

Trust and risk-taking

A study of consumer behaviour within
a Swedish pension investment setting

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PhD thesis

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To Evert

Abstract

The study focuses on the Swedish pension system introduced in 2000. The study describes the evolution of a new pension system, and the differences between the former ATP-system and the present system.

Via a mail survey to a subsample of the mail database of a Swedish bank, questions regarding perceptions of the new pension system were asked. It was found that the majority of individuals expect the system to provide a basic security, not to maintain level of income. Via hierarchical regression analysis, the relations between perceptions and trust were analysed. It was assessed that individuals perceiving the aim of the pension system as to deliver a basic security also had higher levels trust in the pension system.

This level of trust in the pension system was further elaborated on. The study found, through hierarchical regression analysis that a higher level of trust induced a tendency to take higher financial risks. More specifically, trust in the willingness of future governments to fulfil the expectations inherent in the pension system was the trust subpart driving risk-taking. This relation between trust and risk-taking was further analysed in terms of level of knowledge and level of involvement. Knowledge and involvement were both found to have a direct positive effect on risk-taking, but the trust – risk-taking relation was not significantly different for individuals with varying levels of knowledge and involvement.

The study was able to expand previous knowledge of consumer behaviour regarding the relation between trust and risk-taking to an area with increasing impact on citizens' economic situation: the pension investment area. The incorporation of investor types of particular interest for theorists as well as legislators and practitioners, namely the less involved and the less knowledgeable individual, also makes the study well-positioned to contribute.

Keywords: consumer behaviour, trust, risk-taking, pension system, involvement, knowledge

Acknowledgements

Sometimes an article read does not leave your mind. It sticks, and pops up every now and then in thoughts and in reflections. This is when you know you should do something. Write a book if you are an author. Or plan an academic study evolving around the topic if you are a doctoral student writing a dissertation. Around 2007 I read an article by Thomas Dohmen and a group of German researchers. The theme was risk-taking and the formation of individuals as risk-takers. Men were, the article stated, less risk-averse than women, but it was another statement that caught my interest. Children with well-educated parents seemed to be more inclined to take risks than other children. With a big (and growing) family with many kids it was perhaps not surprising that this particular statement stuck. Would the children attempt wingsuit flying? Would they lose everything on ridiculously out-of-the-money calls? Albeit a worrying mother, I started thinking if this result could be applied on a bigger entity. What if the well-educated parents were just one example of a safety net increasing risk-taking? On a national level another example could perhaps be the security systems present in the welfare states of the 21st century, such as social security or old-age pensions? What if a trusted state pension system actually meant a population taking larger risks? After quite some years of surveying, thinking, writing, re-thinking and re-writing, the answer is presented in this dissertation. And yes, it seems it does!

During the many years leading up to this dissertation, I have become deeply indebted to a number of persons. First and foremost I wish to thank Rita Mårtensson, my supervisor, who has endured my many dwindling academic detours with patience. Your passion for the subject of marketing and consumer behaviour is rare, much appreciated and hopefully visible in some parts of this thesis. Your involvement in the topic and in my thesis would rate high on any scale! I also owe a lot to my co-supervisors Tommy Andersson and (previously) Martin Hedesström who have contributed with academic wisdom, inspiration and plenty of good advice. The same was received and much appreciated during the internal seminar chaired by Kjell Grönhaug.

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I have been fortunate enough to come from a family always believing in me. My mother and father have supported every one of my, not always thoroughly thought-through, ideas – something that has meant a lot to me. My sisters and brother are also true sources of encouragement – mostly by being so strong and beautiful individuals and doing so great in their own lives. Thanks also to Nanna, my sister-in-law, for warmth and caring.

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The biggest source of every-day energy (as well as every-day worry and every-day shoe-lacing) however comes from my own family: my kids and my husband. Agnes, master of big-sisterness and warm-heartedness with an attitude; Emil, math genius and our solid rock; Hugo, much appreciated kitchen conversationist and finance wiz; August, fast-growing teenager and football-freak, reminding me so much of those past days; Edvard, the aesthete and philosopher every family needs, and Astrid, my sweet princess and a true natural. I love you deeply, every one of you!

This thesis is dedicated to Evert, my husband and soul-mate. You might not have read a word of it (well, you started ambitiously but I think you gave up at page three...) but the way you are and the way you think has inspired every piece of it. You are the wise and warm granite hub of our whole family, and I'm truly blessed to have you to share the every-day joys and every-day thoughts with. It's always you.

Jeanette Carlsson Hauff

Gothenburg, in December 2013

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1. INTRODUCTION

To ensure a stream of income tomorrow by making financial choices today – in other words investing for retirement – is a challenge with major implications. The newly introduced Swedish pension system emphasizes the importance of individual financial choices to a greater extent than previous systems. This is a responsibility that the majority of citizens is not used to take, implying new choices they are not used to make.

The financial choices of the individual associated with the complex task of retirement investing form the topic of the present thesis. The major research question posed is whether level of trust held in the pension system influences financial behaviour, more specifically defined as choice of financial risk. The thesis further investigates whether the relation between trust and risk-taking may differ between individuals depending on level of involvement and level of knowledge.

1.1 The pension context

Pension systems, i.e. the way a nation organises provisions for the elderly, are a central part of modern society. In many countries, among them Sweden, the state pension system has been profoundly altered; in other countries, the task of reforming the pension system is high up on the agenda due to financial constraints. The new pension systems are often defined contribution systems (i.e. where the pension depends on each individuals' accumulated payments during the working years), as opposed to the previous defined-benefit systems (i.e. where the pension was a promise to deliver a fraction of final salary).

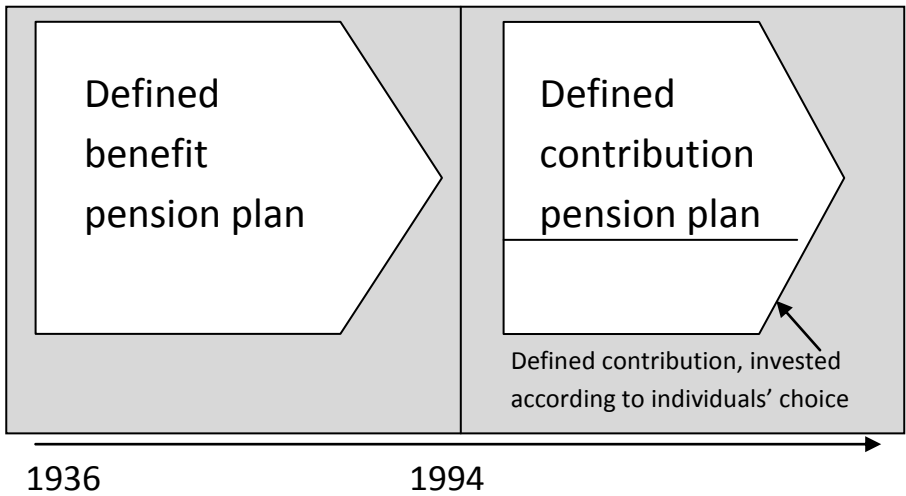


Figure 1.1 Old and present Swedish pension system

Broadly speaking, Swedish pensions stem from three different systems: the state income system covering all citizens, the work-related pensions (where the pension level depends on how long the individual has been employed, level of salary and area of employment), and finally voluntary private savings. This was the case in the previous pension system and is still the case in the present pension system - although it may be argued that the relative importance of the three tiers has been altered.

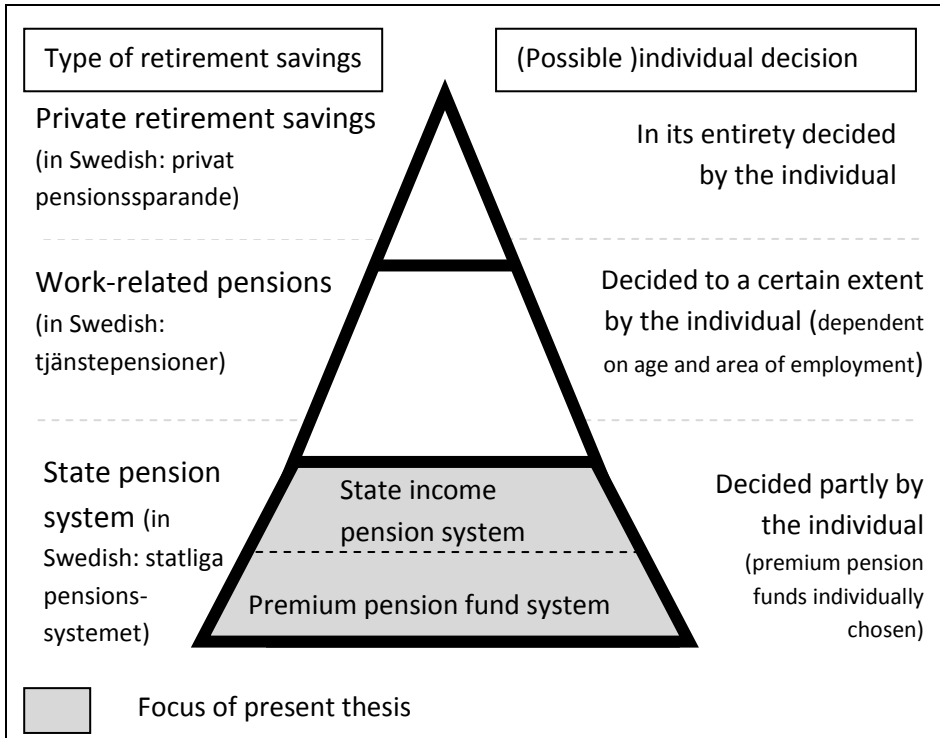


Figure 1.2 Parts of the Swedish pension system

The focus of the present thesis is the state pension system, i.e. the base of the pyramid in figure 1.2. The reason to include only pensions stemming from the state is not due to lack of importance of other pension types, but rather a consequence of the focus on individuals' expectations and trust. It is the individuals' trust in the state as trustee that is of interest, and accordingly the trust in the forecasted future stream of income stemming from the state pension system.

A pension system could be compared to a contract – where promises are stated and expectancies are built. In this sense, Sweden makes an interesting case since a new pension system has been introduced during the 1990's, and hence pension benefits have been altered. A report by the investment firm Schrodgers (2011) shows that Sweden is the European country where the discrepancy between what is actually received at retirement (i.e. a calculated forecast of the future pension) and what people expect that they will receive at retirement (i.e. the

best guess of each individual regarding his or her future pension) is the largest (with expectations being higher than estimates). It is hence tempting to assume that the promises inherent in the previous pension system (i.e. a pension in line with level of final salary – more specifically 60% of final salary stemming from the state pension system and 5-10 percentage stemming from work-related pensions) still lingers on – despite the fact that the new system has lowered levels of compensation to somewhere between 40 and 50% of final salary.

1.2 Trust

Swedish citizens seem to expect a lot of the pension system (c.f. the discussion on the Schroeders 2011 report in section 1.1) – but with which certainty are these future benefits regarded? Pension systems, with benefits decades ahead in the future, are an area where not only the perception of the level of future benefits may be assumed to affect behaviour, but also the perceived certainty with which these future benefits will be delivered. The stated time lag until the pension is paid out implies that many things can happen along the road, and that a certain level of trust, or mistrust, is induced in the minds of individuals.

Trust is a variable that has been frequently studied within the field of consumer behaviour. It is central in the commitment – trust theory of relationship marketing (Morgan and Hunt, 1994; Kassim and Abdullah, 2006), it is of great importance to the emerging subfield of electronic commerce studies (e.g. Järvenpää, 2000; McKnight, 2002) – it has even been argued that “*trust [...] lies at the heart of the marketing concept*” (Arnott, 2007, p. 981). The concept of trust has more specifically been introduced as an influential factor regarding a number of phenomena: e.g. reduced need for monitoring (Malhotra and Murnighan, 2002), reduced transactions costs (Hau-Siu Chow, 2008), increased loyalty (Shainesh, 2012), higher levels of commitment (Gargiulo and Ertug, 2006) and effects on intention to purchase (Hong Cho, 2011). In other words: any relation – be it between a supplier and an industrial customer, between a store and an individual consumer or, as in this case, between a financial system and the consumer of financial services relies on trust. The trust in delivery

dates being held is crucial, as is trust in expectations stemming from advertising and communication being met. In the same manner, trust in promises inherent in the pension system – such as forecasts regarding future pensions – being honoured is assumed to influence the behaviour of the pension investor.

1.3 Risk-taking

A component of the new Swedish pension system is the ability for individuals to make financial choices. Practically, an amount of 2,5% of salary is set aside for individual pension investments within the new Swedish state pension system (in what is referred to as the premium pension system), and are invested according to the will of the individual. The individual is free to choose between some 800 mutual funds with varying risk-level and has in a sense become the portfolio manager for (the premium pension) parts of his or her pension portfolio. This implies that individual financial choices will have a more direct impact on the level of future pensions than before.

When focusing on the individual as financial decision-maker, the most crucial subpart of the investment choice, the asset allocation, is of paramount interest: the choice between low risk fixed income funds and riskier alternatives can denote the difference between a pension similar to the level of final salary and a retirement income close to the poverty level. This fact is important for the individual, but also for society at large. A system where pension levels vary substantially among citizens is not something that the Swedish society is used to and may have consequences for future political decisions and legislation. Financial choices involving choice of risk-level is hence the behaviour that the present study aims to understand.

Previous research within consumer behaviour has described in what way consumer behaviour regarding financial services is different from other types of behaviour: no need recognition, a more passive consumer, hard to evaluate alternatives and evaluation of service provider instead of the service itself (Ennew and McKechnie, 1998; Mishra and Kumar, 2011). The period from the early 1980's and onward has also witnessed the emergence of a body of literature outside the consumer behaviour area with the individual as decision-

maker in focus (see Barberis and Thaler, 2005 for an overview). The real world individual, making real economic decisions has been found to deviate substantially from the standard assumptions of a rational, optimizing “economic man”. Especially individuals’ ability to take risk has been studied in numerous articles (see Mitchell and Utkus, 2004 for an overview). The deviations from the “economic man” paradigm in terms of risk-taking have further been explicitly connected to the concept of trust (e.g. Slovic, 1999). Risk-taking, Slovic states, is dependent on gender, emotions – and also on level of trust. These views are also found within the literature on experiential processing, i.e. where the decision is based not on cognitive analysis but on a more intuitive algorithm, (possibly) including factors such as e.g. trust (e.g. Weber, 2004; Kahneman, 2011).

1.4. Trust and risk-taking

Consequently, we have a setting where trust is assumed to have a decisive impact on consumer behaviour (due to time lag and importance of expectations), and where risk-taking is identified as one of the crucial tasks for the individual as pension investor. Consumer behaviour studies have connected trust and risk-taking conceptually (Mayer, Davis and Schoorman, 1995; Yousafzai, Pallister and Gordon, 2003 for an e-commerce version) and have also explicitly modelled the various possible relations between the constructs (Das and Teng, 2004). Given a causal relation where trust influences risk-taking, previous studies support the notion that there exists a positive relation between the constructs (e.g. Das and Teng, 2004), something that has been verified in several empirical studies (e.g. Zhao, Koenig-Lewis, Hamner-Lloyd and Ward, 2010). Focusing specifically on the trust – risk-taking relation in an investment setting, the importance of both constructs for consumption of financial services has been verified (Ennew and Sekhon, 2007), and the positive impact of trust on risk-taking has been conceptually proposed to have an impact on investors’ decision-making process and to act as an antecedent to the risk evaluation made (Ryan and Buchholz, 2001). A study within finance has empirically confirmed the positive trust – risk relation in an investor setting: level of trust induces stock market participation and increases level of portfolio risk (Guiso, Sapienza and Zingales, 2008). This implies that there is a body of research to build on when

attempting to understand how trust in the pension system may affect financial risk-taking of the Swedish financial pension investor.

1.5 Knowledge and involvement

The responsibilities borne by individuals in the new pension context are numerous, and the competences linked to these responsibilities are equally abundant. Prior research in consumer behaviour has emphasised the importance of both the dimension of knowledge and the dimension of involvement (Mårtensson, 2005; Mishra and Kumar, 2011). That experts act differently than novices are found in numerous studies of investment tasks (e.g. Jacoby, Morrin, Johar, Gurhan, Kuss and Mazursky, 2001; Mishra and Kumar, 2011) and level of involvement is also a factor shown to have an impact on behaviour (e.g. Zaichkowsky, 1985; Prendergast, Tsang and Chan, 2010). It is further well-established in literature that there are numerous connections between the concepts of involvement and knowledge, and the risk-taking behaviour of individuals (Diacon and Ennew, 2001; Weber, 2004). Knowledge and involvement have also been of interest to legislators and practitioners. Both political and research focus have lately been centred on financial literacy and the consequences of a low level of financial knowledge among Swedes (e.g. Almenberg and Widmark, 2011). The costs of low involvement, i.e. the lower level of return obtained by the passive group of individuals not opting for the default alternative within the Swedish premium pension system has also been the focus of academic studies (Dahlqvist, 2011).

Financial choices regarding future pensions, as distant as they may seem, is of increasing importance for the individuals of today. The consumer behaviour issue at hand is about investing – but not about investing as it is described within the theory of classic finance. It is about investing in a context where trust matters, where lack of involvement may be a concrete obstacle and where level of knowledge may be the decisive factor between a decent life after retirement and a troublesome financial situation as a retiree. How do individuals act in their roles as pension investors – by playing safe or by betting for riches? This is, and should be, a burning question for legislators and debaters when tentatively reforming the current pension system and

when creating safety-nets in the form of consumer protection legislation in the area of financial investing.

1.6 Problem statement

The setting for the present thesis is the Swedish pension environment, restructured during the 1990's. Given the historical development of the Swedish pension system it could be argued that the ambitions of the state have changed over time: from a level closer to final salary (calculated as 60% of salary) to the 40-50% at best obtained in the present system. A related question is whether this change of benefits has affected the way individuals view their future pension benefits. The first research question posed hence concerns how individuals perceive their future pension (i.e. if individuals believe that the aim of the system is either maintaining standard of living or providing basic security), and whether a certain perception will have any effect on the individuals' level of trust in the pension system.

The central problem of the present thesis concerns the possible connection between trust and risk-taking. It may be assumed that trust in the pension system will be an important factor for the individual when reflecting upon future pension income – due to the long term horizon of retirement investing and to the “promise”-like content of a pension system. It may also be assumed that choice of risk-level will be of paramount importance for the individual as retirement investor. The second research question hence concerns how trust in the pension system affects the individual in the new task as financial decision-maker within the premium pension fund system. Is a low level of trust in the states' delivery of expected pension levels something that would lead to a tendency to “play safe” and secure a low but stable financial outcome, or is it something that would induce a lottery-like, more risk-taking behaviour?

Trust and risk-taking may also be related in different ways for different individuals. The necessity to analyse the individual as consumer of financial services from several important aspects leads to the question as to how level of knowledge and level of involvement in pension issues affect the individual. The way individuals make choices as regards retirement investing and actual choice of risk-level

has previously been shown to be influenced by these two characteristics of the individual, and a possibility is that this holds also in a pension investment setting. The third research question posed is whether knowledgeable or involved individuals reveal a different relation between trust and risk-taking than other individuals. Further, does the level of knowledge or the level of involvement make an individual less or more prone to at all take financial risks?

1.7 Purpose of the study

The overall focus on trust and risk-taking in a retirement investment setting is decomposed into three research purposes.

The first purpose is to describe individuals' perceptions of the pension system and analyse how perceptions affect trust in the pension system, i.e. in the retirement benefits actually being delivered.

The second purpose is to describe and analyse the impact of trust in the new pension system on choice of risk-level in the premium pension portfolio.

Finally, the third purpose of the present study is to determine the role of knowledge and involvement in the trust – risk-taking relation, and to assess the direct impact of knowledge and involvement on risk-taking.

1.8 Contributions of the study

Pensions and individual behaviour in a retirement investment setting is an area that has attracted much attention from politicians and legislators. It is also well known that the consumer behaviour pattern regarding financial services is different from the pattern described in more general consumer behaviour models (e.g. Mishra and Kumar, 2011). Given these two circumstances, it is surprising that little attention has been paid by consumer behaviour researchers to explicitly outline decision-making and consumer behaviour in a pension investment setting.

The relation between trust and risk-taking is well established, both conceptually (e.g. Das and Teng, 2004) and empirically, in an Internet banking setting (Zhao et al, 2010). It may be argued that these more general findings cannot be directly applied to a pension setting; the findings in e.g. Zhao et al (2010) are more connected to the financial transaction as such and not to longer term trust preceding financial risk-taking. Risk in Zhao et al (2010) is further not defined as risk-taking, but focuses on the level of perceived risk. The long time frame and the actual choice of investment alternatives with varying levels of risk when forming a pension investment portfolio are two factors that point at a possibility of the relation between trust and risk-relation being special for pension investors. The present thesis therefore tests the importance of trust on choice of risk-level in an explicit pension setting. Trust is specifically defined as trust in future pension payments to be delivered, and risk-taking as choice of financial risk in the retirement investment portfolio. The thesis is accordingly able to expand previous results into the important area of consumer behaviour in a pension setting.

The study further manages to assess the nature of the trust base in a pension setting; a less individual-based, less concrete setting than is the context of many previous trust studies (e.g. Morgan and Hunt, 1994). The willingness aspect of trust is clearly visible in the results of the present study, i.e. the importance of individuals trusting the good intentions of policy-makers and future governments. This has obvious similarities to other, less concrete research areas, such as Internet commerce and on-line banking (e.g. Zhao et al, 2010).

Given that consumer behaviour in a pension setting has attracted limited attention, the choice patterns of the knowledgeable and less knowledgeable as well as the involved and less involved pension investors also to a large extent remains to be outlined. Again, this is somewhat surprising. Much legislative work is focused on creating safety nets around individuals perceived as being vulnerable in some sense: e.g. the less knowledgeable consumer vulnerable to bad advice from pension advisors or the passive, less involved individual often ending up in suboptimal default solutions. The present thesis intends to fill this gap, and describe the behaviour of the knowledgeable and less knowledgeable as well as the involved and less involved pension investor. Knowledge is therefore specifically defined as knowledge as pension-related knowledge: e.g. how many active pension fund choices have been made, how high is the self-reported level of pension

knowledge, and how well does the individuals' best guess regarding future pension income correspond to a calculated forecast? Similarly, involvement is defined as interest in pension issues, and realising of the importance of pension choices. Some of the results of the thesis add to what was previously known about experts versus novices in general (e.g. Jacoby et al, 2001; Mishra and Kumar, 2011): i.e. that knowledge breeds risk-taking, but that novices and experts seem to use trust in the same way and in the same amount when making decisions. Some results were, however, not in line with previous findings or expectations. The direct effect of involvement on risk-taking was in the present study found to be positive, contradicting the hypothesis of a negative relation based on the findings by Weber (2004). A possibility discussed in the present study is the need of a clarification of financial risk-taking: is the topic approached focusing on downside and negative consequences (as in many consumer behaviour studies including Weber, 2004; see Stone and Grønhaug, 1993), or is it possibilities of a better return as a consequence of a higher risk-taking that are of main importance (e.g. Mårtenson, 2005)?

From a more general theoretical perspective, the results of the study add to the body of research within consumer behaviour emphasising the importance of emotionally tilted input to consumers' decision-making, even concerning assumedly rational financial tasks such as risk-taking. Much is known about the way individuals act as investors and their ability to handle risk: e.g. general deviations from "economic man" when faced with investment decisions (see Benartzi and Thaler, 2007 for an overview). The present study finds that financial risk-taking is indeed affected by individuals' level of trust in the pension system (one such emotional factor). This implies that the present study is able to verify previous results regarding trust consequences (e.g. Morgan and Hunt, 1994; Sirdeshmukh, Sing and Sabol, 2002; Schwartz, Luce and Ariely, 2011) in a pension investment setting. Theoretical analogies may also be made to other long term activities where reliance on an entity is necessary. Retirement investment may be specific in many aspects, but regarding the long term time frame it is similar to many other activities where planning is necessary and where reliance on another party is inevitable - such as e.g. education and choice of school.

The four variables used in the present thesis: trust, risk-taking, knowledge and involvement are all variables commonly found in consumer behaviour studies. The classification of individuals

according to level of knowledge and level of involvement *together* with an analysis of the trust – risk-taking relation using these two characteristics is less commonly found. Some studies on risk communication (where risk is synonymous to e.g. hazardous companies, nuclear waste or the like, e.g. Heath et al (1998)) share all four variables with the present study. However, the concept of risk inherent in risk communication studies is typically not modeled as risk-taking, nor is risk typically the dependent variable. Another study involving all four variables is Johnson (2005). Here, the actual decision-making (similar to choice of risk-level) is more in focus, starting with choice of information process, and ending up with subsequent risk judgment. This is an example where a traditional marketing focus (building on the long tradition of information processing literature stemming from, among others, Bettman (1979) and Petty and Caccioppo, (1986)) has interesting implications for the financial consumer. However, the focus of the Johnson-study is less on the actual outcome – i.e. risk-taking – and more on the information-processing path taken. In this respect, the present study has a marked outcome-oriented focus: it is the actual risk-level chosen, and its potential implications for future consumption that is of interest.

1.9 Limitations of the study

The present study focuses solely on consumer behaviour within the state pension system, i.e. the base of the pyramid in figure 1.2. This narrow focus makes it hard to say something about quality of individuals' choices of risk-level in other investment settings: the subset of total savings studied is much too small to enable such a discussion. It could very well be the case that the total risk-level of a single individual is very different from the risk-level observed in the premium pension fund choice.

The focus on the state pension system does however not imply that the top two tiers of the pension pyramid (see figure 1.2) are without importance. It has been estimated that some 90% of the Swedish workforce is currently covered by work-related pension plans (Kruse, 2010). The terms are, however, varying according to e.g. sector of employment and age, and it is not unusual for younger employees (25-

35) to entirely stand outside of work-related pension plans (Adolphson and Hellman, 2010). The private savings are also increasingly important. Since the 1950's, retirement savings have been tax deductible and accordingly encouraged by the state. A marked increase of retirement savings may also be observed, especially during the first half of the 1990's (Berg, 2000). As of today, the maximal deduction is limited to SEK 12.000 per year, putting a lid on yearly inflow to private retirement savings.

Further, the top two tiers of the pyramid may not be without importance for the level of trust and the choice inherent in the state pension system. A lack of private savings and no contribution from work-related plans may lead to increased expectations regarding the state pension system, and accordingly an effect on level of trust. Again, this is not discussed further in the present thesis.

Note also that the guaranteed pension, i.e. the pension paid out to individuals with a low or no earnings-related pension is not included in the study. This lower guaranteed pension amounts to between 6.800 SEK and 7.600 SEK per month (as of 2011) and is currently being paid out to around 670.000 retired Swedish citizens (Pensionssystemet.se, 2011; note however that these 670.000 may be covered by other pension types as well, e.g. a combination of guaranteed pension and regular income pension is possible). The reason for excluding this type of pension is that it does not contain a possibility to make financial decisions (such as in the premium pension part in figure 1.3).

As has been briefly described, and as will be elaborated on at some length in chapter 2, the Swedish state pension has been altered during the 1990's. The focus of the present thesis is on the perception of the present pension system, i.e. after reformation. The previous state pension system is not without interest: it practically acts as the reference point in comparisons and will be used in order to discuss how expectations may be formed and changed. It also practically covers a part of the present population: individuals born prior to 1938 are fully covered by the previous system and individuals born between 1938 and 1954 are covered to a certain extent (less and less the younger the individual). However, in the more theoretical and empirical parts of the thesis (chapters 3-6), the term "Swedish state pension system" for practical purposes refers to the present system.

A clarification as to the distinction between savings, investments and consumption of financial services may be made at this point. When directly describing the choice behaviour of individuals within the Swedish pension system, the term "investing" and consequently "investments" is chosen. Perhaps a more common term would have been "saving" and "savings". The reason for not choosing "saving" is that this term is viewed as referring to the more general need to put aside means aimed at securing a stream of income after retirement - no matter in what form. The behaviour studied in the present thesis, i.e. the choice of risk- level, is hence not directly part of this action. The term "investing" in most cases ends up as consumption of one or several financial services (a bank account, a mutual fund etc.). Here, the decision to stick with "investments" and not use "consumption" as the default term is more due to the feeling that "consumption" indicates a purely theoretical reasoning - not necessarily being a very good description of the actual behaviour in focus. When conclusions on a higher theoretical level are drawn, "consumption" is sometimes viewed as the relevant description and is consequently used.

1.10 The structure of upcoming chapters

In chapter 2, the pension setting is described: the evolution of the Swedish pension system, the characteristics of the present system, and the mechanisms of change operational in reforming the Swedish pension system.

Chapter 3 provides an overview of the central concepts: consumer decision-making, trust, risk, knowledge and involvement. It also presents previous research as regards the trust – risk relation. Chapter 4 presents the model used and specifies the hypotheses to be tested and discussed in chapters to come.

The methods of analysis of the present study are outlined in chapter 5 and the results are presented in chapter 6. The last chapter 7 contains a discussion of the separate results and a general discussion of the impact of the study on the picture of the individual as pension investor – in terms of trust, risk-taking, knowledge and involvement.

2. CONTEXT AND CHANGE FROM A PENSIONS PERSPECTIVE

The Swedish pension system has undergone dramatic changes since the 1990's. The old pension system, valid until 1994, was a defined benefit system structured as a pay-as-you-go system. "Defined benefit" implied that the contract with the citizen included a promise to pay a certain fraction of his or her end salary, and "pay-as-you-go" refers to the inflows from the current work force roughly being used to pay the pensions of the current retirees.

The new Swedish pension system is (excluding the guaranteed pension) a defined contribution system, i.e. a system where the individual more or less get what has been paid in during the working years. To a large extent the system is still a pay-as-you-go system, where pension payments of today are financed by inflows of the current work force. A smaller part (the premium pension system) is invested in funds according to the will of the individual, and the pension is accordingly (partly) contingent on the development of the chosen funds.

The actual content of a pension system and individuals' perception of the same pension arrangement may be two different things. The perception in peoples' minds of the wordings in the written law is not something that is easily implemented. It evolves over time in the thoughts of citizens, changes through legislative actions or through economic and demographic forces and is at no point clearly observable. A pension reform, however necessary, always induces new perceptions and new expectations; sometimes similar to its predecessor, sometimes fundamentally new. These new perceptions may or may not be in line with the expectations of the legislator. As stated in Erika Werner's dissertation "Safe, betrayed or uncertain: Thoughts and preparations for retirement" (2012), individuals clearly have not changed their preparations prior to retirement as rapidly as perhaps the reformers had aimed for. The perception of a phenomenon, in this case the pension system, may induce a variety of reactions from the individual. Several such reactions have been documented, among which increased savings and increased

accumulated wealth in forms of real estate due to Italian pension reforms (Bottazzi, Jappelli and Padula, 2006).

In order to understand present phenomena, it is vital to understand both the historical predecessors and the process of change. The perceived present pension system should, according to this view, be understood from a historical perspective and from the context within which it was implemented. As Rothstein (2002) states in an attempt to understand the variety between welfare states: "*the solution ... is related to the way in which the institutions of the welfare state programs have been historically established*" (p. 903). This view is observable in the variety of ways that countries have chosen to solve old age financing. If there would have existed one unique solution that was simply better than all alternatives (in terms of e.g. size of future pension pay-outs and fairness among different interest groups and generations), it would have been expected that the majority of pension systems would be structured in a similar fashion. The variety of financing alternatives as depicted in figure 2.1 (sometimes pensions are financed through the transfer system, sometimes through labour income and sometimes financed by the assets of the individual) indicates that no such optimal alternative exists. The financing situation of a single country depends on the conditions of the country in question and the path taken historically regarding welfare provisions. E.g. the high level of transfers inherent in the Austrian, Hungarian and Swedish pension systems is totally lacking in the US and UK systems. As for the Swedish transition, the change from the previous to the present system could be interpreted as a movement towards the "asset"-corner.

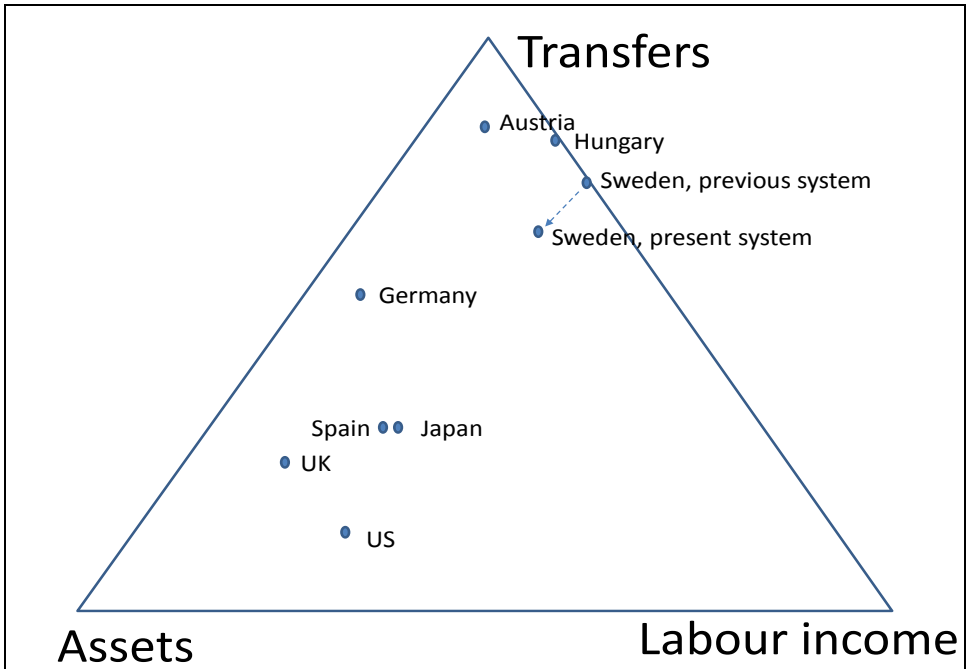


Figure 2.1 Financing alternatives of pension schemes

Source: Keating, C. (2011, p. 13), “Don’t stop thinking about tomorrow: The future of pensions”, BrightonRock

The key reason for devoting part of the study to a description of the Swedish pension system is a belief that the pension setting and the perception of this setting could influence individual behaviour in such a way that conclusions from other, previous settings could not be drawn. Pension systems, sometimes dealing with payments way ahead in the future, could be seen as a promise – made by the government of today to the citizens of tomorrow. To understand how this promise is perceived by the individual, both in terms of content and in terms of trust in the fulfilment of the promise, is important to the present thesis. This implies an assumption of a connection between context and behaviour, between the pension system of yesterday and today and the choices made by the individual as investor. Trust, as an individual belief, here serves as a bridge between the historical evolution of a pension system and the actions, among them choice of risk-level, taken.

The first two sections of the chapter are devoted to descriptions of first the previous, later the present Swedish pension system. The focus then

turns to the analysis of these systems. The perceived need of a historical overview implies two things. First, a theoretical framework of how to view historic evolution of institutions and the mechanism of change is needed. This framework is found within institutional theory, especially in the work of the historical institutionalists. The present study will use the framework provided by institutional theory to describe the evolution and change of the Swedish pension system. The increased understanding of the change of the pension system – the predecessors, the motives, the arguments – will form a basis of understanding the behaviour of the individual in terms of perception and trust; in other words to answer the question posed in section 2.5: should the individual choose to trust or not to trust? A theoretical structure of how to describe the welfare state is the second tool needed. This structure is given by the studies of welfare state regimes (Esping-Andersen, 1985 and 1990) together with studies concerning the pillars of society (Goodin and Rein, 2001).

2.1 Historical overview of the Swedish pension system

Important years in the development of the Swedish pension system of today are listed in table 2.1. These historical points also form the basis for a discussion of the historical predecessors to today's system, and especially the last three dates will be further discussed in the sections to come.

Table 2.1

Important years in the Swedish pension system development

1913	Introduction of first state pension system (folkpension) Low levels of compensation but all-encompassing
1935	Reformation and strengthening of state pension system Contribution part (basically the insurance element) toned down, the term “folkpension” introduced indicating its universal character
1947	Reformation and strengthening of state pension system The “folkpension” actually implemented: i.e. no means-testing and practically possible to survive on only the state pension
1957	Referendum regarding supplementary old-age benefit (ATP-omröstningen)
1994	Parliamentary vote regarding a new state pension system
2001	First pension pay-outs from the new state pension system

2.1.1 Pre-welfare state societies

19th century Sweden may be described as a welfare system where the care of the elderly was the duty of the family, more specifically the duty of the heir to the land. The system was implemented in written law already during the Middle Ages and even though legislation and land-ownership was changed over time, the responsibility still prevailed. Practically, this was carried out through co-residence between generations (Moring, 2008). This of course included only the land-owning part of society. The provisions for the landless poor was to a large extent a responsibility for the church, with poor houses and in some cases the creation of poor relief units as examples. The latter part of the 19th century saw the emergence of industrial towns, with new employment opportunities for the rural landless population. The first Swedish industrial towns of the 1880's and 1890's experienced a number of problems: overcrowding in low standard houses, low paid shift work, child labour and semi starvation in times of unemployment or crisis (Moring, 2008). Life was also dangerous: the newly built

industrial environment was not at all safe for workers. The accident cover introduced in Sweden in 1901 was based on voluntary contributions, leaving the poorer workers with no safety net at all. The increase in the landless group during the latter part of the 19th century also implied an increase in poorhouses; by the 1890's there were almost 2000 poorhouses to be found in Sweden.

The Swedish system may be contrasted with the situation in other European countries. The decades preceding the former turn of the century was a time period when responsibility regarding the care for the society's elderly varied heavily depending on geography (Reher, 1998). In southern Europe, family ties were strong and a substantial part of the responsibility was put on the family. Northern Europe, including Sweden, was characterised by a less encompassing definition of family loyalty and accordingly more responsibility regarding care for the elderly was put on the state. These decades form a crucial time period when it comes to understanding the present pension contract: the emergence of the welfare state.

2.1.2 The emerging welfare state

The first Swedish pension system was introduced in 1913. By then, Germany had had a compulsory social insurance system for blue collar workers since 1889. The German approach with occupational status as a basis for pension benefits was rejected in Sweden (Ebbinghaus, 2001). Instead, Sweden, with its tax-financed pension system went along the road where all citizens, regardless of occupation, were covered and a minimum standard of living was guaranteed (Palme and Svensson, 1997). The reasons for this have been debated. Suggestions are that the large, and relatively strong, agrarian population played a central role (Edebalk, 2003). This group was markedly against a German style pension reform, since its blue-collar scheme would not include farmers. The pension scheme adopted consisted of two parts: the basic pension for all citizens and the supplementary means-tested pension. The level of compensation was very low at this early stage; only 11,3% of earnings for a typical industrial worker (Palme and Svensson, 1997). Still, the scheme had the important feature of being all-encompassing: it was a pension for everyone.

The low level of benefits in the first pension system was the problem to solve for the 1935 pension reform. Quoting the former Prime Minister, Tage Erlander (1952, p. 2):

“Most important was to implement decent income pensions [...] in 1932 the total costs for income pensions amounted to only 70 MSEK.” (Authors’ translation)

The social-democrats wanted to raise the level of benefits without a rise in level of contributions. The result was a switch to a pay-as-you-go-system (Palme and Svensson, 1997). As in all pay-as-you-go systems, the inflow of money from the working population would finance the pay-outs to the present retirees. The rise of the compensation levels now moulded the pension system into one where the main objective was to protect the level of income, or standard of living, after retirement. This is a turning point in the formation of citizens' perception of the present pension system.

The expanded welfare state after World War II did not alter the institutional foundation of the European pension schemes. In Sweden, the universalist approach was now preferred by the vast majority. As Baldwin (1990) formulates the spirit of the time:

“The thrifty... should not be punished for their efforts by reductions in statutory pensions, nor should well-paid wage earners be deprived of benefit”.

