From Figure 10 it seems that the participants invested in a similar way in both tasks, there seems to be a similar trend, with one big hump across Fund A, B, C and D and a small hump across E, F and G. Moving on to Table 13 for more details regarding the participants' choices.

From Table 13, Task 1 it can be seen that four participants thought that B was best, followed by three for F, and two participants thought A and C respectively. The other funds had none or one vote. Most money was invested in B and F, and by most participants (8). The least money was invested in Fund E where only two participants P1 and P3 invested. In total, 11 participants invested in between three to five different funds, only one participant did not to diversify and invested all money in one, fund B.

In Task 2, five participants thought B was best, followed by three participants who found C and F respectively to be the best. The other two participants, P6 and P9, thought A was best. For this task, most money was invested in Fund C, followed by B. The least in D this time. All but one participant diversified the investment in three or more funds, the exception being P2 who again invested only in B.

Table 13. Final decision, presented individually and in total across the sample, investment in thousand SEK and "best" fund choice indicated with dotted lines.

		Participants													Total (T SEK)	%
		1	2	3	4	5	6	7	8	9	10	11	12	13	(T SEK)	%
Task 1	A					20			20	25	20		14		99	11%
	B	21	70		15			15		10	10	35	56		232	25%
	C			15	15		50	15	10	15				15	135	15%
	D	14				20		40	40	15					129	14%
	E	14		15											29	3%
	F	21				20	30	20		5	30	10		40	176	19%
	G			40		20					10	25		15	110	12%
Task 2	A					20	40	10	20	30			17,5		137,5	15%
	B	21	70		20			30					35		176	19%
	C			30	20			10	10	10	22,5	35	17,5	40	195	21%
	D	14				30				20					64	7%
	E	14		20	10			10	20						74	8%
	F				20	20		30			30	20		15	135	15%
	G	21		20		20		10		10	17,5	15		15	128,5	14%
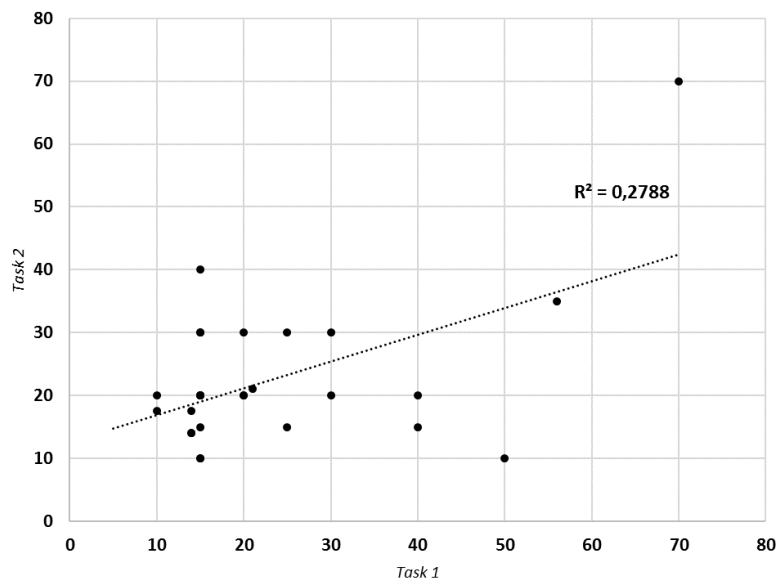
Figure 11. Final decision correlation, with a linear regression line where R^2 equals 0,27 and correlation coefficient 0,53.

Comparing the two tasks, if the investments are significantly different, a correlation was made and plotted in Figure 11. The correlation is significant, meaning the tasks are correlating to a point that it cannot be determined that they are not the same. Although, the linear regression above shows that R^2 is very low, hence the determination of the correlation is low. What remains is that out of all 91 possible investments (7*13), only 42 are exactly the same, both amount and fund. Broadening the definition of

"same", 64 of 91 are the same i.e. same fund invested in in both tasks, disregarding amount. With this, around half of the investments are the same. Furthermore, only one out of the 13 participants make the exact same investment in both tasks.

4.5 REPLICATION OF BOUWMAN ET. AL. (1987)

To paint a picture of the different activities in the decision-making process, what it looks like and to compare this study with previous research, the verbal protocols were coded according to Bouwman et. al. (1987). The activity codes were grouped, replicating Bouwman et. al's (1987) investigation, and the results are shown individually per participant in Table 14 and an average across the sample in Table 15.

Individually, in Table 14 Task 1, nine participant spent a third or more of their activity on Reading & Processing information. The other 4 participants who spent less time Reading & Processing, (P3, P7, P10 and P12) spent more than 40% on Reasoning. The activity Memory codes were limited ranging between 0 and 4%.

For Task 2, 11 participants spent more than a third on Reading & Processing, whereas P1 and P3 spent the majority of their activity on Reasoning. Memory codes are still limited; five participants did not show any sign of that activity at all.

Table 14. Activity codes according to Bouwman et. al. (1987) per participant presented in decimal form.

	Participants												
Activity Task 1	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Read & Process information	0,44	0,33	0,26	0,36	0,43	0,45	0,21	0,48	0,4	0,28	0,39	0,19	0,48
Goal formulation	0,2	0,12	0,08	0,09	0,08	0,1	0,15	0,08	0,13	0,08	0,13	0,21	0,09
Comment	0,18	0,19	0,22	0,07	0,1	0,16	0,13	0,04	0,13	0,09	0,14	0,13	0,13
Reasoning	0,14	0,33	0,4	0,44	0,35	0,26	0,41	0,39	0,31	0,48	0,24	0,4	0,25
Memory codes	-	0,01	0,01	0,02	0,01	-	0,01	-	-	0,04	0,02	0,03	0,01
Decision	0,04	0,01	0,04	0,03	0,03	0,02	0,09	0,02	0,02	0,03	0,09	0,04	0,04
Activity Task 2													
Read & Process information	0,30	0,33	0,05	0,45	0,39	0,36	0,39	0,47	0,51	0,33	0,52	0,37	0,42
Goal formulation	0,22	0,11	0,13	0,02	0,11	0,05	0,07	0,08	0,07	0,09	0,02	0,17	0,04
Comment	0,14	0,23	0,19	0,26	0,20	0,18	0,23	0,08	0,02	0,12	0,15	0,08	0,08
Reasoning	0,33	0,24	0,57	0,20	0,21	0,34	0,29	0,32	0,35	0,39	0,23	0,30	0,39
Memory codes	-	0,02	0,04	0,01	0,04	0,02	-	-	-	0,05	-	0,04	0,04
Decision	0,02	0,07	0,03	0,06	0,06	0,04	0,03	0,05	0,05	0,03	0,08	0,04	0,05

Table 15 indicated the same activity codes as in Table 14, though aggregated across the sample. According to the information in Table 15, Task 1, the participants spent most of their activity on Reading & Processing information (36%), closely followed by Reasoning (34%). Next, almost equally on Goal Formulation and Comments, very little on Memory Codes (1%) and Decision (4%). Task 2, shows very similar results.