The flat rate basic pension was decided by the parliament in 1947. Its' most important feature was that it continued to encompass all citizens; furthermore it was set at such a level that retirees would no longer be regarded as poor. Pension reforms were not the only welfare change implemented in post-war Sweden; family allowances, workers compensations and health insurance were all part of the package that helped *“catapult the country into the welfare vanguard”* (Baldwin, 1990).

Note that during the whole period of pension system development, the social-democratic party is the ruling party of Sweden. The important connection between the social democrats and the principle of securing the level of income is described by Lundberg (2001). He describes the principle as one of the most central issues in the formation of the post-war welfare state, and far from obvious from a social-democratic standpoint. Gustav Möller, social-democratic Minister of Social

Affairs during the 30's and 40's, was a powerful advocate of a basic security pension system where the primary aim would be to secure a basic level of compensation for all citizens. His opponents at the time were to be found in the workers' unions: already in the early 1940's, LO (blue collar workers' union) worked towards a preservation of citizens' standard of living after retirement. With the appointment of Gunnar Sträng as the new Minister of Social Affairs in 1951, this line gained approval. The encompassing model was implemented during this decade, with earnings-related principles as guiding lights for the social security system as a whole, and consequently with earnings-related pensions.

This was the political landscape at the time of the 1950's; the time for the big Swedish pension battle. Should the new pension system be one with a lower guaranteed basic pension, with the individual possibility to voluntarily add on layers through private savings – as was the suggestion from the liberal-conservative parties? Or, should the system continue to cover all citizens with the aim to maintain standard of living, as was the suggestion from the social-democrats? With the smallest majority possible, the social-democrats in 1958 won the pension battle. In the supplementary pension system, ATP, benefits amounted to 60% of the average annual earnings of the fifteen best years up to a ceiling. To get a full pension, 30 years of earnings were needed (Klevmarken, 2002). The pay-as-you-go component implied that the working population through pension payments would finance the pensions paid out to the generation of retirees. The economic risk of the promise was however borne in its entirety by the state. Should the economic activity slow down in the Swedish society and the inflow in the pay-as-you-go structure diminish, the promise to present retirees would still have to be fulfilled.

As mentioned, the system was a defined benefit system; protection of standard of living, or level of income, from this day on became what has been described as a constituting principle that governed not only the social-democratic standpoint in social issues but also served as a central theme in the modern Swedish welfare state (Lundberg, 2001). To be noted here is that there is also a basic security implicit in the system, encompassing all Swedes. It may be described as a system uniting basic security and income security (Palme, 1990) or as a combination of citizenship rights with income security for the working population (Stephens, 1996). The battle against the voluntarily added

layers as had been suggested was however won: as Baldwin (1990) summarises the outcome:

“supplementary pensions won for income-related benefits that secured in times of old age, disability or sickness the standard achieved while economically active a role as the benchmark of Swedish social policy”.

2.2 The present pension system

2.2.1 The reasons behind the pension reform of the 1990's

As is clear from the historical overview, the pension system may either have the goal of basic security, or be seen as a means for something closer to income-protection. The dividing line between these two standpoints may be identified historically throughout the European formation of pension systems, and also between the Swedish political parties. The pension reform of the 1990's is no exception.

In the beginning of the 1990's it was obvious that the present pension system was not sustainable. Sweden no longer had the economic growth needed to support the benefits inherent in the ATP-reform, and due to an ageing population the promise included an increasing part of Swedish citizens. In 1991, the conservative Prime Minister Carl Bildt appointed a pension working group, with members from all parties. The instructions were to come up with a suggestion for a reformed pension system. As is formulated in the proposition (1993/94, p. 45):

“Weaknesses in the present order have successively been more salient. The ability of the pension system to fulfil the commitments made is thus threatened.” (Author's translation)

2.2.2 Content of the present pension system

The result of the pension reform of the 1990's is in fact a combination of two parallel systems. Pension systems include long term commitments and are not easy to change over-night. The present system is therefore divided in two: the part of the population born before 1938 is covered by the old system (the flat rate pension and the ATP) whereas later generations are phased into the new system, fully comprising those born 1954 or later.

The new system consists of several parts. A basic income guarantee serves as the first part. It covers all citizens, irrespective of work and irrespective of level of previous income. 2011, the guarantee pension implied a pension level of between SEK 6.800 and SEK 7.600 per month.

The second part is the income-based pension. It consists of two parts: a non-financial, or notional, defined contribution pay-as-you-go system (often called income pension) and a financial defined contribution system (known as the premium pension). The income pension consists of individual accounts although no direct investments are made. The individual contributions (16% of the pension base – calculated as income minus a fee of 7% - up to a ceiling of around SEK 424.000 as of 2013) are increased each year by the average income increase in the economy minus a factor of 1,5 percentage points. It is not obvious how large a percentage of present income that will be paid out as income pensions. It depends on the development of the individuals' earnings during the working years, and on actuarial assumptions governing the pay-out scheme (basically assumptions regarding remaining life span at retirement). The premium pension system contributions consist of 2,5% of the pension base and are invested according to the individuals' own preferences. Should the individual choose not to make an active choice, the contributions are invested in the default fund (Premiesparfonden, which during 2010 changed its name into AP7Såfa). The part of future pensions that stems from the premium pension system will entirely depend on the future value of the chosen funds. It is this smaller part of the new pension system, the 2,5 %-points that forms the basis for the risk-taking studied in the present thesis.

Furthermore, pensions under payment are also subject to change. Should estimated outflow (calculated as the discounted value of all future pay-outs to present and future retirees) exceed estimated inflow

(calculated as the discounted value of all future payments into the pension system), the pensions under payments are to be reduced. That outflow exceeds inflow may typically occur when unemployment rises.

All in all, the new pension system implies a system shift since the defined benefit structure of the system is changed into a system that calculates pensions according to defined contributions. The promise to, at retirement, provide the individual with 60% of final wage that was inherent in the previous pension system has accordingly disappeared. Instead, a more transparent, and maybe more calculable pension system has been introduced. The new pension system may also be described as more tightly tied to the underlying economy. The wage indexation instead of the former inflation indexation is a sign of this, as is the change mechanism of pensions under payment described above. Retirement investment and retirees are a part of the real economy in a more direct way now than before. The pension paid out to each individual is also closer than in the previous system tied to the amount paid in by the same individual during the working years. In these two aspects the system is more concrete than it used to be. It no longer relies on an entity unknown to the individual for a number of years to come: the fifteen best years of income (to most people the fifteen last years in their career). It now builds on the income during the entire life.

Annually, Swedes receive an estimate of future pensions. The content of this estimated future pension has varied over the years. As of 2013, the forecast assumes a constant wage from now until retirement, and varies the time of retirement from 61 and onwards.

A quick glance of the development of funds and indices since the introduction of the new system (2000-2010) yields some interesting results. First, the average return on the average portfolio within the premium pension fund system has been higher than the increase of the income index during the period. It could hence be argued that during the above time period, the Swedish pension investor was on average better off by taking advantage of the possibility to invest in premium pension funds than had been the case had he been given the income index as return. The dispersion among individuals is however substantial:

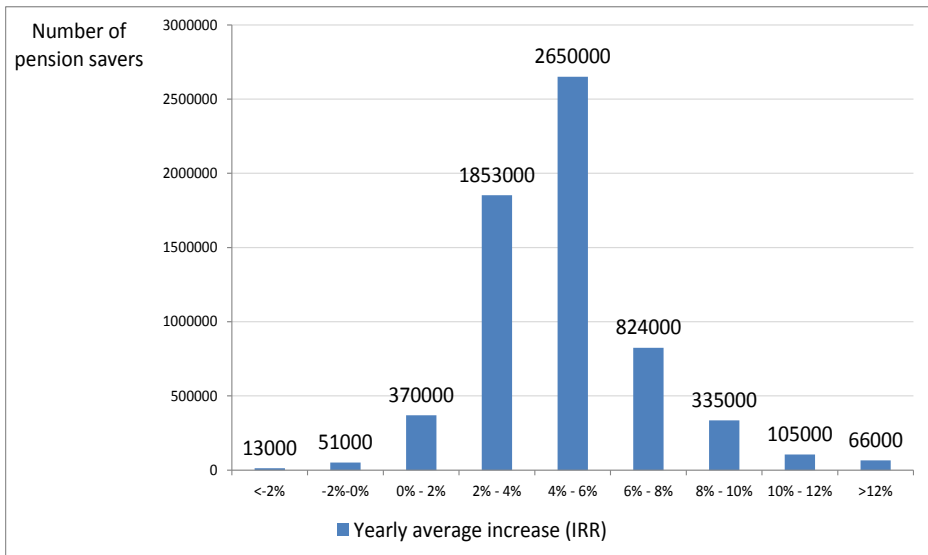


Figure 2.2 Dispersion of premium pension fund returns during 2000-2010 (Source: Pensionsmyndigheten, 2011)

Figure 2.2 shows that the dispersion of results of premium pension portfolios during 2000 and 2009. The average active premium pension fund investor had an annual return of 3,7%, compared to the default fund which had an annual return of 3,1%. From the perspective of the present thesis, the figure also points at the chosen topic being relevant: choice of funds does have a marked impact on level of future pension.

2.3 Welfare state classifications

2.3.1 Regimes and pillars

A central concept in the study of social security in general and pension systems in particular is the concept of the welfare state. In broad terms, the concept comprises the development in Western societies over the past hundred years; a development where the provision of social security, health care and education has become a domain of public policy-making (Palme, 1990).

The driving forces behind the development of the welfare state have been much debated. It has been seen as a consequence of the struggle

against the unpredictable market (Polanyi, 1944), it has been seen as a product of industrialisation and increased economic growth where affluence itself creates a need for social security institutions (Galbraith, 1958), and it has been seen as dependent on the capacity of the working-class parties to build coalitions with other segments of society (Esping-Andersen, 1985 and 1990). The conflict at hand may be generalised as one between those who claim that ideology has played out its role for societal development and those who argue that class-based politics has been decisive for how the welfare state has been patterned (Palme, 1990).

A view of the welfare state introduced by Esping-Andersen (1990) states that society, or the social policy model, is in effect a special arrangement regarding the interplay between state, market and family. He claims that the capitalist market economy co-exists with a legal and organisational structure that leaves the individual more or less enabled with social rights, and accordingly more or less independent of the market forces. Pensions, by far the most important in the overall package of social transfers, constitute a key component in this state-market-family arrangement. The arrangement may be classified into various welfare regimes (Esping-Andersen, 1990). In order to understand the position of the Swedish welfare model including the pension system, an overview of these regimes is given below.

One type of welfare regime is the liberal welfare state, with its desires for economic efficiency and social provisions, and with the underlying aim to avoid labour market disincentives and welfare dependency (Van der Veen and Grooth, 2006). This implies that means-tested assistance (i.e. help only to those in need) and a modest level of social-insurance are commonly found in the liberal welfare state. Benefits are mainly directed towards low-income, usually working-class, state dependents. In this regime, the limits of welfare equal the marginal propensity to opt for welfare instead of work. Entitlement rules are therefore strict. The state encourages the market to fill up the often modest levels of benefits that are state guaranteed. All in all, the liberal welfare state lifts its citizens over a minimum level and leaves solutions above this basic level to be solved by the market. The traditional example of the liberal welfare state is the United States.

A second type of regime is the corporatist structure found in many European countries, among them Germany. The predominant feature of these countries is the preservation of status differentials, and a preference for social stability. The welfare state attaches different

rights to different classes with different status. The market reliance found in the liberal welfare state no longer exists, and private alternatives play a marginal role. The redistributive aim of the state is negligible, and to uphold status differences among citizens is the main objective. The connection to the family is also clearly visible in the emphasis on the state only to interfere when the capacity of the family to take care of its members is exhausted (Esping-Andersen, 1990). However, the importance of occupational social insurance with the aim to ensure the continuity of family income in the face of unemployment is also an important feature of the corporatist regime (Van der Veen and Grooth, 2006).

The third cluster contains regimes where principles of universalism and state guaranteed social rights have been extended to include the middle class. This is referred to as the social-democratic regime type and is characterised by a promotion of an equality of the highest standards, not an equality of minimal needs (Esping-Andersen, 1990). As regards social security, all strata are included in the same universal insurance system, yet benefits may be guaranteed according to earnings. This model crowds out market solutions and is truly all-encompassing: all benefit, all are dependent and all will presumably feel obliged to pay. The classic example of the social-democratic regime has traditionally been the Swedish welfare state.

The classification into regimes has been met with a certain amount of criticism. The structure of Esping-Andersen has been seen as more characterised by “who gets what, and on what conditions?”, and has been criticised to see the problem solely from the recipient’s perspective (Goodin and Rein, 2001). The three regimes are conceptualised in terms of the tax-transfer structure of public programmes; are they means-tested, are they universal and flat-rate-based or do they consist of earnings-related contributions? By looking at the different pillars of society instead, i.e. the individual/family, the state and the market, the perspective is altered and the question to answer becomes “who pays and who provides?” The welfare state of today may also be described as less of a clear-cut case than it used to be, and this may make the regime-classification obsolete (Goodin and Rein, 2001). It is no longer the case that the liberal regime relies entirely on the market pillar, that the corporatist regime relies entirely on the individual/family pillar or that the social-democratic regime relies entirely on the state pillar; instead the picture is blurred. Multi-pillar approaches may be found, e.g. when it comes to pension plans

(Goodin and Rein, 2001). One is the Chilean example with mandated, fully funded plans, chosen by the individual but managed collectively; a second is the Swiss mandate where private firms provide occupational pensions; a third is the Swedish pension system after the 1990's reformation.

The identification of the various pension systems, be it according to the Esping-Andersen regimes or to the pillars of responsibility is important in the attempt to better understand the context of the pension saver. The different regimes denote the institutional arrangements, rules and understandings that guide and shape social-policy decisions, expenditure developments, problem definition and the response-and-demand structure of citizens and welfare consumers (Esping-Andersen, 1990). The latter focus on the individual is of importance to the present study. The range of human needs that are given the status of a social right, and that citizens thus will add to their inventory of expectations, varies from system to system. Knowledge of what the map looks like, i.e. the various welfare regimes listed above and the pillars of responsibility, will serve as a skeleton in the study of the changes that followed from the Swedish pension reform.

2.3.2 Welfare state classifications applied to the Swedish pension system

In most traditional welfare regime analyses, the Swedish model is used as the most typical example of the social-democratic regime (as defined by Esping-Andersen, 1990). Studies regarding social services have pointed at the universalistic and equality-promoting characteristics of the Swedish system (Antonnen and Sipilä, 1996; Korpi, 2000). A few studies, however, point at new winds blowing. The Scandinavian social services models, among them the Swedish, of the new millennium are said to be characterised by selectivism and segmentation rather than universalism and equity-promotion (Szebehely, 2003; Rauch, 2005).

This picture is confirmed when focus is narrowed to encompass only the pension system. The new Swedish pension system is described in the literature as more of an insurance system and less of a system of income redistribution with the aim to increase work incentives (Goodin and Rein, 2001). This aim questions the definition of the Swedish pension system as a universalist, social-democratic system

(Esping-Andersen, 1990); or at least, it makes the definition according to the various pre-set regimes less clear-cut. Some of the social-democratic characteristics still prevail, such as the all-encompassing nature of the system. The need for private savings, to increase the pension income is yet unknown. It may be argued that since the level of pensions in the new pension system as compared to final salary is as low as 40-50% for most Swedes, the arrangements traditionally found within the liberal welfare regime have crept into the Swedish system.

In terms of pillars of society, the new Swedish pension system still relies on the state, especially for the basic pension. It relies on the market, since the means stemming from the premium pension system are directly invested in mutual funds, and also due to the lowered level of pension income. Finally, it relies on the individual by shifting more responsibilities on to him, by demanding a higher level of private savings than was previously needed and by posing certain requirements regarding behaviour on him. The individual benefits from being knowledgeable when it comes to pension investing – he can no longer rely on the state rendering the same, relatively high income stream at retirement. The individual is required to be involved – the new system is constructed as to enable a tailor-made investment portfolio to those who take the opportunity. The individual is invited and encouraged to make investment decisions (the state has invested substantial effort and money for the new premium pension system to enable tailor-making of portfolios) and to understand how these decisions will affect the outcome of his or her pension investments. The institutional arrangements have changed substantially, and the responsibilities along with them.

2.4 Influences from institutional theory

2.4.1 Theoretical overview

The description of the Swedish pension system setting needs to contain both a picture of the previous pension system, and an understanding of the change mechanism. Institutional theory may be said to have an important capacity to stimulate contextualisation; whether that context encompasses regulatory, historical or political

settings (Greenwood, Oliver, Sahlin and Suddaby, 2008). The importance of a historical focus is also verified in the literature: an understanding of the historical process within which the institution was shaped is seen as necessary in order to understand the institution itself (Berger and Luckman, 1966).

The assumption that institutions, or in the present case the underlying pension structure, make sense as explanatory variables in the attempt to understand present policy or present behaviour lies at the core of institutional theory. The basic idea is that the policy choices made when an institution is being formed will have a large impact on the policy going forward (Skocpol, 1992). This reliance on the initial choices is commonly referred to as path dependence. For governments and welfare arrangements (including pension systems), path dependency implies that the institutions and systems involved are mainly stable and act as obstacles towards political change. This view of a “frozen welfare landscape” (Esping-Andersen, 1996) may be depressing at times: if welfare states prove to be too static and unable to adapt to a changing societal structure, they face the risk of becoming obsolete. However, as will be described, change is a possibility even within the institutionalist framework.

Institutional theory assumes that organisations often follow common practice and that they are in this behaviour affected by other organisations. The myths of society, it is assumed, were accepted as prescriptions of acceptable organisational behaviour, and no rational evaluation of the alternatives at hand was made. The reasons for organisations to adapt were to signal social fitness and to gain legitimacy in the eye of both internal and external beholders (Greenwood et al, 2008). This adaption was assumed to be rule-like: organisations tended to collectively follow the same trend, to do this without much debate and to exhibit permanence when having adopted a certain alternative (Tolbert and Zucker, 1983).

One of the reasons for adapting, i.e. the question of legitimacy, has been a central issue in the evolvement of institutional theory. It may be explained as the attempt from organisations to make their own activities, and the norms of the social system of which they are a part, consistent with each other (Dowling and Pfeffer, 1975). As will be shown, the question of legitimacy is crucial when attempting to understand the development of the new Swedish pension system.

For the institutionalists, persistence and stability are definitely more in focus than change. The present path may be altered, but it will take a force of some extent to induce this change. One such driver of change could be an insight that the present situation is not sustainable. New institutional rules and structures can evolve with the aim to solve the problems caused by their predecessors (March and Simon, 1958). The probability of a change taking place grounded in this more pragmatic insight depends on not only the institutional structure, but also on the strategy adopted by the policy-makers in order to minimise political cost. One such commonly used strategy is characterized by blame avoidance (Weaver, 1986; Pal and Weaver, 2003), either by a will to "hide" the suggested change (e.g. by a less transparent changed indexation of welfare benefits), by the will to find a scapegoat (e.g. in a political enemy) or by the will to create a broad agreement among all political parties; a strategy referred to as "to circle the wagons" (Rauch, 2008).

Second, an external, legitimating factor may further act as a driver of change (Meyer, 1982). Third, change has been described as endogenously driven (Leblebici, Salancik, Copay and King, 1991).

The path dependency of pension systems is clearly visible in the historical overview of sections 2.1 and 2.2. In the following section, the focus turns explicitly to the changes inherent in the reform of the 1990's and connects it to the drivers of change inherent in institutionalist framework.

2.4.2 Institutional theory applied on the Swedish pension reform of the 1990's

In the present case, the motives and political undertones of the early decades of the past century may be found in the early pension reforms. The emerging welfare state of the 1940's and 1950's helped shape the Swedish pension reform of the 1960's – a memory of which is clearly visible in the political stance taken by the political parties in the pension debate of the 1990's. The pension systems of yesterday are hence reflected in the pension systems of today.

As stated, the institutionalist focus on path dependency creates sluggishness towards change. However, a few explicit drivers of change have been identified. Acknowledging that upholding status

quo was no longer an alternative was the first driver of change identified. Applied on the case of the Swedish pension reform, this insight may stem from the numerous reports pointing at an unsustainable pension system in need of a reform. It may also be exacerbated by a more political analysis: if the problems inherent in the old welfare system become too imminent, the risk of losing voters due to passiveness probably increases; something that could serve as a driver of change. Three practical examples of this insight may be observed: a bi-partisan cooperation was initiated, the reform decision was taken during the interval between two public elections and much of the work was done behind closed doors in the special committee (Pensionsgruppen) established for this sole purpose (Rauch, 2008). In the study of the actions taken by the various political parties, the framework very much rests on the description of blame avoidance strategies.

The external, legitimating factor that influenced the pension working group was the economic crisis during the first years of the 1990's. The Swedish banking system was under severe financial stress, unemployment soared, interest rates sky-rocketed and house-prices declined with as much as 50% in certain areas. State finances that were far from balanced were also part of the picture. It has been argued that a number of reforms of the Swedish welfare state were already planned prior to the crisis, among them a reformation of the ATP-system (Stephens, 1996). However, the severity of the crisis created a framework of legitimacy to the pension working group; the "special occasion" needed motivated a step away from the path previously followed and the adoption of a new policy (Rauch, 2005).

The focus now turns to the last driver of change: the endogenous or political stance of the Swedish parties, both the social-democrats and the liberal-conservatives.

2.4.3 The pension reform from the perspective of the political parties

The social-democrats and the liberal-conservative parties brought along markedly different views of the pension system to the pension working group. For the social-democrats, the reformation of their "crown jewel, the ATP-system" (expression taken from Lundberg, 2001) was a complicated business. On the one hand was the

intellectual understanding of the problems inherent in the present system. This included knowledge of the fact that an increasing part of the working force had salaries over the ceiling in the present pension system; income above a certain level was not eligible for future pensions. Would the ATP-system be left untouched, the crown jewel would sooner or later turn itself into what the liberal-conservative parties had intended with the ATP-reform: a system with a guarantee of only a basic level of income (Lundberg, 2001). On the other hand was the history within the social-democratic party: many members still regarded the ATP-fight of the fifties as their finest hour and were not at all inclined to criticise the prevailing pension system.

With the outcome known, an interesting question posed by Lundberg (2001) is to what extent the pension reform may be regarded as a social-democratic reform. The critique from within the social-democratic party was substantial; both as regards the future of the buffer funds (AP-fonderna), the premium reserve and the future level of pensions. The reasons, Lundberg (2001) argues, to why the social-democrats at all agreed on the reform may be seen both as a will to pragmatically and responsibly solve an imminent problem, and a response to the main alternative proposed by the right wing parties: a pension system with a guarantee applicable only to a basic level of security. Internally, the reform is described as finally having tied up the right wing parties around an agreement on a universal and public pension system. Quoting Ingela Thalén (in Lundberg, 2001, p. 44), social-democratic Minister of Health and member of the pension working group:

“...when the liberal-conservative parties for the first time agree that pensions are the responsibility of society [...] let us not risk a pension battle that might destroy the principle ground gained, namely to have a big, encompassing and public system for everyone.” (Author's translation)

The question as to whether the social-democrats have abdicated from the principle to protect standard of living is in the eye of the beholder. Party rhetoric would object, strongly, whereas the standpoint of many a social-democratic grass-root is less obvious.

The liberal-conservative parties, on the other hand, brought along a view of a pension system where it is the responsibility of the state to guarantee a basic security, but up to the individual to save up to a

preferred income level. This view was predominant during the fifties pension battle, and to a large extent intact during the 1990's (Lindbom, 2001).

Still, the liberal-conservative standpoint in the pension working group of the 1990's did include the ATP-system, but saw private savings as a supplement above the ceiling in the ATP-system (Lindbom, 2001). The reason for this is to be found in history. The fact that the previous Swedish pension systems were compulsory and contained a pay-as-you-go-feature implied a reliance on the payments of the present working generation to pay for the pensions of the present retirees. A totally new pension system, e.g. constructed according to the will of the right-wing parties as a basic security system with voluntary additions, would make it impossible for the present pension contract to be fulfilled. A certain amount of pragmatism surely served as a guide for not only the social-democrats, but also the liberal-conservative parties.

The endogenous, political motives as described above fit well into an analysis with institutional theory as framework. The social-democratic stance may be seen as the result of a classic struggle between the advocates of preserving status-quo, i.e. a classic social-democratic pension-system, and the advocates of change – possibly with a different analysis of what was economically possible at the time than their more traditional party colleagues.

2.5 To trust or not to trust?

With the theoretical background of the welfare state and the historical description of the evolution of the Swedish pension system established, the question of trust, or mistrust enters the description. Mistrust in this context refers to a feeling among citizens, well-grounded or not, that the forecasts calculated as regards future level of pensions will not be fulfilled. A system change would, it could be argued, more or less automatically lead to a certain amount of mistrust – but what about smaller changes? The question of mistrust depends to a large extent on the structure of the pension system. The following section will give a number of examples of various measures of variability and propensity to change of pension systems in different countries. None of these calculations are based on Swedish data. The

reasoning for using these international examples in order to draw conclusions regarding the Swedish case is the assumption that the variability and alterations of pension systems observed abroad could function as a starting point for a discussion on variability and alteration of the Swedish pension systems, both the old and the new one.

The defined benefit systems (i.e. where the individual receives a pre-defined level of pension) in general and the pay-as-you-go feature in particular (i.e. where inflows of the current working generation is used to finance pay-outs for the already retired) act as a starting point for the analysis. Since the long run rate of return in pay-as-you-go Social Security (i.e. the type of pension scheme common in Sweden) depends on the future course of fertility rates, immigration rates, mortality rates and the growth rate of real wages, there is considerable uncertainty built into the system (Shoven and Slavov, 2006). Furthermore, since the pension system is a closed system, i.e. there exists no external party to help bear the risk, fluctuations in the demographic or economic factors will inevitably lead to legislative changes in taxes and benefits in order to restore actuarial balance. It can therefore be argued that there exists a non-trivial amount of political risk in a defined benefit system. The term political risk is here defined as the risk that benefit rules will be changed through the political process before or during retirement, with a subsequent change in the value of retirement benefits.

A defined benefit pension scheme in a situation with an ageing population poses particular difficulties (McHale, 1999). Cash benefits to retirees will account for a substantial part of GDP (McHale exemplifies with Italy and Germany where the former, more generous benefits would have accounted for about one quarter of GDP). Concerns about the effects of such a situation, e.g. labour market distortions, inadequate national saving and declining returns of contribution for future generations become imminent. The temptation for the state to change the rules and the compensation for the current workers may prove to be irresistible. With reference to the German and Italian example, this is exactly what has happened. Both Germany and Italy have legislated downward adjustments in the level of pension benefits (McHale, 1999).

Several studies have attempted to measure the impact of particular law changes on the participants' lifetime benefits. The change in present discounted value that an average household may expect to receive

from the pension system has been used as an indicator of how pension reforms affect the population (McHale, 1999). The estimation covers the US and some European countries. It is observed that legislative changes seldom affect the part of the population already in retirement, or close to retirement. For young and middle-aged workers, however, the change may be as large as between one quarter and one third. Another approach used is to try and quantify effects of legislative changes of the pension system (Shoven and Slavov, 2006). The internal rate of return (IRR) in the US Social Security system is computed, and consequently political risk is defined as the fluctuation in IRR. The fluctuations observed are substantial. For instance, the IRR for the 1975 cohort average earning single male was -0,95% in 1993, rose to 2,04% in 2000 and declined to -0,39% in 2004 – all due to legislative changes. With a 1960 male cohort member as an example, the results imply that the average IRR between 1977 and 2004 was 0,525%, and the standard deviation as high as 0,8%. The authors conclude that “*there can be no doubt that the deal offered by Social Security has changed over the years*” (Shoven and Slavov, 2006; p. 8).

The above results show that the pay-out streams of even a defined benefit pension system do fluctuate. History has shown that benefit formulas and contribution rates have been changed when necessary to induce financial sustainability (Shoven and Slavov, 2006). As for defined contribution schemes, these naturally fluctuate depending on the development of the financial market – which is a consequence of their construction. The historical fluctuations of both types of pension systems imply that the individual observing these fluctuations and subsequently analysing the future forecasts would have reason to be somewhat sceptical. History shows that promises are often not fulfilled, and that systems have often been remodelled in order to ensure stability – leaving the individual with a lower pension than was expected (Shoven and Slavov, 2006). Knowing that the individual may not be involved enough to dig up the historical pay-outs or may not be knowledgeable enough to understand the data obtained, the conclusion of whether the fluctuations actually lead to mistrust is less clear. The formal foundation, however, rests firm: pension systems do fluctuate, and pension forecasts have been revised.

With this as background, it may be concluded that although faced with a defined benefit pension scheme prior to the reform of the 1990’s, it would not have been unthinkable for the Swedish population to view

future benefits with some scepticism. The more systemic reform of 1994 must be viewed in this light. It is not fair to describe the Swedish situation as moving from zero risk or fluctuation in the pension system to a big shift, with a possible rise in the level mistrust. The picture is perhaps more of one where a certain type of political risk during the previous regime (e.g. changes in composition of price indices, tax rule changes, raising of retirement age) is partly replaced by another type of risk: a more marked reliance on market factors.

Up until now the risks inherent in a defined benefit scheme, especially the pay-as-you-go part, have been discussed. The present Swedish pension system (after the 1990's reformation) is a defined contribution system, i.e. where the individual pension pay-outs depend on the money being paid into the system during the working years. For the aggregate situation, i.e. all the pension paid out in the country, it is important to bear in mind that a substantial part of the new Swedish pension system still contains a pay-as-you-go structure. The aggregate rise of pension pay-outs in the new scheme is governed by the aggregate rise of income level in economy – and as a consequence even the retired population is vulnerable to downturns in the economy. With the discussion in the aftermath of the crisis of 2008 fresh in memory, some political risks may still be said to apply. The state may still alter taxation rules and may still change the basis for actuarial calculation of pensions, or as in the case of 2008, may still change the “smoothing effect” of calculations of the income in the economy. However, a part of the new system is structured as a defined contribution system where individual contributions are invested according to the will of the individual himself (the premium pension system). A fundamental characteristic of this part of the pension system is the notion that the risk is ultimately borne by the individual. Variations in the stock market and in the income stream of the individual worker will alter his or her future pension – but these risks may no longer be viewed as political. It may be market risk, or economic risk stemming from cyclical fluctuations, but they are not caused by political decisions.

The new Swedish pension system may be summed up as to include one pay-as-you-go part more vulnerable to political risks and one part more sensitive towards market fluctuations. This description forms the foundation for the coming investigation of individuals' trust in the pension system.

2.6 Aspects of pension systems studied in the present thesis

The term "pension system" in the present thesis is centred around the ambitions of the system to either preserve level of income (resembling the previous system) or to create a level of basic security (resembling the present system). These dividing lines are observed both in their own right (illustrating e.g. differences between old and young citizens) but also as carriers of expectations regarding future pensions and as such influencing behaviour, e.g. level of trust in the pension system held by individuals.

3. THEORETICAL BACKGROUND

The new Swedish pension environment raises certain questions as regards individuals' reaction and behaviour. In order to provide a framework for subsequent analysis, an introduction to consumer behaviour and decision-making in general, and to consumer behaviour regarding financial services more specifically is provided in section 3.1.

One question connected to the content of the pension system concerns the perception among individuals regarding the aim of future pension payments (i.e. ensuring an unchanged standard of living versus acting as a provider of basic security). A related issue is whether the individual regards these payments or benefits as given – or with a certain amount of skepticism. In other words, does he or she trust the retirement benefits to come? Section 3.2 provides a theoretical overview of the construct of trust and an application regarding the importance of trust in a welfare state setting.

The focus on the new Swedish pension system and the new responsibilities borne by the individual also raises the question of risk-taking. Almost all decisions taken by the individual contains some aspect of risk: investments in stocks, educational attainment and home ownership (Dohmen, Falk and Huffman, 2008). The uncertainties of modern life and the volatility of the financial markets have accentuated the central position of risk and risk-taking and, as in the case of the Swedish pension system, increased the importance of individuals' ability or inability to handle risk. The individual is invited (and sometimes encouraged) to invest part of his or her state income pension savings in mutual funds, each with a specific risk-level. This implies that an understanding of factors that affect financial risk-taking has become increasingly salient. Chapter 3.3 provides a theoretical overview of the concept of risk and risk-taking, and of factors determining the level of perceived risk. Studies have further shown that trust may influence the level of financial risk-taking (e.g. Das and Teng, 2004; Ennew and Sekhon, 2007; Zhao et al, 2010). It might not be the most important influential factor, but trust and the specific level of trust in the pension system may have concrete

implications for the risk-taking of the individual. An overview of the literature regarding the trust and risk-taking relation is provided in section 3.4.

In the consumer behaviour literature, individuals are often segmented according to level of knowledge and involvement since part of their information-search and behaviour has proven to be explained by these two constructs (e.g. Alba and Hutchinson, 1987; Howcroft, Hower and Hamilton, 2003). Both knowledge and involvement have also been connected explicitly to risk and risk-taking (e.g. Diacon and Ennew, 2001; Weber, 2004). An overview of the literature on the constructs of knowledge and involvement and their respective relation to risk-taking is provided in section 3.5. This section also discusses if and how knowledge and involvement moderate the trust – risk-taking relation.

3.1 Consumer behaviour

The present study focuses on the individual as decision-maker and on the process underlying his or her choice of financial services, specifically the choice of financial risk inherent in these services. The starting point is what is known about consumer behaviour in general, and how the subset of decision-making is explained in the consumer behaviour literature. The overview starts on a general level and subsequently narrows the focus to the particular case where the individual makes retirement investment decisions.

3.1.1 Consumer behaviour research

The analysis of consumer behaviour originates from work presented in the 40's and 50's – at first oriented around the rational decision-maker, or “homo economicus”. Consumer behavior at this stage leaned on the classical economic theories (among them the expected-utility theory of von Neumann and Morgenstern (1947)). Consumers in this perspective were seen as merely maximising utility functions. Classic finance theory builds on this notion of “economic man”, or a rational decision-maker. Briefly, economic man is distinguished as maximizing a utility-function in which all relevant constraints and

preferences are included and weighed correctly. This economic-man model has been questioned from the 1950's and onward. Herbert Simon (1955) stated that "*when perception and cognition intervene between the decision-maker and his objective environment, this model no longer proves adequate*" (1959, p. 272). Simon also introduced the notion that people's decisions are subject to "bounded rationality": some decisions are simply too complex to be perfectly calculated by the human brain.

Consumer behaviour research continued to develop during the 1950's, with a more marked influence from clinical psychology. The attempts to understand the subconscious motives for consumption were numerous (e.g. Packard, 1957), and new research such as in-depth interviews and focus groups were introduced (see Ekström, 2010 for a description).

The first comprehensive models of consumer behaviour were introduced during the 1960's (e.g. Howard and Sheth, 1969; Engel, Blackwell and Miniard, 1993). These models share the view of the decision-maker introduced by Simon (1955). The idea was to explain and capture the complexity of consumption in one single model – a model that understandably became large and complex. Factors such as cognition, attitudes, personality and culture were typically assumed to play a vital role in the consumer behaviour process. Another common feature in these models was the modelling of various stages of the purchase process (e.g. Engel et al, 1993):

- Problem recognition, or need identification, where the individual compares his or her current state with an "ideal" state
- Information search, including search from memory or previous experiences (internal) and sources such as recommendations from other, interviews, advertising, company databases etc.
- Evaluation and ranking of the alternatives against different criteria
- Purchase decision – made on the basis of the chosen criteria, but also as a consequence of situational factors and social context
- Post-purchase evaluation including customer satisfaction with the purchase

Inherent in the stages above is still the notion of the individual as a problem-solver; a view to be found also in the related information-

processing model of consumer choice as introduced by Bettman (1979). In other words, the focus is still cognitive. These information-processing models play a significant role in the present study, especially when attempting to explain the influence of knowledge and involvement in the risk-taking decision.

3.1.2 Decision-making – from purely rational to experiential

The deviations from rationality (as e.g. bounded rationality, described by Simon, (1955)) were taken one step further by psychologists, starting during the 1980's and continuing today. The shift from a rationality-based and cognitive focus to a stronger emphasis on emotions has even been referred to as a methodological shift from an old positivistic research perspective to a new interpretive paradigm (Ekström, 2010). Simonson, Carmon, Dhar, Drolet and Nowlis (2001) refer to the shift as a movement from “cold” topics such as attitude-formation, information-processing and decision-rules to “hot” topics, including mood, arousal, hedonic aspects of consumption and self-expressive motives underlying preferences. The trend in psychological research and psychological journals to include also “hot” or emotional approaches to decision-making is reflected in leading consumer research journals (Simonson et al, 2001).

The present study is influenced by the “old” perspective of consumer research – with its focus on testing and statistical methods, its positivistic stance and emphasis on economic and psychological influences. However, the notion of emotions and moods is also visible in the present thesis. Trust as an influential factor when making financial decisions is central to the present thesis and could be seen as one such emotional, or hot, input to decision-making. The discrepancies described above, covering among other topics the area of risk-taking, have given rise to the idea of two parallel systems both influencing decision-making (e.g. Chaiken and Trope, 1999; Kahneman, 2003 and 2011). The rational and/or boundedly rational decision-making algorithm of individuals is seen as only one of two systems that may guide decisions and behaviour. On another level, what is referred to as “the experiential system” (Holbrook and Hirschman, 1982) exists; a system that is emotionally driven. Quoting Weber (2004, p. 2): “*Experience-based thinking is intuitive, automatic and fast. It relies on images and associations, linked by experiences and affect...*“. This experiential perspective does not assume rational considerations made by the individual, but focuses on intuitions and

emotions associated with prior experience. These two systems, the cognitive and the experiential, co-exist and react on different cues.

The emotional state, or mood, of an individual has in previous literature been found to influence several of the steps of the purchase process (Bagozzi, Gopinath and Nyer, 1999). These findings often have a psychological approach, but may nevertheless be of use when explaining the purchase process model of consumer behaviour. Memory has proven to be affected: individuals in a positive mood at the outset of retrieval have been shown to more easily recall positive material (Isen, Shalke, Clark and Karp, 1978). Similar effects of mood have also been found on recall and learning (Bower, Monteiro and Gilligan, 1981). Emotions, or mood, have further been found to have a robust effect on evaluation: individuals in a good mood have been found to evaluate stimuli more positively (Isen et al, 1978). More interestingly to the case of consumption of financial services, mood has been found to have an effect on information processing. Individuals in a good mood have been found to avoid investing cognitive resources in tasks unless (implicitly) promised that this will maintain or enhance their mood (Isen et al, 1978). This implies that individuals in a good mood may have little interest in engaging in cognitive processing at all (the promise is not there) and instead use heuristic processing of some kind. The central question here is whether systematic, or cognitive, information processing is assumed a priori to maintain or destruct the mood currently held.

3.1.3 The buying process of financial services

Consumption of financial services is often described as being different than consumption in general. This could be due to certain characteristics of the financial service in question, such as e.g. intangibility or level of complexity (Brady, Bourdeau and Heskell, 2005; Mishra and Kumar, 2011). Consequences of these differences are that the stages of the consumer purchase process are hampered (Ennew and McKechnie, 1998). Below, the steps of the purchase process are examined from the perspective of consumption of financial services.

First, individuals often do not recognise that they at all have needs for financial products or services (Ennew and McKechnie, 1998). This could depend on financial services often being associated with events

the individual wishes not to think about (such as burglary, illness, death or even old age) (Ennew and Waite, 2007). The observed lack of need is in line with the theory of constructed preferences implying that individuals elicit their preferences when faced with alternatives (Slovic, 1995). The consequence of constructed preferences is a passive consumer and consequently a limited information search. This also implies that unless the consumer can lean on own previous experience, the purchase is likely to be influenced by factors such as word-of-mouth and the credibility of the financial institution acting as counterpart (Ennew and Mckechnie, 1998).

Second, a comprehensive model of individuals' (specifically mutual fund investors) information search regarding financial services has been proposed to rely heavily on factors such as involvement and knowledge (Mishra and Kumar, 2011).

Third, the information evaluation stage is hampered by the intangibility of financial services (Zeithaml, 1981). Services in general, including financial services, are low in search qualities. Many financial services are further high in credence qualities, i.e. attributes that cannot be assessed even after the purchase. Other difficulties arise from the fact that many financial products are customized to individuals, making it hard to draw conclusions from information gathered by word of mouth (Ennew and Waite, 2007). Last, the complexity of many financial services is such that although collected, information is hard to interpret in a correct way (Ennew and Waite, 2007). These facets of financial services lead to a number of deviations from the rationality-based decision-making algorithm. Satisficing, i.e. settling with the first plausible alternative rather than strive for optimisation, is one such consequence (Simon, 1955). Other specificities of the buying process regarding financial services include a smaller evoked set especially when the information stems from personal sources, and a higher dependency on brand loyalty and relationship with the service provider (Harrison, 2003). The problems of information evaluation are further exacerbated by lack of transparency in the pricing of financial services (Diacon and Ennew, 1996).

The effect of emotions on evaluations, as documented by Isen et al (1978), may be found also in financial decision-making. Given the passive nature of the individual attempting to make a choice of financial service, and given the findings that the information-processing part of the buying process may be affected in a way that

will refrain individuals from using cognitive resources (Bagozzi et al, 1999), the decision of what financial service to buy, which fund to invest in etc. clearly is moved towards the emotive corner. This tendency should, all other things equal, be more marked for a service so “uninteresting”, i.e. evoking such low involvement as investments and choice of financial services. In this respect, it is hard to understand why the rational paradigm of financial choice has prevailed to such a large extent.

The next stage, the actual purchase is often the result of an active selling effort by the service provider – a consequence of the passivity of individuals making financial choices. Finally, the post-purchase evaluation of financial services is problematic due to the same reasons that have made the evaluation process problematic.

3.1.4 Consumer behaviour from a financial perspective

Decision-making has above been described from a consumer behaviour and marketing perspective (albeit recognising the impact of parallel theoretical trends within psychology). However, the financial environment of the present thesis calls for a reflection regarding the field of behavioural economics and behavioural finance. That there exist similarities between consumer behaviour research on one hand and behavioural economics/finance on the other is obvious – an article in *Journal of Advertising Research* labeled “What behavioural economics can teach marketing research” just underlines the case (Rubinson, 2010). A more technically oriented article, advocating a marketing model relying on behavioural economics comes to the same conclusion: an integration of the development within economics and finance into marketing may be fruitful (Ho, Lim and Camerer, 2006).

In essence, behavioural finance and behavioural economics evolve around the same core as the evolution of consumer research: individuals are not purely rational decision-makers. The discrepancies between what would have been assumed according to the expected-utility paradigm and the decisions actually observed are the starting point of this theoretical stream (e.g. Kahneman and Tversky, 1979). The deviations may stem from either affective input (emotions and feelings playing a role – something that is not acknowledged within traditional finance) or cognitive factors (mental processes having bounded capability, leading to simplification of the problem and the use of heuristics).

In many cases, the discrepancy between the rational agent of modern portfolio theory and the real life investor is fairly large (see Mitchell and Utkus 2004 for an overview). The investment decision has even been deemed the "ideal illustration of Simon's 'bounded rationality'" (Mitchell and Utkus, 2004, p. 5). One of the central concepts in this thesis, risk-taking, is a good example of the discrepancies between the "economic man"-reasoning and what is commonly observed in real life. Risk-taking in reality implies a human agent rather than a perfect optimiser. The father of modern portfolio theory, Harry Markowitz, was asked how he combined assets in his own pension portfolio and responded:

"I should have computed the historic co-variances of the asset classes and drawn an efficient frontier. Instead,...I split my contributions fifty-fifty between bonds and equities" (in Zweig, 1998, p. 114).

This quotation hints at these deviations being fairly common. The aim of this thesis is not to provide a comprehensive overview of the field of such discrepancies and the field of behavioural finance. The focus on the specific consumer behaviour of interest to this study, namely investing for retirement in general and risk-taking in particular, guides the selection. Below, a brief overview of observed risk-taking behaviour as regards retirement investing within behavioural finance is provided.

Plenty of evidence shows that the decision to invest for retirement is the school-book example of a complex decision, posing high cognitive demands on the decision-maker (Benartzi and Thaler, 2007; Mitchell and Utkus, 2004). It is, however, not only lack of cognitive capacity that is thought to influence decision-making. Other important phenomena are bounded self-control, i.e. the lack of will-power demonstrated in several situations, and bounded selfishness, i.e. the fact that individuals often prove to be more altruistic than the assumption of a purely rational agent theory postulates (Mullainathan and Thaler, 2000). Several studies have also shown that individuals are easily influenced by decision-framing, or how a question is asked (Tversky and Kahneman, 1986), and that inertia plays an important role when trying to explain individuals' decision-making (Madrian and Shea, 2001; Choi, Laibson, Madrian and Metrick, 2001).

Behavioural finance studies have specifically examined the ability of the individual to handle co-variation, i.e. to diversify. A large body of evidence suggests that investors diversify their portfolios less than is recommended by modern portfolio theory (Barberis and Thaler, 2005). A marked “home bias”, i.e. a preference for domestic assets, is found in several countries, among them Sweden and the Swedish premium pension system (Palme, Sundén and Söderlind, 2007). Insufficient diversification is often explained by investor avoidance of ambiguity and the preference of familiar situations. It is suggested that investors may find their national stock market more familiar – and less ambiguous – than foreign markets, and prefer domestic investments (Barberis and Thaler, 2005). Another deviation from the asset allocation model of modern portfolio theory is the naive way in which individuals choose to diversify (Benartzi and Thaler, 2001). Many seem to use simple diversification strategies such as an allocation of $1/n$ of their investments to each of the n alternatives available. This most likely leads to a non-optimal portfolio, since the optimal weights of each asset class rarely coincides with $1/n$. Faced with a complex decision such as the asset allocation decision, the behaviour is understandable. The $1/n$ -rule further implies that the composition of funds within a certain pension plan will have an impact on the risk-level of the individual investor: with the $1/n$ rule as guide, plans primarily composed of stock funds will induce a larger allocation towards stock funds and consequently higher risk (Benartzi and Thaler, 2001).

The last example of deviations from modern portfolio theory is the investor view that the employer stock (i.e. stocks in the company where the individual is employed) is safer than, or as safe as, a diversified portfolio of stocks. Retirement investors most probably overlook expectations regarding volatility, i.e. risk, and base their portfolio choice entirely on expected returns (Mitchell and Utkus, 2004; Benartzi, 2001).

The above deviations from the school book example of how to compose a well-diversified investment portfolio all speak the same language. Individuals have a hard time to complying with risk and the co-variation of assets. This is an important finding for the present thesis. Had the financial decision-maker historically behaved in a purely rational way, a search for purely

rational explanations to e.g. risk-taking would be natural. With the recorded history of the financial decision-maker as described above, this is not the case. Reliance on an emotionally tilted variable such as trust is, in this respect, not too far-fetched and clearly in line with previous findings. This is confirmed by a body of research from, among others, Paul Slovic (e.g. Slovic, Flynn and Layman, 1991; Slovic, 1999). The incorporation of feelings (such as trust) into the decision-making process may be one of several influential factors as stated by Loewenstein et al (2001, p. 270): “...response to risky situations (including decision-making) result in part from direct [...] emotional influence, including feelings such as worry, fear, dread, or anxiety”. Feelings may also be seen as the only, or main, basis for judgment as in the literature on affect-heuristic (Slovic et al, 1991; Finucane, Alkhami, Slovic and Johnson, 2000).

All in all, a growing body of literature may be found focusing on a decision-maker that is not entirely rational. This stream of research is also evident in the behavioural finance literature concerning the financial decision-maker, making e.g. choices concerning the level of risk. The focus on trust as an important factor influencing consumers’ financial decisions relies on the documented importance of emotional factors, and less cognitive input to the decision-process. The specific type of trust studied in the present thesis, namely trust in the pension system and in future pension payments actually being delivered is a narrow application of the above mentioned more general findings.

The two conclusions from the brief overview of behavioural finance do not contradict the trend within consumer behaviour research: the re-definition of how rational the decision-maker actually is, and the prevalence of less-cognitive and “hot” factors such as feelings (Simonson et al, 2001).

3.2 The concept of trust

Trust as a concept has, over the years, been defined in a number of ways. Moorman, Desphandé and Zaltman (1993) define it as “a willingness to rely on an exchange partner in whom one has

confidence”, whereas Morgan and Hunt (1994) define trust as the perception of “*confidence in the exchange partner’s reliability and integrity*”. The common denominator among theorists seems to be that trust is a perception about others in relation to oneself (Das and Teng, 2004). More formally, three different properties have been deemed necessary in an attempt to define trust (Arena, Lazaric and Lorenz, 2006):

- A tripartite relation: X trusts Y to do Z
- X is vulnerable in the sense that Y is free to act in ways that could harm X
- X has reasons for his expectations regarding Y’s behaviour

Trust has been the subject of research within a variety of fields. On a general level, trust between people, between organisations, governments and associations – and between an individual and an organisational counterparty – has been shown to be of substantial importance for how a society functions.

Rotter (1967) indicates the value of the trust concept:

“One of the most salient factors in the effectiveness of our present complex social organization is the willingness of one or more individuals in a social unit to trust others. The efficiency, adjustment, and even survival of any social group depends upon the presence or absence of such trust.” (p. 615)

The work of Rotter (1967) on the trust concept lies as a foundation for its subsequent use within marketing and consumer behaviour. As noted by, among others, Arnott (2007, p. 981), trust is one of the most central concepts when attempting to understand the customer:

“Trust ...lies at the heart of the marketing concept. ... If marketing is about meeting customer needs, the establishment and management of relationships with customers, and the delivery of promises (either explicit, for example in terms of delivery dates or fitness for purpose of the product; or implicit, for example in branding and positioning), then trust is a major element in the relationship that exists between a company and its customers.”

The importance of trust within marketing became especially visible within the field of relationship marketing, emerging during the 1990's. This new relationship focus implied a shift away from using constructs such as satisfaction, perceived quality and perceived value when explaining the decision-process of the consumer – factors that had guided and affected consumer behaviour research for decades. In fact, as stated by Grönroos (1997) and Gummesson (2002), customer-brand relationships became a competitive imperative and the dominant paradigm of marketing. This implied more focus on the personal relationship, a more imminent need for a formalised relationship process model and – consequently – more focus on, among other key principles, the concept of trust (Morgan and Hunt, 1994; Moorman et al, 1993). Morgan and Hunt (1994) explicitly stated the reasons why trust and commitment were needed in order to form a successful relationship: commitment and trust encourage marketers to work on and further develop existing relationships, they help resist short-time temptations to balk from the present relation, and finally they make potential high-risk actions seem less dangerous due to the belief that the relationship partner will not act opportunistically.

The need for trust arises in supplier/client relationships characterized by risk, uncertainty and lack of knowledge or information. Customers should be able to trust their service providers and feel safe in contact with their service provider, and also be assured that confidentiality applies. Most services, including financial services, are hard to evaluate – the customer must typically buy the service before experiencing it. This implies that trust is especially important in service industries; among them the financial services industry (Harrison, 2003; Moeller, 2010; Hansen, 2012). As stated by Berry and Parasuraman (1991, p. 107): “*Effective services marketing depends on the management of trust...*” The reason for this is, among other factors, the intangible nature of services, increasing the level of risk and uncertainty (Zeithaml, 1981; Nepomuceno, Laroche, Richard and Eggert, 2012). Effective services marketing logically depends on the management of trust since the customer typically must buy a service before experiencing it (Parasuraman, Zeithaml and Berry, 1991). Furthermore, in the financial services industry, the service itself is a promise to be delivered in the future (Ennew and Mckechnie, 1998) and requires even more confidence from the customers' point of view. Trust is, in this perspective, the consumers' vehicle in order to mitigate the perceived risk in dealing with the financial services providers (Ennew and Sekhon, 2007).

Within consumer behaviour, the growing field of research in electronic commerce has drawn further attention to the concept of trust (e.g. Järvenpää, 2000; McKnight, 2002; Grabner-Kräuter and Faullant, 2008). Complete re-examinations of the commitment – trust theory of Morgan and Hunt (1994) has also been developed in an e-commerce setting (Mukherjee and Nath, 2007; Kassim and Abdullah, 2006). The fundamental linkage between trust and relationship commitment is verified in this setting, but new specific factors such as attraction, privacy and security were found to influence level of trust significantly.

A few studies have investigated not only trust in a vendor or counterparty, but the influence of trust in the surrounding context (Grayson, Johnson and Chen, 2008; Hansen, 2012). It is found that trust in the context, or broad scope trust, is a necessary requirement for trust in the particular vendor or institution, or narrow scope trust, to build (Grayson et al, 2008; Hansen, 2012). One example of this broad scope trust may be a pension system as studied in the present thesis – it is the pension system as a whole that is in focus, not a single financial institution or product which is most often in focus in the more general trust studies covering the financial industry.

Trust has a central position within the field of consumer research but has of course been the focus of research within other disciplines as well. Bo Rothstein (2002), in his article on the Swedish welfare program, describes the social dilemma that individuals face: on one hand co-operate and contribute to solve the collective action problem instead of acting as free-riders, and on the other hand risking to be "a sucker" when "others" are not contributing. He further states that:

"... one of the things needed to solve social dilemmas is trust and other such norms of reciprocity ... The first [social dilemma situation, authors note] is with the government: Will the state actually, when the day comes, deliver what it has promised to deliver? For the individual, many things provided for by the welfare state have long-time horizons (pensions, college education for one's children, old age and old-age health care). So, the individual does not only have to consider if the current government can be trusted but also any government likely to hold power in the future." (p.909)

The question posed by Rothstein is central to this study: Will the state deliver? Rephrased: do individuals trust the welfare system to fulfil the implicit contract between state and individuals? The “partner”, using the definition by Moorman et al (1993) and Morgan and Hunt (1994), in this case is the Swedish pension system and its’ future behaviour consists of providing or not providing expected pension streams. The definition of the trust concept used in the present thesis is quite narrow: it is trust in the society’s economic provisions for its elderly in general and trust in the present pension system in particular that will be analysed.

From a theoretical standpoint, trust studies in marketing may be broadly divided into two categories: studies focusing on the dimensions of trust and studies interested in the influence of trust on various outcomes, i.e. the consequences of trust (Kenning, 2008). This division will guide the trust sections below. The focus will be on the trust concept within the field of consumer research and marketing, but influence from other disciplines will be noted when needed.

3.2.1 Dimensions of trust

One of the strands of trust research within marketing is focused on the multidimensional character of the construct as such. How may trust be described? Which are the dimensions inherent in the trust concept?

The dimension-focused strand of trust research is often described as being centred on either psychologically defined or situational trust. From a marketers’ perspective, the distinction between these two types of trust may be understood in terms of the ability of marketing management to influence the level of trust. Trust as a personal trait, or general trust, is not easily affected by marketing efforts, whereas situational trust is more dependent on marketing factors. Below, a description of both trust as a personal trait and situational trust research is provided along with antecedents for each type of trust.

3.2.1.1 Generalised trust

The focus on generalised trust emanates from the psychological and sociological trust studies presented during the 1960's. Rotter (1967), among others, started viewing trust as an individual difference factor, similar to a personal trait. This definition of trust may be interpreted as a general willingness to trust others (Mayer et al, 1995; Morrow, Hansen and Pierson, 2004). Given the nature of trust as a general expectancy held, or psychological trait, it is considered as less easily affected (Kenning, 2008) – by e.g. marketers. This has been brought forward as the reason why the generalised trust approach is not widely used in marketing but appears more common in psychological science (Kenning, 2008). An interesting meta-analysis made 1998, including all trust-articles published in the major marketing journals during the years 1970-1995, contains no antecedents connected to psychological factors (Geyskens, Steenkamp and Kumar, 1998). This analysis underpins the argument that trust research within the field of marketing has not been focused on trust in this general sense. Other disciplines, e.g. sociology and psychology have presented a number of findings, potentially interesting to marketers. However, the reluctance of marketing researchers to consider this psychological aspect of trust has been seen as somewhat strange – it has been known for quite some time that generalised trust has significant implications for trust-building, and for explaining the behaviour of the individual (Kenning, 2008).

One notable exception is the study on factors explaining cooperative behaviour among sales personnel (Yilmaz and Hunt, 2001). Personal factors, in the study defined as personal cooperativeness, were found to have a major, positive impact on cooperation. Conclusions drawn by the authors are that identifying individuals with cooperative personal traits for future employment is crucial but difficult. These traits are often not manifested in demographic data, and the solution becomes more of a situation where the potential employer should look for individuals with a history of cooperative behaviour.

Gurtman and Lion (1982) have further explicitly shown that individuals with a high level of psychologically defined trust perceived messages to be more trustworthy – a finding that would be of major importance for marketing managers trying to reach consumers with their message. These individuals have further been found to be more likely to have positive beliefs about human nature at large and faith in other human beings (Uslaner, 2008) and to be more

prone to donate money to e.g. charity (Evers and Gesthuizen, 2011). The lack of previous focus from marketers implies that the remains of the section on generalised trust will incorporate mainly structures and findings from other disciplines: economics, psychology and sociology primarily.

Naturally, the question of what influences generalised trust has been the focus of previous research. A few studies have focused on the connection between trust levels of parents and children (Charles and Hurst, 2003; Dohmen, Falk, Huffman and Sunde, 2006). Empirical evidence shows that parents who are more willing to trust others also have children who are more trusting (Dohmen et al, 2008). The individual level of trust depends to a large extent on the attitude of the parents. On the other hand, studies in political psychology show that immigrants tend to change towards the level of trust in their destination country; i.e. level of trust as a personal trait is built not only on origin but on experiences (Thisted Dinesen, 2012). These two findings do not need to be in conflict with each other: that the trust attitude of parents is transmitted to the children could very well reflect a reliance on environment and experiences made. In the case of pensions, the experience of a generation as regards pension level could thus be inherited by the next generation, and form the expectations regarding their own pension levels.

Apart from individual traits, another factor that will influence the level of generalised trust is similarity. These findings stem primarily from sociology and psychology but are inherent in some marketing research. In e.g. Dwyer, Schurr and Oh (1987), environmental diversity, i.e. the heterogeneity of elements in the environment, was connected positively to environmental uncertainty, and further to trust. Trust is more likely to emerge between parties that are similar along some relevant characteristic (Gargiulo and Ertug, 2006). Examples of such characteristics include income and wealth; factors that have been found to have a profound impact on trust. A very hands-on example of the effect of similarity on generalised trust concerns the enlargement of the EU. The southern enlargement (during the 1990's) and the more recent eastern enlargement did have an effect on level of trust; an effect that is explained by e.g. differences in level of modernisation and various cultural characteristics (Delhey, 2007). Schooling is another individual variable that has been shown to be positively related to trust (Alesina and La Ferrara, 2002; Gustavsson and Jordahl, 2006). In the present thesis, some of these factors proven to affect

trust will be measured as background variables (e.g. gender and income).

The psychological stream of research focusing on generalised trust has taken several paths over the years, presenting findings that may be of interest for consumer behaviour research. One discussion, connected to research on decision-making, concerns rationality. Is the level of subjective trust built on rational expectations or not? The rational expectations view builds on the notion that individuals are able to deliberately consider the evidence at hand (Taylor-Gooby, 2005). Such evidence may consist of historical track-record, quality of staff or monitoring arrangements. This general form of trust has in some studies been deemed impossible since the individual cannot have information about all other people in his or her community, association or society that would make such trust rational (Hardin, 1993). Individuals trust when they have reason to believe that it is in the other party's interest to be trustworthy. The core of trust is however still within the rational boundaries. Against this rational view with emphasis on cognitive capacities stands research that focuses more on affective factors (e.g. Hovland, Janis and Kelley, 1953). This academic stream builds on the notion of trust being contingent on both competence and care; i.e. both the rational evaluation (competence) and the trustworthiness of the counterparty (care). This strand of less rationality-based reasoning influences the remains of the study, and some of the items used to measure the trust construct. E.g. the trustworthiness of the present and future governments is the subject of several of the items. Element of morale, or ethics, have also been introduced into the definition of trust (Rothstein, 2005). Trust may empirically be observed in a number of situations where it cannot be reduced to a "pay-back"-function.

Generalised social trust is a special case of psychologically defined trust, referring to individuals' stable views regarding society and social phenomena. Since the central theme of this thesis is trust in the pension system, factors influencing generalised social trust will be elaborated upon. Two different views on what shapes the individual level of generalised social trust may be found (Rahn, Yoon, Garet, Lipson and Loflin, 2009). The first is referred to as experimental realism. A history-dependent process is here the foundation for the individual level of trust; i.e. the experiences made by the individual play a central role (Hardin, 1993). These experiences are then interpreted by the individual, taking into account his or her own

estimate of the level of trustworthiness. A layer of realism is added on top of the experiences made (Hardin, 2002). The other strand sees communities as social networks, formed by shared ideas and values (Rahn et al, 2009). These communities form a psychological idea that will shape the individual's view of the environment; among other variables the view of trustworthiness and trust. This strand is deemed the ideational and cultural perspective of trust and emphasises not only hardware (reality and experiences) but also software (values and ideas). In a pension setting, the generalised level of social trust for a certain individual will most likely affect the level of trust in how well society will take care of its elderly.

Similarities or dissimilarities – be they of a genetic, social or economic nature – between people may also be discussed on a social level. Dissimilarities, or distance, have in this respect been operationalised as income inequality and heterogeneity in a society, and several studies of distance have found a negative correlation with trust (e.g. Knack and Keefer, 1997; Alesina and La Ferrara, 2002, or Gustavsson and Jordahl, 2006 for a Swedish application).

All in all, the dimension-focused trust research on generalised trust has since the 1960's placed intense light on the psychological components of trust. For the present thesis, the above mentioned theoretical framework forms part of the trust platform, well aware of the fact that this particular form of trust is not a widely used variable within consumer behaviour research. Many of the articles on generalised trust are conceptual in nature, e.g. Das and Teng (2004). Several articles include empirical investigations – many in the US (e.g. Rahn, 2009). Some, however, have empirical evidence from Europe (e.g. Germany, such as in Dohmen et al, 2008) and some even have European empirical evidence collected in a pension context (e.g. Taylor-Gooby, 2005). The decision to include a general question of trust in the questionnaire is motivated by these reasonably similar studies both from a geographical perspective and from a more theme-based perspective, i.e. a shared focus on pension systems.

3.2.1.2 Situational trust

The other dimension of trust is situational trust. Situational, or specific, trust, is crucial when building a long-lasting relation between e.g. a company and its customers, and has been the focus of the

majority of marketing articles on trust (Kenning, 2008). The situational dimension of trust is influenced by the context in which the trusting occurs and has been shown to influence behaviour to a greater extent than trust as a personal trait (Ryan and Buchholtz, 2001). This implies that the impact of marketing strategies and actions are much stronger when it comes to situational trust – a potential reason why this part of the trust construct has been more in focus from marketers' point of view.

The marketing focus on situational trust is visible in the meta-analysis of trust articles made by Geyskens et al (1998): all of the antecedents found are situational in nature. Environmental uncertainty was one such antecedent found to have a significant (negative) impact on trust. The existence of an uncertain situation, i.e. where one of the parties could behave opportunistically in ways that would harm the interests of the other party is of paramount importance in the formation of trust (Achrol and Stern, 1988). When a party is unable to behave opportunistically, her partner is unlikely to attribute the observed behaviour to the party's trustworthiness. This marketing-oriented finding has its parallel within other disciplines. Within political science uncertainty has been discussed in terms of binding and non-binding contracts. The removal of binding contracts has been found to lead to a significant reduction of the number of trusting choices made by the subjects in a trust game (Malhotra and Murnighan, 2002). The existence of the binding contract had hampered the formation of trust. Had the contract instead been of a non-binding nature, and had the situation contained some uncertainty about the other party's behaviour, the history of past exchange between the parties would have revealed information about the underlying intentions and induced a starting-point for trust-building. This connects very well to the historical path-dependency theme of the present thesis.

Apart from environmental uncertainty, the meta-analysis of Geyskens et al (1998) revealed some other antecedents as well: channel decision structure (especially revealing a negative relation between trust and a centralised decision-making structure in Dwyer and Welsh, 1985), decision instruments used (e.g. an adverse effect on trust of threats (Andaleeb, 1995) and penalties (Scheer and Stern, 1992)), power/dependence patterns (such as interdependence asymmetry between partners and total interdependency having a small negative effect on trust (Anderson and Narus, 1990) and type of service

encounter (Dimitriadis and Kyrezis, 2008; Poenaru and Halliburton, 2011). Communication has also been found to have an impact on level of trust: the atmosphere is enhanced and expectations and perceptions aligned, leading to an increase in trust (Anderson and Weitz, 1989; Morgan and Hunt, 1994). The importance of honest and trustworthy communication is also visible in the fact that informational justice seems to be an important influential factor for trust to build (Colquitt and Rodell, 2011).

Situational trust may be further decomposed according to the object of trust – a distinction primarily made within political science and sociology. More specifically, the question of trust becomes a distinction between the intentions of the trustee and the actual behaviour of the trustee? The difference here lies in the trustee's ability to behave in accordance with his or her intentions (Gargiulo and Ertug, 2006). The intentions/behaviour may be described as a distinction between “willingness” and “ability”. “Ability” here refers to an assessment of another's knowledge, skills and resources available, whereas “willingness” refers to the other's desire to take certain actions (McLain and Hackman, 1999). These concepts can be seen as representing two different kinds of trust: trust in intention and trust in capability (Snijders and Keren, 1999). These different kinds of trust may emanate from different cognitive processes by which the trustor decides whom or when to trust. The first is the intentionality process, in which trust formation is influenced by one party's perception of the intentions of the other party, and the second is the capability process where an assessment is made as to the target's ability to meet his or her obligations (Doney, Cannon and Mullen, 1999). The literature on ability – willingness is to a large extent conceptual in nature (e.g. Gargiulo and Ertug, 2006; McLain and Hackman, 1999, Doney et al, 1999). Some empirical verifications have however been made (e.g. Snijders and Keren (1999) where the verifications are of an experimental nature).

The distinction between willingness and ability will guide the measurement of trust in the present study. Similar conceptualisations are not commonly found in empirically-based articles, let alone based on data from a pension environment. This is a known possible drawback for the present study and will have to be taken into account. It must also be acknowledged that the terms ability and willingness are borrowed from political science and sociology, and are not marketing specific. However, the pension focus of the present thesis is well

suited for an ability/willingness analysis: pension streams are long-term in nature and may be affected by a number of factors of both economic and political nature.

From a perspective of political science, the importance of formal institutions on the level of situational trust has been investigated (Zak and Knack, 2001). Trust has been found to be lower when the formal institutions (such as the SEC, the US Securities and Exchange Commission) are weaker and social sanctions against cheating are ineffective. In an investment setting, it has been shown that objective characteristics of the financial system, such as investor protection, influence the level of trust (Guiso et al, 2008). The institutional framework may be viewed as the external boundaries for the actual contract between the two parties. Central to this relationship is again the concept of uncertainty.

Summing up, situational trust is the predominant type of trust within consumer behaviour research. Several antecedents to trust have been documented within the marketing literature. In the present thesis, situational trust will be analysed using a framework borrowed from sociology and political science, where a distinction between the willingness and the ability of the trustee is drawn.

3.2.2 Influence of trust on several dependent outcomes

A large part of the trust research in marketing, has been devoted to the consequences of trust (Kenning, 2008). These objects may vary from macro-economic variables such as productivity and economic growth, to interpersonal factors such as customer trust and employee trust, central in the marketing literature. The effects of trust are also the core of the present study.

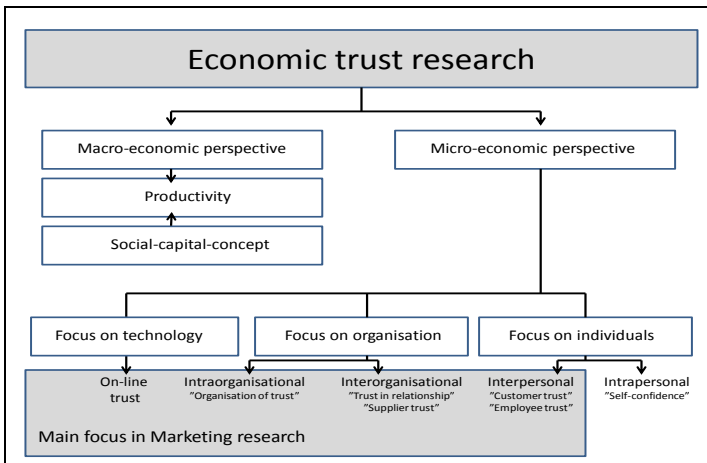


Figure 3.1 Overview of outcome-oriented trust research

Source: Kenning, (2008, p.463) “The influence of general trust and specific trust on buying behaviour”, *International Journal of Retail and Distribution Management*, Vol. 36, No. 6

Apart from the macro-variables mentioned above and apart from distinctively more psychology-oriented research on e.g. self-confidence, marketing research on trust outcomes may be divided into (at least) four different areas, as depicted in figure 3.1. The four areas most focused upon by marketing scholars are marked, and will be elaborated on below.

A large number of studies focus on inter-personal trust, e.g. trust between a customer and a salesperson. Defined in this way, trust has proven to have a number of consequences. First, the relational focus of many of these marketing studies leads to a focus on the function of trust in relation-building. In this general sense, the Morgan and Hunt-study (1994) becomes central: the importance of trust, and the subsequent cooperative behaviour, is here both conceptualised and empirically shown. Trust (and the accompanying cooperative behaviour) is further proven to function as a mediator of other (beneficial) consequences: reducing the propensity to leave the relationship and increasing the probability of functional conflict (i.e. where disputes are solved in a constructive manner). Morgan and Hunt also posit that trust and relationship commitment will reduce decision-making uncertainty. The trusting party has confidence in that the

counterparty is trustworthy and may be relied upon. This result is central to the present study: an article of paramount importance to consumer behaviour indicates a negative relation between trust and decision-making uncertainty and hence, it could be concluded, a positive relation to risk-taking. The Morgan-Hunt-study has been recently modified to include a dynamic component of relationship commitment, where trust has been found to impact relationship velocity (i.e. direction and rate of change in a relationship), which in turn has been found to have a positive impact on performance (Palmatier, Houston, Dant and Grewal, 2013).

A number of studies have further shown a positive relation between trust and another beneficial consequence: satisfaction (e.g. Anderson and Narus, 1990; Andaleeb, 1991). The reasoning is simple: when one party trusts the other party, it will feel secure, implicitly believing that the actions of the other party will be beneficial. The positive effect of trust on satisfaction has also been proven to hold in a financial services' setting (Cockrill, Goode and Beetles, 2009). The negative effect, i.e. trust-violation in an inter-personal setting has been studied within the field of consumer regret studies. Regret has been found to persist among customers even after a refund (for e.g. finding a lower price when a "lowest-price guarantee" was issued), implying that customers view the fact that they could find a lower price as a trust violation, something that cannot be easily compensated for (Dutta, Biswas and Grewal, 2011). Trust has also been applied as an influential factor when examining consumer behaviour after an experience of service failure. Trust has in this setting been found to make consumers less likely to switch after a negative service experience (Mattilla, 2001) and also to influence switching behaviour differently depending on whether the consumer has an independent self-construal (Hui, Ho and Wan, 2011).

Another documented consequence of trust is the long-term orientation of the relationship and loyalty (e.g. Ganesan, 1994; Sirdeshmukh et al, 2001; Shainesh, 2012). The reasoning here stems from the original positive effect of a relationship characterised by trust: these effects will lead to the relationship being so valuable that other parties will desire to enter into it. The focus is not on short-term gains but on nurturing and taking care of the present customer relation in order to attract new customers. This long-term orientation has also been proven to be useful in a governance setting: the building of communities based on mutual respect and trust has been found to be a

useful mechanism for managing electronics markets (Grewal, Chakravarty and Saini, 2010). The relationship focus is found also when explaining cooperative behaviour in organisations (more explicitly between salespersons): relational factors (among them trust) were found to have substantial impact on cooperation (Yilmaz and Hunt, 2001).

Apart from these central consequences of trust, the concept of trust has further been explicitly proven to influence purchase intentions (Hong and Cho, 2011), to determine the long-term orientation of a vendor-retailer relationship (Schwartz et al, 2011; Eisingerich and Bell, 2007), to positively affect motivation and performance in the workplace (Heavey, Halliday, Gilbert and Murphy, 2011) and to have profound implications for cooperation in general (Morgan and Hunt, 1994; Garbarino and Johnson, 1999).

Even outside of marketing research, documentation of positive trust consequences may be found. In an economic setting, trust has been shown to be negatively related to the levels of monitoring and vigilance (Malhotra and Murnighan, 2002) and has also been viewed as a means to reduce transaction costs (e.g. Bromiley and Cummings, 1995). Agents assess – approximately – how trustworthy the counterparty is and then economise in the formation of control systems: extensive governance structure when trust is low and subsequently less control when trust is high. Secondly, trust has been shown to both limit the need to perform screening of knowledge (Szulanski, Cappetta and Jensen, 2004) and to increase the perceived accuracy of information (Roberts and O'Reilly, 1974). In a financial setting, trust has been explicitly connected to households' financial choices such as portfolio allocation, availability of loans and reliance on informal lending by the research program performed by Paola Sapienza, Luigi Guiso and Luigi Zingales (e.g. Guiso, Sapienza and Zingales, 2004; Guiso et al, 2008 and 2009). The connection between trust and finance has been explicitly explained: “*financing is nothing but an exchange of a sum of money today for a promise to return more money in the future. Whether such an exchange can take place depends not only on the legal enforceability of contracts but also on the extent to which the financier trusts the financee*” (Sapienza and Zingales, 2011, p.1). The inter-personal structure of the trust relation is clearly visible in the quote; with in this case a larger entity, or financee, as the counterparty. The conclusions drawn from the Guiso-articles are closely related to the scope of the present thesis. Most

importantly, they conclude that trusting individuals are more likely to buy risky assets at all and also to invest a larger portion of their wealth in such assets (Guiso et al, 2004). As the title of the paper indicates “Trusting the stock market” turned out to be a factor relevant to explain investor behaviour. This reasoning bears a strong resemblance to the present study: the trust in a greater entity (i.e. the pension system) may be assumed to explain how individuals vary in terms of risk-taking. The present study contains the same interpersonal focus as in the classic marketing articles (most notably Morgan and Hunt, 1994), but with two facets borrowed from the Guiso-article: the greater entity and the investment-behaviour (or risk-taking) as the outcome of interest.

Another field of outcome-oriented trust research is the inter-organisational trust strand. Instead of a sole focus on trust between individuals, the trust concept is here applied on entities such as e.g. organisations or companies (Gulati and Sytch, 2008). A finding in this respect (that applies to the inter-personal setting as well) is that trust leads to the existence of frequent and open communication, multiplex relationships and greater and richer resource exchanges (Gargiulo and Ertug, 2006). Trust on various levels has also proven to be critical for inter-organisational collaboration: trust in the other party has proven to motivate resource investments in the co-entity and to facilitate collaboration with the co-entity (Fang, Palmatier, Scheer and Li, 2008).

The third field of outcome-oriented trust research concerns the intra-organisational trust, or the organisation of trust. This could e.g. be between the employee and supervisor in a retail setting (Kenning, 2008). The fourth and last field of trust research is more technology-oriented. Notably, the field of Internet commerce has drawn on theories that include the element of trust: trust has been found to have a large impact on consumer behaviour on the Internet (Lim, Sia, Lee and Benbasat, 2006). Trust in this setting has been found to determine e.g. the choice to buy from a certain provider (McKnight, 2002), willingness to share personal information (McKnight, 2002) and satisfaction with a certain provider (Harris and Goode, 2004). Furthermore, the loyalty effects of trust reported in Morgan and Hunt (1994) are evident in an electronic commerce setting as well (Harris and Goode, 2004).

The present study is focused on the individual as decision-maker, and hence draws markedly from research in interpersonal trust. It,

however, has a larger entity, namely the pension system, as counterparty - not another individual. This resembles what Ganesan and Hess (1997) refer to as "organisational trust", exemplified by the fact that both the buyer and the seller in a buyer-seller relationship may have different levels of trust in the buying and selling organisation respectively. The focus of the present thesis hence lies somewhere between interpersonal trust and interorganisational trust in figure 3.1. It is not purely individuals involved (as in interpersonal trust), nor may the focus be described as being trust between organisations (interorganisational trust).

3.2.3 Trust and the welfare state

As can be seen from figure 3.2, trust is also imbedded within macro-economic research. The strand – be it defined as macro-economic or sociological - most important to the current study is studies focusing on social capital (e.g. Putnam, 1993). Within this framework, studies specifically focusing on the rise and upholding of the welfare state are commonly found (e.g. Rothstein, 2001). The claim is most often that the welfare state produces trust (e.g. Kumlin and Rothstein, 2005) due to the existence of universal welfare programs building a sense of equal treatment and that the rules of society are based on the principle of fairness. Means-tested public services, on the other hand, give rise to suspicion concerning the bureaucratic procedures.

The institutional context of the welfare state may be seen as a likely creator of coalition formation among citizens (Korpi, 2003). Risk-averse citizens who benefit from welfare state legislation in terms of reduction of risks they are likely to face during their lifespan may have a reason to resist governmental cut-back of social rights. More generally, *“major welfare state institutions are of relevance for the formation of values, attitudes and interests among citizens”* (Korpi, 2003).

The causal relationship between trust and welfare systems as described above has been questioned. With universal access to services with no or little needs testing, a strong temptation to free riding may exist (Bergh and Björnskov, 2009). Instead, the causality may be in the opposite direction: trusting populations are more likely to create and sustain welfare states.

Trust has been viewed as more important now than historically. The complex society of today implies more situations than before characterised by uncertainty regarding future outcomes (Taylor-Gooby, 2005). Trust may be seen as one resource to manage these uncertainties. Recent work points at a decline in trust in social institutions. This is reflected in a lower belief that judges, politicians and media “*can be trusted to tell the truth*” (Taylor-Gooby, 2005, p. 218). Interestingly, the factors that cause society to behave in a more complex manner than before may also be the factors that cause the rate of trust to decline. A better informed, well-educated individual with a higher level of awareness – i.e. the citizens of today’s society - is less prone to engage in a passive and uncritical trust in received wisdom (Giddens, 1994). This decline in social trust has been regarded as a threat to the welfare state, more specifically a threat to all forms of institutions that build on social cooperation. Interestingly enough, it has been shown that the dividing line is not between those that prefer the state and those who prefer non-state alternatives; the line goes between those who do trust and those who do not (Taylor-Gooby, 2005).