Comparing these results with Bouwman et. al. (1987), the results are somewhat similar. Though the participants in this study spend more time Reasoning and less on Reading & Processing. The total amount of codes is comparable 3677 to 4874, the number of participants also, 13 and 12. However, the main difference is the use of experts in their case, whereas in this study non-experts were used.

Table 15. *Activity codes according to Bouwman et. al. (1987) comparison between the studies.*

	Activity	f	MIN	MAX	MEAN	Bouwman et.al (1987) MEAN	f
Task 1	*Read & Process information*	805	0,19	0,48	0,36	0,42	2060
	Goal formulation	277	0,08	0,21	0,12	0,1	499
	Comment	277	0,04	0,22	0,13	0,19	929
	Reasoning	818	0,14	0,48	0,34	0,24	1177
	Memory codes	35	-		0,04	0,01	0,04	209
	Decision	80	0,01	0,09	0,04	x	x
	Total	2292			1		4874
Task 2	*Read & Process information*	491	0,05	0,52	0,37	0,42	2060
	Goal formulation	153	0,02	0,39	0,09	0,1	499
	Comment	204	0,02	0,26	0,15	0,19	929
	Reasoning	441	0,2	0,57	0,32	0,24	1177
	Memory codes	30	-		0,05	0,02	0,04	209
	Decision	66	0,02	0,08	0,05	x	x
	Total	1385			1		4874

In conclusion, nine participants in Task 1 and 11 participants in Task 2 devoted themselves to Reading & Processing followed by Reasoning. Some activity was spent on Goal formulation and Commenting and very little on Decision and Memory Codes. Similar results have been obtained by Bouwman et. al (1987), the main difference in this study is a lower focus on Reading & Processing and more on Reasoning.

4.6 INDIVIDUAL CHALLENGES – QUALITATIVE

Within the qualitative section of this study, other behavior not captured by the quantitative data is presented. All quotes are translated from Swedish to English using the tool Google Translate, when results did not make sense they were subjectively translated.

4.6.1 PERCEIVED CHALLENGES – TECHNICAL LANGUAGE

All 13 participant got stuck on technical words in the study material at some point during both tasks and many also commented on the technical language, that it was hard to understand what was written. This was a general problem, meaning there was no fund or information item in particular that was difficult but the language in general. A selection of comments made by the participants is presented below:

"But anyway, there's clearly many terms that I don't understand that I skip when I read."
- P3, general comment

"Oh god, it's like reading a different language..."
- P5, general comment

"So much information! I would need a copy writer who could write this a little more accessible (understandable)."
- P6, general comment

"'*The fund holds liquid assets.'... Well, you may wish that they had been a little bit kinder in explaining these words.*"
- P9, information item: Risk-Reward (RR), Fund E, Task 1

*"I think this is all *** Greek… Ehm..."*
- P10, general comment

"Shouldn't anybody be able to buy the fund? It's not that you have to be fluent in a difficult language for that? That's what I think."
- P12, general comment

P2 was clearly annoyed and made the following comments:

"Ehm… It's almost ridiculous this, they try... They try… They don't want you to understand what it says!"

"I'm really annoyed by the fact that it says 'allocation', because I don't know what it means. And it seems to be an important word, 'an allocation towards the Swedish stock market'? Fools…" (Information item: Target Group (TG), Fund B, Task 2)

"Still I do not understand exactly what they mean by: 'The investment objective is to achieve long term capital growth.' Can they be so twisted that they write that instead of writing: 'Our goal is to get the fund to grow, to be worth more'?" (Information item: Investment focus (IF), Fund G, Task 2)

"Why do you choose the term 'investment horizon'? It makes me annoyed too. Why is it not just: 'For those who have planned to save for 5 years without touching the money.' So that anyone can understand without thinking about it!?" (Information item: Investment focus (IF), Fund C, Task 2)

In Table 16 a list of words that participants expressively stated that they did not know is presented:

Table 16. List of words or expressions participants expressively stated that they did not know or understand

1	Total cost share	20	Dividend
2	Sharpe ratio	21	A-series
3	Benchmark index	22	Running costs
4	Eurozone interest rates	23	Long-term investment horizon
5	Nasdaq OMX	24	OECD-countries
6	"Fund fee in %, difference purchase and sales price"	25	Allocation
7	Investment horizon	26	Fixed income investment
8	"...to follow the trend" (fund objective)	27	Performance-based fees
9	Money market fund	28	Treasuy Bill index
10	Money market instruments	29	Warrant exchange rate
11	Derivative instruments	30	Fund days
12	Securities	31	Average maturity
13	Capital growth	32	Real Estate exposure globally
14	Fund share	33	"Sweden short" (Bond fund)
15	Issuers 0-1 year	34	Share weight
16	Neutral share weight	35	"The Fund does not pay dividends"
17	Derivatives risk	36	Transferable securities
18	Interest rate instrument	37	Investment grade loan
19	Stadshypotek, Landshypotek, Swedish bond, EMT (from ten larges investments)		

4.6.2 PREFERRED INFORMATION

Of the 13 participants, 10 made specific comparative comments regarding the tasks that they preferred, a presentation format over the other.

"Well, I have to say that the Swedish Pension Agency gets plus points for their presentation format of value development, because it's much easier to follow this one here than a bar chart, which was on their own ... Eh... What's it called? Well, fact sheets."
- *P3*

"It was much easier on the other (Task 1) [...] The papers explained a little more what they do. Here I see the facts, see numbers and make a decision after that... I don't know if I can handle it? It's really difficult. I have no idea."
- *P4*

Commentating on the presentation format and their decision-making, how they aim to solve the tasks by answering the two questions (i) Which fund do you think is best? and (ii) How would you invest SEK 70 000? Two different strategies became apparent, weather they preferred and sough out information that was in numbers, focusing on graphs or they preferred to read the text. A list of statements, preferred information type and presentation format is presented in the table below:

Table 17. List of statements per participant preferred type of information and task.