3.2.4 Trust in the present study

The overview of trust research and the statement that the focus of the present thesis lies somewhere between interpersonal trust and organisational trust may now be tied to the pension system. As regards personality traits, these refer more to the heterogeneity of the respondents. There are bound to be some respondents with a high level of trust, and some with a lower level of trust, and the reason for this variety could very well be differences in e.g. income, gender and education. This similarity argument could be transferred to cover the political level. In the historical overview, it is shown that the basic aim as regards pensions of the social-democratic and the liberal-conservative parties diverges. The former has historically aimed for preservation of income level, whereas the latter has preferred a pension level that implies a lower, basic level of income. This historical divergence may be a dissimilarity factor that could induce a feeling of mistrust among the citizens - albeit that the pension deal of the 1990’s was, as described, almost unanimous. As for the relation between citizens and state in the pension issue, the nature of this relation must today be described as more open and filled with more

exchange of information than before. The individual every year receives information on the present holdings in the premium pension system as well as a forecast for the state income pension. Perhaps this enhanced frequency of information-sharing together with increased media coverage could be a reason to anticipate a higher level of trust among citizens? Finally, a connection to the theory of binding and non-binding contracts and the amount of political risk inherent in the pension system may be made. The historical existence of variations in the previous defined benefit pension scheme point at the presence of a non-binding contract: the state had the opportunity, and at several occasions took it, to alter the benefits for retirees. Trust in the pension system has accordingly had the opportunity to be built among the citizens. As for the present pension system, the pay-as-you-go-element is still there and the opportunity and necessity of the state as the ultimate bearer of risk to alter the game-plan still present.

Summing up, trust in the present thesis is defined as an individuals' level of trust in the pension system fulfilling the expectations held. Trust is operationalised taking into account both the systems' ability and willingness to fulfil set expectations, and also the more general aspect of trust held by the individual.

3.3 The concept of risk and risk-taking

The study of risk has been the focus of consumer behaviour studies since the 1960's (Simcock, Sudbury and Wright, 2006). The focus is in itself quite natural: since one central issue in consumer behaviour is choice, and since the outcome of a choice can only be known in retrospect, the consumer is forced to deal with risk and uncertainty (Taylor, 1974).

The focus on the individual as decision-maker implies that marketing and consumer behaviour research has perceived risk, or subjective risk in focus. This focus is shared by e.g. psychology and behavioural finance, but deviates from the objective focus found within classic finance and economics. Ricciardi (2004) describes the difference between these two strands in terms of human presence: the classical finance definition assumes rationality of all participants and is primarily concerned with the macro-level, i.e. the financial market as a

whole. The social sciences, among them consumer behaviour, are focused on the micro-level and emphasise the importance of the human element and the individual as decision-maker.

The remainder of the section is structured as follows: the section starts with the definition of risk perception and the various dimensions of the construct found in consumer behaviour research. This section is followed by a reflection on the subjectivity of the risk concept found in the social sciences versus the objective version of risk found in e.g. traditional finance. The risk-taking behaviour of the individual, i.e. the part of the risk construct of importance to the present thesis, is then approached, with sub-sections describing the formation process regarding risk perception, individual risk profiles, and the final connection to risky choice.

3.3.1 Definitions of perceived risk

Definitions of perceived risk within the consumer behaviour literature vary: they often depend on the context in which the study is conducted (Conchar, Zinkhan, Peters and Olavarrieta, 2004). Two facets may however be found throughout the research on perceived risk: uncertainty and adverse consequences (stated from the outset by Bauer, 1960). Starting with the uncertainty dimension, this may be understood in the light of the work done by Frank Knight in the early 20's (Knight, 1921). Risk, in this sense, is seen as something calculable, i.e. where the probabilities of some future outcome are known. Uncertainty, on the other hand, is prevailing when no such probability may be assessed. Adhering to this theoretical definition, risk or Knightian risk, is really absent from real life – it is seldom that the probabilities regarding what will happen are known, but what is commonly found is a situation of uncertainty. This is definitely the case for the consumer: all possible outcomes are hardly ever known, neither are the probabilities associated with them possible to accurately estimate (Stone and Grønhaug, 1993). The concepts of risk and uncertainty has however been less stringently used in consumer research (Stone and Grønhaug, 1993). The remains of the thesis uses the terms “risk” and “perceived risk”, where in essence “uncertainty” and “perceived uncertainty” would have been the proper concepts.

The adverse consequences inherent in the definition by Bauer (1960) have also been elaborated on in subsequent consumer research. E.g.

Taylor (1974) defined adverse consequences as “importance of loss”, whereas Bloch and Richins (1983) used the term “instrumental importance” – both definitions incorporating the severity of outcomes. These adverse consequences, or losses, have been divided in various categories: performance, social, safety, financial and psychological losses; each one affecting the overall level of risk perception in a special way (Jacoby and Kaplan, 1972). Adding a sixth dimension, time, Stone and Grönhaug (1993) found the explanatory power of these dimension on risk perception to be little short of 90%.

The debate on *how* to combine the concepts of uncertainty and consequences has further been an ongoing theme within risk perception research since the late 1960’s (Mitchell, 1999). An additive model has been preferred with the argument that very mathematical representations of a topic as complicated as consumer decision processes may be out of line (Wright, 1973), whereas other studies have adopted a multiplicative model (Peter and Ryan, 1976). As in probability theory, where the expected value of a gamble is calculated as probability times monetary value, multiplicative perceived risk was calculated as probability of consequences occurring times importance of consequence. Later, more complex models (Dowling and Staelin, 1994; Deering and Jacoby, 1972) have included factors such as the risk inherent in a product category, the product-specific risk handled by the individual, the acceptable level of risk for various products and the risk-reducing activity undertaken by the individual. A focus on certain characteristics within each product, and the nature of risk perception these characteristics evoke may also be found within the multi-attribute risk perception models (Zikmund and Scott, 1977; Greatorax and Mitchell, 1993). It may be fair to say that although a number of modifications have been made, the focus on uncertainty and consequences has prevailed throughout the history of perceived risk research. To quote Mitchell (1999, p. 187):

“The two-component model appears to be the most generally useful and comes out well on the five proposed evaluation criteria of usability, practical implications, prediction, suitability for reliability and validity testing, and developing understanding.”

Another distinction inherent in the definitions of perceived risk is if the outcomes to be perceived are purely negative, or if there is a wider range of outcomes, both positive and negative. Consumer behaviour has been mainly focused on the potential negative outcomes (Stone and Grönhaug, 1993): risk has been synonymous with something to

avoid, something that stands in the way of a reaching a certain purpose. This negative outcome avoidance is connected to the prevailing view of the customer: as an agent more concerned with not making mistakes than maximising utility (Mitchell, 1999). This negative focus is shared with many scholars within behavioural finance where a focus on downside risk and catastrophic losses (Laughunn, Payne and Crum, 1980), probability of loss (Slovic, 1967) and prospect theory (Kahneman and Tversky, 1979) may be found. The emphasis on negative outcomes differs very much from traditional finance. Central within modern portfolio theory is the trade-off between risk and return. This implies that financial decision-making is less concerned with avoiding the risks – as would be the case when risk is defined in purely negative terms – and more with taking risks in hope for a better outcome. The present study will have to take into account these discrepancies: the individual in his capacity of making financial choices is not merely avoiding pitfalls, but also aiming at receiving a good payoff.

3.3.2 Subjectivity versus objectivity

The topic of interest for consumer behaviour researchers is not the concept of risk per se – the focus on the consumer, or decision-maker, implies that it is the risk perceived by the individual that is of interest. From its' introduction in the early 1960's, researchers have attempted to understand how values, feelings and attitudes influence perceptions of risk and have further used this risk perception in order to explain the behaviour of the individual consumer (see Cox, 1960 for an early treatment of the topic). One of the pioneers, Bauer (1960), explicitly stated that his interest lay with subjective risk, not "real world" risk. From a consumer perspective this subjective focus makes sense. A consumer does not have accurate and accessible historical data for the decision or purchase at hand, nor does he have the cognitive capability to process such information. This topic has also been elaborated on by psychologists: e.g. Kahneman, Slovic and Tversky (1982) and Slovic (2000) have revealed a number of cognitive biases and shortcomings of individuals as decision-makers; biases that practically transforms the objective calculations into subjective assessments. Further, not depending on cognitive shortcomings, risks are perceived differently by different individuals and are therefore inherently subjective (Diacon and Ennew, 2001). This variety may depend on various factors: previous experiences, the situation at hand and demographics:

factors which will be discussed when examining the antecedents to perceived risk. A thorough objective risk assessment by the individual consumer may therefore be regarded as close to impossible to obtain. Finally, even if accurate risk data were at hand and were processed extensively, the behavioural impact would still come from the individuals' perception of risk, not the objective risk outcome (Capon, Fitzsimmons and Prince, 1996; Mitchell, 1999).

It is worth contrasting the topic of perceived risk with the objective version of risk. Objective risk is quantitative in nature; it is precisely observable and measurable. Historical occurrences of a certain event are measured and formed as to assess the risk-level going forward. Probably the most common measure of risk in finance since the work of Markowitz (1952) is standard deviation of outcomes. Risk in this respect is defined as a variation of return, not a probability of a negative outcome or a hazard to be avoided. Since the focus of the present thesis is the individual as investor, not the investment task per se, the remains of the section on risk will discuss the subjective influence on the choice of risk-level, and the deviations from classical finance this implies. To be noted, however, is that the concepts of objective risk and subjective risk may exist simultaneously: the consumer may be seen as gathering both factual information and perceptual information on risk (Mitchell, 1999).

The distinction between objective and perceived risk may be understood in connection with the researchers' philosophical perspective (Mitchell, 1999). Scientific realists, adhering to the notion that the world exists independently of it being observed, would accept an objective risk definition, whereas a researcher with a relative perspective would not. However, Mitchell (1999) notes that these two schools are united in their more practical stance towards risk. The realist acknowledges the behavioural impact of perceived risk and hence the need to measure this type of risk, whereas the relativist (possibly) accepts the scientific tools and methods of the realist knowing that it is a relativist and individual perspective that will be measured. This philosophical meeting is illustrated in figure 3.2.

	Relativism	Positivism
Subjective risk	The only risk which exists and that can be measured	Willing to accept its existence and the need to measure it
Objective risk	Not willing to admit exists	Attempts should be directed at conceptualising and measuring this when possible

Figure 3.2 Objective versus subjective risk

Source: Mitchell, V-W. (1999, p. 165), “Consumer perceived risk: Conceptualizations and models”, *European Journal of Marketing*, Vol. 33, No. ½, pp. 163-195

To sum up, consumer behaviour studies do not have the objective risk measures in focus, but individuals’ subjective judgements and evaluations. It is this subjective risk assessment that will be further delineated in the sections to follow: important concepts such as risk preferences will be discussed, determinants will be outlined and applications will be described. The focus of the present study, i.e. consumer behaviour, implies that it is the risk a consumer actually *believes* exists within a purchase or investment decision that will influence subsequent behaviour.

A final observation: the subjective focus of consumer behaviour applies also for behavioural finance. As has been discussed in section 3.1, the underlying decision-making processes within the field of consumer behaviour (i.e. for the consumer) and behavioural finance (i.e. for the investor) share similar features, among them a focus on individual impact. This individual impact has been empirically demonstrated both generally (e.g. Slovic, Fischhoff and Lichtenstein, 1982) and in a variety of settings and manipulations: e.g. in a setting consisting of financial advisors, (MacGregor and Slovic, 1999), in terms of gender and racial differences (Finucane et al, 2000) and in terms of individual response to events happening and changing the

perceived level of risk (Burns, Peters and Slovic, 2012). In terms of a theoretical platform it is fair to say that previous research on individual impact on risk perception is wide and thorough enough for the present thesis to build on. E.g. Wang, Keller and Siegrisk (2011) is a study based on a Swiss sample of respondents testing the perceived subjective riskiness of investment products as opposed to the objective riskiness measured as standard deviation.

3.3.3 The context and the individual

The level of perceived risk has typically been connected to context, i.e. to situation-specific factors, in consumer behaviour literature (e.g. Conchar et al, 2004). For example, Lopes (1987) showed that the purchase of low-involvement goods evoked different levels of perceived risk compared to gifts or visible durables. It has also been shown that decomposing services into consumption and production (e.g. making bank transfer via telephone instead of at the bank counter) may increase level of perceived risk (Keh and Pang, 2010). Put in a process framework, the context is assumed to be identified before risk is processed, and the situation will accordingly affect all subsequent phases of the risk process (Conchar et al, 2004). The common use of situation-specific factors within consumer behaviour research implies that pension-related questions regarding risk-taking will have to be asked in the present study.

As for individual factors these are also of vital importance. The focus on the individual in the formation of perceived risk within consumer behaviour has been emphasised from the outset (e.g. Cox, 1967). Risk is different for each individual: what is regarded as a risky decision by one person may be seen as a decision including only a minor risk by another. The risk-aversion underlying the trade-off between risk and return is not identical over all individuals. Individuals will differ in how much return they must be compensated with in order to incur a set amount of risk. It must be noted that it is, also within traditional finance, widely accepted that individual preferences will affect the risk-return trade-off and accordingly affect the optimal portfolio (Hallahan, Faff and McKenzie, 2004).

The reason for these varying risk attitudes has been deemed either an individual trait or a situational factor throughout the literature. However, as noted in Conchar et al (2004), most studies within the

field of marketing and consumer behaviour have focused on the importance of the *situation*, not the individual. The duality of the risk task or decision at hand has further been emphasised (Dowling, 1986; Sitkin and Pablo, 1992). A situation can be characterised as more or less risky and individuals vary in their perception of similar situations. The level of perceived risk is therefore bound to depend on both the situation *and* the individual.

Starting with risk attitude based on the individual, the impact may be conceptually divided into three domains: traits that are relatively stable in nature (such as personality and demographics), dynamic influences (such as motives and modes) and cultural factors (Conchar et al, 2004). These domains will have a marked influence on all three phases of the risk perception process (i.e. risk framing, risk assessment and risk evaluation) as will be described in section 3.3.4.

As for the first individual domain, personality and demographics, many of the operationalisations of this domain include a general tendency to seek or to avoid risks (referred to as risk affinity by Conchar et al, 2004 and by ambiguity intolerance by Schaninger and Sciglimpaglia, 1981). This general tendency includes factors with an inverse relationship towards perceived risk, such as novelty seeking (McAlister, 1982), sensation seeking (Zuckerman, 1979) and self-confidence (Krueger and Dickson, 1994), but also factors that induce a high level of perceived risk such as anxiety (Kogan and Wallace, 1964). A genetic component in the general tendency to seek or avoid risks has been brought forward (Barnea, Cronqvist and Siegel, 2010), e.g. women have been found to be less prone to take risks than men (Dohmen et al, 2008; Grable, 2000). It is further shown that professionals seem to be more risk tolerant than non-professionals (Baker and Haslem, 1974; Grable, 2000), that taller individuals are more willing to take risks (Dohmen et al, 2005), that respondents with higher levels of financial knowledge seem to be more risk tolerant than others (Grable, 2000) and that individuals with highly-educated parents are more inclined to take risks (Dohmen et al, 2005).

It must be noted that the existence of a general risk-seeking personal trait is not uncontroversial. Slovic (1964) e.g. measured risk in different situations and found no significant correlation between the different set-ups: the same individual simply took different risks depending on the context. These findings have a much deeper impact than merely questioning the domains mentioned by Conchar et al (2004): the findings of Slovic (1964) is contrary to the existence of

stable and situation-invariant risk aversion. The non-existence of stable risk preferences have also been studied explicitly in a pension investment setting (Benartzi and Thaler, 2002).

The second domain is more psychology-oriented, and focuses on changing and dynamic influences on risk-taking, including both conscious and subconscious motives. The motives could be associated with need for affiliation (McClelland, 1987), need for power (McClelland, 1987) and a need to be perceived as unique (Lynn and Harris, 1997). These motives will have an impact on which dimensions the individual regards as important, and subsequently on the risky decision being made. A person for whom it is important to be regarded as unique will be more inclined to take risks than a person not motivated by this particular need.

Last, the cultural factors refer to the fact that a group norm regarding tendency to avoid or take risks may be adopted by a person (Celsi, Rose and Leigh, 1993). In a setting where it is standard to take risks, the risk perception of the single individual will be affected to induce a higher risk-taking.

3.3.4 Perceived risk processing

The question of how the central components of the risk perception construct are processed by the individual arises. The formation of perceived risk of an individual has been described as to occur in three distinct phases: risk framing, risk assessment and risk evaluation (Conchar et al, 2004).

The first phase, risk framing, is concerned with both the dimension of uncertainty and the dimension of consequences: it involves searching for information regarding the riskiness of the various alternatives at hand and assigning the importance of avoiding this specific risk inherent in each alternative. It may be seen as a way of “editing” or presenting the risk problem, using both external and internal information – or simply put: a search for information cues in order to handle or reduce perceived risk (Cox, 1967). This emphasis on information search is consistent with the information processing theory within consumer behaviour (Bettman, 1979). Note that the consumer behaviour concept of risk framing is also in line with the notion of reference points and choice within prospect theory, one of

the cornerstones of behavioural finance (Kahneman and Tversky, 1979). This implies that the importance of the framing phase is pointed out both within consumer behaviour and behavioural finance: the risk assessment will reflect not only an absolute objective level of risk, but also the presentation, or framing, of choices (Bettman, Luce and Payne, 1998; Kahneman and Tversky, 1979).

After the initial framing phase, each choice alternative is transformed into a perceived-risk assessment. This implies that the information at hand is used in order to estimate the probabilities of future outcomes. In the words of Conchar et al (2004, p. 431): "*consumers consolidate their perceptions of search output, importance and inherent risk to formulate a subjective expected value for risk on each choice...*" The information gathering in the framing phase is hence turned into a subjective risk assessment.

This assessed level of perceived risk is in the last evaluation phase moderated by both cognitive and affective factors. The assessment of perceived risk of the various alternatives is weighed against possible outcomes of the choice, according to a certain standard. This standard may be e.g. financial (resulting in the risk-return trade-off inherent in the capital asset pricing model) or psychological (incorporating the notion of mental accounting, (Thaler, 1985) and the findings within prospect theory that "losses loom greater than gains" (Kahneman and Tversky, 1979)). Again, a parallel both to the information processing theory of consumer behaviour (Bettman, 1979) and to behavioural finance and prospect theory (Kahneman and Tversky, 1979) may be drawn.

The process of framing, assessment and evaluation may be repeated until a choice has been made. When the choice at hand is similar to previous choices, the consumer may exit the loop prematurely (Conchar et al, 2004). The three-stage process may also be useful for defining heuristic strategies adopted by the consumer: when the decision at hand is too complex, a thorough application of all three phases would probably be too time-consuming or require too much information and hence a simplified, satisficing version is adopted instead (Tversky and Kahneman, 1974).

The risk perception process described above contains both cognitive and affective factors, just as the view on decision-making in general as described in section 3.1.2 (e.g. Kahneman, 2011). The "two-systems-theory" posits that decision-making includes both a cognitive process

with hard facts as input, and an experiential process based on emotions. The fact that the process entails both analytic processes, and association and affect-driven processes has some implications for retirement investing. It is argued (Weber, 2004) that the lack of visceral perceptions of risk is the reason for individuals not saving enough. Factual statements such as "when a retiree you will have to live on 60% of your income" lack concrete associations connected to emotional reactions - and an emotional reaction, or a visceral perception of some risk is a necessary condition for any action to be taken in order to manage the risk (Weber, 2004). Using the two-systems-theory to explain Webers' reasoning implies that retirement information and pension investment guides are structured based entirely on rational and analytical facts - leaving out the entire part of the decision-making process of the individual that is based on feelings. This, Weber argues, is the reason for the retirement investment decision not even entering the risk perception process.

3.3.5 Risk perception, risk propensity and the connection to risk-taking

The connection between the subjective perception of risk and the behavioural dependent variable, i.e. the actual risk-taking, differ in consumer behaviour risk literature. An intermediate variable in this sense is risk propensity. Risk propensity is defined as an individual's current tendency to take or avoid risks (Sitkin and Pablo, 1992; Sitkin and Weingart, 1995; Conchar et al, 2004). This tendency depends on both the risk preferences of the individual and on this individuals' assessment (through the phases of risk framing, risk assessment and risk evaluation) of the current decision or task at hand. Conchar et al (2004) explicitly defines risk propensity as the result of the risk evaluation phase, or the end state of a consumer before making a risky decision. In all cases a negative relation between risk perception and risk propensity has been established, and a positive relation between risk propensity and actual risk-taking.

The actual decision to take or not to take a risk depends both on risk perceptions and risk preferences. Whether it is important to distinguish between these two inputs depends on the goal of the study: if it is to predict future risk behaviour, then knowledge of whether risk-taking is incurred by risk preferences or risk perceptions has been deemed of little importance (Weber, Blais and Betz, 2002). This is

clearly the case for the present study. It is risk-taking that is the variable of interest, not the underlying concepts of risk perception or risk preferences.

3.3.6 Risk in the present study

The possibility of choosing various levels of financial risk in a subset of the Swedish state pension system (i.e. the premium pension portfolios) implies that risk-taking is enabled in a Swedish pension system setting. The observed differences in actual outcome (see figure 2.2) of these portfolios since the system was introduced further illustrates the importance of financial risk-taking in a Swedish pension setting. Practically, the choice available to individuals is a choice between mutual funds investing in different markets and sectors, and hence carrying different levels of risk.

Risk in the present thesis is defined as the amount of financial risk the individual is willing to take on. This focus on risk-taking is operationalised both directly, describing situations involving actual financial risk-taking (resembling the actual choice individuals may make within the present Swedish pension system), but also by capturing the risk perceptions of the individual - subsequently assumed to affect risk-taking. The general characteristic of the individual as "risk-taker" is also taken into account to.

3.4 Trust and risk-taking

In the present study, trust (specifically measured as trust in the pension system) is assumed to influence the behaviour of the individual (in this case financial risk-taking). This implies that it is the relation between trust on one hand and risk-taking on the other that is the focus of the study. An important starting point has already been mentioned: the Morgan and Hunt study (1994), where trust is found to have a negative relationship with decision-making uncertainty. A possibility is that this reduced uncertainty will manifest itself in an increased inclination to take risks. The Morgan and Hunt study is central to the present study, both as regards understanding the trust

construct but also, in establishing a foundation for a marketers' view of trust and risk-taking.

A few consumer behaviour studies, often focused on e-commerce and Internet banking, have combined the constructs of trust and risk-taking (see Zhao et al, 2010 for an overview of Internet banking studies). Some studies have a clearer focus on the trust component, and how trust may be built (and perceived risk consequently overcome) (e.g. Harridge-March, 2006). Other studies have a more defined perceived risk-perspective, and the importance of trust is not clearly stated (e.g. Littler and Melanthiou, 2006). Some studies, however, clearly define both trust and perceived risk (or risk-taking) and aim to describe the relation between them in various settings (e.g. Yousafzai et al, 2003 for a conceptual framework, and Zhao et al, 2010 for empirical testing). The result of this latter empirical study is a negative relation between trust and perceived risk, a result that will be discussed in subsequent sections.

From a general standpoint, the trust – risk literature is not clear on how the relation between trust and risk-taking should be described. Taking into account all disciplines, Rousseau, Sitkin, Burt and Camerer (1998) find that the concept of trust has been modelled both as an independent variable, an interaction variable and a dependent variable. The unclear definition of trust also complicates the causal relation to risk-taking: *“it is unclear whether risk is an antecedent to trust, is trust, or is an outcome of trust”* (Mayer et al, 1995, p. 711). A large part of the trust-risk connection stems from a shared use of probability and uncertainty. As has been shown in the overview of the trust concept, trust explicitly involves a probability assessment of the reaction of the counterparty. When you say that you trust someone, you are not one hundred percent sure that he or she will react according to your expectations – there is always a risk involved. This risk-based view of trust has been increasingly used in the literature (Mayer et al, 1995; Das and Teng, 2004), and is also the foundation for the use of trust and risk-taking within consumer behaviour.

The two concepts of risk and trust have in the literature (widely defined, not only taking consumer behaviour studies into account) been explicitly connected in (at least) three ways: as risk affecting trust, as trust affecting risk or as the constructs being identical. Figure 3.3 aims at schematically present these possible trust-risk relations, which will be further developed in section 3.4.1.

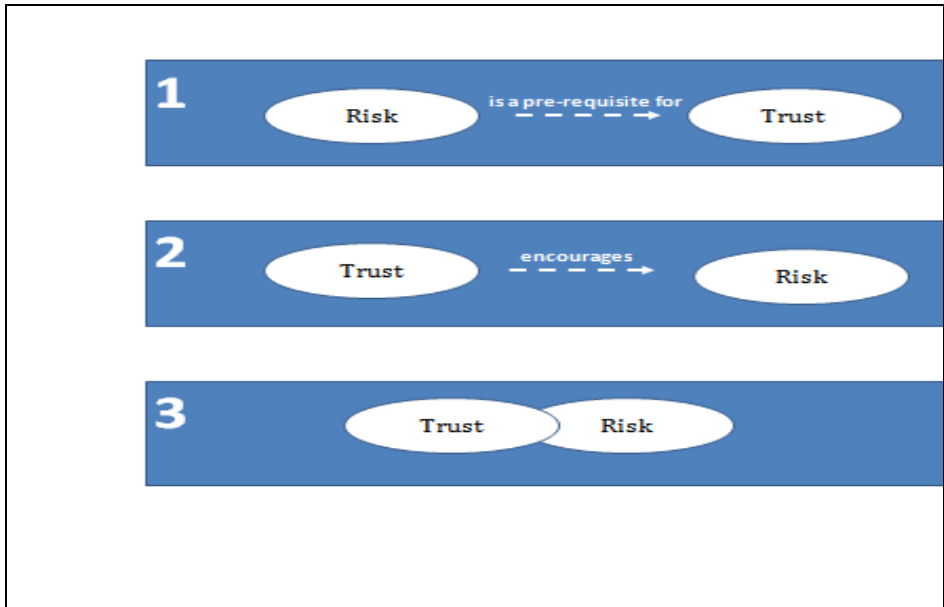


Figure 3.3 Theoretical perspectives on the trust-risk connection

For the purpose of the present thesis, the question addressed is if it is trust in the future pension payments actually being delivered that drives risk-taking, if it is risk-taking that induces a sense/no sense of trust, or if trust in the future pension pay-outs and choice of risk-level are the same thing. These various possibilities will be outlined from a theoretical standpoint based on previous literature and after that an application to the present study will be made.

3.4.1 The theoretical alternatives as regards the trust – risk-taking relation

The first possible relation between trust and risk focuses on the fact that only under conditions of risk has trust been found to be necessary (Deutsch, 1958). The reason for this has been that uncertainty (or unbinding contracts) must exist regarding the outcomes of other peoples’ behaviour in order for trust to build. In this sense risk, and the perception of risk, is seen as a prerequisite for trust to build. An extension is made by Kim and Prabhakar (2000), describing both perceived risk and trust as influencing trusting behaviour.

The second possible relation builds on the definition of trust as a “willingness to take risks” (e.g. Mayer et al, 1995). The level of trust

is seen as an indication of how much risk one is willing to undertake. As stated by Johnson-George and Swap (1982, p. 1306): “*willingness to take risks may be one of the few characteristics common to all trust situations*”. In this sense, trusting someone is seen as a risky decision in itself – partly – reflecting the risk preferences of the individual. Trust, in this perspective, encourages risk-taking. The traditional set-up of these trust-risk studies puts perceived risk as the mediator between trust and risk-taking (e.g. Garbarino and Strahilevitz, 2004). Two different types of trust have further been identified within this theoretical set-up. First, the risk associated with the interaction partner or service provider has been found to have an inverse relationship with trust in the trustee, i.e. the more you trust the service provider, the lower the level of perceived risk and consequently the more prone the individual is to make risky choices (Järvenpää, Tractinsky and Vitale, 2000). This inverse connection between trust and perceived risk is also commonly found in e-commerce studies concerning e.g. Internet banking (e.g. Grabner-Kräuter and Faullant, 2008). A similar application builds on the connection between a firm’s longevity and perceived risk. The use of longevity (which may be seen as related to trust) as an extrinsic cue was found to decrease level of perceived risk (Desai, Kalra and Murthi, 2008). The second type of perceived risk connected to trust is the risk associated with the general transaction in question. Here the relation is somewhat different: the more risk that is associated with a particular transaction, the more trust is needed to at all engage in such a transaction (Mayer et al, 1995). The entire body of more empirically oriented studies of e.g. control system could be seen as presenting an alternative mechanism for dealing with risk in relationships (McEvily et al., 2003; Sitkin and George, 2005).

The third strand focuses on the similarities between the trust and the risk concept (Kee and Knox, 1970; Mitchell, 1999). Both constructs deal with probabilities, and situations that involve trust could be seen as a subset of those involving risk. However, studies (Dohmen et al, 2008) have opposed this view of trust and risk as practically the same thing. In an intergenerational study, included in the 2003 and 2004 wave of the German socio-economic panel and verified using a large sample of individuals (over 3.700), the transmission of both risk-attitudes and trust-attitudes from parent to child were measured. Both level of trust and level of risk were found to be transmitted from generation to generation, but the trust-attitude of the parent was found to have no explanatory power as regards the risk-attitude of the child (and vice versa) (Dohmen et al, 2008). These results point at risk and

trust being separate constructs – a view that will be adopted in the present study. This implies that alternative three in the figure above has been found not relevant for the present study going forward.

3.4.2 The causality of the trust – risk-taking relation

Having concluded that two possibilities exist: either trust is a driver of risk-taking, or risk is an antecedent to trust, the theoretical arguments for adapting one or the other are outlined below.

Four different approaches to delineating the causal relationship between trust and risk-taking are discussed. The approaches are outlined based on previous research from a wide area of disciplines and then applied to the present study in order to assess the causality of the trust – risk-taking hypothesis. Note that the approaches are not found as an entity in previous research – they may be seen as the attempt of the present study to categorize the many methods of describing the trust – risk-taking relation found in previous studies.

3.4.2.1 Causality based on trust dimensions

First, the trust – risk-taking causality may be explored using the various dimensions of the trust construct. As noted in section 3.2.3, the trust construct may be described as containing three subsets: a generalised dimension, a component reflecting ability (or competence as in Das and Teng, 2004), and a component reflecting willingness (or goodwill). It is proposed that the nature of the trusting, i.e. if it is ability-based or willingness-based, decides how the relation between trust and risk-taking is formed (Das and Teng, 2004):

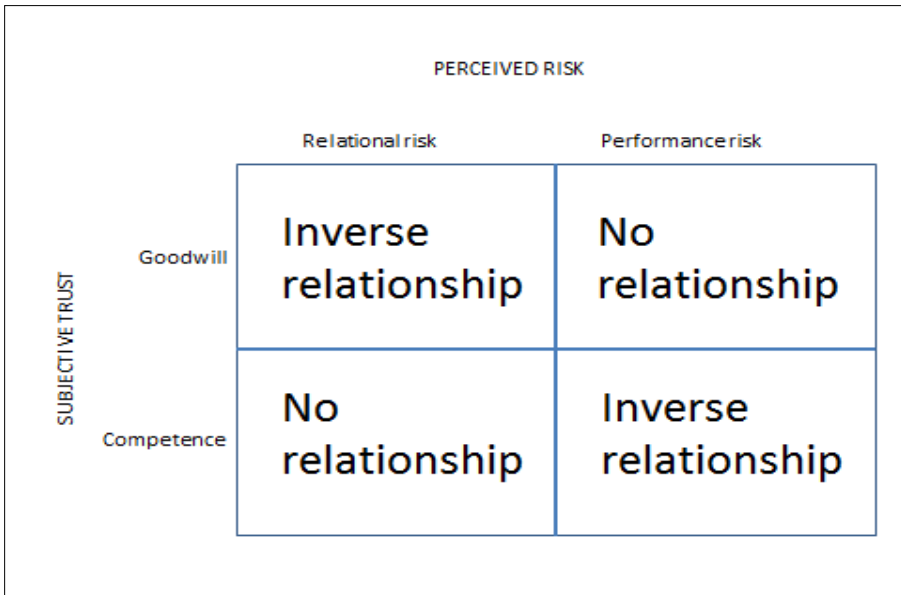


Figure 3.4 Trust and perceived risk

Source: Das, T.K. and Teng, B-S. (2004, p. 102), “The risk-based view of trust: A conceptual framework”, *Journal of Business and Psychology*, Vol. 19, No. 1, Fall, pp. 85-116

Das and Teng (2004) advocate that trust in the willingness of the counterparty (or goodwill in the figure above), i.e. a judgement based on intentions, implies a low assessed probability that the trustee will act opportunistically. The risk perception of the situation will accordingly be low, something that will induce risk-taking. This implies that when the nature of trust may be defined as trust in the willingness of the counterparty, the causality goes from trust to risk-taking. Trust in the ability (or competence in the figure above) of the counterparty on the other hand, has been suggested to have no effect on the perception of relational risk of the individual, i.e. if the counterparty will act opportunistically or not. This emanates from the source of trust in the ability: the focus not on trustworthiness or intentions of the counterparty, but on underlying competences and skills needed in order to meet the promises made. However, trust in the ability (or competence) has been found to have an inverse relation with performance risk, i.e. the variety of outcomes, including factors out of control of the counterparty. In the present study, examples of such exogenous factors creating a surprise for e.g. future governments would be demographic development not modelled in the present

pension system. The possibility of this development occurring has nothing to do with the opportunistic behaviour of the government but still affects the possible future outcomes and the perception of risk. The causality as regards trust in the ability of the counterparty is also that trust leads to perception of risk.

Having decomposed both the concept of trust (into ability and willingness-based trust) and risk-taking (into relational and performance risk) the general connection between the concepts is discussed by Das and Teng (2004): “...*the causal relationship becomes obvious – a perception of low risk prompts individuals to take that risk*” (p. 111), and since risk perception and trust are mirror images of each other, it follows that trust causes risk-taking. The discussion in Das and Teng (2004) is purely conceptual in nature. However, the article has proved to be a continuous influence to other more empirically oriented studies (e.g. Juga and Junttunen (2011) and Sngun and Wasti (2007) just to mention a few).

The present thesis measures both trust in the ability and the willingness of the counterparty. The willingness-dimension of trust is clearly applicable to the pension focus. The prioritising of both the present and future government is clearly an important factor in deciding the level of future pensions. A suspicion that other beneficiaries – such as e.g. schools and health care – will be more highly prioritised than the retired population will reduce the level of trust in the pension system. The ability dimension, on the other hand, focuses on factors out of control of e.g. the government, such as demographic development. A low level of trust in the present system being sustainable and able to adjust to future demographic challenges will increase the level of perceived risk inherent in the pension system. Both the willingness and ability form of trust is applicable to the pension system setting of the present study, and both dimensions point in the direction of trust affecting perception of risk.

3.4.2.2 Causality based on nature of trustee

The causality of the trust – risk-taking relation may also be explored using variations in the nature of the trustee. Since the focus of this study is individual behaviour, the trustor is by definition always a person. The trustee, on the other hand, may take other forms. Below is

a, non-comprehensive, overview of various types of trustees and the implications the nature of the trustee has for causality.

A) Person to person

A substantial part of the trust – risk-taking literature consists of studies with a person as a trustor and a person as trustee (e.g. Ben-Ner and Putterman, 2001). Evidence of this type of studies may also be found within consumer behaviour: trust in a particular service provider is the topic of several studies (Järvenpää et al, 2000; Pires, Stanton and Eckford, 2004). This person-to-person feature is also common in the more experimental strand of trust research (e.g. Cook and Cooper, 2003). In many of these studies it is assumed that greater risk aversion creates less trusting. Consider the simple game described in Ben-Ner and Putterman (2001): player A receives \$10 and may then decide to keep the money or give it to player B – in which case player B will receive an additional \$10. B can then decide to return any sum back to A. For A, the decision is whether to trust B, hoping to receive a sum larger than \$10, or to keep the safe initial amount. The example proves that the risk aversion of player A will be highly influential on the judgement of player B, and on the subsequent decision to trust or not to trust. The causality is here described as risk aversion influencing trust.

B) Person to a particular transaction

Much of the consumer behaviour literature is devoted to the situation where the individual is to engage in a special transaction, e.g. buying medicine, or shopping on-line (Buettner and Göritz, 2008). The causality here is the reverse of the person-to-person relation: here the case is that the more you trust a trustee, the more inclined you are to engage in the transaction in question, or to engage in risk-taking.

C) Person to a larger entity, e.g. an organisation

Organisational research has also focused on trust and risk-taking. A large part of these studies have focused on themes connected to organisational change (McLain and Hackman, 1999). Within this change focus, the trust component of workers has often been used as an explanatory variable in understanding their risk perceptions associated with the new organisation. The causality in this case becomes one where trust affects risk-taking.

D) Person to stock market

A stock market focus implies that the underlying trust component will contain an element of trust in the efficiency of the market (Ryan and Buchholtz, 2001). The chance of being cheated in this particular setting and the institutional framework around the market will be of high importance. The total level of trust will then influence how risky the investment situation is perceived to be, and subsequently affect trading behaviour. Due to investment risk as the operationalised variable, the causality in these studies is in all cases found modelled as trust influencing risk-taking (Ryan and Buchholtz, 2001; Guiso et al, 2008).

The alternatives A to D above are intended to provide a theoretical overview of how the nature of the trustee could affect the relation between trust and risk-taking. The present situation in a sense resembles alternative B, common within consumer behaviour, where the particular transaction to engage in could be interpreted as investing in non-risky or risky financial assets. Further, the pension system focus of the present study also resembles the stock market alternative, as depicted in D above. Both the pension system and the stock market may be seen as abstract, non-personal entities, inducing the same kind of trust or distrust. The resemblance to alternative B and D above point at a situation where trust leads to risk-taking.

3.4.2.3 Causality based on repeated games v/s one-off situations

A third way of analysing the causality is to use the difference in feedback: is it a one-off situation or a repeated game? In the latter case, experiences from previous encounters will feed back to influence the level of trust, and will – if positive – lead to a decision to co-operate (Rousseau et al, 1998). This may also be compared to the trust-loyalty relation commonly found within consumer behaviour (e.g. Morgan and Hunt, 1994). In a one-off situation, the cooperation factor will disappear. In terms of causality, the repeated-game situation including the possibility to co-operate reflects the existence of trust-building and more resembles the trust – risk-taking causality than the opposite.

Pension systems are a long term phenomenon, where previous outcomes will affect the behaviour of current workers. As has been

shown in section 2.5, pensions stemming from various pension systems globally have had a tendency to fluctuate. The feedback loop existing within pension systems suggests that individuals will form their trust in the present system based on previous experiences. The repeated-games nature of the investment task within a pension system setting, points at the causality being one where trust influences risk-taking.

3.4.2.4 Causality based on trust v/s manifestation of trust

The fourth and final way to analyse the causality is to distinguish between just trusting, and the behavioural manifestation of trust. As noted by Mayer et al (1995, p. 711): “*One does not need to risk anything in order to trust; however, one must take a risk in order to engage in trusting action*”. This implies that in situations where the actual outcome of trust is in focus, the causality will be that trust leads to risk-taking. In more hypothetical game situations (such as Ben-Ner and Putterman, 2001), or in more conceptual research, the opposite causality may well be the case.

The present study clearly has a behavioural focus: it is the risk-level in the investment portfolio within the pension system that is of interest. Again, this behavioural focus points at the causality being trust leading to risk-taking.

3.4.3 Direction of the relationship between trust and risk-taking: negative or positive

Remaining to be analysed is the direction in which trust affects risk-taking. Does a high level of trust lead to increased or decreased risk-taking? From an empirical pension system perspective it is not obvious that the relation is either positive or negative. A sceptical view as regards the income stream after retirement stemming from the state – is that accompanied with a tendency to secure a low level of income or will it lead to increased risk-taking? Adhering to the structure of the risk concept, the direction of the trust – risk relationship will be observed both by decomposing the risk construct (i.e. looking at the direction of the trust – risk perception relation and on the risk perception – risk-taking relation and then combining these analyses) and by looking at the trust – risk-taking relation directly.

This is also in line with the way most consumer behaviour studies on trust and risk-taking are constructed (Buettner and Göritz, 2008).

First, the theoretical trust-risk-framework stipulates that trust is inversely connected to risk perception, i.e. that a high level of trust makes the situation perceived as less risky (Das and Teng, 2004). On a conceptual basis, the inverse relation between trust and risk-perception is established. This negative relation has been tested and confirmed in numerous settings, among them trust in radioactive management and perceived risk by radioactivity (Flynn, Burns, Mertz and Slovic, 1992), and in an Internet purchase situation (Kim, Ferrin and Raghav Rao, 2008; Grabner-Kräuter and Faullant, 2008). The negative relation has also been confirmed in a financial setting. Ryan and Buchholz (2001) showed that the level of situational trust within each individual reduces the level of perceived risk of the investment (and consequently affects the trading behaviour of the individual). As stated by Ryan and Buchholz, "*perceived risk is simply the flip side of situational trust*" (p. 185). Factors that may affect the strength of this negative correlation between trust and risk perception have been debated. A weak negative relation between trust and risk perception (as presented in Sjöberg, 1999) was argued to be the result of a general measure of trust (Siegrist, Cvetkovich and Roth, 2000). The use of a more domain-specific trust measure was assumed to make the relationship stronger.

Second, the relation between risk perception and risk-taking has conceptually been described as negative (Das and Teng, 2001; Sitkin and Weingart, 1995). A perception of low risk encourages an individual to undertake a certain risky action, whereas a high level of perceived risk would have led to the risky action to be less likely. Summing up, the negative relation between trust and risk perception and the negative relation between risk perception and risk-taking, leads to a positive relation between trust and risk-taking. In other words, a high level of trust will lead to more risk-taking.

Focusing directly on the trust – risk-taking relation yields the same result. A meta-analysis performed by Colquitt, Scott and LePine (2007) revealed a moderate to strong positive relationship between trust and risk-taking in 119 published articles. The positive relation between trust and risk-taking has also been verified to hold for risk-taking regarding investments (Guiso et al, 2008). Trusting others increase the probability of participation in the stock market by 6,5 percentage points; an effect that is statistically significant. More

interestingly, Guiso et al (2008) show that trust makes the individual significantly more prone to invest in risky assets. The increase in risk-level of investment portfolio caused by a higher level of trust that is the subject of the present study has hence been verified in previous literature. This is the foundation for the hypothesis to contain a positive effect of the level of trust held in the pension system on financial risk-taking, i.e. to assume that it is trust that drives risk-taking, and that the effect is that a higher level of trust leads to increased risk-taking.

3.5 The impact of knowledge and involvement

Among the most cited influential variables within the marketing literature when it comes to risk are knowledge and involvement (Dowling and Staelin, 1994; Mårtenson, 2005; Laroche, Nepomuceno and Richards, 2010). The constructs of knowledge and involvement are in some instances empirically investigated together, and results are that consumers' knowledge is positively connected to involvement (Park and Moon, 2003), whereas involvement has been found to mediate the impact of product knowledge on the buying decision (Lin and Chen, 2006). Mårtenson (2005) has, in a study of complex credence products, explicitly modelled two of the subsets of knowledge together with involvement, and the result is that expertise breeds involvement, which in turn leads to increased levels of familiarity.

Involvement and knowledge has also more specifically been connected to risk-taking (Mårtenson, 2005; Nelson, 2004). The precise relation between knowledge and involvement respectively, and risk-taking will be explored further in the remainder of section 3.5. The theoretical arguments for knowledge and involvement directly influencing risk-taking will be provided. Also, the potential moderating role of knowledge and involvement on the hypothesised trust – risk-taking relation will be examined, i.e. is there reason to believe that level of knowledge or involvement will make trust more or less important when deciding on which level of financial risk to take?

The direct effect of knowledge and involvement on trust is not the main focus of the present study. The reason for including a general

discussion on the knowledge-trust and involvement-trust relations is the complexity and importance of the various constructs. Although not modelled explicitly in this present study, it is highly likely that the central constructs of knowledge and involvement will in some way affect trust. The general discussion of this relation serves as a foundation for the hypotheses regarding the direct effect on risk and the indirect effect on the relation between trust and risk-taking: is there something in the general overview of the knowledge – trust relation or the involvement – trust relation that is assumed to affect these hypotheses?

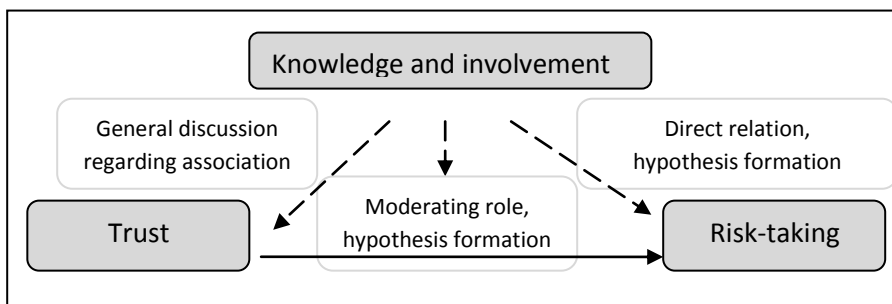


Figure 3.5 Relation between knowledge and involvement, and trust and risk-taking

3.5.1 The concept of knowledge

Before addressing knowledge from a consumer behaviour perspective, a brief note on the concept of knowledge as such may be warranted. The precise definition of what knowledge actually is has varied throughout history. Starting with the classic Anglo-Saxon definition of knowledge as a “justified, true belief”, the view of knowledge as something basically tacit, a type of knowledge imbedded in peoples’ minds has emerged (Polanyi, 1966). A mechanism of interrelation between the two types of knowledge has later been introduced: explicit knowledge may be internalised as tacit knowledge and tacit knowledge may be converted into explicit knowledge (Nonaka and Takeuchi, 1995). To this duality of explicit and tacit knowledge has been added what is referred to as an “epistemology of practice”, i.e. a more marked focus on the activity of knowing, not only on the possession of knowledge (Cook and Brown, 1999). The present study adheres to the notion of explicit and tacit knowledge co-existing. As

will be shown, two of the measures used to measure knowledge (self-assessed knowledge and factual knowledge) take into account both explicit and tacit knowledge.

Conceptually, many studies divide consumer knowledge into three subsets: subjective knowledge (what an individual thinks he or she knows), objective knowledge (the amount or organisation of what is actually stored in memory) and prior experience or familiarity (prior usage) with the product (Brucks, 1985). The subsets of knowledge are, naturally, related to each other. Carlsson, Vincent, Hardesty and Bearden (2009) however in a meta-analysis report substantial variation regarding this relation – correlation coefficients range from insignificant and close to zero to around 0,5. The investment-related studies also present a wide range of correlation coefficients: from around 0,2 in a study on financial services (Devlin, 2006) to over 0,4 in a study focusing more closely on investing (Chiou, Droge and Hanvanich, 2002). In the present study, all three subsets of knowledge will be reflected in the items measuring the constructs. The varying correlation coefficient will be reflected in a tendency not to rely on the average knowledge score, but rather use the separate sub-parts.

Knowledge has since long been regarded an important variable in the attempt to understand consumer behaviour in general (Brucks, 1985; Alba and Hutchinson, 1987; Sääksjärvi, Holmlund and Tanskanen, 2009). The effect of increased knowledge has been found to affect the need for cognitive effort when performing the task at hand, the categorization or cognitive structure of knowledge obtained, the degree of analysis of relevant information, the elaboration performed on a given set of information and finally to have an effect on memory and recognition (Alba and Hutchinson, 1987). It has also been related to many facets of consumer behaviour: to information search (Katona and Mueller, 1955; Newman and Staelin, 1972), analytical information processing (Brucks, 1985), product involvement (Bloch, 1986; Flynn and Goldsmith, 1993), evaluation of products (more specifically use of alignable and non-alignable product attributes) (Nam, Wang and Lee, 2012) and to the amount of information used in decision-making (Brucks, 1985). The three subsets of knowledge have also been found to have different consequences. The level of objective knowledge has been found to facilitate acquisition of new information and to affect the accuracy of the decision. Subjective knowledge, on the other hand, may be interpreted as a measure of confidence in one's own knowledge and is the subset most likely to influence the purchase

behaviour (Flynn and Goldsmith, 1999; Grønhaug, Hem and Lines, 2002). Finally, prior experience has been found to (in a financial services context) induce individuals to perform a deeper and less superficial evaluation based to a greater extent on functional cues (Devlin, 2011).

Knowledge has further been found to have an impact on financial decision-making. Financially knowledgeable individuals have been found to engage more in responsible behaviour such as budgeting and long-term planning (Perry and Morris, 2005). Knowledge has more explicitly been connected to choice behaviour, and knowledge has been found to positively influence choice behaviour (Lusardi and Mitchell, 2009; Howcroft et al, 2003), and make individuals less prone to e.g. remodel the savings portfolio after a change in the fund assortment. The knowledge level of the financial consumer has been found to be reflected in the choice of acquisition strategy, and also in the perception of uncertainty and confidence regarding the purchase (Morris, Broniarczyk, Inman and Broussard, 2008).

Of special interest to the present study are the findings pointing at knowledge affecting information processing. This effect has been found to be especially noticeable for information processing and decision-making with a high degree of complexity (Jacoby et al, 2001). High knowledge individuals have been shown to be better at structuring and focusing on the right diagnostic item of information (Hershey and Walsh, 2000-2001). High knowledge individuals have also been found to be more motivated to adopt detailed information processing when faced with an incongruent message than low knowledge individuals (Johnson and Russo, 1984). Informative and factual attribute statements are further found to be perceived as more useful by high knowledge individuals, who are more prone to adopt a rational and fact-oriented information process (Maheswaran and Sternthal, 1990). Novices, on the other hand, are found to rely more on opinion of others and on cues such as brand and price. Low knowledge individuals have also been found to concentrate more on how easy it is to at all understand the message (Maheswaran and Sternthal, 1990). This makes the low-knowledge individual more susceptible to less fact-oriented cues (Earle and Cvetkovich, 1995). The discussion of the dual existence of information processing systems, i.e. the rational versus the experiential (e.g. Weber, 2004), implies that the less knowledgeable individual would be more prone to adopt the experiential path, and use an attribute such as trust. The

results above regarding the difference in information processing between high and low knowledge individuals have been verified in a number of settings and in a number of countries. They have even been verified in a Swedish pension setting, where individuals with varying levels of knowledge were found to rely on significantly different input when making fund choices in the Swedish premium pension fund system (Hauff, 2006). The information processing effects of knowledge have further been delineated depending on type of knowledge. Number of attributes searched for has e.g. been found to correlate significantly with objective knowledge, but not with subjective knowledge (Brucks, 1985). Another example in a financial context is the finding that investors who rate themselves “comfortable” in understanding financial matters (i.e. that have a high level of self-assessed, or subjective knowledge) were more prone to trade more often and diversify more internationally (Graham, Harvey and Huang, 2009).

As for financial services, it is *“almost an understatement to say that financial decision-making is a complex and multifaceted task”* (Mårtenson, 2005, p. 452). From an economic perspective, Lusardi and Mitchell (2009) have shown that the general economic model assumes that in order to save wisely for retirement the individual needs to take into account expectations regarding survival probabilities, discount rates, investment returns, earnings, pensions and Social Security benefits, and inflation – not mentioning the information needed to formulate and execute optimal consumptions/savings plans. The choice of risk-level in retirement investment portfolios may therefore be regarded as a good example of complex decision-making, where level of knowledge is assumed to have a large influence on the outcome.

3.5.2 Knowledge as an explanatory variable and a moderating variable

In order to later formulate hypotheses as to how knowledge would impact risk-taking and further function as a moderator between trust and risk-taking, the connections between the knowledge construct on one hand, and the constructs of first trust, then risk-taking on the other are delineated. The knowledge – trust relation is intentionally formulated in more general terms since no hypothesis is formulated based on this relation.

3.5.2.1 Knowledge and trust

Based on the documented effect of knowledge on process of information and decision-making (e.g. Maheswaran and Sternthal, 1990), it would be assumed that levels of knowledge would have an impact also on the formation of trust. This is confirmed in the literature: knowledge has been shown to alter the cues consumers look for when forming trust (Coulter and Coulter, 2003). Low-knowledge customers put high reliance on personal delivery factors such as similarity, empathy and politeness, whereas the highly knowledgeable consumers emphasised performance-related factors such as competence, reliability and promptness. This corresponds well to the rational information process of the high knowledge consumer versus the less fact-oriented process of the low knowledge individual as described in section 3.5.1. Higher levels of both narrow scope trust (trust in a particular financial institution) and broad scope trust (trust in the context in which the institution operates) have been found among more knowledgeable individuals (Hansen, 2012). Financially knowledgeable consumers have also been found to be more realistic in what to expect from a financial institution, and hence to experience less disappointment and form higher levels of trust (Pucetaite and Lämsä, 2008) and to be more in control and feel more secure when evaluating a financial institution – something that might spill over into higher levels of trust (Walczuch and Lundgren, 2004).

The complexity of the knowledge construct calls for an examination of whether any particular part of the construct may have a connection with trust. Consumer experience – one of the subparts of the knowledge construct – has been found to play a decisive role in the prediction of loyalty (Brunner, Stöcklin and Opwis, 2008). Experienced consumers have been found to be less sensitive to the current service and their satisfaction with it because they had already established a reliable image. These effects of knowledge may be compared to the concept of trust. The effects of familiarity on trust are further well-documented as regards e-commerce: that an individual is familiar with the Internet may help reduce feelings of uncertainty as regards on-line transactions (e.g. Gefen, Karahanna and Straub, 2003). The need for trust has also been found to be negatively correlated with information and education (i.e. objective knowledge); the act of faith that in a sense constitutes trust is not necessary when the individual understands what is going on (Guiso et al, 2008). This reasoning is in line with the case where the existence of binding contracts hampers

the formation of trust (Malhotra and Murnighan, 2002). In this case no sequence of promises delivered exists and no experience is allowed to form.

All in all, level of knowledge is shown to influence the way individuals form trust. Empirical evidence of this relation has been found to hold for several service industries (such as management consultants, health insurers and travel agents in Coulter and Coulter, 2003). Guiso et al (2008) have a lengthy discussion on the special premises that hold explicitly for the stock market. They argue, based on a large Dutch sample of individuals, that part of the reason for not investing in the stock market is lack of trust, in turn based on individual differences in education and religious upbringing among other factors. As stated: “*these individual priors play a bigger role when investors are unfamiliar with the stock market or lack data to assess it. But they are unlikely to fade away even with experience and data*” (p. 1). This implies that the influence of knowledge on trust (and subsequent risk-taking) may be said to have been verified in a setting close to the present thesis. Further, the subpart of the knowledge construct assumed to influence level of trust the most is assumed to be experience (Coulter and Coulter, 2003). Note that in the Guiso (2008) study, individuals’ education is used as a proxy for level of knowledge which makes it hard to distinguish between the various facets of the knowledge construct.

3.5.2.2 Knowledge and risk-taking

The constructs of knowledge and risk-taking have been explicitly modeled together in several consumer behaviour studies (e.g. Diacon and Ennew, 2001). Knowledge has been viewed as an antecedent to consumers’ perceived risk-level and assumed to be of importance in subsequent purchasing choices (Howcroft et al, 2003). Opportunity and ability (representing the subset of expertise), have further been found to increase the level of risk-willingness in a financial setting (Mårtenson, 2005). The relation between knowledge and risk-taking here runs via an increase in the level of involvement. Last, the concept of issue capability, i.e. that the individual thinks that he or she has enough resources to solve the issue at hand, may also be seen as similar to knowledge (Mittal, Ross and Tsiros, 2002). Issue capability has been shown to be positively associated with risk-taking. All in all, studies have established a positive relation between knowledge and

risk-taking, i.e. that knowledgeable consumers seem to take on more risk than less knowledgeable consumers.

Many researchers have attempted to explain this positive impact of knowledge on risk-taking. Familiarity with a risk has been suggested to lower the psychological perception of its riskiness (Fischhoff, Slovic, Lichtenstein, Read and Combs, 1978). This is the case when experts, e.g. in the area of nuclear power generation, perceive the risks to be much lower than the general public. In line with this reasoning are the findings where risk associated with the purchase of a new product is found to be high because the consumers lack information and prior experience (e.g. Havlena and de Sarbo, 1990). In a financial setting, the documented employer stock-bias in the portfolios of the employees (Driscoll, Malcolm, Sirull and Slotter, 1995) may be seen as increased knowledge of the own stock leading to a less risky perception of the investment, and consequently to increased risk-taking.

A high self-assessed level of knowledge may be interpreted as a high level of financial confidence, a concept of central interest to the field of behavioural finance research. Self-assessed or subjective knowledge has been explicitly connected to financial risk-taking: a group of students high on subjective knowledge preferred a risky alternative to a much higher extent than students low on subjective knowledge (Hadar, Sood and Fox, 2013). A study by Wang (2009) also finds that subjective knowledge breeds risk-taking and he goes so far as to state that “*subjective knowledge might be the key to investors’ risk-taking*” (p. 201). The logic presented is rather intuitive: when taking risks, accuracy regarding outcomes is rarely the case, implying that objective knowledge is of less importance. A **too** high level of self-assessed knowledge however borders what is commonly known as overconfidence, i.e. the psychological effect that the individual believes that the accuracy of his or her knowledge is greater than it actually is (Barber and Odean, 2001). Overconfidence has been associated with individual behaviour, most often frequency of stock trading (Glaser and Weber, 2001). It has also been directly connected to risk-taking: overconfident individuals have been found more likely to invest in a risky portfolio (Nosic and Weber, 2010). These two studies are both based on empirical investigations (in the Glaser and Weber case a combination of questionnaire, background information and actual transactions from a German online broker, and in the Nosic and Weber study a smaller German student sample).

As regards the low knowledge financial consumer, the assumption is that they will refrain from taking risk. Vulnerable consumers with little knowledge of investment-related issues are assumed to suspect that their lack of knowledge will be used against them, causing a higher perception of the risk at hand (Diacon and Ennew, 2001). This higher perceived risk will subsequently manifest itself in lower risk-taking.

It might be worth noting that not all studies show the same result, i.e. that more knowledgeable consumers take on higher risks. A study of adult and young peoples' on-line behaviour shows that young people (assumedly low in knowledge) are prepared to use unknown web-sites although they admit that they lack knowledge (Hadjikhani, Safari and Thilenius, 2011).

3.5.2.3 Knowledge and the relation between trust and risk-taking

The decision processes of knowledgeable and less knowledgeable individuals differ (e.g. Lee and Lou, 1996; Cordell, 1997). One such observed difference concerns which cues or attributes that individuals use in order to evaluate the alternatives at hand and subsequently take action. High knowledge individuals have generally been shown to approach decision-making and evaluation of alternatives in a more rational, cognitive and fact-based manner, and to place more weight on functional, product-specific cues (e.g. King and Balasubramanian, 1994, and Devlin, 2002 and 2011 for applications on financial services). The 2002 Devlin study interviewed 6700 UK financial customers in order to assess choice criteria, and the 2011 Devlin study carried out some 1000 telephone interviews in order to assess which input was preferred when choosing an investment product. In line with these general findings is the result that Swedish individuals with a high level of financial knowledge have been found to rely more on (fact-based) fund company material when choosing a fund (Hauff, 2006). Low knowledge individuals, on the other hand, have been shown to rely more on non-functional cues such as brand - and trust (Bettman and Park, 1980; Alba and Hutchinson, 1987). More recent applications verify this connection. The low-knowledge consumer has e.g. been shown to rely more of country of origin when evaluating a product because they have less information on how to evaluate the performance of the product (Josiasen, Likas and Whitwell, 2008) and

also to rely more on procedural fairness when forming a purchase intention (Shehryar and Hunt, 2005).

The specific case of risk-taking may be analysed using the findings of the more general decision-making process for high and low knowledge consumers. Analogue to the difference in choice of attribute among individuals with differing levels of knowledge, risk-taking may also be seen as a function of functional versus non-functional cues. The individual with a high knowledge in financial matters accordingly approaches the choice of risk-level with more weight on fact-based cues. Low knowledge individuals on the other hand use non-factual cues, among others trust, when choosing level of financial risk. Trust may for the low knowledge individual also be used as a heuristic, a mechanism through which complexity of the task in question is reduced (Earle and Cvetkovich, 1995). Based on the fact that trust is a non-factual attribute, and that low knowledge individuals have been shown to be more frequent users of this type of attributes, the relation between trust and risk-taking is assumed to be stronger for low knowledge individuals than for high knowledge individuals.

This relation has been empirically confirmed in a financial setting, where portfolio risk-taking of individuals with a low level of education – here used as a proxy for knowledge – have been shown to be more influenced by level of trust (Guiso et al, 2008). The results point at knowledge altering the relation between trust and risk-taking in a significant way. Guiso and his colleagues formulate this in a somewhat different way, drawing the attention to the less knowledgeable individual and his various options at hand: “...*trust is the necessary act of faith we have to do when we are not properly informed or we do not know what is going on...*” (p. 6).

3.5.3 The concept of involvement

Another construct that is commonly found to have an impact on consumer behaviour is involvement (e.g. Howcroft et al, 2003; Dholakia, 2001; Prendergast, Tsang and Chan, 2010). It has been tied to several aspects of the marketing domain: from advertising and message processing (e.g. Krugman, 1967; Petty and Caccioppo, 1981; Lee, Yum and Lee, 2005), to product classes (e.g. Kapferer and Laurent, 1993), loyalty (Suh and Yi, 2006) and commitment (Warrington and Shim, 2000). Defined more narrowly as consumer

co-production, it has been shown that behavioural involvement leads to increased satisfaction (Hunt, Geiger-Oneto and Varca, 2012). Involvement has further been shown to induce a deeper and more complex consumer choice process (e.g. Laurent and Kapferer, 1985) and a more marked cognitive effort in information search and information evaluation (Celsi and Olson, 1988). As for financial services, it has also been verified that involvement is an important factor in order to understand the financial consumer in terms of e.g. choice of financial instrument (Harrison, 1994; Ennew and Mckechnie, 1998).

The conceptualisation of involvement within the field of consumer behaviour frequently builds on the three types of involvement suggested by Houston and Rotschild (1978): enduring, situational and response involvement. Enduring involvement may be described as long-term attachment with e.g. a product or a product-class (Richins and Bloch, 1986). Given this description, the reliance on individual characteristics such as values and goals becomes evident, and involvement may be defined in terms of personal relevance (Zaichkowsky, 1985). Situational involvement, on the other hand, is a temporary concern with an object, aroused by e.g. perceived risk (Dholakia, 1997). By definition, the level of situational involvement relies more on the particular product characteristics (price, time, complexity etc.) and less on the psychological connection between the individual and the object (Houston and Rotschild, 1978). Response involvement, finally, sees involvement as a type of behaviour in its own right (such as e.g. information search and purchase process) and less as a mediator of behaviour (Leavitt, Greenwald and Obermiller, 1981).

Somewhere in between enduring and situational involvement lies the view that involvement is a goal-directed arousal capacity, driven by two sets of motives: emotive and rational (Park and Mittal, 1985). This definition implies that although the involvement contains a temporary arousal (similar to situational involvement), the direction, or the aim of this arousal is of utter importance. The emotive and more enduring part connects to the personal values and needs inherent in the personal relevance definition. It is the self, and self-identity related needs, that are in focus rather than a particular purchase or purchase goal (Dholakia, 2000). A broadened picture of exactly how facets of emotive involvement (including e.g. emotive commitment and self-expressive involvement) affects behavioural intentions has been

modelled, showing that the feeling that a certain behaviour would be appealing has a marked impact on the eagerness of engaging in the behaviour (Fitzmaurice, 2005). The rational part, on the other hand, refers to the raised level of interest due to a specific purchase situation. This raised level is centred on the goal-fulfilling due to a purchase or usage of a specific product or service (Bloch and Richins, 1983). These two motivators of level of involvement, emotive and rational, will be measured in the present study.

As for consequences of different levels of involvement, several studies have confirmed that the level of involvement influences the depth of the cognitive processes applied when making a choice (e.g. Chakravarti and Janiszewski, 2003; Bian and Moutinho, 2011). Highly involved individuals have further been suggested to be more likely to devote cognitive capacity to issue-related evaluation of incoming messages (Nkwocha et al, 2005; Petty and Cacioppo, 1986). Less involved individuals have been found to be less prone to invest any effort in information processing (Chung and Zhao, 2003) and are instead assumed to judge the message based on what is referred to as simple cues, such as e.g. context in which decision takes place (Petty and Cacioppo, 1986). Again, the reference to the dual information processing system mentioned in section 3.1.2, the rational and the experiential (Weber, 2004), may be made. The less involved individual will be more prone to make decisions based on the experiential system, using attributes such as e.g. trust.

A few studies have focused explicitly on involvement and financial services (Foxall and Pallister, 1998; Mårtenson, 2005; Hedesström, Svedsäter and Gärling, 2007; Steinhart and Mazursky, 2010). Findings are that the level of involvement in financial services may be regarded as medium to low, that level of involvement does have an impact on fund choice activity and that buyers of financial services load higher on rational factors than on emotional. A transformation from rational to emotional involvement in the movement from a non-buying situation to a buying situation would have been expected according to theory, but has not been empirically verified (Zaichkowsky, 1985; Foxall and Pallister, 1998). This transformation has however been documented for investment-related services in particular: many customers felt a situational involvement when making the actual investment decision (e.g. buying a mutual fund) but few stated an enduring interest (Sunnikka, Peura-Kapanen and Rajjas, 2010).

3.5.4 Involvement as an explanatory variable and a moderating variable

For the purpose of the present study, the connection between involvement and the constructs of trust and risk is of importance. Hypotheses of how involvement directly affects risk-taking, and how level of involvement will alter the relation between trust and risk-taking are formulated. The involvement – trust relation is more generally dealt with since no hypothesis is formulated based on this relation.

3.5.4.1 Involvement and trust

Involvement and trust are both important elements in the creation of a customer relation. They are also both found to have implications for consumer behaviour of financial services: levels of trust and level of involvement differentiated customers in a study on wealth management services, i.e. a type of financial services close to the topic of the present study (Sunnikka et al, 2010).

The moderating effect of involvement on trust is shown in several studies (e.g. Martin, Camarero and José, 2011). The underlying reasoning builds on the existence of various signals, some being objective and factual and stimulating cognitive processing, whereas others are more subjective, stimulating emotive response (Petty and Cacioppo, 1986). Depending on the level of involvement of the individual, he or she will focus on a certain set of signals when forming trust: less involved individuals will rely more on the emotional signals whereas more highly involved individuals will rely on factual information (Martin et al, 2011). It is not the case that level of involvement per se leads to a high or low level of trust – but a situation where involvement serves as a selector of certain signals, and these signals in turn are active in the formation of trust.

It may be argued that investment-related information and retirement investing are more fact-oriented topics and lack subjective, emotional signals. Less involved individuals will look for emotional signals but without any luck, and accordingly no trust will be formed. More highly involved individuals, on the other hand, will process the rational content of the retirement investment information and build trust accordingly.

3.5.4.2 Involvement and risk-taking

Many studies have investigated the relation between involvement and perceived risk (e.g. Celsi and Olson, 1988; Dowling, 1986). Similarities between the constructs have been stated: they both incorporate a notion of importance and they both have been found to have an impact in determining cognitive and behavioural processes (Dholakia, 1997). However, differences have also been stated: perceived risk is focused solely on negative consequences of a purchase whereas involvement reflects also the positive consequences.

The causality between involvement and risk perception is not treated in the same way throughout consumer behaviour literature. Perceived risk has been seen as an antecedent to involvement: situational involvement has been suggested to rise when the stakes in a purchase or action are high (Bloch, 1981). On the other hand, level of risk perception has also been envisaged as a consequence of involvement (Venkatraman, 1989; Dholakia, 1997). An interesting study focuses on consumers high on clothing involvement and their online shopping intentions (Jones and Soyoung, 2010). The fact that the intentions remained high even when controlling for the impact of brand trust implies that it might be the consumers' sense of confidence, in turn reducing the level of perceived risk, that impacts behaviour. A distinction between these two directions of causality, one where perceived risk induces involvement and one where involvement leads to a perception of risk, could be argued to rely on the type of involvement used: enduring or situational. The more stable trait of enduring involvement would cause a perception of risk whereas the more changing situational involvement would be a consequence of perceived risk.

A number of studies show that low involvement will lead to low motivation to evaluate the riskiness of the choice and therefore to a low level of perceived risk (Dholakia, 1997; Weber, 2004). Very low levels of involvement will lead to the individual not experiencing any associated risk or anxiety at all. In other words, the low involvement individual, especially the individual low on emotive involvement, will not sense any affect or feeling of danger as a result of the choice situation; something that will lead to the individual not engaging in any risk-reducing action (Damasio, 1994; Bechara, 1997). Involvement leads to a feeling of anxiety or danger, and this visceral perception in turn affects the perception of risk and the subsequent risk-taking (or reduction of risks).

In the area of retirement investing, very few people perceive the least favourable outcome of an investment decision as something dangerous (Weber, 2004). The time lag (i.e. the fact that repercussions of a bad decision or neglect regarding retirement investments are far in the future), and the reliance on responsibility of the society to financially care for its elderly are two factors implicating a low level of involvement, little or no feeling of anxiety or danger, and a low level of perceived risk. The most severe consequence of this lack of visceral perceptions and anxiety is the passivity of the retirement investor (Weber, 2004). This lack of visceral cues, in turn due to low involvement, would imply a higher tendency to take risks.

Contrary to these result is a study that directly focuses on the risk willingness in the area of complex credence products (Mårtenson, 2005). High involvement (stemming from a higher level of knowledge with the products) leads to an increased willingness to take risks on the stock market.

The moderating role of involvement, as in the present study is also found in previous research. A conceptual model where involvement mediates the level of perceived risk and the risk-reduction strategies adopted by the individual has been introduced (Kovacs, Farias, Moura and Souza, 2011). High involved consumers have also been found to react more negatively towards web-site use as a consequence of increased perceived technology or vendor risk (Herrero and San Martin, 2012).

3.5.4.3 Involvement and the relation between trust and risk-taking

Literature provides ample evidence of a connection between involvement and trust on one hand and between involvement and risk-taking on the other (e.g. Martin et al, 2011; Celsi and Olson, 1988). The question posed is if involvement is a characteristic that will make the individual adopt a particular mode of decision-making – either a rational path or an experiential path (Weber, 2004), or differently phrased: either a central or a peripheral route (Petty and Cacioppo, 1986). The level of involvement has in several studies proven to decide what cues the individual will look for: rational, fact-based cues for the high involvement individual, or non-factual, peripheral cues including context and feelings for the low involvement individual

(Devlin, 2011). E.g. an application on longevity (which might be seen as related to trust) as an intrinsic cue explicitly tests the impact of longevity on perceived risk and finds that it has a reducing effect that diminishes under conditions of high involvement (Desai, Kalra & Murthi, 2008). It could be argued that trust is one non-factual, peripheral cue; something that would imply that trust would be a more important attribute for low involvement individuals. The strength between trust and risk-taking would accordingly be stronger for the low involvement individual.

4. MODEL AND HYPOTHESES

Chapter 4 takes as starting point the literature and results from previous research discussed in chapter 3. Here, the concepts of trust, risk and risk-taking, knowledge and involvement have been discussed separately, and the connection between trust and risk-taking has been outlined from a theoretical perspective. These constructs are now combined in a proposed model, introduced in section 4.1. The proposed relations between trust and risk-taking, and the impact of knowledge and involvement are outlined. All these relations in the model are then put in perspective and compared to other similar models found in previous literature. How has, trust, risk-taking, involvement and knowledge been combined and tested in previous research, and how does this research connect to the present study? For each relation in the model, one or several hypotheses are finally formulated in sections 4.2 to 4.5.

4.1 The proposed model

The narrow definition of trust in the present study (i.e. trust in the Swedish state pension system) has in the previous chapter been put in a wider perspective. The definition of risk and risk-taking has further been defined and discussed, as has the two variables thought to influence individual behaviour: knowledge and involvement. Some of the relations have also been investigated in terms of previous research – primarily in the field of consumer behaviour, but also in other areas. These relations include the central relation between trust and risk-taking, the direct and indirect effect of knowledge on risk-taking, and the direct and indirect effect of involvement on risk-taking.

The problem addressed in the present thesis however calls for the relations between all of the constructs to be hypothesised. In figure 4.1 below, the structure of all relevant relations is presented. In sections 4.1.1 to 4.1.4, the model in itself is analysed in terms of previous research: have the hypothesised relations between the constructs in

question been analysed together previously, and if yes, which are the conclusions drawn?

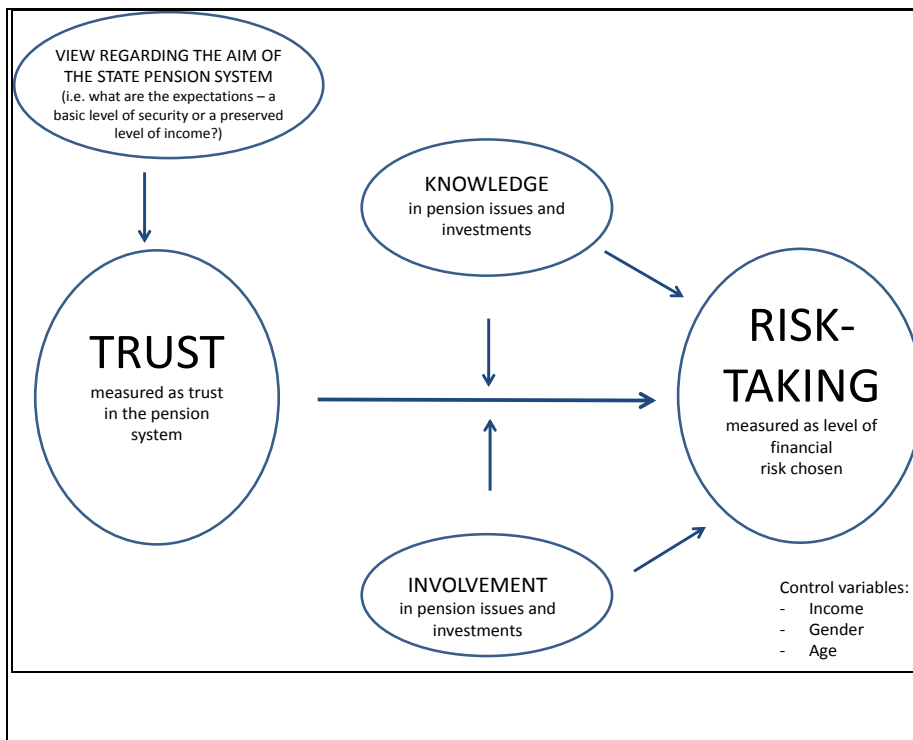


Figure 4.1: Trust, risk-taking and the influence of knowledge and involvement

4.1.1 The relation between trust, knowledge and risk-taking

The difference between lay persons' and experts' perception of risks has been the focus of several consumer behaviour studies (e.g. Howcroft et al, 2003, Mårtenson, 2005) as well as psychological studies (e.g. Slovic, 1987; Finucane et al, 2000). The general finding has been that people with less expertise evaluate risks in a less rational, more contextual manner. In this less rational evaluation process, trust has been one of factors found to influence behaviour (Slovic, 1999). Outside the focal area of the present thesis, namely varying information processes for knowledgeable versus non-knowledgeable individuals, a number of marketing studies have used the concepts of knowledge, risk-taking and trust. E.g. Kim et al (2008) has suggested a model of Internet consumer behaviour building on the

connection between trust and perceived risk. As an antecedent to trust, experience-based factors are used (e.g. Internet experience, e-commerce experience). A positive impact of these familiarity factors (resembling part of the knowledge construct used in the present thesis) on trust is confirmed, as well as a strong negative influence of trust on perceived risk (Kim et al, 2008). Summing up, it is not uncommon in the studies relating trust and risk-taking to include level of knowledge (in various forms) as a variable of interest.

Also outside the area of consumer behaviour, studies have confirmed the impact of knowledge on trust and risk-taking. In a financial setting, investors' risk-taking has been found to depend (positively) on level of trust; a relation that has been shown to be stronger for less educated individuals (Guiso et al, 2008).

4.1.2 The relation between trust, involvement and risk-taking

The constructs of trust, risk and involvement have been modelled together in previous consumer behaviour literature – notably in the field of consumer behaviour and electronic commerce (e.g. the vast literature on online trust formation, see Shankar, Urban and Sultan 2002 for an overview). As has been elaborated on in section 3.5.4.3, involvement has in many studies been modelled as a moderator and an indicator of which information processing choice to make (e.g. Devlin, 2011). A few studies include both risk and involvement as possible antecedents to level of online trust (e.g. Bart, Shankar, Sultan and Urban, 2005) and significant differences as regards the underlying driving force in order for trust to build are found. However, the relationship in these studies is reversed as compared to the present study: it is the level of perceived risk that is thought to influence trust, not trust affecting risk-taking.

Several studies outside the area of consumer behaviour build models where trust, risk and involvement influence a fourth factor (e.g. Premazzi, Castaldo, Grosso, Raman, Brudvig and Hofacker, 2010; Wang, 2008). Premazzi et al (2010) manage to assess a significant positive effect of involvement with the service category on individuals' intention to disclose information on the Internet (no effect was found as regards trust and risk), whereas Wang (2008) come to exactly the same conclusion regarding individuals' propensity to adopt

contactless credit cards: positive effect of involvement and no significant influence of trust and risk.

4.1.3 The relation between risk-taking, involvement and knowledge

A few consumer behaviour studies have explicitly used knowledge and involvement as moderating variables in the relation between perceived risk and some other variable. Mårtensson (2005) models risk willingness, knowledge and involvement and their impact on individuals' return on investment, and concludes that expertise (i.e. factual knowledge) has a positive impact on involvement, and that a higher level of involvement in turn positively influences both familiarity and risk-willingness. The same impact of knowledge on risk-taking is found in a study of mutual fund investors: knowledge (here subjective knowledge) reduces perceived risk (Mishra and Kumar, 2012). The level of subjective knowledge was also found to positively impact the level of purchase decision involvement.

Further, Laroche et al (2010) model the relationship between evaluation difficulty on one hand and perceived risk on the other, and use knowledge and involvement as moderators. The study verified that evaluation difficulties increased the level of perceived risk, and that this positive relation was stronger for the high involvement individual. The level of knowledge did not alter the relation in any significant way. Laroche, Bergeron and Goutaland (2003) performed a similar study using knowledge and involvement as moderators, but now with the relation between intangibility and perceived risk as central. The study showed that there exists a strong positive relation between mental intangibility and perceived risk, and that both knowledge and involvement intervene significantly in this relationship. For the more knowledgeable individuals', intangibility has less an effect on perceived risk whereas the opposite result held for involvement: intangibility was more correlated with perceived risk for highly involved individuals.

4.1.4 The relation between trust, risk-taking, knowledge and involvement

A few studies share all four operationalized variables with the present study. Some lie close to the area of consumer behaviour, but all four variables have not been examined in a consumer behaviour study. Within the field of risk communication, Heath, Seshadri and Lee (1998) examine how people's levels of trust, involvement and knowledge (among other factors) are affected by their physical proximity to chemical factories. The results were that proximity had no significant effect on the studied variables. At the same time, proximity is found to have a limited impact on the risk perception of individuals. The connection between risk assessment on one hand, and trust, involvement and knowledge on the other is not statistically proven. To be noted, however, is that the area studied is different from the area of the financial consumer. Risk communication studies typically address technological dangers and risks associated with these, and not decisions where risks are actively taken in order to gain increased return.

Another study that has a risk decision/risk judgement focus more similar to the present study is Johnson (2005). Johnson used the variables of knowledge and involvement to explain choice of information processing system (heuristic versus systematic processing) and perceived risk associated with each system, and further assessed the importance of trust on the risk judgement and risk acceptability of individuals. Knowledge was found to alter mode of processing significantly (favouring systematic processing) as did involvement; results that are in line with the hypothesis of the present thesis. It was further found that both systematic and heuristic information processing increased perceived risk, although heuristic processing in a more marked way. Last, trust was found to have a significant negative effect on risk perception (also in line with hypotheses in the present study) but no effect on risk acceptability.