Participant	Statements	Preferred information	Preferred Task
1	*I check developments and costs, ehm.. not so much more actually […] What I… what for me, who is not very knowledgable in this, ehm the figures says more regarding costs and development.*	Numbers	1
2	*So now I just check statistics and the previous performance och compare that, since none of the other (information items), what is written here tells me anything.*	Numbers	1
3	*It difficult to compare and have all numbers in my head, but if I try to get an overview, then all these are 5, two are 6 and one 4 and one is 1… With differing fees… If I were to choose just one, that I think is best…*	Numbers	2
4	*[…]Meaning I will go with my feelings from reading the text a lot more than what… what is actually written; facts in money and percentage and stuff like that. So then I will mostly go with my feeling.*	Text	1
5	*So it feels again like the only thing I can base my decision on is what is acually written, that I sort of can, well ordinary language. [...] When it comes to this statistical development, risk thing (graph), I don't understand a thing from what's just written in numbers.*	Text	1
6	*Regaring investing my money, then I still want to invest some in C, since they, well they've had good historical returns, they invest ethically, but it also says here that it is for the "active investor" which could be a fun experiment for me on the "fund market" to see if I think it is fun?*	Text	No comment
7	*Ehm, this one I think was difficult to understand. Ehm, I don't think I understand this graph at all. (Task 2) [...] I think it was good that they have Target Group at least, and that they have some sort of list here with the companies they invest in.*	Text	1
8	*Okey, so now I have read all this… Well, HOW should I decide which one is best? I can only base it on... what has been written here…? I quickly look at the graphs as well, just because.. I don't know why I do it? I just feels like I should, because.. Even if it says here in the description box, that you shouldn't look at the graphs, because it doesn't say anything.. but.. It can be interesting.. Anyway..*	Text	No comment
9	*As usual, when I don't quite get it I try to look at figures a bit, trying to understand how it works...*	Numbers	2
10	*Well, this was easier to read in a way than the other papers (T2 compare T1) [...] Ehm, spontaniously I like.. I like this little Statistics, performance and Risk (graph), there's a lot on development and percentages per year, you get that right away..*	Numbers	2
11	*Hmm… Okey, ehm.. Well, this feels more complicated to read, just like that… There a bit more numbers. There's more information..*	Text	1
12	*Allright, okey, there's a lot of papers, that's my first though. Who can bother to read all this text. Ehm, to get into all this information for a normal person who just wants to save 70 000 on the bank [...] it's absurd!*	Text	2
13	*Does it matter to me? I can't do any computation anyway, or do any type of callculation of what would be best. I am going to have to go with my gut feeling.*	Text	No comment

4.6.3 FINANCIAL LITERACY

Level of financial literacy was tested during the first warm-up step in the experiment (See Appendix 2 for specification of questions). Since the sample is small, it is not possible to make general statements, although it seems that the sample is on level with the Swedish national average level (FI, 2015). From the 13 participants, seven answered all three questions correctly, and the sample was divided in two, Higher Financial Literacy (HFL) and Lower Financial Literacy (LFL), with seven and six participants accordingly.

The two groups' different investments are illustrated in Figure 12 as percentage of investment across the funds. It seems as though HFL are more dispersed across all funds, and LFL have clearer preferences, where they invest more than 50% of the capital in two funds, B (33%) and F (22%).
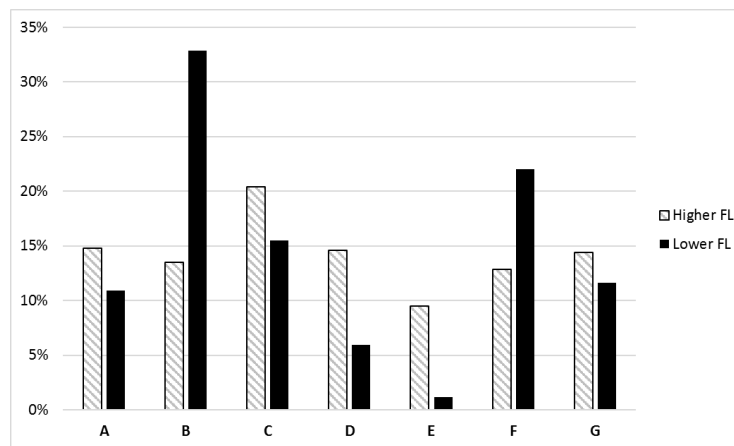
Figure 12. Investments in each fund, both tasks combined. A division of participants' investments in two groups according to level of financial literacy (Higher and Lower).

4.7 EVALUATIONS SUCCEEDING THE TASKS

Having finished each task, the participants were asked to fill in evaluations regarding their experience and feelings about the task. See Appendix 4 regarding the design of the evaluation form. Response options were expressed literally in the evaluation form but for the convenience of this analysis translated to a value ranging from low 1 to high 5. Relevant questions for the thesis is presented and discussed below.

The first question "Did you feel motivated to participate in the experiment?" and second "How realistic did you experience the case?" are important for the method in this study. All participants stated either a 4 or 5 on question 1, resulting in an average value of 4,6 for Task 1 and 4,5 in Task 2. The second question averaged 4,2 for both tasks, where P5 gave it a 3 and P6 gave it a 2, with the motivation that (s)he did not find it probable to be asked to invest that amount of money (SEK 70 000). The otherwise high values indicate that the participants were both motivated to participate and found the task realistic.

Question four regards the information they received to base their decision on. For Task 1 the average was 3,8 and Task 2 it was 3,3, which indicates a preference for the KIID-sheets rather than the web-format. When asked in the following question five, what it was they were missing, most statements regarded language and a lack of understanding.

"Do not know exactly. An understanding of what I am looking at." - P2

"I am missing simpler language" - P9

Next, the participants were asked what they thought of the task, how difficult it was. And Task 1 averaged 3,8 whereas Task 2 averaged 3,5, which can be explained by P1 and P8 who both indicated a 5 in Task1 and and a 2 for Task 2. Overall, the tasks were perceived as fairly challenging.

Question seven regarded the participants own estimation of level of intuition/feeling in their decisions making, as opposed to logical reasoning. For Task 1, nine participants indicated a 4 or 5 i.e. high levels of intuition/feeling, in Task 2 the same question had seven participants indicate a 4 or 5. Overall, a majority estimated their level of intuition/feeling in their decision-making process to be somewhat high or high.

The following two questions, eight and nine, regarded their feelings about their choice, "Are you satisfied with your choice?" and "Do you feel confident in your choice?". Generally, the participants are satisfied with their choice, no one indicated below 3, and the average across the sample was 3,8. However, they felt less confident in their choice, an average of 2,5 where only two participants (P1 and P3) stated a value above 3. Minor differences +/- 0,1 between the two tasks.

Finally, the participants were offered to leave their own comments, two examples are presented below:

"Fun, I feel keen to start saving money in funds!" - P10

"Hard to choose when you are not familiar, a but unclear, do not know exactly what I have chosen" - P12

4.8 SUMMARY RESULTS

With the research questions as a starting point a short summary of the results is presented before moving on to a discussion. The first three research question regarded how individuals make decisions when choosing between a set of funds, namely:

1. How do individuals search for information?
2. What information is important?
3. Can the theory of dominance structuring be applied to describe the process?

In the section regarding information search strategies, the participants search behavior can best be described as sequential, passively absorbing the information as it is presented. Further on, from the search order, it follows that they seem to search for and use the same information. In regards to information item's significance, triangulation was used to determine the weight of importance. In Task 1, the most important information item was Historical Returns, and the least important being Practical Information. Regarding Objectives, Fees and Risk-Reward there are mixed signals, although it seems that Fees are more important than Objectives, which is more important than Risk-Reward. For Task 2, Stats. Performance & Risk is the most important information item, followed by Fees and Ten Largest. The least important information items are Type of Security, Objectives, Other. The section regarding dominance structuring as theory of explaining the decision-making process was presented and the results show an indication of dominance structuring using both Estrada et al.'s (1997) and Svensson & Montgomery's (1989) method.