The combination of trust, risk-taking, knowledge and involvement has thus been the focus of several previous studies. Applications similar to the present study, i.e. quantitative studies with an investor focus in a financial setting using some of the variables of the present study, have also been previously performed (Guiso et al, 2008). New in the present study is the clear pension focus (i.e. trust is narrowly defined as trust in the pension system) and the explicit use of both knowledge and involvement as moderating variables.

4.2 Hypotheses connected to the purpose to describe individuals' perceptions of the pension system and analyse how these affect trust

The first research question, addressing the perceived aim of the pension system is formulated as whether a certain perception of the pension system benefits held by the individual (i.e. if individuals believe that the aim of the system is either maintaining standard of living or providing basic security) will have any effect on the individuals' level of trust in these benefits actually being delivered at retirement.

This research question is decomposed into three hypotheses, discussed one at a time below.

4.2.1 Description of the perceived view – hypothesis 1a

In order to assess the effect an individuals' view of the pension system may have on level of trust in the pension benefits being delivered, a picture of what this perception looks like must be assessed. The first hypothesis hence concerns the actual perception of the present pension system.

Pension system studies have provided numerous descriptions of a changing pension environment in many geographical settings. Specific Swedish applications exist, focusing on the changing Swedish pension environment (e.g. Lundberg, 2001; Lindbom, 2001). The theoretical classification of the present Swedish pension system has also been debated (Goodin and Rein, 2001; Szebehely, 2003; Rauch, 2005). It can be argued that the new Swedish pension system no longer fulfils the requirements of a system aiming for income preservation. The facts and figures of the two contrasting pension systems (the old and the present) are however not the main interest of the present thesis, but the way in which individuals *perceive* the present pension system. Two different standpoints as regards the perception of future pensions stemming from the present pension system have been introduced: either the individual expects a maintained standard of living after retirement, or he or she views the state income pension as a guarantor of a basic level of security and expects to save privately to compensate for loss of income. The first hypothesis, hypothesis 1a, is based on three observations.

First, the factual comparison between the old and the new pension system is clear: the new system implies a smaller pension for (almost) all individuals. It is no longer the goal of providing 60% of final salary that guides the level of pension, but what has been paid in during the working years. In most simulations, the level of pension lies in the range of 40 to 50% (depending on level of income) of final salary for most individuals (lower percentages for the higher income-levels).

Second, the academic debate around welfare systems in general indicates that Sweden is more commonly now than before used as an example of selective and segmented social systems (Szebehely, 2003; Rauch, 2005). Sweden no longer seems to be the pure example of a social-democratic, income-protecting pension system, at least not among academic debaters. It is possible that this more theoretically defined debate among scholars has affected the general debate and accordingly influenced the individual.

Last, the public debate regarding changed pension responsibilities (e.g. Newsmill, 2011) has increased during the last few years, indicating a discontent with the present, less generous pension system. Most likely, this part of the pension debate is the part most important to the individual. Few people actually perform the factual comparison of pension system, as suggested in the first observation, and few people take interest in the scholarly debate around welfare systems, as suggested in observation number two.

All in all, the fact-based comparison between the two systems, the academic literature and the public debate suggest that the perception of the new pension system will resemble a system where the state acts as provider of a basic security:

Hypothesis 1a: A majority of individuals perceive the aim of the Swedish state pension system as functioning as a provider of basic income security.

4.2.2 Age difference in perceptions held – hypothesis 1b

The second hypothesis emanating from the first research question concerns the difference in perceptions between individuals of different age.

Development and change of an entity such as a pension system may carry along some of the characteristics of its predecessor. In the present case, the previous ATP-system and maybe even older forms of Swedish state pension systems may still be regarded as visible in the prevailing pension system. The question is if the previous systems are visible also in the memories of the individuals. It is this “memory” of previous systems, and its potential influence on the perception of the current pension system (and of current expectations) that is in focus in the present thesis. Some evidence that the memories of individuals do reflect previous version of the pension system exist. The study by Werner of the Swedish pension reform indicate that individuals’ behaviour, in the Werner study specified as preparations for retirement, has not changed as rapidly as would have been anticipated from the legislators’ point of view (Werner, 2012). In the present study the question is if this assumption holds for individual level of trust in the pension system as well: do expectations regarding retirement benefits influence the level of trust in these benefits actually being delivered? This focus on trust is visible in other pension system studies (e.g. Rothstein, 2002), but in these studies the financial decision, i.e. the behavioural consequence is not taken into account.

A concrete sign of memory lingering on would be if older people, having lived and worked under the previous regime, were more inclined to perceive the current pension system as income preserving, i.e. more in line with the characteristics of previous systems. Note that individuals born in the 1940’s are to some extent still covered by the previous pension system – the question does not aim to judge whether the perceptions of the older group are correct or not, but merely to describe them, and to see if they are different from other cohorts:

Hypothesis 1b: Elder individuals (defined as individuals born in the 1940’s) will to a larger extent than younger individuals (defined as individuals born in the 1970’s and 1980’s) perceive the Swedish state pension system as having the aim to preserve level of income.

4.2.3 Perceived view connected to level of trust – hypothesis 1c

The last hypothesis connected to the first research question on individuals’ view of the current pension system concerns the

consequences, namely the effect of the perceived view on level of trust in the pension benefits being delivered.

The present Swedish pension system is a system that is in several aspects fundamentally different from its predecessors. A question that arises concerns the trust in this new pension system, and in the new expected future pension pay-outs. The antecedents to trust formation have been described in previous chapters, with the new Swedish pension system in focus. The historical divergence (visible in e.g. the ATP-debate) between the political parties has been described as a possible source of mistrust towards the new pension system, whereas the increased openness as regards information has been seen as a factor possibly improving level of trust. Further, the theoretical overview of the trust concept described non-binding contracts, i.e. a certain element of uncertainty, as crucial for trust to build (Gargiulo and Ertug, 2006; Malhotra and Murnighan, 2002). The important question “to trust or not to trust” was posed, i.e. the general existence of binding contracts within different types of pension systems was examined. International evidence was provided to show that a non-negligible amount of political risk exists within non-funded pension systems (i.e. the sort of system that built up the old pension system and still constitutes a part of the new Swedish system), a fact that could be viewed as an argument for the existence of non-binding contracts between the individual and state (McHale, 1999; Shoven and Slavov, 2006). Furthermore, the other part of the new Swedish pension system, the premium pension system, is a funded pension scheme where market fluctuations will markedly alter the amounts paid out after retirement. Based on this, it could be argued that individuals would be wise to include some scepticism or mistrust in their view on estimates of future pension levels: both political legislation and market movements could alter these estimates substantially.

The purpose to analyse and describe perceptions of the pension system as a possible foundation for trust takes as starting point the two views, or beliefs, regarding the pension system that were introduced in hypothesis 1a and 1b. Either the pension system is viewed as an income-preserver or as basic-security guarantor. The respondents perceiving the pension system as income-preserving may be described to act more in accordance with the content of the previous pension system (i.e. the ATP-system). The expectations are highly set, and the individual has had decades of observations (i.e. pensions received by

past generations) to build his or her level of trust upon. This is in line with previous research on history-dependent experimental realism (Hardin, 1993), i.e. that experiences made play a role in setting the level of trust. This would, according to theory, imply a higher level of trust among individuals viewing the pension system as income-preserving. Note, however, the proven historical variability of pension payments, and the fact that individuals should, according to the experimental realist school (Hardin, 1993), incorporate historical experiences in the formation of current expectations given a certain amount of realism. This realism is most likely influenced by the ongoing debate, especially prior to the latest pension system change, regarding the possibilities of the existing system to fulfil its obligations – a debate that possibly lowered the level of trust in the prevailing system at that time (i.e. the ATP-system). The increased openness as regards information of the future levels of pension within the new system may be assumed to have the same affect: to each year receive an estimate of a pension level that markedly differs from expectations held may be assumed to increase dissonance and decrease trust. All in all, the factors leading to a lower level of trust among those viewing the pension system as income-preserving outweigh the factors pointing at an increased level of trust.

The respondents that view the pension system as a guarantor of basic security and consequently may be regarded as being more in line with the present pension system – the majority according to hypothesis 1a – may be said to have more realistic expectations of their future pension. These respondents receive information each year in line with their set expectations, and no dissonance between the message received and the belief held occurs. This group is accordingly assumed to have a higher feeling of trust in the pension levels forecasted actually being delivered.

The purpose to describe and analyse the perception of pension system as a possible foundation for trust is operationalised into a statement covering this latter group of individuals, i.e. those viewing the pension system as provider of basic security.

Hypothesis 1c: Individuals perceiving the Swedish pension system as primarily a provider of basic security will have a higher level of trust in the pension system than individuals perceiving the pension system as income-preserving.

4.3 Hypothesis connected to the purpose to describe and analyse the impact of trust in the pension system on choice of financial risk-level – hypothesis 2

The second and central research question of the present study concerns how level of trust in the pension system affects financial risk-taking.

The present study is focused on a particular form of consumer behaviour, namely the provision for retirement within the context of a reformed pension setting. This type of activity by definition includes investing money for future consumption, and inevitably touches upon the concept of risk-taking. Putting money in a bank account or investing in mutual funds both includes forms of risk-taking – low in a bank account and higher in the fund alternative.

A special piece of the risk-taking puzzle is focused upon, namely the influence of trust. To start with, the concept of trust is central in consumer behaviour research, and has been proven to influence consumer choice in several ways (see Kenning, 2008 for an overview). One such choice outcome, central in situations where consumers make financial choices, is level of risk. Trust and the construct of risk, or perceived risk, have been previously linked in the literature. Some studies claim that only in risky situations is trust needed (Coleman, 1990; Deutsch, 1958), some use a risk component explicitly or implicitly in the definition of trust (Barney and Hansen, 1994), yet others point at the fact that both risk and trust contain the individuals' perception of probabilities (Kee and Knox, 1970; Coleman, 1990). Even more narrowly connected are the two concepts in the risk-based view of trust, (Das and Teng, 2004) where risk and trust are seen as mirror images of each other. Das and Teng (2004) also provide conceptual evidence of a positive connection between trust and risk-taking: the more individuals trust, the higher risks are taken. This positive connection is verified in several empirical studies (e.g. Zhao et al, 2010).

The connection between trust and risk-taking found in consumer behaviour studies has further been elaborated on within the fields of finance and behavioural finance. The positive connection between trust and risk-taking has been conceptually proven in an investor-related environment (Ryan and Buchholz, 2001), and empirically tested in a financial setting (Guiso et al, 2008).

The present study builds on the established connection between trust and risk-taking and aims to verify it in a Swedish pension system setting. A major change has occurred lately in the Swedish pension system, something that may affect the level of trust. The purpose is to describe and analyse whether trust in the pension system and the belief that the expected retirement income will be delivered may explain consumer behaviour regarding risk-taking, more specifically the choice of risk-level in the premium pension portfolio.

In order operationalise this purpose into a hypothesis regarding the trust – risk-taking relation, this relation is examined closer. Previous research has shown that although the concepts share similarities, they are not “just the same thing” (Dohmen et al, 2008). Remaining is then the question of causality: is trust the driver of risk-taking, or is it the other way around?

The causality question was addressed from several theoretical standpoints. Starting with the dimensionality of the trust construct, literature has shown that depending on if trust is ability-based or willingness-based, the relation to (relational or performance) risk-taking may vary (Das and Teng, 2004). Trust in the willingness of the counterparty will induce low perception of risk and accordingly high risk-taking. Trust in the ability, on the other hand, deals not with assessment of trustworthiness but focuses on skills. These skills have been found to be negatively associated with performance risk; i.e. high trust in ability leads to low perceived risk and subsequently to high risk-taking. In the current causality discussion the important thing is that in both cases of trust, it is trust that causes the perception of risk (and subsequently the level of risk-taking).

The causality between trust and risk-taking has also proven to depend on nature of trustee: whether it is a person-to-person situation (Ben-Ner and Putterman, 2001), a person-to-a-particular-transaction situation (Buettner and Göritz, 2008), a person-to-a larger entity situation (McLain and Hackman, 1999) or a person-to-stock-market situation (Ryan and Buchholz, 2001; Guiso et al, 2008). The particular transaction-focus fits well with the investment choice of the present study. The abstractness of the stock-market case also fits very well with the pension system focus of the present study. The causality in both these cases is where trust influences risk-taking.

Another factor that has proven to influence causality is whether the situation analysed is a case of repeated games (including a learning

loop) or if it is a one-off situation (Rousseau et al, 1998). The feedback from previous pension system experience inherent in the present study points at a repeated games situation. Examples of this feedback loop could be as simple as just viewing the present retirees and drawing conclusions and forming expectations based on these observations. The existence of such a feedback loop points at trust influencing risk-taking.

Finally, it matters whether the situation analysed involves behavioural manifestations or not (Mayer et al, 1995). Since this study clearly has a behavioural focus, the situation seems to be one where trust influences risk-taking.

As can be seen, all four different analyses of causality (i.e. trust dimensions, nature of trustee, frequency and behavioural manifestation or not) suggest that the causality of the present thesis should be one where level of trust is hypothesised to influence the risk-taking behaviour of the individual.

The final part of hypothesis formulation concerns the positive or negative relation between trust and risk-taking. The theoretical trust-risk framework stipulates that trust is negatively connected to risk perception (Das and Teng, 2004; Grabner-Kräuter and Faullant, 2008; Kim et al, 2008). Further, the connection between risk perception and risk-taking has been shown to be negative (Das and Teng, 2004; Sitkin and Weingart, 1995), leading to a positive relation between trust and risk-taking. This positive relation has also been directly confirmed in literature in a financial setting (e.g. Guiso et al, 2008).

In the present study, and in hypothesis 2, trust is defined as trust in the Swedish pension system. The items measuring trust involve both a general trust question, and more specific trust questions covering both willingness- and ability-based trust. Risk-taking is defined in investment terms (including choices of assets with varying level of risk) with focus on retirement investments. Attitude towards financial outcomes is measured (speculation versus control focus) and a portfolio is composed, revealing the risk-taking attitude of the individual.

Hypothesis 2: Individuals with a high level of trust in the Swedish pension system will take more financial risk in their premium pension portfolio than individuals with a low level of trust

4.4 Hypotheses connected to the purpose to analyse the role of knowledge and involvement – hypotheses 3 a - d

The third research question pertains to the differences between individuals, and how these differences may affect risk-taking behaviour.

The differences above are more specifically defined as differences regarding level of knowledge and level of involvement. Knowledge and involvement are two of the most commonly cited factors within the marketing literature with respect to their impact on perceived risk (Dowling and Staelin, 1994; Park and Moon, 2003; Lin and Chen, 2006). They are assumed to have a marked impact on several constructs within the field of consumer behaviour in general, and risk and risk-taking particularly (e.g. Weber, 2004; Nelson, 2004). Even more marked is the importance of knowledge and involvement when financial services are concerned (Diacon and Ennew, 2001).

The purpose to determine the direct impact of knowledge and involvement on risk-taking, and to assess the role of knowledge and involvement on the trust - risk-taking relation has been divided into four different hypotheses. Two concerns the direct impact (for knowledge and involvement consequently) and two concerns the indirect impact via trust (for knowledge and involvement).

4.4.1 Hypotheses regarding knowledge – hypotheses 3 a - b

Knowledge is a construct that has proven to be of importance in order to understand consumer behaviour (Alba and Hutchinson, 1987). It has further been connected to directly to risk and risk-taking (e.g. Diacon and Ennew, 2001). A positive relation between knowledge and risk-taking has further been confirmed in several studies (e.g. Mårtenson, 2005; Mittal et al, 2002). Previous research has defined three subsets of knowledge (objective knowledge, subjective or self-assessed knowledge and familiarity) and a connection between (at least) two of these subsets to risk-taking has been confirmed in literature. Familiarity has been shown to lead to reduced perception of riskiness (and consequently an increased risk-taking) (Fischhoff et al, 1978; Driscoll et al, 1995 for an investment-related application). High

self-assessed level of knowledge has also been shown to increase risk-taking (Nosic and Weber, 2010).

Analogous to the negative relation between familiarity and perception of riskiness (Fischoff et al, 1978), familiarity with pension investment issues is suggested to make the investment risk-taking task seem less risky. This in turn is assumed to lead to a higher risk-taking for knowledgeable individuals. This is in line with the findings regarding self-assessed level of knowledge (Wang, 2009; Nosic and Weber, 2010). The hypothesised relation between knowledge and risk-taking is that a high level of knowledge will lead to an increased risk-taking.

Hypothesis 3a: Individuals with high levels of knowledge in pension investment issues will take higher financial risk than individuals with low levels of knowledge.

The focus of this study regarding trust as a factor influencing risk-taking leads to a focus on the relative importance on emotionally tilted factors such as trust in the decision process of individuals. This decision process has been shown to differ depending on level of knowledge (Maheswaran and Sternthal, 1990). High knowledge individuals have proven to base their individual level of risk-taking on a rational, fact-based way of reasoning, whereas the low knowledge customer is thought to be more influenced by other non-factual factors, among them trust (Earle and Cvetkovich, 1995). This has also been confirmed in a financial setting: level of trust was more important to individuals without education when choosing a portfolio risk-level (Guiso et al, 2008). The hypothesis is that the level of knowledge will have a significant impact on the relation between trust and risk-taking. As is stated in hypothesis 2, trust is assumed to have a positive influence on risk-taking. This positive relation is assumed to be stronger for low knowledge consumers than for high knowledge consumers.

Hypothesis 3b: Individuals with low levels of knowledge in pension investment issues will reveal a stronger positive relation between trust and financial risk-taking than individuals with high levels of knowledge.

4.4.2 Hypotheses regarding involvement – hypotheses 3 c - d

Involvement is another factor that has been found to influence consumer behaviour (Howcroft et al, 2003). The relation between involvement and perceived risk (subsequently assumed to influence risk-taking) has also been the topic of several consumer behaviour studies (e.g. Celsi and Olson, 1988). Findings are that low involvement leads to a low motivation to deeply evaluate the riskiness of the choice at hand and consequently to a low level of perceived risk (Dholakia, 1997). This has been confirmed in a retirement investment setting, where the least favourable outcome of an investment portfolio is not something that is perceived as “dangerous” and consequently does not induce any risk management (or risk reducing) action (Weber, 2004).

The direct link between involvement and risk-taking is far from straight-forward. It could be argued that a low level of involvement induces passivity within the consumer, and that this passivity will refrain the individual from doing anything at all. In an investment setting, this corresponds to a situation where the individual goes for the default alternative, something that has been found to be very common when choosing among e.g. fund alternatives (Madrian and Shea, 2001). The default alternative in the setting of the present study implies an investment in Premiesparfonden, with an equity share of 85%. In this particular setting, the low involvement level leads to passivity and a subsequent pre-set risk-level. It has also been argued in previous research that high involvement will lead to a high willingness to take risks in the stock-market (Mårtenson, 2005).

However, based on the link in literature between low involvement, low perceived risk and high risk-taking, the hypothesis below states that there would be a negative relation between level of involvement and risk-taking.

Hypothesis 3c: Individuals with low levels of involvement in pension investment issues will take higher financial risk than individuals with high levels of involvement.

The decision-making process prior to risk-taking has been shown to vary depending on level of involvement (Petty and Caccioppo, 1986). High involvement individuals have been shown to devote more cognitive capacity to problem-solving, whereas low involvement

individuals use simpler cues. One such cue could be trust – something that would strengthen the hypothesised positive relation between trust and risk-taking.

Hypothesis 3d: Individuals with low levels of involvement in pension investment issues will reveal a stronger positive relation between trust and risk-taking than individuals with high levels of involvement.

4.5 List of hypotheses

- H1a: A majority of individuals perceive the aim of the Swedish state pension system as functioning as a provider of basic income security.
- H1b: Elder individuals (defined as individuals born in the 1940's) will to a larger extent than younger individuals (defined as individuals born in the 1970's and 1980's) perceive the Swedish state pension system as having the aim to preserve level of income.
- H1c: Individuals perceiving the Swedish pension system as primarily a provider of basic security will have a higher level of trust than individuals perceiving the pension system as income-preserving.
- H2: Individuals with a high level of trust in the Swedish pensionsystem will take more financial risk in their premium pension portfolio than individuals with a low level of trust.
- H3a: Individuals with high levels of knowledge in pension investment issues will take higher financial risk than individuals with low levels of knowledge.
- H3b: Individuals with low levels of knowledge in pension investment issues will reveal a stronger positive relation between trust and risk-taking than individuals with high levels of knowledge.
- H3c: Individuals with low levels of involvement in pension investment issues will take higher financial risk than individuals with high levels of involvement.
- H3d: Individuals with low levels of involvement in pension investment issues will reveal a stronger positive relation between trust and risk-taking than individuals with high levels of involvement.

5. METHOD

The methodological part starts with a discussion of the research approach of the study in section 5.1. In section 5.2, the collection of data is described, followed by a description of the customer database used. The questionnaire is then examined (section 5.3) along with a discussion of the measurement items linked to the different constructs of the model (sections 5.4 and 5.5). Section 5.6 presents a descriptive analysis of the background variables and sections 5.7 and 5.8 contains an overview of statistical methods and measures used, along with a test of regression assumptions.

The chapter finishes with quantitative tests of the validity and reliability of the measures chosen (5.9), and a final presentation of the revised scales formed (5.10).

5.1 Research approach

A theoretical paradigm is a set of assumptions regarding the world; assumptions that provide a framework for the researcher in structuring a scientific study (Kuhn, 1962). More specifically, the paradigm has four objectives (Filstead, 1979):

- to guide the researcher in his or her search for important problems and issues in the chosen discipline
- to enable a development of a framework around these important issues (e.g. theoretical models or schemes)
- to establish the criteria for the appropriate tools in order to solve the problem identified, and
- to provide an epistemology in which the preceding steps are viewed as guiding principles for carrying out the research inherent in the chosen discipline – i.e. to make sense of the observations made

The present study adheres to a quantitative tradition. Questions are asked, data is collected and compared and computations are made. This quantitative paradigm is consistent with the logical positivist

view of the world; a theoretical perspective that traces back to the early natural scientists of the 15th and 16th centuries (Deshpande, 1983).

The quantitative nature of the study implies certain characteristics and methodological preferences (Cook and Reichardt, 1979), among others:

- quantitative methods preferred
- seeks facts and causes without subjective interpretation
- controlled measurement
- verification-oriented, outcome-oriented, hypothetico-deductive
- reliability critical

The description of the quantitative positivist paradigm is a stylised picture of endpoint on the paradigm scale ranging from quantitative to qualitative, from idealism to positivism. As noted by Deshpande (1983), most individual researchers fall somewhere along the continuum between the two extremes.

One characteristic of the quantitative paradigm deserves a closer examination: the hypo-deductive component. The research question posed in the present study has been concretised in 8 hypotheses. These hypotheses include variables, all of which will be operationalised in 32 questionnaire items. The process of hypotheses formation is, from the outset, a deductive method, where theory and previous literature lay the foundation for hypotheses and questionnaire items, and set the structure through which observations may be collected. The aim of the data collected is to falsify or verify the hypotheses and, since the hypotheses are built on previous research, to falsify or verify existing theory. The underlying theory of knowledge lies close to the hypothetico-deductivism described by Popper (1959). However, since the material inherent in the present study covers a broad range of behavioural phenomena, it is possible that some observations will lie outside the structure defined by previous research and existing theories. E.g., studies of the relation between involvement and risk-taking have come to different conclusions. The hypothesis of the present thesis cannot just rely on previous results, but has to weigh the different results against each other. A certain amount of inductive reasoning may therefore be expected, and may need further clarification and falsification in research to come. This is an example of the phenomenon described by Deshpande (1983): that the single

study performed may involve certain features outside the pure theoretical paradigm adhered to by the researcher.

5.2 Data collection, data examination and demographics

5.2.1 Pre-study

A pre-study, with both the actual survey-questions and ample room for comments was distributed to a convenience sample of some 50 people. 18 responses were obtained and analysed. The items were checked for malfunctions regarding distribution and correlation, but most of the items performed well enough to be kept. One item that had to be adjusted was the scenario-based risk-assessment, where too little dispersion was obtained. A second alternative was constructed, and distributed to 7 respondents. A better dispersion was obtained and the new alternative was kept.

5.2.2 Collection of data

Data was obtained through an internet survey to a subsample of the client base of Skandiabanken, a subsidiary of Skandia Life (Livförsäkringsaktiebolaget Skandia), one of Sweden's largest financial groups. Skandiabanken comprises about 300.000 customers, and almost all customers can be reached by e-mail. This e-mail database constitutes the relevant universe for the present study. This implies that the study does suffer from a self-selection problem. The customer database of Skandiabanken is not in all aspects identical with the total population of Swedish citizens. In order to illustrate the actual deviations between the entire Swedish population and the Skandiabanken e-mail-customer database, the two entities were compared as regards age and gender (the results shown in table 5.1 – 5.2 below).

Table 5.1

Age comparison between Skandiabanken and Sweden

Birth decade	Skandiabanken	
	mailcustomers	Sweden
1980	11%	20%
1970	26%	20%
1960	25%	21%
1950	19%	19%
1940	19%	19%

The discrepancies between the Skandiabanken customer-base and the Swedish population is not very large. It is primarily less young individuals in the bank database (naturally since a bank relation might start later in life) and an overrepresentation of individuals in their thirties and forties.

Table 5.2

Gender comparison between Skandiabanken and Sweden

Gender	Skandiabanken mail customers	Sweden
Men	54%	50%
Women	46%	50%

There is a marked overrepresentation in the Skandiabanken e-mail database of men. To some extent this is probably a function of the income distribution but also of the fact that earlier generations often consisted of a male earning an income and making investment decisions for the entire family may also hold true.

Unfortunately, no figures as regards income were available for the Skandiabanken e-mail customer database.

Given the discrepancies shown in tables 5.1 and 5.2, together with income, the self-selection bias inherent in the sample is obvious. In order to off-set the negative impact of such a bias, the variables above (age, gender and income) will be used as control variables in the regression analysis. As will be discussed in chapter 7, the specificities of the Skandia database and the even more specific dataset obtained however also creates an opportunity to get a picture of a potentially interesting group of individuals.

A random sample of 10.000 individuals was drawn from the e-mail database and the mail containing the internet survey was sent out in May-June 2010 via Novusgroup, a survey company. 909 usable responses were collected. This implies a response ratio of around 9% which is low. However, according to Novusgroup this is not unusual for surveys focusing on financial issues.

5.2.3 Examination of empirical data

The data set was examined in order to find obvious typos. These were subsequently corrected.

Missing data is also something that has to be explicitly considered. The process through which data is processed may have implications for the result.

Missing data may be either deleted or replaced. In the case of a deletion, list-wise or pair-wise deletion may be chosen. List-wise deletion refers to the process whereby cases are deleted from the sample if they have missing data in any of the variables in the analysis. Pair-wise deletion implies that cases are only excluded if they have missing data on variables involved in the particular analysis. Missing data may also be replaced by using a Maximum Likelihood algorithm to calculate the value missing. As a rule of thumb, pair-wise deletion should be applied when the sample size exceeds 250 and the total amount of missing data is below 10% (Hair, Black, Babin, Anderson and Tatham, 2005). For smaller samples, ML-estimation is preferred.

In the present study, pair-wise deletion is adopted in light of the large sample size (over 900 respondents).

Below, a description of demographics for the whole sample and statistics for the various constructs is provided.

5.2.4 Respondents' demographics

The sample contains an overrepresentation of elder respondents:

Table 5.3

Proportions of different age cohorts in sample versus Skandiabanken mail database

Birth decade	Number of responses	Percentage	Skandiabanken mailcustomers*
1980	55	6%	11%
1970	182	20%	26%
1960	229	25%	25%
1950	236	26%	19%
1940	207	23%	19%
	909		

* The relevant cohorts make up 92% of total mail customers; the percentages refer to share of relevant cohorts

56 of the respondents had already retired. The decision was taken to keep these 56 in the sample with the argument that although they had retired, they would still rely on the state pension system for a substantial period of time. Trust could be viewed as an important factor, influencing behaviour even for this subgroup.

The sample further shows a heavy overrepresentation of men as compared to the mail database (67% versus 54%):

Table 5.4

Proportions of men and women in sample versus Skandiabanken mail database

Gender	Percentage in sample	Skandiabanken mailcustomers
Men	67%	54%
Women	33%	46%

In table 5.5, the distribution of monthly income (before tax) is shown. As stated, no figures for the specific e-mail database were available. Instead, a crude comparison to the Swedish population is made. Compared to national figures, the sample is biased towards high

income individuals. This high income bias is however common in other studies of financial consumers and has been attributed to the fact that affluent individuals are often more interested in financial services and accordingly more prone to engage in a study (Howcroft et al, 2002).

Table 5.5

Proportion of different income groups in sample versus Sweden

Monthly salary	Number of respondents	Percentage in sample	Sweden	Percentage in Sweden
Below 10.000	33	4%		
10.000 - 20.000	68	8%		
20.001 - 30.000	219	26%	Below 25.000	70%
30.001 - 40.000	226	26%	25.000-36.000	20%
Over 40.000	308	36%	Above 36.000	10%
	854			

Note that the sample contains 55 missing values, 15 that did not know their salary and 40 who were reluctant to reveal their salary.

5.3 The questionnaire

The empirical material necessary to draw conclusions regarding the proposed model was collected through a written questionnaire. A Swedish version of the questionnaire may be found in Appendix 5.1.

5.3.1 Format of responses

The questionnaire contains several questions, most of them in a 5-point Likert-format. Typically, the questions using the Likert-format introduce a statement and the respondent is thereafter asked to indicate whether he or she agrees with the statement. The scale is anchored by "does not agree at all" and "agree totally".

Using a Likert-scale renders data in an ordinal form, strictly only allowing for comparison in a “greater than” or “smaller than” fashion. This is due to the fact that the numbers used in ordinal scales only indicate relative positions in an ordered series (Hair et al, 2005). However, numerous studies have used other methods than pure non-parametric statistical tests for computation and inference regarding ordinal scales.

As Kline (2008) states

“In practice, though, the likelihood that total scores from psychological tests do not really form interval scales is not generally a problem, especially when means and correlations are analyzed. This is because just any kind of transformation of the scores from one measurement scale to another that preserves the rank order of the scores has relatively little effect on statistical results associated with means or correlations.”

For the purpose of the present study, this implies that means, variances and correlations of the empirical material will be computed, and that a regression analysis will be performed.

A few questions are in a binary format (yes/no), e.g. when the respondent is asked whether he or she has made an active choice in the premium pension fund choice. Some questions, finally, are scenario-questions trying to mimic real world financial choices using a description of funds in order to assess the priorities of the respondent.

5.4 Measuring the constructs

The purpose of measurement in theory testing is to provide an empirical estimate of each theoretical construct (Gerbing and Anderson, 1988). Practically, this process involves a choice of items in order to represent the underlying theoretical construct. The process of item selection has been deemed “by far the single most important decision [...] and it should be guided by theory and/or findings from past research” (Goldberg and Digman, 1994).

The subjects and constructs analysed in chapter 2 and 3 (general view of pension system, trust, risk, knowledge and involvement) are all part of hypotheses posed and must be estimated using empirical data. Below is a description of measures of each construct used in previous research, a discussion of specificities associated with the construct at hand and a list of the items finally chosen to represent the underlying construct.

5.4.1 Measures regarding the perceived aim of the state pension system

In order to verify or falsify hypothesis 1a, two very broad and general questions were used in order to depict the respondents' view regarding the aim of the state pension system. These questions may be seen as mixes of objective knowledge (i.e. “how things really are, how the legal text is written”) and perception (i.e. “how the legal text is interpreted by the individual”). The reason why these questions are not imbedded in the knowledge measurement is that the latter perception-part is regarded as the most important in order to decide the general view of the respondent. It is the interpretation of the written text that counts here, and no "rights" or "wrongs" really exist.

Item 1: The present state pension system has as its main goal to preserve my level of income the day I choose to retire

Item 2: The present state pension system has as its main goal to provide me with a basic security – extra individual savings will be needed to maintain my level of income

Both item 1 and item 2 are measured with a 5-point scale, anchored by “does not agree at all” and “agree totally”.

5.4.2 Trust measures

Trust may be measured from a psychological standpoint (generalised trust) or with a focus on the situation.

Measures of generalised trust are most commonly found in the psychological literature. Trust is here traditionally measured in an interpersonal perspective; e.g. the Rosenberg (1957) faith in people scale and the Rotter (1967) interpersonal trust scale. A widely used example is to focus on responses to questions such as "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" (question taken from the National Opinion Research Center's General Society Survey in Glaeser, Laibson, Scheinkman and Soutter, 2000). The same kind of general trust measure may also be found in studies attempting to explain individual decision-making in a financial setting (Guiso et al, 2008).

As has been shown in the overview of dimension-focused trust research above, this general type of trust covers only part of the picture. Situational factors play a key role when assessing the level of trust (Snijders and Keren, 1999). This implies that trust cannot be measured for a certain individual using general attitudinal questions or a trust game, and then simply applied to other settings and with other stakes. To assess the level of trust, the individual should be asked about specific instances of past trusting behaviours (Glaeser et al, 2000). Since the chosen definition of trust concerns the individuals' trust in society as a provider of financial security, the attitudinal questions posed should be oriented towards this topic.

The present study attempts to combine these two types of trust approaches. The importance of trust as a trait is acknowledged, and a measure similar to the Guiso et al (2008) general trust measure is included. It is however rephrased and adapted to a pension setting. Further, situational trust, i.e. the willingness and ability distinction also play a central role in the present study. However financially capable, a society may decide to use its monetary funds for completely other purposes than increasing compensation to its retired population. At the same time, society may prioritise pensions ever so high, but without state-financial ability the good intentions cannot be fulfilled. With the consequences of continuing the old defined benefit pension scheme known, this aspect becomes central.

All six trust items are measured on a five-point scale, anchored by "does not agree at all" and "agree totally".

The first trust measure is consequently a general question, however formulated as to capture the specific features of the pension investment context:

Item 3: The state pension system will provide me with a stable and sufficient level of income after retirement (“agree totally” indicates high trust)

As has been outlined above, the concern lies with the individuals’ assessment of the ability and the willingness of the government to support the retired population. The financial ability, including a question referring specifically to the construction of the new Swedish pension system and not to the government, is measured with three items:

Item 4: The financial needs of retired persons are sufficiently budgeted for in the Swedish state budget (“agree totally” indicates high trust)

Item 5: Future costs of the retired population may come as a negative surprise for a future government, something that might result in lower future pensions (“agree totally” indicates low trust – will be reversed in computations)

Item 6: The new state pension system is stable and capable of providing sufficient income for generations to come (“agree totally” indicates high trust)

Trust in the political willingness is measured in the following way:

Item 7: It may be necessary to make major changes in the financial priorities in the state budget in order to ensure financial support to the elderly (“agree totally” indicates low trust – will be reversed in computations)

Item 8: I fear that a future government will prioritise the retired population lower, something that might result in future lower future pensions (“agree totally” indicates low trust – will be reversed in computations)

The trust concept is consequently measured in three ways: with a more generally phrased question, and with questions pertaining to the ability and willingness of the government and the pension system

respectively. The summated trust score will be computed for each individual as well as the equally weighted mean of the included items.

5.4.3 Risk measures

The most straight-forward way to measure the risk preferences of individuals is to observe the risk-level inherent in their financial asset portfolio. Households possess several characteristics that make them special in terms of financial decisions (Campbell, 2006). The composition of household assets in all its complexity is of utter importance. Not only should a complete calculation of financial assets be included in the discussion of the risk-level of assets, but human capital (i.e. the individuals' future flow of labour income and pensions) should also be considered.

With a limited possibility to observe financial decisions from the perspective of the individuals' full asset base, researchers have made attempts to measure risk attitudes in alternative ways. Studies with an experimental design have asked the respondents if they would give up their present job with a fixed salary for a new job with an uncertain income (Barsky, Juster, Kimball and Shapiro, 1997). Lottery questions are also commonly found (e.g. Donkers, Melenberg and van Soest, 1999). The difficulties and possible pitfalls in the measurement of risk have also been discussed (Camerer, 1995; Tversky and Kahneman, 1992).

The question arises of how well survey questions and experimental designs are able to mimic real world financial decisions. It has been advocated that survey questions are well-equipped to serve as proxies for real-life behaviour. Individuals that play a hypothetical game and those that participate in a real-money experiment have been reported to behave in a similar fashion (Binswanger, 1981). Financial incentives in an experiment have in the same way been found not to alter the results (Camerer and Hogarth, 1999). Survey measures have also been found to be good predictors of behaviour, measured as how people say that they would react in different situations (Dohmen et al, 2005). Against the proponents of survey methods stand the observation that how people *say* that they would allocate their assets is often different from how they actually allocate them (Riley Jr. and Chow, 1992). It is also a fact that none of the more realistic settings in the experiments above (i.e. real-money instead of a hypothetical game,

the inclusion of financial incentives and assessments of how risk-willing people think they would be) may be said to include the complexity and nature of a real-life situation.

It may be concluded that an ideal situation would contain the observation of real-life investment choices, together with as thorough a description as possible of the asset base of the individual. A second-best alternative is to try and capture the chosen investment portfolio and financial background through survey questions, fully aware of the shortcomings of this method.

The first task of the objective risk measurement is to find a method to capture the actual choice of the individual, i.e. how he or she would compose the pension portfolio. The lay-out of such a survey item is not unimportant. Several studies have shown that the presentation format actually affect how people choose (Russo, 1977; Kahneman and Tversky, 1984). This is in line with the findings of prospect theory, namely that people make different choices in situations with identical final wealth levels (Kahneman and Tversky, 1979).

According to modern portfolio theory and the mean-variance analysis (Markowitz, 1952), it seems obvious that individuals should pay some attention to variables such as return and risk. It is, however, not obvious what impact the presentation format of these variables has. Past returns, for example, may be shown as discrete values year by year, or as a continuous probability density function illustrating the situation 10-20 years ahead. Each presentation format highlights different aspects of the same information. Time-series representation shows possible trends in returns and the distributional representation puts greater focus on both average and maximum and minimum possible returns (Weber, Siebenmorgen and Weber, 2005), and also incorporates the effect of a longer time horizon.

The first item measuring risk-taking actually deals with the actual risk-taking choice of the individual. It builds on a standard presentation of risk figures for a number of fund alternatives, with the risk figures depicting yearly standard deviation. The fund alternatives all exist within the premium pension fund choice and are chosen as to represent distinctively different risk-levels. They do not primarily aim at covering the whole universe of premium pension funds.

First risk survey item to include is:

Item 9: Imagine that you are to invest money in some of the premium pension funds that are available. In the table below a couple of different fund types are listed. For each fund type an approximate risk figure is given: the higher the risk figure, the more the value will vary. This implies that if the stock market falls, the funds with higher risk figures will probably fall more than other funds, and when the stock market rises, they will probably rise more than the rest.

How would you choose to allocate the money – choose freely or try to remember how you made your actual premium pension choice. Write in the right column (“chosen percentage share”) how large a percentage share you chose to invest in the various types of funds. Check that your percentage shares sum to 100!

Those who do not wish to choose funds themselves will have their money invested in Premiesparfonden. Around 85% of Premiesparfonden is invested in equities and the rest in fixed income assets. If this is the alternative of your choice, mark with an x in the box under the table.

Fund type	Risk figure	Chosen percentage
Fixed income funds	5	
Mixed funds (50% equities, 50% fixed income)	10	
Global equity funds	16	
Equity funds covering the US market	17	
Equity funds covering separate sectors (such as pharmaceuticals or technology)	18-22	
Equity funds covering the Swedish market	24	
Equity funds covering the Asian markets	26	
Equity funds covering new markets (high growth)	30	

I do not want to choose funds myself but wish to have my money in Premiesparfonden (with 85% equities)

Figure 5.1 Scenario-based asset allocation choice, part 1

The second attempt to measure risk is also connected to actual risk-taking. It builds on the continuous probability density function depicting the future scenario of a hypothetical investment. An important factor that underpins this way of formulating an item is the concept of narrow framing. Whenever multiple prospect decisions are made, the presence of narrow framing can have negative effects on the quality of decision (Venkatraman, Aloysius and Davis, 2006). The term narrow framing refers to the fact that individuals have a tendency to treat each choice as a separate event rather than to integrate them into a distribution of different outcomes (Kahneman and Lovallo, 1993). The effects of narrow framing are generally regarded as negative. Broad framing has been found to be essential to rational decision-making (Kahneman and Lovallo, 1993) and narrow framing has been found to shift the attention from the macro level to the micro level (Read, Loewenstein and Rabin, 1999).

How may the now well-recognised presence of narrow framing affect the asset allocation decision? Studies have shown that repeated gambles are perceived as more attractive if the explicit distribution of possible outcomes is presented (broader frame), rather than narrowly framed in a repeated trial format (Benartzi and Thaler, 1999). Individuals that make financial choices might invest more in higher risk/higher return alternatives if shown the equivalent long term distributions.

Underlying narrow framing is a number of psychological factors (Venkatraman et al, 2006). The fact that the underlying probabilities are not known in an investment setting have been suggested to lead to ambiguity; something that may be seen as an additional risk factor (Steul, 2006). Both perceived riskiness and perceived ambiguity have been found to have significant impact on the willingness to accept, i.e. on the effects of narrow framing (Venkatraman et al, 2006). Some studies have also focused on different kinds of information processing (Henderson and Nutt, 1980; Hunt, Krzystofiak, Meindl and Yoursy, 1989). The results of these studies suggest that the effects of narrow framing are observed in connection with intuitive decision-making, rather than among individuals adopting a more analytical decision-making process.

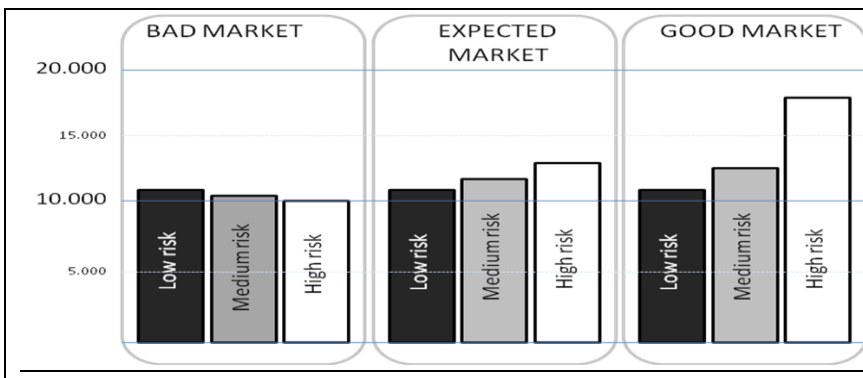
For the purposes of the present study, the above findings point at the need to have an alternative item, where the negative effects of the common method of providing discrete values of historical standard deviations are overcome. A scenario-based question will be

constructed, with the aim to illustrate the situation in the future with different types of portfolios. With this method, the negative consequences of narrow framing are avoided.

The second risk survey item to include is:

Item 10: Imagine that you right now have a monthly salary of SEK 25.000. You are not to retire for thirty years. While you are working, money is being paid into your PPM-account; money that will form a part of your future state pension. Your pension will depend partly on how you decide to invest the money, i.e. what kind of PPM-funds you choose (high risk, medium risk or low risk) and partly on whether the stock market has a good, bad or average future development.

Let us use an example: the box labelled “Bad market” below shows what will happen to your monthly pension if the stock market performs really bad: a high risk in your PPM-portfolio will give you a pension of around 11.000 SEK (the white bar), medium risk will give you 10.700 SEK (the grey bar) whereas a low risk portfolio will give you 10.000 SEK per month (black bar). The box far right, with the label “Good market” shows in the same fashion what will happen to your pension if the stock market performs well: the high risk portfolio (white) will now yield 17.000 SEK; the portfolio with medium risk-level (grey) will give 13.000 SEK whereas the low risk portfolio (black) will yield 11.000 SEK.



Based on the above information, would you choose the high risk, the medium risk or the low risk portfolio?

Figure 5.2 Scenario-based asset allocation choice, part 2

The next task is to assess the risk propensity of the individual. Focus is no longer objective investment risks and whether these are attractive or unattractive to the individual, but the personality of the individual.

Several studies have concluded that risk-taking behaviour is domain specific (e.g. Slovic, 1972 and Morse, 1998). This means that conclusions cannot be drawn as regards financial risk-taking by observing risk-willingness in other areas. From a Swedish perspective, risk-taking has been shown to be specific to the topic area (Sjöberg and Engelberg, 2006). Hedelin and Sjöberg (1995) have developed a 22 item scale measuring economic risk-taking. The scales include questions such as the more general “Risk-taking in business is always a bad thing”, and “I can judge when a risk is too large to take” and the more specific “It is quite alright for a bank to give a loan to a high risk project, if they have collateral”.

Could a broad general risk question serve as an indicator of financial risk? Dohmen et al (2005) have studied survey questions regarding risk with German data from the Socio-economic Panel of 2004. The first question is a general question that measures the individual’s willingness to take risks on a scale from zero to ten. The next five questions use the same wording but refer to risk attitudes in special situations, e.g. car driving, financial matters and career. The findings of Dohmen et al (2005) conclude that a general risk attitude question could be useful in the specific areas as well. Note that this question does not measure actual risk-taking behaviour, but rather the underlying risk attitude of the individual - which is thought to subsequently affect behaviour.

Based on the Dohmen-study (2005), the general risk item is:

Item 11: How do you see yourself? Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?

A study by Lampenius and Zickar (2005) builds on the view that risk-willingness is determined by two factors: speculative risk and risk control. The two dimensions are based on the risk-taking and risk-aversion concepts introduced in the economics and finance literature. Speculative risk will capture the gambling behaviour of the individual and the possibility to gain a higher expected return by the acceptance of a higher risk-level, whereas risk control will remind him of the potential of future losses. This duality of the model assumes that for

some individuals the thrill of speculating is larger than the need for risk control. Again, it is here the underlying attitude towards risk-taking that is measured, an attitude that is later thought to influence risk-taking.

Eight items from the Lampenius/Zickar study are used. First, the four items which deal with the speculative element of the individual:

Item 12: I like to seek thrills in having high returns on investments

Item 13: I see risk as an opportunity to make money

Item 14: For my personal investments I prefer equity funds that have fluctuated significantly in price during the last six months because then there is a potential for a high return on the investment

Item 15: When I invest money, a high return on my investment, even if it means accepting a high risk, is the most important aspect

Now, the four items that focus on the need for control are listed:

Item 16: When I invest money, a safe return is very important to me

Item 17: I prefer putting money into a low-risk fixed income fund because then I know exactly how much money I will have in the future

Item 18: When I invest money, I want to be in control regarding the return

Item 19: When I invest, I plan on having a specific amount at a future date

All in all, the quantitative measurement of risk includes three components: two scenario-based asset allocation-questions, the general risk attitude item and the questions regarding speculation and risk control. The general risk question, the speculation items and the control items are all in a Likert 1-5 format (anchored by “does not agree at all” and “agree totally”), enabling an easy summation. As for the scenario-based items, the responses will be converted into a five

point scale and included in the summation and computation of an individual risk score.

5.4.4 Knowledge measures

The concept of knowledge has been measured in various ways. Broadly speaking, a distinction between objective knowledge and subjective, self-assessed knowledge is frequently made (Park, Mothersbaugh and Feich, 1994). The former concept refers to factual information about the product class stored in long term memory. Hauff (2006) used a test battery containing twelve factual questions regarding savings in general and mutual funds as a basis for measuring consumers' level of objective knowledge. The latter concept of self-assessed knowledge refers to peoples' own perceptions regarding how much they know. The classical example in a questionnaire is simply to ask the respondent to grade his or her level of knowledge of a certain topic.

The two constructs, objective and subjective knowledge have been found to affect search and information processing in different ways. This is in line with the results of Hauff (2006) where the activity of Swedish mutual fund savers is examined. Objective knowledge is found to vary substantially among the respondents, but to have no effect on activity or choice of funds. A subset of objective knowledge: previous experience, or familiarity, is found to have some effect on behaviour. Subjective knowledge, on the other hand was found to have substantial impact on investment behaviour. This latter result is in line with the extensive evidence of overconfidence (see Barberis and Thaler, 2005 for an overview).

The question is what kind of knowledge measure is best served to fit the aim of this particular study. The usage of the two types of measures depend on the situation: in cases where the consumers' ability is in focus an objective measure is preferred, whereas if motivation, confidence and perceived level of risk are important factors of the study, the self-assessed subjective knowledge should be included (Selnes and Grønhaug, 1986). The research question clearly incorporates ability as an important factor; ability in this sense interpreted as actual awareness of the pension situation. The starting point is therefore defined as the assessment of the actual knowledge of the pension system - i.e. how much the individual believes he or she

will receive when retiring. The first question regarding knowledge concerns the individuals' perception of the actual consequences of the present pension system on his or her own income as a retiree.

Item 20: I think my future state income pension will be in the magnitude of x percentage of final salary (x set to a range from 40% to 90% of final salary).

In order to assess the respondents' level of previous experience, familiarity is the focus of three varying questions:

Item 21: I have actively made several decisions concerning my pension investments

Item 22: I have made an active choice in the premium pension fund choice

Item 23: I have opened and read the information in the orange envelope (containing information about both income- and premium pension)

However, the present research also relies on the three factors mentioned by Selnes and Grønhaug (1986): motivation, confidence and perceived level of risk. A self-assessed measure of subjective knowledge is therefore also included. Two questions are used, one for a general knowledge grading and one focusing on the view of the future pension level, to capture this part of the knowledge construct:

Item 24: How would you yourself grade your knowledge of pensions in general?

Item 25: I have a clear view of the level of my total pension the day I choose to retire

The knowledge construct is hence measured in three ways: actual knowledge, familiarity and self-assessed knowledge. The self-assessed items are in a Likert 1-5 scale (anchored by "does not agree at all" and "agree totally"), making a summation straight-forward. The item intended to capture actual knowledge (item 20) will be corrected (underlying logic described in section 6.1.4) and converted into a five point scale. The familiarity items are in a yes-no format (with 1 equalling yes, therefore inverted) and will also have to be converted before summated. With all six knowledge items in a 1-5 format, a summation will be performed and the knowledge score for each individual will be computed as the average of all six scores.

5.4.5 Involvement measures

The different scales used to measure involvement vary substantially – much due to the variety of focus employed in involvement research. In most cases, the scales apply to goods (Zaichkowsky, 1985; Laurent and Kapferer, 1985; Mittal, 1989). Some scales have been deemed to be context free and possible to use on both goods and services (Zaichkowsky, 1985). However, many studies have pointed out that services are different enough to warrant special interest (Murray and Schachter, 1990; Zeithaml, 1981), and in line with this reasoning a specific replication of the goods-centred scales is necessary. The explicit need to develop an instrument to measure involvement in a financial services context has also been pointed out (Aldlaigan and Buttle, 2001).

Hauff (2006) tested the involvement of Swedish financial consumers as regards savings and mutual funds. The three questions chosen to depict rational involvement are as follows:

Item 26: Knowing about my future level of state income pension is important/not important to me

Item 27: I have a lot to lose/little to lose by ignoring the information about my future state income pension

Item 28: I am interested/not interested in reading evaluations and articles about the state pension system

The three questions aiming for emotional involvement are the following:

Item 29: I really enjoy/ do not enjoy reading and finding out more about my state income pension

Item 30: I like thinking/do not like thinking about my state income pension investments

Item 31: I like to read and learn more/do not like to read and learn more about my state income pension investments

Every year, information is sent out to the entire Swedish population eligible for state income pension. This “orange envelope” usually receives widespread media attention, not only from business newspapers and websites. Opening and reading the information contained could serve as an indicator of involvement in the pension issue.

Furthermore, building on the notion that pension investing may lack affective cues and as a result lack in sense of danger, a final question is included, depicting how worried the individual is:

Item 32: I am really worried about my economic situation after retirement

Involvement is measured in three ways (rational involvement, emotive involvement and an item capturing level of worry), all in a Likert 1-5 format (anchored by “does not agree at all” and “agree totally”). A summation of all scores will be computed and for each individual a total involvement score will be computed as the average of all involvement item scores.

5.5 Summary of questionnaire items

Table 5.6:

Summary of questionnaire items

Construct (number of items)	Sub construct (number of items)	Theoretical foundation	Type of scale
View regarding aim of pension system (2)		Literature review	Likert (5-point)*
Trust	General item(1)	Glaeser et al, 2000	Likert (5-point)*
	Ability (3)	Literature review	Likert (5-point)*
	Willingness (2)	Literature review	Likert (5-point)*
Risk	General item (1)	Dohmen et al, 2005	Likert (5-point)*
	Risk propensity – speculative (4)	Lampenius and Zickar, 2005	Likert (5-point)*
	Risk propensity – control (4)	Lampenius and Zickar, 2005	Likert (5-point)*
	Asset allocation (2)		Low-medium-high risk, and % invested in type of funds respectively
Knowledge	Actual knowledge (1)		Range (6 steps) from <40% to >90% of final salary
	Familiarity (3)	Literature review	Ordinal (Yes/no)
	Self-assessed knowledge (2)	Literature review	Likert (5-point)*
Involvement	Rational involvement (3)	Literature review	Likert (5-point)*
	Emotional involvement (3)	Literature review	Likert (5-point)*
	“worry”-item (1)	Literature review	Likert (5-point)*

*where 1 = “does not agree at all” and 5 = “agree totally”

5.6 Background variables

A few background variables are collected in the questionnaire. These background variables are of special interest to the study. They are used as control variables when calculating the effect of trust on risk-taking. The background variables are also used to crudely calculate the future level of pension income for each individual - a number that will be compared to each respondent's own estimate. The background variables of interest are

- current income
- age when started working
- age when planning to retire
- age
- gender

The study contains no direct hypotheses regarding the background variables.

5.7 Statistical method

The research method manifests itself in the method chosen for the study. For the present study, a quantitative method best suits the aim and design of the research question posed. This implies a necessity to reflect upon the methodological framework associated with quantitative research, as well as to outline the statistical methods applied in order to verify the hypotheses.

5.7.1 A methodological framework

In order to ensure that scales used to verify hypothesised relations hold the desired measurement properties, a number of frameworks have been suggested (e.g. Segars, 1997; Gerbing and Anderson, 1988; Churchill, 1979).

The main points in these frameworks are the sequence in which the research proceeds. First, the theoretical measurement modelling is performed. The theoretical domain is specified and the items are selected based both on existing scales and literature review. Data is

then collected and reconciled with theory and, if needed respecified and recollected. The last phase is then statistical measurement modelling: assessment of validity and reliability and interpretation of results.

The various steps in the theoretical measurement model have guided the study in previous chapters. The domain has been defined and specified through a review, the existing scales for each construct have been examined and modified and the questionnaire has been pre-tested on a small sample of respondents. Empirical data has also been collected and examined as regards typos and missing values. The study now focuses on the statistical measurement modeling including assessment of validity and reliability.

5.8 Regression analysis

In order to evaluate the relation between trust and risk-taking and also the impact of knowledge and involvement, regression analysis is used. Regression analysis is a widely used and versatile statistical technique that analyses the relationship between a single dependent variable and one or several independent variables:

$$y = a + b_1x_1 + b_2 x_2 + \dots + b_nX_n$$

Using regression analysis demands that the variables meet the assumptions of:

- i) acceptable levels of multicollinearity
- ii) acceptable levels of heteroskedasticity and
- iii) linearity of regression model
- iv) normality of variables

These assumptions will be addressed one at a time in sections 5.8.1 – 5.8.4.

5.8.1 Multicollinearity

When adding variables to a regression, as in the present case the variables knowledge and involvement, the question of how these additional variables are related to the regression variables arises. The

ideal situation would imply a high correlation between the independent and dependent variable, but low correlation within the group of independent variables.

The level of multicollinearity will be assessed through the two most commonly used measures (Hair et al, 2005): tolerance and variance inflation factor (VIF). Tolerance refers to the amount of variability of the selected independent variable not explained by the other independent variables. It is calculated by taking one independent variable at a time and calculating R^2 with the remaining independent variables as explanatory variables. Tolerance is then calculated as $(1 - R^2)$, and VIF as the inverse of the tolerance measure. The VIF-value translates the Tolerance measures into the direct impact of existing multicollinearity on the estimation process: a high VIF implies an increased standard error and accordingly larger confidence intervals around the estimated coefficients. All in all, multicollinearity will make it harder to demonstrate that the coefficients are significantly different from zero.

A commonly used threshold for VIF is 10, corresponding to a Tolerance value of 0,1 (Hair et al, 2005). The VIF-values of the present sample were well below the set threshold of 10 (full results in Appendix 5.2).

5.8.2 Heteroskedasticity

Heteroskedasticity refers to the situation when the variance of the error terms is not constant over the range of values of an independent variable. The Levene's test for homogeneity is used to measure equality of variances for a single pair of variables (i.e. risk-taking and trust, risk-taking and knowledge, and risk-taking and involvement), and will detect heterogeneity in the sample if present.

In the present sample the assumption of equal variance was found to hold for all pairs.

5.8.3 Linearity

The assumption of a linear relationship between the dependent and independent variable is critical in regression analysis. In the pure

regression equation, only linear relations will be used to model the coefficients and relations. The linear relationship is used by studying the graphs and scatterplots obtained, and by ANOVA-analysis.

For the present sample, linearity was ensured for all relations in the model.

5.8.4 Normality

The variables were tested for normality, i.e. that the underlying distribution followed a normal distribution. The Shapiro-Wilks test was used. It was concluded that only the risk average did not violate the assumption of an underlying normal distribution. The severity of this violation may be discussed. It has been proposed that regression analysis is less sensitive to violations of normality:

“[Normality] is not necessary for the least-squares fitting of the regression model but it is required in general for inference making...only extreme departures of the distribution of Y from normality yield spurious results.”

(Kleinbaum, Kupper, Muller and Nizam, 1998)

Simulations of sample sizes in order to off-set the negative influence of a non-normal distribution have been made (e.g. Lumley, Diehr, Emerson and Chen, 2002). It is advocated that a sample size of 100 would be sufficient, and for “extremely non-normal” distributions sizes of around 500 would suffice. The 900 respondents of the present study would consequently be enough to off-set the negative consequences of non-normality.

5.8.5 Moderator versus mediator

The indirect effect of knowledge and involvement on the relation between trust and risk-taking has to be further clarified. In order pinpoint the nature of these relations in more detail, the Baron and Kenny (1986) model of mediators versus moderators, is used. In general terms, a moderator is here defined as a variable that affects the direction and/or strength of the relation between an independent variable, i.e. trust in the present study; and a dependent value, here

risk-taking. A moderating hypothesis, i.e. that a variable has a moderating effect on a dependent variable, is supported if the interactive path c in figure 5.3 is significant. Furthermore, it is desirable that the moderator variable be uncorrelated with both the dependent and independent variable.

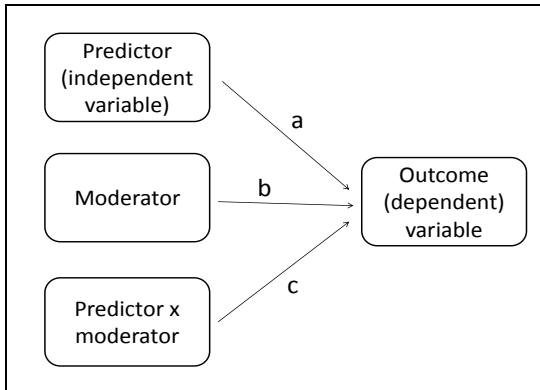


Figure 5.3 Definition of moderating variables

Source: Baron, R.M. and Kenny, D.A. (1986, p. 1174), “The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations”, *Journal of Personality and Social Psychology*, Vol. 51, No. 6, pp. 1173-1182

Mediating variables on the other hand explain how or why certain effects will hold. A variable functions as a mediator when

- variations in levels of the independent variable significantly account for variations in the presumed mediator (see path c in figure 5.4),
- variations in the mediator significantly account for variations in the dependent variable (path b), and
- in the case where paths a) and b) are controlled, a previously significant relation between the independent and dependent variables is no longer significant.

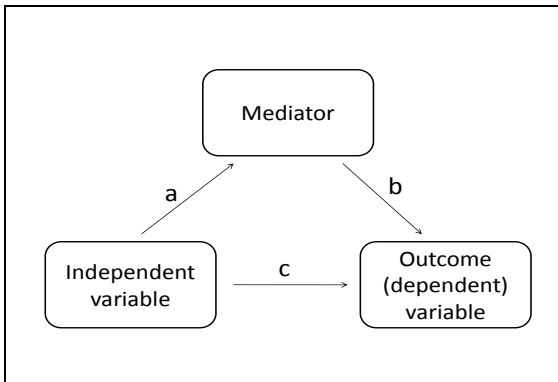


Figure 5.4 Definition of mediating variables

Source: Baron, R.M. and Kenny, D.A. (1986, p. 1176), “The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations”, *Journal of Personality and Social Psychology*, Vol. 51, No. 6, pp. 1173-1182

With this overview of the nature of both mediators and moderators, the question of which is applicable in the present study will have to be addressed. First, as can be seen by comparing figures 5.3 and 5.4, moderators and predictors are at the same level regarding their role as causal variables to the dependent variable in question. Moderators always function as independent variables, whereas the role of the mediator may shift from effects to cause depending on the specific setting. The mediator-oriented research may also be described as more interested in the mechanism, i.e. that there at all exists a mediating variable, than the variable itself.

Baron and Kenny (1986) also elaborate on strategic considerations in the design of a study. Moderators are typically used when there is an unexpectedly weak relation between an independent and a dependent variable; e.g. when the relation holds for one subpopulation but not for another. Mediation, on the other hand, is suitable when the relation between independent and dependent variable is strong. As for the present study, the dependent variable, risk-taking, can be assumed to be explained by numerous factors. This fact points at a test design where knowledge and involvement are labelled moderators. Previous research, e.g. a study by Laroche et al (2003) that uses knowledge and involvement, also deem these factors moderators.

5.8.6 Analysis of moderator variables

In a multivariate analysis including moderator variables, two basic methods are commonly used (Sharma et al, 1981). These methods are either subgroup analysis or moderated regression analysis. In order to identify and analyse the presence of moderator variable, both methods can be used in tandem. This implies that when knowledge and involvement are introduced as moderators, both a subgroup analysis and a moderated regression analysis may be performed.

In a *subgroup analysis*, the sample is split into subgroups on the basis of a hypothesized moderator variable. This may be done with qualitative variables, in discrete situations and in cases where the moderator variable is measured in a continuous manner (Sharma et al, 1981). Typically, the subgrouping of respondents is followed by a regression analysis in order to investigate the possible difference in relationship between the variables in the various groups.

In the present study, the total sample is divided into three groups when analyzing the interaction effect of knowledge and involvement: low (defined as scores below mean minus one standard deviation), mean (plus minus one standard deviation in each direction) and high (above mean plus one standard deviation). This method is recommended by Cohen, Cohen, West and Aiken (2003).

Moderated regression analysis maintains the integrity of the sample, yet provides a basis for controlling the effects of a moderator variable (Sharma, Durand and Gur-Arie, 1981). Where one or both variables are measured on a continuous scale, regression is preferred over subgroup analysis or methods where interaction effects are examined using ANOVA (Aiken and West, 1991).

In moderated regression, the moderated relationship between the dependent variable, (y), and the independent variable (x) and moderator (z) may be written as:

$$y = a + b_1x + b_2z + b_3xz + e,$$

where a is the intercept,

b₁ is the linear effect of x

b₂ is the linear effect of z

b₃ is the moderator effect of z on y, i.e. the interaction effect, and

e is the error term

In forming the regression equation, the predictor and moderator variables need to be standardized (Frazier, Tix and Baron, 2004). This is due to the fact that predictor and moderator variables generally are highly correlated with interaction terms created from them (i.e. the xz term above).

The regression coefficients are then interpreted. The fact that the variables have been standardized implies that the first-order effect of one variable represents the effect of that variable at the average level of the other variables (Frazier et al, 2004). The reported regression coefficients are the unstandardized and not the standardized coefficients. The significance of the moderator effect is measured using the F-test (Frazier et al, 2004).

5.9 Validity and reliability

5.9.1 Prerequisite for validity and reliability testing

The model to be estimated, as depicted in figure 4.1, consists of latent constructs (i.e. risk, trust, involvement and knowledge) and several indicators, or measures (i.e. the items used in the questionnaire). The causality among these two entities has implications for validity and reliability assessments, and has therefore been the subject of research both within the area of marketing but also from a more general perspective. The most common relation is that causality flows from the underlying construct to its measures. Typical examples of the reflective indicator model would include e.g. constructs such as purchase intention or attitude (Burke Jarvis, MacKenzie and Posakoff, 2003), and validity and reliability are typically and appropriately assessed using traditional analysis tools (e.g. Churchill, 1979). However, certain models contain formative indicators, influencing the underlying construct and not the other way around (Fornell and Bookstein, 1982). The underlying construct is consequently determined by the group of indicators. A typical case of a formative model would be at hand when the underlying composite construct is determined by mutually exclusive forms of behaviour.

The fact that the formative indicators might well be uncorrelated implies that internal consistency reliability is not appropriate for this kind of model. Several studies have also observed that for these

indicators, the traditional methods of assessing validity and reliability are of less use (Bollen and Lennox, 1991; Diamantopoulos and Winklhofer, 2001). Further, the consequences of dropping one indicator might be serious in the case of formative indicator models.

Based on the above, an investigation into whether the specified model contains reflexive or formative indicators must be performed prior to validity and reliability testing. A checklist, as described in Burke Jarvis et al (2003) is adhered to in this investigation. Table 5.7 shows the four criteria listed:

Table 5.7

Criteria of reflective indicators

Criteria	Situation regarding present study
1. Direction of causality implied by the definition	Indicators in model manifestations of the underlying construct.
2. Interchangeability of the items	Items share a common theme Dropping one item does not alter the conceptual domain of the construct
3. Co-variation among indicators	Items do co-vary with each other
4. Nomological net of the construct indicators	Items share common antecedents and consequences

Source: Burke Jarvis, C., MacKenzie S.B. and Posakoff, P.M. (2003, p. 204), “A critical review of construct indicators and measurement model misspecification in marketing and consumer research”, *Journal of Consumer Research*, Vol. 30, No. 2, pp. 199-218

All in all, the examination points at the model containing reflective indicators. This implies that classical validity and reliability testing may be performed on the sample obtained.

5.9.2 Validity and reliability of scales – basic conditions

The prime objective of statistical measurement modeling is to assess that latent phenomenon, in the present case trust and risk-taking and

the additional variables knowledge and involvement, are successfully captured through operationalised item scales. Essentially, this is the same as ensuring that a measure has an acceptable level of construct validity – in simpler terms that the test really measures what it aims to measure. More exact, construct validity refers to how well inferences may be made from the operationalisations in the statistical material to the underlying constructs the material tries to depict.

According to Gefen (2003), assessing construct validity practically means assessing that:

- (i) the items are consistent with each other (scale reliability),
- (ii) the items reflect the same latent variable of interest (convergent validity) while
- (iii) the items are statistically distinct from items regarding other latent variables (discriminant validity)

Sections 5.9.2 - 5.9.4 will address these conditions one at a time

5.9.3 Reliability

Reliability measures the precision of a score obtained from a scale (Weiss and Davison, 1981). It refers to stability over time – i.e. when individuals on a consecutive test receive the same or similar score as on the first test. Reliability depends on how much of the variation in scores that stems from random or chance errors (Churchill, 1979).

Mathematically, reliability is expressed as the ratio of the variation of the true score and the variation of the observed score:

$$s^2_T / s^2_X$$

With the mathematical definition as background, reliability may be expressed as the correlation between an item, scale or instrument, and a hypothetical ideal item, scale or instrument which truly measures what it is supposed to measure. The most commonly used measure of reliability is Cronbach's Alpha (Cronbach, 1951).

Mathematically, Cronbach's alpha may be written as a function of number of test items and the average inter-correlation among the items:

$$\alpha = (N * r) / 1 + (N-1) * r$$

where r = average inter-item correlation, and
 N = number of items

Alpha equals zero when the true score is not at all measured and there is nothing but an error component. Alpha further equals 1.0 when all items measure only the true score and there is no error component. A threshold for Cronbach's alpha has been set to 0,8 (Nunnally, 1981) although scores of 0,6 have been regarded as acceptable (Peterson, 1994).

Another way to measure reliability is to evaluate the degree of correlation between the items, or nomological validity. The correlation matrix of the various items is examined to see if there is any single item or group of items that has a negative correlation with other items. This might then be a sign of this particular item not being part of the common core of the construct.

5.9.3.1 Reliability of the trust items

A reliability analysis using Cronbach's Alpha was performed on the trust items. The Cronbach's Alpha for all items was 0,72, i.e. within the acceptable range. The item-to-total analysis revealed that no item removal would cause the scale reliability measure to increase, and that all items had an acceptable item-to-total correlation (see Appendix 5.3 for full results).

The three item-groups measuring trust, i.e. the general trust question, the mean of the three ability questions and the two willingness questions are all positively correlated. As for the individual items, one of the items measuring ability showed correlation with other items ranging from 0,06 to 0,36, i.e. only slightly positive (the full correlation matrix for the respective averages is found in Appendix 5.3).

5.9.3.2 Reliability of the risk-taking items

A reliability analysis using Cronbach's Alpha was performed for the risk-taking items. For the whole risk-taking construct the Cronbach's

Alpha statistica was 0,73, i.e. satisfactory. For the individual items, the item-to-total correlation revealed that the four control questions had a low item-to-total correlation (see Appendix 5.4 for full results). The removal of these items should raise the reliability measure for the construct as a whole.

The correlation matrix was then observed for the five variants of observing risk, i.e. the general risk question, the four questions addressing the speculative element and the four questions addressing need of control and finally the two asset allocation items (the second split in two where one includes and the second excludes the respondents choosing the 7th AP-fund). The correlations between the inverted control questions and all other items include some or several negative correlations for each control question. All other correlations were positive (full results in Appendix 5.4)

5.9.3.3 Reliability of the knowledge items

A reliability analysis for the knowledge items was also performed. Cronbach's Alpha for the knowledge construct using all 7 items was 0,517, i.e. on the low side. The item-to-total analysis shows that the low reliability measure does not seem to depend on any single item (full results in Appendix 5.5).

The correlations between all the knowledge items were also examined. The estimate of the actual pension income has a slightly negative correlation with two of the (inverted) familiarity items. The full correlation matrix for the self-assessed and familiarity averages and the corrected actual estimates (both assuming retirement at 65 and taking into account the stated retirement age of the individual) is found in Appendix 5.5.

5.9.3.4 Reliability of the involvement items

The calculation regarding Cronbach's Alpha for the involvement items resulted in a score of 0,673. The item-to-total analysis revealed that the worry-item stands out: a removal of this item would imply an increase in the level of Cronbach's Alpha to 0,734 for the whole construct (Full results provided in Appendix 5.6).

The correlations between the individual items covering involvement are all positive bar the question measuring worry. This particular item is negatively or only slightly positively correlated with almost all other items. Full correlation matrix between the rational and emotional averages and the worry-item is provided in Appendix 5.6.

5.9.4 Convergent validity

Convergent validity assesses the correlation between item measures of a construct across multiple methods of measurement. It ensures that measures of constructs that theoretically should be related to each other are actually found to have a close relation. This is ensured by examining the intercorrelations: item-pairings connected to the same construct should have high intercorrelations.

Practically, convergent validity is assessed in two ways. First, standardized factor loadings in a factor analysis should exceed 0,5 and ideally be above 0,7 (Hair et al, 2005). In order to ensure this a factor analysis is performed on each construct. Since a direct solution (i.e. obtaining the factor matrix directly from the correlation matrix) is normally not sufficient, a rotation of the axes was performed. The rotation was set to Promax, an oblique rotation allowing the factors to correlate, and the extraction was based on eigenvalues larger than 1 (i.e. Kaiser's criterion, see Nunnally, 1981).

Second, the average variance extracted, or AVE, (i.e. the squared sum of standardized factor loadings divided by number of items) should be above 0,5 (Hair et al, 2005).

5.9.4.1 Convergent validity of the trust items

In the factor analysis for the trust items, all loadings exceeded 0,5 and several also exceeded 0,7. One of the "ability"-items ("I fear that future costs of the retired population will come as a negative surprise for a future government, resulting in lower future pensions") loaded on the "willingness"-factor instead of on its "ability"-colleagues (full results in Appendix 5.7).

The average variance extracted for the trust construct equals sum of square factor loadings divided by number of items, i.e. $4,28/6$ or $0,71$.

This was higher than the stated lower limit of 0,5, indicating convergence.

5.9.4.2 Convergent validity of the risk-taking items

A factor analysis performed on all the risk-taking items revealed loadings above the crucial 0,5-limit (several also exceeding 0,7). As expected, the factor analysis discriminated between the various subsets of the risk-taking construct. The speculative questions were found to be different from the control-questions. As for the asset allocation questions, the low-medium-high choice loaded high on both the “asset allocation” factor and the speculative/general factor (full results provided in Appendix 5.8). The average variance extracted for the risk-taking measure is calculated as the sum of squared standardized factor loadings divided by the number of items; for the risk-taking construct $10,5/12=0,87$. This is higher than the threshold of 0,5, accordingly indicating convergence.

5.9.4.3 Convergent validity of the knowledge items

A factor analysis was performed for the knowledge construct items (full results in Appendix 5.9). All loadings were high, except for one of the familiarity items (where it was still above the crucial 0,5-limit). The average variance extracted was calculated as the squared sum of factor loadings, in this case 4,90, divided by number of items. The AVE for the knowledge construct equaled 0,70, which is above the threshold of 0,5.

5.9.4.4. Convergent validity of the involvement items

A factor analysis was performed for the involvement items, revealing that one rational involvement question (“I am interested/not interested in reading evaluations and articles about the state pension system”) and one emotional involvement question (“I really enjoy/do not enjoy reading and finding out more about my state income pension”) loaded on a different factor as compared to their peer questions (full results in Appendix 5.10). The factor loadings were generally high (above 0,5, bar the first emotional involvement question). The average variance

extracted for the involvement construct was calculated as $4,40/7$, i.e. 0,63. This is a level indicating convergence.

5.9.5 Discriminant validity

Discriminant validity is the degree of uniqueness achieved from item measures in defining a latent construct (Churchill, 1979). It determines that constructs that should not be related according to theory are not related in the model. This is done by examining the cross-construct correlation and ensuring that these are low.

Practically, discriminant validity is assessed by comparing the average variance extracted (AVE) with the squared correlations. If AVE is larger than the squared correlations, then discriminant validity is ensured.

The squared correlation coefficient between the risk-taking items and the groups of items representing other construct ranged from close to zero to 0,1. This is markedly lower than the average variance extracted for the risk-taking construct (0,87), indicating discriminant validity.

In the same fashion, the squared correlations between the trust, the involvement and the knowledge items, and the item-groups from other constructs were examined. The pattern was the same as for the risk items: lower squared correlation coefficient than AVE, pointing at sufficient discriminant validity (full results in Appendices 5.11-5.14).

5.10 Formation of scale

A scale is defined as a composite score of all items that are intended to reveal levels of a specific theoretical variable (De Vellis, 2012). A summated scale, i.e. a “bundling” of several items and a subsequent use of the simple or weighted sum of all scores as a manifest variable, is rather commonly used (Blunch, 2013). In 5.10.1, the theory behind summated rating scales is described, followed by the final steps of the scale generating process for the present study (section 5.10.2).

5.10.1 General theory of summated scales

The theory behind summated scales builds on the notion that every observed item is comprised of two components: the true score and a random error (Spector, 1992). The randomness of the error term implies that when observing multiple items, the average of the error term will approach zero. In a scale consisting of several items, each item represents an attempt to capture the true score of the underlying trait or construct. For the single item, however, the error term may be substantial. If the average (or sum) of the individual items is calculated, the errors of measurement will decrease. This implies that the estimates stemming from summed scales will be more stable (Blunch, 2013).

The central limit theorem may also constitute an advantage to summated scales. The theorem states that under certain (fairly general) conditions a sum of stochastic variables will approach a normal distribution. This implies that whereas skewed single items may constitute a problem, this is made less severe for the sum of several items (Blunch, 2013).

A simple (equally-weighted) summation of scale items has received critics since this implies that all items are equally good (Blunch, 2013). One way of overcoming this critic would be to weigh the items according to the weights obtained in a factor analysis. The objection to this would be instability: a simple-weighted sum is more stable over different samples. Also, the summated scale is a simplification in itself: the items of a construct may be interrelated in such a way that any static weight (stemming from factor loadings or not) will fail to capture the “true” combination (Comrey and Lee, 1992). Equally-weighted summation is hence the method chosen for the present study.

This rationale behind summated scale development – the classical test theory – is a simplification. It must be noted that in many instances, the error term does not average out simply by taking multiple items and adding them up. A systematic bias may be introduced into the equation – such as e.g. social desirability (where respondents will give not the answer that corresponds most to the true situation, but to what they think is expected of them) (Spector, 1992). Assuming, however, that classical test theory represents an acceptable approximation, the final score on the scale is the sum of the ratings for all items (Trochim, 2006).

5.10.2 Summated scale development for the present study

From the initial pool of items, extracted from theory as described in section 5.4, the validity and reliability checks have suggested some modifications, i.e. removal of some items. These removals are listed below.

The trust items revealed a factor loading pattern where one of the ability-items (item 5: “The future costs of the retired population may come as a negative surprise for a future government, resulting in lower future pensions”) loaded on the willingness factor. A decision was taken to remove this particular ability-item and construct an ability average based on the remaining two items. As for the risk-taking items, the questions pin-pointing need of control (items 16-19) showed negative correlations with practically all other items. A decision was taken to remove these four questions from further analysis. The Cronbach’s Alpha of the reduced number of risk items was 0,85, which is acceptable. The knowledge items showed a low and sometimes even negative correlation. No specific item was the source of this phenomenon. It was decided that the knowledge items should, when possible, be considered one at a time and not be taken together in a compound measure. A decision was finally taken to remove one item (item 29) measuring emotive involvement (“I really enjoy reading and finding out more about my state income pension”) and one item measuring rational involvement (item 28: “I am interested in reading evaluations and articles about the state pension system”) from the following analysis. These items loaded on a different factor compared to their co-items. The involvement construct is built on two rational and two emotional questions going forward. The decision to remove the worry-item from further analysis was finally taken.

A composite measure of each construct was finally formed by taking the average of the remaining items. No specific weighting was applied, i.e. each item of the average was equally-weighted.

6. RESULTS

In this chapter, the empirical material of the study is analysed and the hypotheses formulated in chapter 4 are addressed from a statistical perspective. The constructs of interest – trust, risk-taking, knowledge and involvement – are first illustrated descriptively. The view of the pension system is analysed, the level of trust in the pension system is revealed and respondents' attitude towards risk-taking is also explicitly measured. This first descriptive part (6.1) gives a picture of the level of these constructs, and answers some of the questions posed. E.g. the connection between age and view of pension system is analysed in this section.

In chapter 6.2, the regression results pertaining to the remaining hypotheses are presented. The trust – risk-taking relation is assessed, together with a refined analysis taking into account the level of knowledge and level of involvement of the respondents. These analyses will be interpreted and discussed in chapter 7.