The fourth and final research question regarded:

4. Does presentation format influence the decision-making process?

This question was addressed in the section regarding the participants' actual choice, what fund they thought was best, and how to invest SEK 70 000. In Task 1, apart from the fact that none though E was best, all funds had at least "one vote". In Task 2, on the other hand, the choice was a bit less mixed and 4 out of the 7 funds chosen, were favored. In both tasks, all funds are invested in. By comparing Task 1 and Task 2, this study indicates that presentation format do influence decisions when non-experts choose between a set of fund alternatives. The section in Results presenting the final choices, show a clear difference between Task 1 and Task 2, and by a strict definition, only 42 of the 91 possible investment choices are the same. Although it is not significantly different choices, this level of determination is low.

Next, the results were compared to the research by Bouwman et. al. (1987), painting a picture of the different activities in the decision-making process and the similar results, furthermore strengthened the validity of this study. Lastly, a short passage in the Results chapter was dedicated to present qualitative data. The different participants, their decision-making and challenges, together with a list of words the participants encountered and did not understand. Financial literacy levels from the warm-up exercise were briefly touched upon and presented, although this was not a primary concern of the thesis and the sample is again very small to see clear indications.

Table 18. Summarizing presentation of participants, qualitative results.

Participant	FL	Preferred Task	Preferred format	Overall difficulty 0-5	Overall confidence 0-5	Overall satisfaction 0-5
1	H	1	Numbers	3,5	4	4,5
2	L	1	Numbers	3	1,5	3,5
3	H	2	Numbers	3	4	4
4	L	1	Text	4	2	3,5
5	L	1	Text	4	2	3
6	H	N/C	Text	3,5	2	3
7	H	1	Text	4	2,5	3
8	H	N/C	Text	3,5	2,5	4
9	H	2	Numbers	2	2	4
10	L	2	Numbers	4	3,5	5
11	H	1	Text	4	3	3,5
12	L	2	Text	3,5	1,5	4
13	L	N/C	Text	4	3	4

5. DISCUSSION

The discussion chapter is structured as follows, to start, the three first research questions are addressed under "How do individuals make decisions when choosing between funds?" following that, the fourth research question on presentation format "Does presentation format influence the decision?" will be addressed and discussed along with additional findings. Next, implications of the results for policy, then shortly on contributions and future research. Thereafter limitations are described, finally closing comments linking back to the introduction will end the thesis.

5.1 HOW DO INDIVIDUALS MAKE DECISIONS WHEN CHOOSING BETWEEN A SET OF FUNDS?

The majority of the participants in this study had a distinct sequential search behavior, meaning that they passively examine information as it is presented, to further exemplify; for each new fund they examined they usually started at the top of the page with the first headline "Objectives" and proceeded to the second "Risk-Reward" and so on until "Practical Information" the last headline of the second page. Then moving on to the next fund and repeated the same search behavior. The results are in line with previous research regarding non-experts, given a lack of experience in processing financial information and also a lack of knowledge within the topic area could explain the absence of a clear search goal for most participants and fairly long time spent (when comparing with other studies e.g. Nordemalm and Pütz (2004). Following this, in terms of using and searching for information items, the results show that the participants search for and use mostly the same information items. From both Task 1 and Task 2 it is suggested that the participants to a large extent search for and use the two information items; Historical Returns and Fees, as put forward as important by Carhart (1997). However, looking at the participants' final decisions the results vary, all but one fund is chosen as the "best" in Task 1, and investments are spread out across all funds. A conclusion is thus, that the same information items have different meaning to the participants.

As for describing the decision-making process, the results show an indication concerning the existence of dominance structuring and for some participants it occurred during a considerable part of each task. A promising alternative was found varyingly early and for those participants who found it during the first half of the protocol it meant that during the entire second half they had a favorite. For those individuals the decision-making process can thus be described as comparative starting before they had examined all options a first time. This is in contrast to other participants, where the comparison started after the last fund, G, had been examined. A fair assumption is that this (early comparison) lead to information distortion, as can be seen with P11 in Task 2, where (s)he is considerably negative towards all preceding funds after having found a promising alternative. In addition, funds with equivocal information could be used to strengthen an opinion regarding a fund, for example low fee-alternative B, with good historical returns but high risk, could be used to justify the existence of fees in a fund like G, while still rejecting fund choice E, for the same reason. A sort of confirmation bias, selectively choosing what information is important (Wärneryd, 2001). Furthermore, it seems that dominance structuring occurs regardless of presentation format, thus it seems to be a natural and unconscious part of the decision-making process. The somewhat varying results between the tasks has most likely to do with the fact that participants scrutinize the funds more carefully in Task 1 than 2, which is assumed to happen for three reasons; for the second task a certain learning curve is expected, some participants may have got tired and impatient to be done and also, there is a lot less information in Task 2.

The different interpretation of the same information, and the occurrence of dominance structuring which can be viewed as a systematic error, means that the participants' decision-making is thus not compatible with the traditional idea of "rational" behavior. These results would thus support the idea for choice structure architecture, and the idea that policy makers need to act in a way to help individuals make decisions.

5.2 DOES PRESENTATION FORMAT INFLUENCE THE DECISION?

By comparing Task 1 and Task 2, this study indicates that the participants' decision was influences by the presentation format, both when choosing the best fund and when investing SEK 70 000. Although the information items on the two tasks varied slightly, the main information (although in different format) was presented in both tasks i.e. risk, historical return, objectives, fees and other practical information. Traditional economic theory, assuming fully "rational" behavior would stipulate that since the underlying asset is the same i.e. the same seven funds in both tasks presented in the same order, the participants should make the same choice and have a preference consistency. Yet only one out of the 13 participants make the exact same investment. Following the definition of a non-expert by Shanteau et al (2002), a low ability to discriminate and be consistent, can help explain these results and further emphasize non-experts' cognitive limitations. Yet, from presentation format research these differences are not as surprising, and further supports the recent prescriptive body of research for an active design of task structure for decision-making.

Hence, an implication for policy makers would be to optimize the presentation format, and thus a higher degrees of relevant information can be processed leading to higher accuracy in decision-making (Beach & Mitchell, 1978; Payne, 1976). On that same note, "optimal presentation format" is thus the one with the least cognitive effort according to Bertin (1983), and although this study's primary focus was not to address what optimal presentation format is, the qualitative analysis showed interesting results discussed below.

5.2.1 THE CURSE OF KNOWLEDGE?

The participants' comments in the verbal protocols in both tasks, show that participant preferred different tasks, and that their preferences had a somewhat even split. Analysis from the verbal protocols also reveal that the same information (items on the fact sheets) will be interpreted differently, explained by differences in previous knowledge, cognitive abilities and how they prefer to process information. In other words, some participants preferred to read the text and avoided the figures, while the next participant could do the exact opposite. In line with current research on presentation format (Spiegelhalter, 2011) the optimal presentation format seems to depend very much on the audience. What more is, the findings from the 13 participants verbal protocols in this study seems to indicate that the overall primary challenge in the decision-making process was rather in understanding the technical language present in both tasks.

In the results section's qualitative part, a full list of words the participants came across they did not understand is presented, along with comments regarding the technical language. Comparing these results with Bouwman et. al. (1987), the results are somewhat similar, though the participants in this study spend more time Reasoning and less on Reading & Processing than the financial analysts did in Bouwman et. al.'s study. A conclusion to be drawn from this is thus that this study's non-experts spend less time on Reading & Processing because they do not understand the technical language. Regarding the specific fund fact sheets chosen for this study and why they were chosen, the term "curse of knowledge" comes to mind. A cognitive bias when communicating information when better-informed

agents (like policy makers) cannot accurately anticipate the judgment of less-informed agents (individuals). A harmful effect from this is when the better informed agents *think* their knowledge is shared when it is not, it actually hinders the gap of information asymmetry to be bridged (Kennedy, 1995).

A conclusion from this study for policy makers is thus that although the findings seem to indicate deviations from a "rational" decision-making process (and hence their decisions) from a traditional view point, which would support choice architecture. However, the bigger picture painted by the verbal protocol analysis is that the general primary challenge for the participants seemed to be the technical language, and that the participants seem to prefer different presentation formats. The findings from this study that are relevant to policy makers is thus to simplify the technical language in order to facilitate a higher degrees of relevant information to be processed for non-expert individuals, as argued by both Beach & Mitchell (1978) and Payne (1976). This could thus facilitate for individuals to make more informed decisions.

5.3 OTHER IMPLICATIONS & FUTURE RESEARCH

The results in this thesis have also contribution to theory in the application of the theory of dominance structuring on non-experts in their decision-making process choosing between a set of funds. This study's main contribution concerns the use of method producing descriptive process information data to a theoretical field where there has been a lack thereof.

Concerning future research within this area, it would be interesting to determine the difference, if any, between experts and non-experts, if experts are more resistant to "irrational" decision-making in the same situation. A comparison would be valid to help determine to what extent experts are helped by their experience, professional knowledge and also knowledge of the technical language.

5.4 LIMITATIONS TO THE STUDY

First and foremost, the choice of method appears as the most principal limitation, given the nature of the method, few participants (13) are used and thus it limits the extent to which results can be generalized. However, for a larger sample another method would have had to be used and the trade-off and choice of method has been thoroughly argued in the methods chapter. The resulting verbal protocols were coded, which opens up to the risk of subjectivity. Although this was addressed and attempted to be fended off by having another student scrutinize the codes to give a second opinion, it would have been preferred to have had a second completely separate coder, with no knowledge of the study nor its objective, to code the protocols as well. However, limits in time and resources and given the vast amount of codes, 15 932 that someone would have had to be hired and paid for the job.

In terms of study material, the fact that the two tasks do not contain the exact same information is a limitation for the comparison. The most obvious difference being fees, since funds in the PPS are subject to a discount. Hence the fees are higher in Task 1 than in Task 2, where there is also no withdrawal or deposition fee. Furthermore, in an attempt to keep the material as representative as possible, this meant that the names of the funds were fully displayed and that some of the participants noticed that the funds were the same. If they made a remark on it, the statement was not confirmed, however if the participants noticed and asked directly how to treat it, they were asked to consider it a new task, to the extent which it was possible. However, even though some participants noticed, most still made a different choice.

Another comparative limitation attributable to the material is the resulting protocol for Task 1 in substantially longer than Task 2, for most participants. A fair assumption in this regards a certain learning curve is expected, some participants may have got tired and impatient to be done (although they state about the same level of motivation in the evaluation form in both tasks). However, the material in Task 2, is only one-page, less information and the sheets have the same lay-out. Using more participants, the order-effect between the tasks and intra-task could have been limited.

Finally, the participants were chosen from a convenience selection, a result from the preparatory work in practicing the think-loud method. A more thorough selection, based on cognitive abilities instead, could have resulted in more conformed results, and would have made for an interesting study as well.

5.5 CLOSING COMMENTS

To come back to where this thesis started; how capable is the population in handling the choice task of choosing between funds? It has been shown in this study that there are decision-making mechanisms in play, like existence of dominance structuring and the influence of presentation format, that may be a part in explaining "irrational" decisions when non-experts choose between a set of funds. Irrational judgment and decision-making is not considered a desirable trait in financial markets, thus these findings would support the body of work regarding a need for experts' assistance in order to help individuals make better decisions. However, the primary challenge perceived by the participants in both tasks was rather in understanding the technical language than the task itself. Hence this suggests that simplifying and improving the language instead could be beneficial and helpful for individuals to make more informed decisions.

Finally, the term "rationality" is consistently used within quotation marks to emphasize the terms dependence on the view point, rational behavior can either be the normative account of preference consistency and a lack of logical errors such as heuristics and biases, but it can also be ecologically rational to use heuristics in decision-making (Gigerenzer & Goldstein, 1996). Coming back to Simon (1990:1955) who pointed out that decision-making must be viewed in light of both the task at hand and the capacity of the agent (participant).

What is notable as well is that this thesis has been focusing on the decision-making process and has not been concerned with evaluating the participants' decisions. For one, participants in this study were ensured that there was no right and wrong answer, and second, there is not a lot of unanimous research regarding what a "good choice" actually is. With that, it has been approximately two months since the study was made, which is a short time for most fund investments, even so, as a final note the participants hypothetical fund investment portfolios are presented in Table 19.

Table 19. Final presentation of the participants and their return on investment two months after the experiment.

Participant		Task 1	Task 2	FL	Preferred Task	Preferred format	Overall difficulty 0-5	Overall confidence 0-5	Overall satisfaction 0-5
1		1 520 kr	2 234 kr	H	1	Numbers	3,5	4	4,5
2		4 207 kr	4 207 kr	L	1	Numbers	3	1,5	3,5
3	-	1 605 kr	3 336 kr	H	2	Numbers	3	4	4
4		190 kr	4 256 kr	L	1	Text	4	2	3,5
5		938 kr	41 kr	L	1	Text	4	2	3
6		2 033 kr	2 837 kr	H	N/C	Text	3,5	2	3
7		1 494 kr	3 670 kr	H	1	Text	4	2,5	3
8		1 412 kr	2 792 kr	H	N/C	Text	3,5	2,5	4
9		2 486 kr	2 111 kr	H	2	Numbers	2	2	4
10		911 kr	1 567 kr	L	2	Numbers	4	3,5	5
11		470 kr	2 288 kr	H	1	Text	4	3	3,5
12		4 085 kr	4 104 kr	L	2	Text	3,5	1,5	4
13	-	440 kr	2 565 kr	L	N/C	Text	4	3	4

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http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:302:0032:0096:en:PDF

APPENDIX 1. PARTICIPANTS IN RANDOMIZED ORDER

Age	Gender	Personal savings in funds?	Field of study
26	Man	No	Civil engineer
25	Man	Yes	IT
24	Man	Yes	Urban Planning
28	Woman	Yes	Journalism
22	Man	Yes	IT
34	Woman	Yes	Literary Studies
25	Woman	Yes	Pedagogy
25	Man	Yes	Civil engineer
36	Man	Yes	Journalism
27	Woman	Yes	Civil engineer
28	Woman	No	Pedagogy
21	Woman	Yes	Art History
24	Man	No	Peace & Development

Warm-up exercise – Think aloud!

Orally explain Think-high method

From the next task, please - think and read aloud.

1. Suppose you have SEK 200 on a savings account. The interest rate is 10% per annum and is credited to the same account. **How much do you have in your account after 2 years?**

2. Assume that the interest rate on your bank account is 1% and inflation is 2%. If you save money on your bank account for one year, **will you be able to buy more, equal or less by year-end?**

3. Do you think the following statement is true or false? **"Buying shares in a company is usually safer than buying fund units."**

Fund choice

Imagine the following:

You have SEK 70,000 on your bank account that you want to save and have decided to invest this money in funds instead - You will now have 7 funds to choose from.

For your help, you will get 7 fund fact sheets about these funds, one for each fund. They contain basic facts about the funds and are not promotional materials but are regulated and standardized information that you can use to make an informed decision.

I am an observer, and have the fact sheets. You can only request one fact sheet at a time, and they are numbered A, B, C, through G. After reviewing all 7 sheets, you can use the material as you like. There's no right or wrong way to move forward - you can read the material for as long as you want and you can make notes, you can also go back in the material if you wish, etc. **The only requirement is that you "think aloud" by talking about how you go about, and voice your thought as they come to you.**

For example:
"Now I look at risk and return ... hm ... do not tell me so much ... I think I stop reading about it now"
"Now I'm looking at historical returns ... hm ... looks good, but I do not know ... hm" and so on.

You have the opportunity to ask me if any uncertainties should arise. However, it should be emphasized that this should occur to the minimum extent possible to avoid disturbing your thinking.

Once you feel ready and made a decision, the task is over. Please indicate your selection below:

What fund do you think is best?

Fond	A	B	C	D	E	F	G

I choose to place my SEK 70 000 as follows:

Fond	A	B	C	D	E	F	G
Summa (T Kr)							

APPENDIX 4. HAND-OUT: EVALUATION FORM

Enkät för utvärdering efter experiment om beslutsprocesser vid fondval (fondfaktablad)

Efter att ha utfört experimentet, ombeds du att besvara nedanstående frågor:

1. Kände du dig motiverad att deltaga i experimentet?

Nej, absolut inte Nej, i stort sett inte Tveksam Ja, i stort sett Ja, absolut inte

2. Hur realistisk upplevde du fallet i experimentet?

Mycket overkliga Något overkliga Varken eller Något realistiska Mycket realistiska

Plats för kommentarer

3. Vilken tidshorisont hade du i åtanke vid ditt val?

4. Var informationen tillräcklig för att kunna bedöma och fatta beslut?

Nej, absolut inte Nej, i stort sett inte Tveksam Ja, i stort sett Ja, absolut

5. Om otillräcklig, vilken information saknade du?

6. Vad anser du om fallet?

Mycket lätt att bedöma Något lätt att bedöma Varken lätt eller svår att bedöma Något svår att bedöma Mycket svår att bedöma

7. Anser du att du till stor del förlitade dig på intuition/känsla än metodisk utredning/analys när du fattade ditt beslut?

Nej, absolut inte Nej, i stort sett inte Tveksam Ja, i stort sett Ja, absolut

8. Är du nöjd med ditt val?

Nej, absolut inte Nej, i stort sett inte Tveksam Ja, i stort sett Ja, absolut

9. Känner du dig säker på ditt val?

Nej, absolut inte Nej, i stort sett inte Tveksam Ja, i stort sett Ja, absolut

10. Vilken betydelse (för ditt val) ger du de olika rubrikerna:

RUBRIK	VIKT I PROCENT
Mål och Investeringsfilosofi	
Risk- och avkastningsprofil	
Fondens avgifter	
Tidigare resultat (historisk avkastning)	
Praktisk Information	
	SUMMA: 100%

11. Plats för egen kommentar:

EVLI

FONDENS FAKTABLAD

Detta faktablad riktar sig till investerare och innehåller basfakta om denna fond. Faktabladet är inte reklammaterial. Det är information som krävs enligt lag för att hjälpa dig att förstå vad en investering i fonden innebär och riskerna med denna. Du rekommenderas att läsa den så att du kan fatta ett välgrundat investeringsbeslut.

PLACERINGSFONDEN EVLI FINLAND MIX

Avkastningsandel, andelsserie A (ISIN: FI0008800149)
Fonden förvaltas av Evli-Fondbolag Ab som är en del av Evlikoncernen.

MÅL- OCH PLACERINGSINRIKTNING

Fonden placerar huvudsakligen sina tillgångar i finska aktier och aktierelaterade värdepapper samt i ränteinstrument inom eurozonen. Beroende på marknadsläget varierar andelen aktierelaterade investeringar mellan 20 och 60 procent, neutral aktievikt är 40 procent. Fondens ränteplaceringar utgörs främst av masslån, emitterade av stater, offentliga samfund eller företag. Ränteplaceringarnas fokus är på Investment Grade-lån med det högre kreditbetyget och på inhemska, icke-klassificerade lån. Placeringarnas genomsnittliga riskklassificering är minst BBB- eller motsvarande (gäller inte finska emittenter), vilket innebär ett en medelhög kreditrisk förknippas med fondens placeringsobjekt. Högst 10% av fondmedlen kan placeras i utländska objekt som saknar officiellt kreditbetyg. Fondens ränteplaceringar kan ha en genomsnittlig emotenringstid (duration) på högst 10 år men är normalt mellan 2,5 och 4 år. Fonden är klen känsligare än konträntefonder för förändringar i den allmänna räntenivån. Fonden kan även investera i derivatinstrument, både i skyddande syfte och som ett led i strävan att nå fondens målsättning.

Fondens jämförelseindex är sammansatt av OMX Helsinki CAP GI (40%), Citigroup Finland GBI All Maturities EUR (40%) och tre (3) månaders Euribor (20%). Den aktive portföljförvaltningen innebär att fondens värdeutveckling kan avvika från jämförelseindexets utveckling.

Fondens basvaluta är euron.

Avkastningsserien utdelar minst 4% p.a. av andelens värde i avkastning. Teknings- och inlösningsuppdrag för fondandelar tas emot alla finska bankdagar, bortsett från dagar då fondens eller placeringsobjektens värde inte kan beräknas på grund av ovätindisk helg eller bankfri dag. Handeln med fondandelar upphör likaså ifall fondbolaget tillfälligt har avbrutit fondandelarnas värdeberäkning på grund av ett marknadsläget är onormalt instabilt eller annat vägande skäl. Fondbolaget och på grund av Undantagstillstånd eller annet vägande skäl. Fondbolaget avviker inte beräknas.

Rekommendation: denna fond kan vara olämplig för investerare som planerar att ta ut sine pengar inom 4 år.

Du får ytterligare information om placering i fonder i fondens officiella faktablad samt på webbadressen www.evli.com/fonder.

RISK/AVKASTNINGSPROFIL

Lägre risk — Vanligen lägre avkastning | | | | | | Vanligen högre avkastning — Högre risk

Lägre risk						Högre risk
1	2	3	**4**	5	6	7

Risk/avkastningsprofilen återger variationerna i fondandelens värdeutveckling under de senaste 5 åren. Fondens risk/avkastningsprofil och riskklass kan ändras. Risk-avkastningsprofilens lägsta kategori (klass 1) är inte helt riskfri. Historiska data utgör ingen garanti för framtida utvecklingen av risk-avkastningsprofilen och riskklassificeringen.

Fondernas risknivå klassificeras på en skala mellan 1 och 7, där 1 betyder låg risk och 7 hög risk. Fondens riskklass är idag 4. Denna innebär att fondens värdeutveckling för närvarande förknippas med medelhög risk.

Fondmedlen placeras i sin helhet i aktier eller aktierelaterade värdepapper samt i euroadenominerade, räntebärande placeringsobjekt. Blandfondens risk består främst av aktiemarknadsrisker samt av aktiemarknadsrisken. Aktiemarknadens avkastning påverkas både av den allmänna ekonomiska utvecklingen och av endra faktorer; bland annat politiska och juridiska förändringar. Fonden koncentrerar placeringarna en mer diversiferad fond. Räntemarknadens avkastning påverkas av geografiskt, vilket medför risk för större avkastningsvariation än i förändringar i räntenivån. Räntenivån måts med modifierad duration. Ränteamarknadens avkastning påverkas även av kreditrisken, det vill säge osäkerheten beträffande emittenterna återbetalningsförmåga. Kreditrisken kan framför allt som förändringar i ränteplaceringarnas pris på emittenternas kreditbetyg eller de allmänna kreditriskpremierna förändras.

Fondens helhetsrisk påverkas även av följande faktorer som inte nödvändigtvis ges en komplett beskrivning i riskprofilen:

- Likviditetsrisk: Risken för att placeringarna i fonden inte kan säljas eller köpas inom planerad tid eller till önskat pris.
- Kreditrisk: Osäkerheten som hänför sig till emittentens återbetalningsförmåga.
- Derivatrisk: Att använda derivat för ett ris tilläggsavkastning kan öka riskklass kan ändras. Fondemns risk och avkastningsförväntningar. Att använda derivat i skyddande syfte eller inom ramen för riskhanteringen kan minska fondens risk och dess utgör ingen garanti för att framtide utvecklingen. Att använda derivat kan öka motpartsriken eller de operative riskerna.

AVGIFTER

Avgifterna utgör betalning för fondens kostnader inklusive marknadsföring och distribution. Dessa minskar fondens potentiella avkastning.

Avgifter vid teckning eller inlösning av fondandelar	
Teckningsavgift	0%
Inlösningsavgift	1%

Fondens årliga avgifter	
Löpande kostnader	1,85%

Teckningsavgiften och inlösningsavgiften är de maximala belopp som kan avdras från placeringsbeloppet i anslutning till teckning och inlösen. Detaljinformation tillgänglig i gällande prislista, hos fondbolaget och hos fondbolagets ombud.

Löpande kostnader grundar sig på de kostnader fondbolaget debiterat 2016. Kostnaderna kan variera från år till år. De angivna kostnaderna omfattar inte:

- prestationsbaserad avgift.
- fondens handelskostnader.

Ytterligare information om kostnader ges i det officiella fondprospektet samt i fondens prislista, både tillgängliga på webbadressen www.evli.com/fonder.

TIDIGARE AVKASTNING ELLER VÄRDEUTVECKLING

Fondens verksamhet inleddes 1.11.1995. Beskrivningen av den historiska utvecklingen omfattar förvaltningsavgiften, men inte avgifter för teckning, inlösen eller eventuellt skattavdrag. Fondandelens värdeutveckling beräknas i euro. Den historiska utvecklingen är ingen garanti för utvecklingen i framtiden.

PRAKTISK INFORMATION

- Fondens förvaringsinstitut är Evli Bank Abp. Fondens revisorer är KPMG Oy Ab, CGR-samfund.
- Fondens stadgar, faktablad och andra publikationer är tillgängliga på webben, adress www.evli.com/fonder och hos Investerer Service, tel. +358 9 4766 9701, må–fr 9.30–16.30 (finsk tid).
- Fondandelernas senaste noteringar är tillgängliga på adressen www.evli.com/fonder och i nätijänsten My Evli.
- Skattelagen i fondens hemstat kan påverka placerarens personliga beskattning.
- Evli-Fondbolag Ab kan hållas ansvarigt endast om ett påstående i detta faktablad är vilseledande, felaktigt eller oförenligt med de relevanta delarna av fondens informationsbroschyr.
- Fondandelerna indelas på basis av utdelningen i avkastnings- och tillväxtandelar. Tillväxtandelarna berättigar inte till utdelning, istället omplaceras avkastningen (aktieutdelning och räntemäkter) för att öka tillväxtandelens värde. Avkastningsandelarnas avkastning delas ut årligen, vilket minskar avkastningsandelens andel av fondkapitalet. Fondbolagets efterstrāvar en så jämn årlig avkastning som möjligt. Därför är utdelningen inte beroende av resultatet under den senaste räkenskapsperioden eller någon tidigare räkenskapsperiod. Vid avkastningsutdelning kan avkastningsandelens värde sjunka under teckningspriset.
- Fonden kan även emittera andelar i annan valuta än basvaluten.
- Information om fondbolagets belöningssystem är tillgänglig på adress www.evli.com.

Fonden stadgar har bekräftats 14.3.2012 i Finland och de träder i kraft 1.6.2012. Evli-Fondbolag Ab har beviljats koncession i Finland. Fonden och fondbolagets tillsynsmyndighet är Finansinspektionen. Detta faktablad träder i kraft 3.2.2017.

EVLI-FONDBOLAG AB, ALEXANDERSGATAN 19 A, PB 1081, FI-00101 HELSINGFORS, FINLAND, WWW.EVLI.COM

# Appendix 6. Study material from Task 2 (Web print-outs, PPS) Fund example A "Evli Finland Mix"

PENSIONS MYNDIGHETEN

Uppdaterad 2017-03-01

BLANDFONDER

Evli Fondbolag Ab
657460 Evli Finland Mix

Placeringsinriktning
Fondmedlen allokeras utgående från avkastningsförväntningarna på den finländska aktie- och europeiska räntemarknaden. Andelen aktier varierar mellan 20 och 60% beroende på marknadsläget, neutralvikt är 40%. Ränteplaceringarnas genomsnittliga duration kan vara högst 10 år.

Fondfakta
Fondtyp	Blandfonder
Kategori	Utländska aktier och räntor
Registreringsland	Finland
Valuta	Euro (EUR)
Antal fondhandelsdagar	3-4 handelsdagar
Ansvarig fondförvaltare	Kujala, Juuso
Förvaltningserfarenhet	13 år

Kostnader
Fondavgift, % (Pensionsmyndighetens rabatt avdragen)	0,55
Total kostnadsandel (TKA) senaste kalenderåret, %	-
Skillnad köp- och säljkurs	Nej

Övriga förhållanden
Fondens jämförelseindex är sammansatt av OMX Helsinki CAP avkast index (40%), Citigroup Finland GBI All Maturities EUR (40%) och 3 mån Euribor (20%).

Typ av värdepapper
Fonden placerar i finländska aktier samt ränteinstrument emitterade inom euroområdet.

Målgrupp
Investerare som eftersträvar helstäckande kapitalförvaltning och som vill placera i både aktier och ränteinstrument.

Innehav (uppdaterad 2016-12-31)
Normalt antal värdepapper 50 st

Övrigt 6%
Euroland räntor 49%
Finland aktier 45%

Statistik - värdeutveckling och risk

Evli Finland Mix
Kategori Blandfonder Aus

	2017	2016	Snitt 5 år	Snitt 10 år
Värdeutveckling, % per år, före rabatt	0,49	11,71	8,84	4,71
Värdeutveckling, % per år, efter rabatt	-	12,99	10,09	5,89
Omsättningshastighet, ggr	-	0,79	-	-
Fondförmögenhet, MSEK	-	204	-	-

	36 mån	Snitt 5 år	Snitt 10 år
Sharpekvot	1,4 (1,2)	1,3 (1,3)	0,5 (0,6)
Risk	6,6 (7,0)	6,4 (6,2)	7,5 (7,0)

Siffror inom parentes visar jämförelseindex

Mål med placeringen
Målet för fonden är att uppnå en avkastning som på lång sikt överstiger jämförelseindexets värdeökning.

10 största innehav, %
Nokia	5,4
Sampo A	5,3
Neste Oil 18.09.2019 4.000%	4,1
Stora Enso R	3,6
Nordea	3,6
Kesko B	3,3
Rettig 25.06.2017 5.25%	3,0
Citycon 24.06.2020 3.75%	2,7
Teollisunden Voima 04.02.2019 4.625%	2,6
Metsä Board B	2,6
Summa	36,1

PENSIONS MYNDIGHETEN

Ordlista

Antal fondhandelsdagar
Hur många dagar fondhandeln beräknas ta. Följande värden finns: 2-3 handelsdagar, 3-4 handelsdagar och 3-4 handelsdagar, förlängd handel. Förlängd handel innebär att fondbolaget genomför Pensionsmyndighetens fondhandelsorder med en eller två dagars fördröjning jämfört med normal handel, 2-3 handelsdagar.

Fondavgift
Den årliga fondavgiften anges efter att Pensionsmyndighetens rabatt dragits av. I fondavgiften ingår fondens förvaltningsavgift och övriga administrativa kostnader. Rabatten baseras på hur mycket premiepensionspengar Pensionsmyndigheten har placerat i ett fondbolags fonder; ju mer pengar Pensionsmyndigheten har placerat hos ett fondbolag, desto mer rabatt går tillbaka till dem som sparar i fondbolagets fonder. Kostnader som uppstår i samband med fondens köp och försäljningar av värdepapper ingår inte. Det gör inte heller avgiften till Pensionsmyndigheten.

Fondförmögenhet
Fondens totala värde för senaste kvartalet. Alla värdepapper i fonden värderas till senaste betalkurs. Därefter läggs likvida medel och fordringar till och skulder dras av.

Fondnummer
I premiepensionssystemet har varje fond ett sexsiffrigt nummer. Fondnumret används vid val eller fondbyte hos Pensionsmyndigheten.

Innehav/10 största innehav
Anger fördelningen mellan de största tillgångarna i fonden, dels med en bransch-/länderfördelning, dels med en förteckning över fondens 10 största innehav.

Kategoriindex
Visar hur en viss fondkategori har utvecklats i genomsnitt. Genom att jämföra fondens utveckling med fondens kategoriindex går det att få en uppfattning om hur fonden har presterat i jämförelse med genomsnittet för alla premiepensionsfonder med liknande placeringsinriktning. Kategoriindex beräknas på fondernas avkastning före fondavgift.

Miljö-etisk hänsyn
Fonden med M/E-märkning tar hänsyn till miljö och/eller etik i sina placeringar. Fondbolagen kan dock ha olika definitioner av hur de tar hänsyn till miljö och etik. Det innebär att urvalskriterierna skiljer sig åt mellan olika fondbolag. Märkningen av fonderna baseras på uppgifter som lämnats från fondbolagen.

Mål med placeringen
Det resultat förvaltaren försöker uppnå med de placeringar som görs i fonden.

Normalt antal värdepapper
Det antal olika värdepapper en fond vanligtvis investerar i. Antalet värdepapper kan givetvis variera över tid för en fond och det angivna värdet gäller i normalfallet.

Omsättningshastighet
Mått på hur stor andel av fonden som har omsatts under senaste året. Den beräknas som summan av köpta och sålda innehav delad med den genomsnittliga fondförmögenheten. När omsättningshastigheten är 1, innebär det att fonden har omsatt hela sin portfölj under året.

Risk
Mått på hur mycket värdet på fonden varierar över tiden i förhållande till medelvärdet för fondens värdeutveckling. Högre siffra innebär större variationer och högre risk. Lägre siffra innebär mindre variationer och lägre risk. Värje fond är indelad i en riskklass utifrån riskskalen. Följande skala används: 0-2 mycket låg risk, 3-7 låg risk, 8-15 medelrisk, 16-24 hög risk samt 25- mycket hög risk.

Sharpekvot
Sharpekvot är ett sätt mäta fondens riskjusterade avkastning. Måttet beräknas genom att dividera fondens riskpremie (avkastning minus riskfri ränta) med fondens risk. Ju högre Sharpekvot desto bättre värdeutveckling i förhållande till risken. Fondernas placeringsinriktning bör dock vara likande för att Sharpekvoten ska bli jämförbar.

Skillnad mellan köp- och säljkurs
Anger om fonden har skillnader mellan köp- och säljkurs, vilket i så fall innebär en indirekt avgift för köp och försäljning av fondandelar. Mellanskillnaden läggs fondförmögenheten.

Total kostnadsandel (TKA)
TKA är ett mått som anger hur stora kostnader en fond har haft under ett år. I TKA ingår, förutom fondavgiften, även de kostnader fonden har haft för att köpa och sälja värdepapper. Hur stora dessa kostnader är vet inte fondbolagen i förväg. Därför varierar TKA över tiden och redovisas för senaste året. Pensionsmyndighetens rabatt redovisas inte i fondernas TKA.

Valuta
Anger den valuta som används vid handel i fonden. Värdet på ditt innehav i fonden anges alltid i svenska kronor.

Värdeutveckling
Fondens utveckling under angiven period, inklusive återinvesterad utdelning. Du har mest nytta av uppgiften om värdeutveckling när du jämför fonder inom samma kategori. Alla avgifter är redan avdragna.

Värdeutveckling, efter rabatt
Fondens utveckling under angiven period, inklusive återinvesterad utdelning och medräknad rabatt på fondavgiften.