6.1 Descriptive statistics

6.1.1 Perceived aim of the state pension system (hypotheses 1a and 1b)

Hypothesis 1a: A majority of individuals perceive the aim of the Swedish state pension system as functioning as a provider of basic income security.

Hypothesis 1b: Elder individuals (defined as individuals born in the 1940's) will to a larger extent than younger individuals (defined as individuals born in the 1970's and 1980's) perceive the Swedish state pension system as having the aim to preserve level of income.

The first topic of interest is how individuals perceive the pension system. Two questions were asked regarding the general view of the present state pension system: “The present state pension system has as its main goal to preserve my level of income the day I choose to retire” and “The present state pension system has as its main goal to provide me with a basic security – extra individual savings will be needed to maintain my level of income”.

The results from both questions point at the present pension system being interpreted not as an income preserving contract but as a provider of basic security. The results indicate that hypothesis 1a is supported. The first question (item 1), “The present state pension system has as its main goal to preserve my level of income the day I choose to retire”, had a mean of 1,82. As much as 50% of the respondents indicated “do not agree at all” on this question. The other question (item 2), “The present state pension system has as main goal to provide me with a basic security – extra individual savings will be needed to maintain my level of income” had a mean of 4,29. 60% of respondents indicated “agree totally” on this question. These results will be discussed further in chapter 7. Complete response frequencies for the pension view questions are provided in Appendix 6.1.

A subsequent question was to see if elder respondents (here defined as respondents born during the 1940’s) were more prone to regard the state pension system as income preserving than younger (here defined as respondents born during the 1970’s and 1980’s). In figure 6.1, the percentage of respondents of different age viewing the current pension system as a provider of basic security is shown. There is no obvious trend to be found in the results. Respondents of all ages seem to agree to a high extent that the main aim of the pension system is to provide a basic security (proportion of age cohort totally agreeing or agreeing (4 or 5 on a 5-point scale) varies from 79% to 87%).

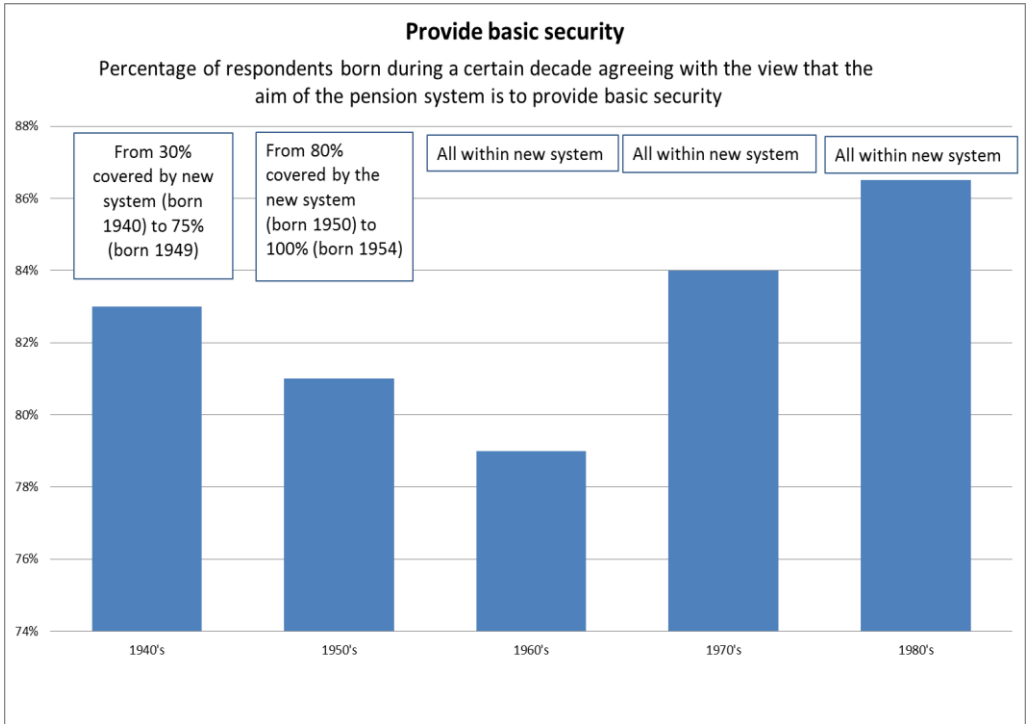


Figure 6.1 Proportion of respondents agreeing that the pension system should provide basic security

When it comes to agreeing that the aim of the pension system is to preserve level of salary, a majority of all age cohorts regards this statement as not corresponding to their own views. However, a more marked difference may be found between older and younger respondents.

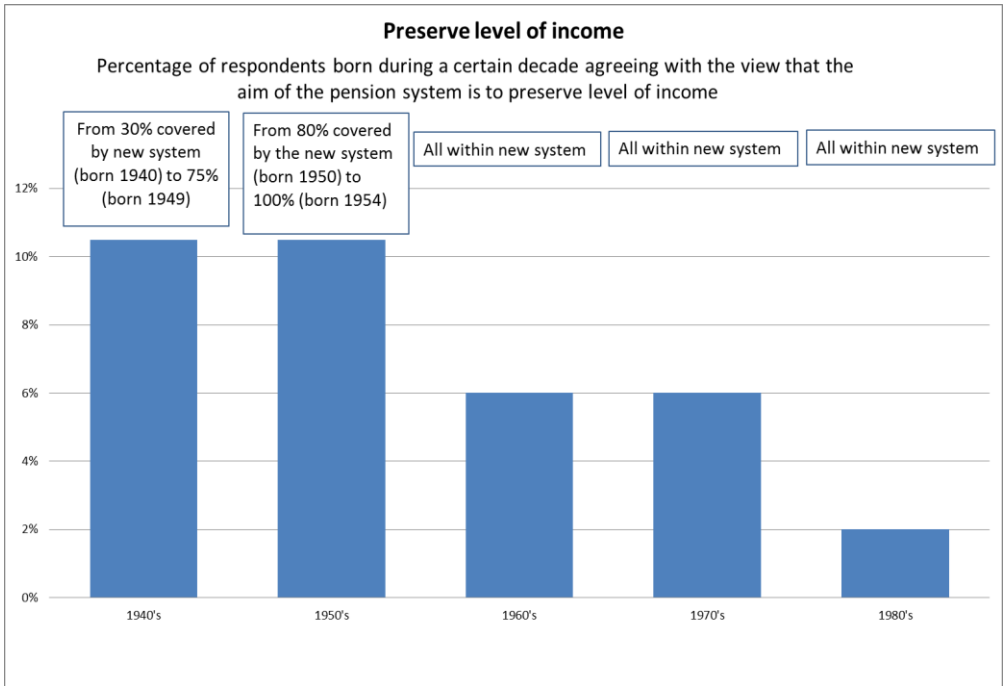


Figure 6.2 Proportion of respondents agreeing that the pension system should preserve level of income

In the youngest group (born during the 1980's) it was very rare that individuals viewed the pension system as a preserver of income level. This view was more commonly found among the elder respondents (born in the 1950's and 1940's) where around 11% supported this view. It may be argued that the previous Swedish pension system, with its ambition to preserve the final level of salary for citizens (and actual pensions calculated as 60% of final salary as opposed to the present 40-50%) still may have an impact on the expectations regarding future pension held by elder respondents. Remembering that the new system is only gradually comprising Swedish citizens (those born before 1938 fully dependent on the old system and those born after 1954 fully dependent on the new system) this is factually the case for at least the group born during the 1940's. For the group born during the 1950's this is less accurate: the dependency on the new system ranges from 80% (born 1950) to 100% (born 1954 and onwards).

A statistical test performed on the means of the two groups (born during the 1980's and born during the 1950's and 1940's) show that

on the 5% level these are significantly different from each other (see Appendix 6.1). This implies that hypothesis 1b is supported by data obtained.

6.1.2 Trust items

How the expected future payments are regarded – as a given or as something that cannot be counted on with certainty – indicates the amount of trust in the pension system. This trust level held will be connected both to expectations as regards the pension system and to subsequent financial risk-taking, and will also be analysed with respect to knowledge and involvement. Individuals' level of trust was measured in three different ways: via a general question, through three items covering the ability of the pension system to fulfill its obligations and through two items covering the willingness of the pension system to do so. Complete tables of responses are provided in Appendix 6:2.

The general item, measured by the question “The state pension system will provide me with a stable and sufficient level of income after retirement” (item 3), indicated that respondents hold an overall low level of trust in the pension system (mean 1,77 out of 5). As much as 50% of respondents indicated that they did not agree at all with the statement.

The questionnaire further focused on how respondents perceive the (financial) ability of the state to honour its pension obligations. Two items (after the removal of one item – number 5 - as a result of the factor analysis) covering the ability of the state pension system to fulfill its obligation were presented:

- Item 4) The financial needs of the retired persons are sufficiently budgeted for in the Swedish state budget (mean 2,03 out of 5)
- Item 6) The new state pension system is stable and capable of providing sufficient income for generations to come (mean 2,22 out of 5)

The ability-items pointed in the same direction as the general question: respondents hold a low level of trust in the ability of the state to fulfill its future obligations.

The last trust dimension focused on individuals' perception regarding the willingness of society to fulfill its obligations. Two questions were posed:

- Item 7) It may be necessary to make major changes in the financial priorities in the state budget in order to ensure financial support to the elderly (mean of inverted scale 2,16 out of 5)
- Item 8) I fear that a future government will prioritise the retired population lower - something that might result in lower future pensions (mean of inverted scale 2,62 out of 5)

The willingness-items (after reversion of scales) also had means that were below three, indicating that respondents held a low level of trust in the willingness of the state to fulfill its pension obligations.

A compound measure of level of trust in the pension system was obtained by taking the average of the five remaining trust items. The average of these five items amounted to 2,05 (out of 5), revealing a low level of trust in the pension system. The respondents seem to regard the expected payments with a certain skepticism or mistrust. The dispersion regarding the trust average scores is illustrated in figure 6.3.

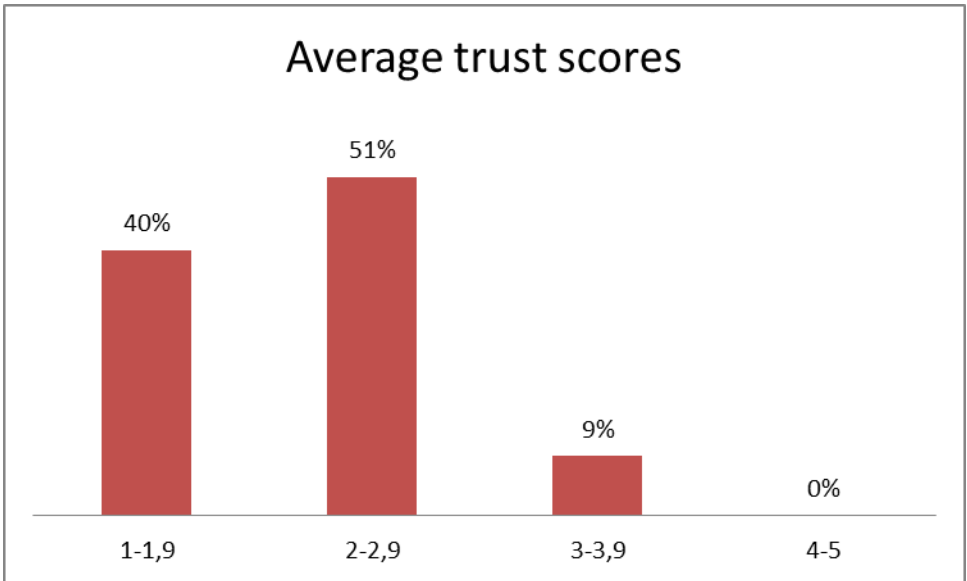


Figure 6.3 Histogram of average trust scores

The following calculations will focus on whether differences may be detected between respondents with high and low income, between elder and younger respondents and between male and female respondents.

Income proved to have a significant effect, with high income respondents being significantly more trusting. This is what would be expected according to previous studies (Nieminen, 2006).

Table 6.1

Level of trust for different income groups

	Trust average (entire sample 2,05)	Difference between highest and lowest group
Income over SEK 40.000	2,22	-0,29 (-3,298)***
Income between SEK 20.000 and SEK 40.000	2,04	
Income below SEK 20.000	1,93	

Note: t-values within parenthesis, *** indicating significance on the 0,1%-level

Level of trust also proved to be contingent on age. Elder respondents (defined as over 60) had a significantly lower level of trust compared to younger respondents. Previous research stipulates that there should be a difference between level of trust for different age groups (Nieminen et al, 2006). However, the present study is a special case, where the object of trust, i.e. state pensions, is tightly connected to age. The fact that older respondents are less trusting must be further examined – could this be a result of higher expectations, i.e. that elder respondents to a larger extent build their perception of the estimates inherent in the previous pension system? This possibility will be examined when connecting the respondents’ general view of the pension system with his or her level of trust.

Table 6.2

Level of trust for different age groups

	Trust average (for entire sample 2,05)	Difference
Age over 60	1,94	0,187 (3,291)**
Age below 60	2,14	

Note: t-values within parenthesis, ** indicating significance on the 1%-level

Gender was finally also shown to affect level of trust. Male respondents were significantly more trusting than females; a result that is in line with previous results (Chaudhuri and Gangadharan, 2007; Siegrist et al, 2000).

Table 6.3

Level of trust for men and women

	Trust average (for entire sample 2,05)	Difference
Male	2,14	0,172 (3,180)**
Female	1,97	

t-values within parenthesis, ** indicating significance on the 1%-level

A general result of the background variable calculations is that the levels of trust are low for all subgroups (both men and women, both

young and old, both with high and low income), but that there are significant differences among the groups. An illustration of individuals with a high level of trust (defined as scores one standard deviation above the mean) and a low level of trust (defined as scores one standard deviation below the mean) is provided in table 6.4. The low trust group is predominantly younger, whereas the high trust group consists of more male respondents with high income.

Table 6.4

Descriptive statistic regarding high and low trust group

	% in sample	% in low trust group	% in high trust group
Income, low income (below 10.000 SEK)	4%	5%	2%
Income, high income (over 40.000 SEK)	36%	30%	53%
Age, born in the 1940's	23%	35%	12%
Age, born in the 1980's	6%	2%	6%
Gender, female	33%	39%	18%

6.1.3 Risk items

The inclination of individuals to take financial risk was the next area of interest. Financial risk-taking is increasingly important to the individual – the choice of risk-level chosen in the premium pension system (and of course in other non-state parts of individual investments) will imply differences in the amount actually paid out after retirement. In the present study, risk-taking will be connected to level of trust, knowledge and involvement of the individual. Risk-taking was measured in three different ways in the questionnaire: through a general risk question, through specific survey items trying to pinpoint the gambling-characteristics of the individual and through

two asset allocation scenarios (low/medium/high portfolio and composition of various funds with different risk numbers). The control questions, aimed at pinpointing the need for control were omitted as a result of the correlation analysis performed. Below, means for the various subsets are provided. For complete number of responses, figures are provided in Appendix 6.3.

The first scenario question (item 9) contained a choice between various funds (with given level of risk). The portfolio risk could then be estimated given the asset class risk numbers and using a correlation matrix based on 10-year historical figures (the correlation matrix is included in appendix 6.4) as:

$$\sigma_p = \text{sqrt} (\sum \sum w_i w_j \sigma_i \sigma_j \rho_{ij})$$

where w represents the weights of asset class i and j
 σ represents the standard deviation of
asset class i and j , and
 ρ represents the correlation coefficient
between asset class i and j

The respondents could also choose to invest in a default-fund (Premiesparfonden, indicated in the information text to have an equity allocation of 85%).

Excluding both respondents indicating that they preferred the default alternative and those that indicated “don’t know”, the remaining 413 respondents had portfolios with standard deviations ranging from 5% (pure fixed income) to 30% (pure new markets). The mean of the standard deviation of these portfolios was 17,2%.

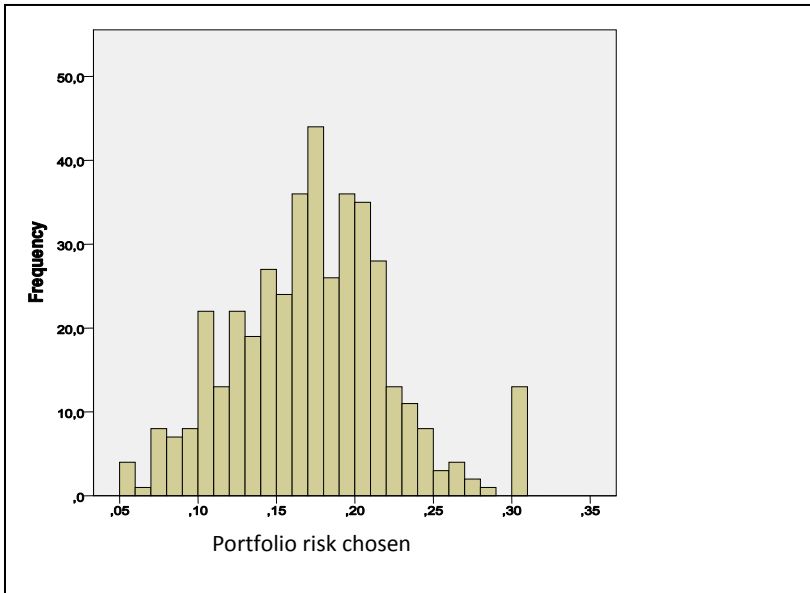


Figure 6.4 Portfolio risk for respondents who actively chose a portfolio of funds

It could be argued that inherent in the choice of the default fund lies a preference for the risk-level that the default alternative actually contains (and that is communicated in the question). This implies that the respondents choosing Premiesparfonden should not be excluded, but given a risk-level of around 14% (roughly corresponding to a global equity portion of 85% which was the information given to the respondents in the questionnaire). The average risk-level including these respondents declines to 16,1% and the dispersion is shown in figure 6.5.

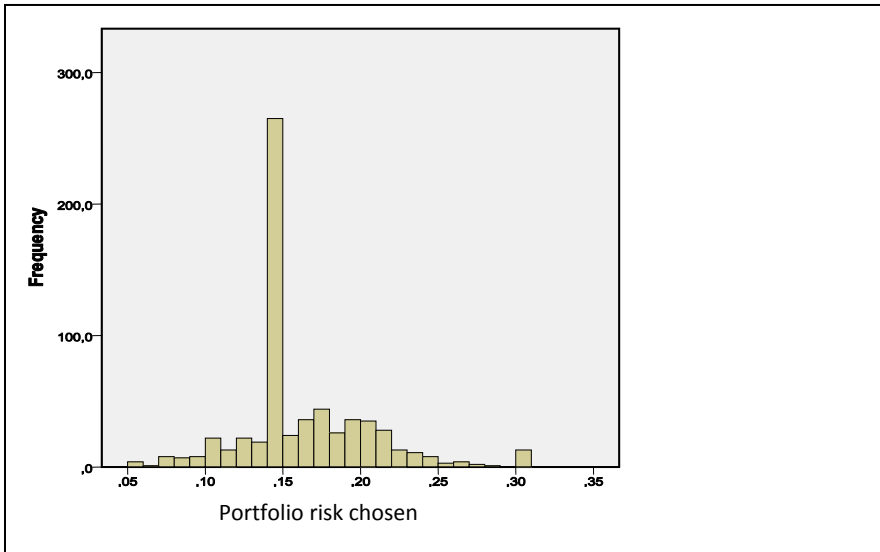


Figure 6.5 Portfolio risk for respondents who actively chose a portfolio funds plus estimated risk for the respondents who indicated a preference for Premiesparfonden

The portfolio choice regarding the various asset classes will be represented by the latter diagram; i.e. where the respondents choosing the default alternative are modeled using the inherent risk-level of Premiesparfonden. Individuals are assumed to take the risk-level of the default fund into account when making a choice. The difference in means between the average risk-level including and excluding respondents investing in Premiesparfonden is around one percentage-point (17,2% versus 16,1%). The respondents were assigned a risk indicator between 1 and 5 based on their portfolio risk. Since the standard deviation of the portfolio risk measure was 4,3%, the decision was taken to assign a 3 to respondents with a risk-level between 14% and 18%, a 2 to respondents with a risk-level between 10% and 14% and a 1 to respondents with a risk-level below 10%. Corresponding assessments are made for respondents with higher risk-levels. The average of this converted scale from 1 to 5 was 3,42.

The second asset allocation question (item 10), contained a task where the respondents had to pick one out of three retirement portfolios, with high, medium or low risk. There was a marked tendency among respondents towards the medium alternative (58%) but also the high risk portfolio was chosen by some respondents (37%). The risk-level chosen on this second asset allocation was converted to a 1-5-scale (in

order to fit with the rest of the risk measures). The average of this converted scale ranging from 1 to 5 was 3,64.

The general risk question (item 11) showed a well-dispersed response, neither indicating a high risk appetite nor a low (mean 3,16 out of 5; standard deviation 1,1). Respondents seemed to vary a lot as regards risk-taking and to (on average) be neither very risk-averse, nor very risk-loving.

The questionnaire contained four questions aimed at depicting the risk-seeking characteristics of individuals:

- Item 12) I like to seek thrills in having high returns on investment (mean 2,93 out of 5)
- Item 13) I see risk as an opportunity to make money (mean 3,26 out of 5)
- Item 14) For my personal investments I prefer equity funds that have fluctuated significantly in price during the last six months because then there is a potential for a high return on investment (mean 2,70 out of 5)
- Item 15) When I invest money, a high return on my investment, even if it means accepting a high risk, is the most important aspect (mean 2,63 out of 5)

The four risk-seeking questions also had well-dispersed responses. The means for the risk-seeking items indicate that the “gambling” characteristics of respondents were on a medium-low level (2,87 out of 5).

A compound measure of risk-taking was obtained by taking the average of the general risk question, the four speculative questions, the indexed high-medium-low asset allocation choice and the indexed fund allocation choice. All in all, the risk average for the compound measure was 3,10 on a scale from 1 to 5. The respondents were neither markedly risk-loving, nor markedly risk-averse. They seemed to vary substantially when risk-taking was concerned, but taken together be medium-risk investors. A dispersion of the risk average score is provided in figure 6.6.

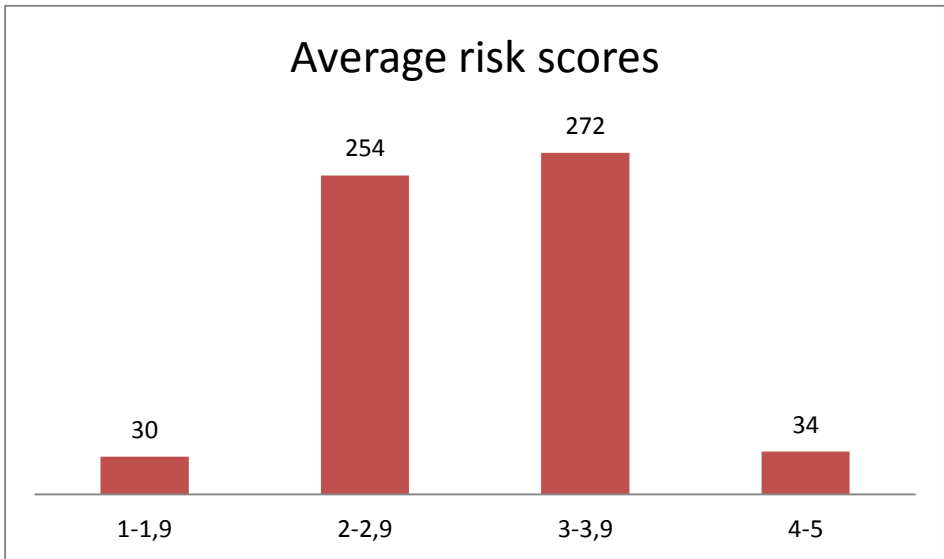


Figure 6.6 Histogram of average risk scores

Risk-taking was also explored with respect to the background variables: income, age and gender. Could these underlying characteristics to some extent explain the risk-taking behaviour of respondents? Starting with level of income, the results showed that this variable had a marked impact on risk-taking. A comparison of the risk-taking averages of the highest income group (over SEK 40.000 per month) and the two lowest groups (below SEK 20.000 per month) shows a statistically higher risk-taking average among high income individuals. This is what would be expected from previous research (Riley and Chow, 1992) – a very bad outcome would be expected to have more severe consequences for a low-income individual. Note however that the large middle group deviates from this pattern, making the income – risk analysis less reliable.

Table 6.5

Risk-taking for different income groups

	Risk-taking average (sample average 3,10)	Difference between highest and lowest group
Income over SEK 40.000	3,14	-0,34 (-2,215)*
Income between SEK 20.000 and 40.000	2,78	
Income below SEK 20.000	2,80	

t-values within parenthesis, * indicating significance on the 5%-level

A spontaneous assumption regarding the effect of age on risk-taking would be that an age closer to retirement may implicate reduced risk-taking, since the investment horizon is shorter at that age (e.g. Phillips and Sternthal, 1977). This assumption is verified in numerous empirical studies (e.g. Riley and Chow, 1992). The assumption is also consistent with the findings of the present study. Respondents over the age of 60 had a significantly lower level of risk-taking than respondents under 60.

Table 6.6

Risk-taking for different age groups

	Risk-taking average (sample average 3,10)	Difference
Age over 60	2,99	-0,16 (0,180)*
Age below 60	3,15	

t-values within parenthesis, * indicating significance on the 5%-level

Gender was further found to have an impact on risk-taking. Men were found to be more risk-loving than females, and the difference is statistically significant.

Table 6.7

Risk-taking for men and women

	Risk-taking average (sample average 3,10)	Difference
Male	3,23	0,387 (6,175)***
Female	2,84	

t-values within parenthesis, *** indicating significance on the 0,1%-level

The effect of gender on risk-taking is consistent with previous findings. It is well-documented that women are more risk-averse than men (see Byrnes et al, 1999 for a meta-analysis). These results have been shown to hold also in an investment setting (e.g. Jianakoplos and Bernasek, 1998; Mårtensson, 2008).

Generally, the analysis of risk-taking with respect to the underlying characteristics of income and gender was in line with previous research. Males, younger individuals and high-income earners were found to take higher risks than women and low-income earners.

To illustrate the groups of respondents taking high risk (defined as respondents with a risk score one standard deviation above the average) and those taking low risk (defined as respondents with a risk score one standard deviation below the average) an analysis as shown in table 6.8 was performed.

Table 6.8

Descriptive statistic regarding high and low risk group

	% in sample	% in low risk group	% in high risk group
Income, low income (below 10.000 SEK)	4%	6%	0%
Income, high income (over 40.000 SEK)	36%	22%	53%
Age, born in the 1940's	23%	29%	23%
Age, born in the 1980's	6%	11%	2%
Gender, female	33%	49%	14%

As can be seen, respondents taking low risk are predominantly younger and female. In the high risk group, male respondents with high income were more frequent.

6.1.4 Knowledge items

The knowledge of pension-related issues is a variable often used to explain consumer behaviour. In the present thesis knowledge is used to explain financial risk-taking and individuals' use of trust when taking financial risks. Knowledge is not easily captured, but consists of many facets. The knowledge measures included in the present study contain both measures focusing on objective pension knowledge, on familiarity, i.e. how frequent individuals make financial decisions, and on individuals' self-assessed level of knowledge. The complete response frequencies for the self-assessed and the familiarity subparts are provided in Appendix 6.5.

The item (item 20) intended to measure actual knowledge asked the respondents to estimate the level of future state pension (in percentage

of final salary with alternatives ranging from “below 40% of final salary” to “90% of final salary”) they thought they would receive after retirement. This estimate was then compared with a (crude) calculated estimate. To calculate this estimate of the actual pension as a percentage of final salary, a simple estimation was made:

Table 6.9

State pension calculation logic

For respondents with a salary above 40.000	40% of final salary
For respondents with a salary under 40.000	50% of final salary

Having an income below the ceiling within the pension system (currently around 30.000 SEK per month) implies a state pension at around 49% of final salary. Here, the cut-off level has been set to 40.000 (i.e. if a respondent earns 40.000 he is given 50% of his final salary in pensions), acknowledging that the estimation is quite rudimentary. The logic used in table 6.8 is probably more generous than reality. For respondents with an income above the ceiling, a pension of 40% has been assessed. This is also quite rudimentary, and an overestimation especially for income levels high above the ceiling. Table 6.10 shows that roughly 50% of the respondents had a too optimistic view of how much they would receive when retiring.

Table 6.10

Knowledge of state pension in relation to final salary

	Number of responses	% of sample
“Correct” estimate (according to logic in table 6.9)	270	30%
Too pessimistic estimate	101	11%
Estimate up to 10% off (in optimistic direction)	196	22%
Estimate more than 10% off (in optimistic direction)	246	27%

Again, it needs to be stressed that this is a back-of-the-envelope calculation. These calculations are also based on the individual retiring at 65. The respondents were asked when they planned to

retire, and were given a range between 55 (i.e. as early as possible) and 70. Taken into account the age of retirement the calculations were performed once again. Simplifications were used here as well in order to incorporate age as a factor when calculating future retirement income:

Table 6.11

Retirement age calculation logic

Retiring at 55 or 60	-10%-points of final salary
Retiring at 65	No change
Retiring at 70	+10%-points of final salary

Table 6.12 shows that the number of correct responses decreased and the erroneous responses increased when incorporating retirement age.

Table 6.12

Knowledge of state pension in relation to final salary, account taken to retirement age

	Number of responses	% of sample
“Correct” estimate (according to logic in tables 6.9 and 6.11)	196	22%
Too pessimistic estimate	72	8%
Estimate up to 10% off (in optimistic direction)	223	25%
Estimate more than 10% off (in optimistic direction)	282	31%

For further statistical calculations a five point scale was constructed where 5 indicates a correct estimate and 1 indicates an estimate that differs with the calculated estimate by 40%-points or more. The average of this constructed scale was 3,7. The dispersion of the factual knowledge question is showed in figure 6.7.

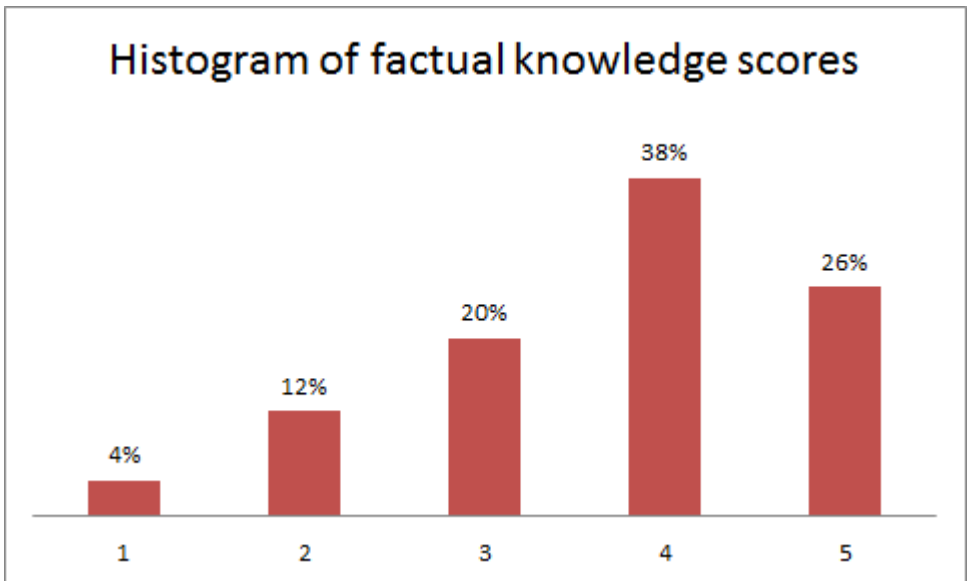


Figure 6.7 Histogram of factual knowledge scores

Knowledge was also measured as frequency of financial decisions in the past, aiming to capture the level of familiarity. The line of thinking is that the habit of making financial decision-making will induce a certain type of knowledge. The three items covering familiarity all deal with historical activity of financial decision-making in various forms:

- Item 21) I have actively made several decisions concerning my pension investments (mean 1,26 out of 2)
- Item 22) I have made an active choice in the premium pension fund choice (mean 1,17 out of 2)
- Item 23) I have opened and read the information in the orange envelope (containing information about both income- and premium pension) (mean 1,04 out of 2)

The three familiarity items are in a yes – no format and the low mean (1,16) of the three items indicate a substantial level of familiarity (1 indicates that the respondent has been active and that a high level of familiarity may be assumed, and 2 indicates that this is not the case). The dispersion is showed in figure 6.8.

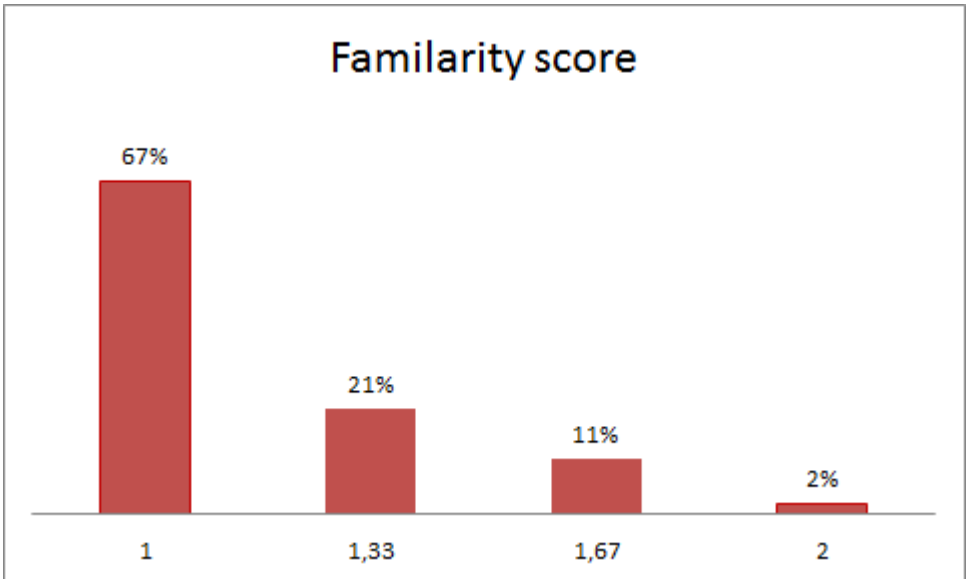


Figure 6.8 Histogram of familiarity scores

Most probably, the frequency of financial decisions made is lower in the entire population than the measures obtained within the present study. E.g. data from Pensionsmyndigheten, the authority administrating the Swedish pension system indicates that 42% of all Swedish pension investors had some money invested in the default alternative as of 2011 (Pensionsmyndigheten, 2012). This number is partly a reflection of the more intense communication strategy between 2000 and 2007 where individuals were encouraged to make own choices. The number of new entrants making own choices 2011 was as low as 2% (Pensionsmyndigheten, 2011). These figures correspond well with an approximate assessment of the activity outside the premium pension fund system. These comparisons serve to illustrate the skewness of the sample towards respondents with a high level of familiarity. The discrepancy between the observed level of familiarity within the sample and real world figures would have been a problem if the assessment of level of familiarity had been the core objective of this study. However, the individuals' familiarity with financial decisions is used only as one explanatory variable among several in order to explain behaviour, i.e. risk-taking.

Last, the respondent was asked to assess his or her level of level of pension-related knowledge. Two questions were asked:

- Item 24) How would you yourself grade your knowledge of pensions in general (mean 3,05)
- Item 25) I have a clear view of the level of my total pension the day I choose to retire (mean 2,94)

The self-assessed items were well-dispersed and had a mean of 3,00. The dispersion is illustrated in figure 6.9.

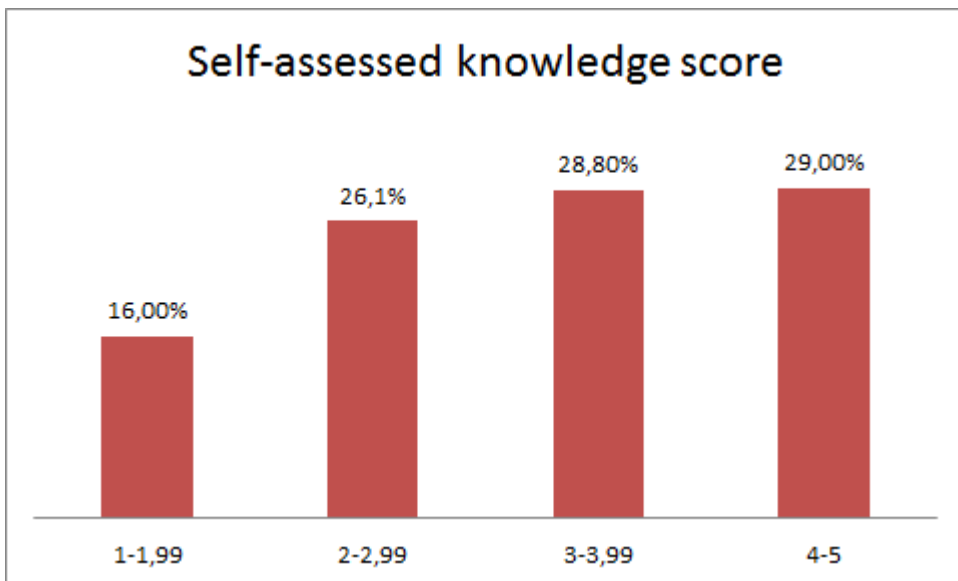


Figure 6.9 Histogram of self-assessed knowledge scores

Based on these results, the level of self-assessed knowledge among individuals would be at a medium level.

The average of all knowledge items (the familiarity items scaled up to a 1-5 scale) amount to 3,77. Individuals very high on pension knowledge and very low may be particularly interesting: the latter group potentially vulnerable and the first group possibly more active than the average. A description of these groups (the knowledgeable and the less knowledgeable individual) may therefore be of interest. Table 6.13 shows gender, age and income data for individuals lower than average plus/minus one standard deviation.

Table 6.13

Descriptive statistic regarding high and low knowledge group

	% in sample	% in low knowledge group	% in high knowledge group
Income, low income (below 10.000 SEK)	4%	5%	1%
Income, high income (over 40.000 SEK)	36%	31%	58%
Age, born in the 1940's	23%	16%	42%
Age, born in the 1980's	6%	10%	0%
Gender, female	33%	37%	22%

As can be seen, the knowledgeable individual is typically an elder man with high income. The individual with low knowledge is less typical and stands out to a lesser extent.

All in all, the knowledge level of the individual is not easily interpreted. A tendency to be too optimistic regarding future pensions (i.e. a poor level of actual pension knowledge) is combined with a medium level of self-assessed knowledge and a markedly high activity regarding financial choices. This could be the result of the multifaceted construct of knowledge, i.e. that it is hard, if at all possible, to grasp the core of financial knowledge within the individual. The dispersed results make it hard to treat knowledge as one construct going forward.

6.1.5 Involvement items

Involvement is another construct often assumed to influence consumer behaviour, and more specifically consumer behaviour regarding financial services. Involvement captures both the perceived importance of pensions and the pension system, and the joy and interest with which the individual approaches these topics. Involvement was in the questionnaire measured by three items that covered rational involvement (of which one was removed after the factor analysis), three items that covered emotional involvement (of which one was removed after the factor analysis) and a final item that focused on the extent to which the individual worries about future state pension levels. This worry-item was also removed as a result of the factor analysis. Complete response frequencies are provided in Appendix 6.6.

The two remaining rational involvement questions, aiming to capture feeling of importance, were

- Item 26) Knowing about my future level of state income pension is important to me (mean 3,80 out of 5)
- Item 27) I have a lot to lose by ignoring the information about my future state income pension (mean 3,47 out of 5)

The rational involvement items indicated a medium to high level of rational involvement. Individuals seemed to perceive pension issues as something important – from a cognitive and rational viewpoint. The dispersion of scores as regards rational involvement is illustrated in figure 6.11

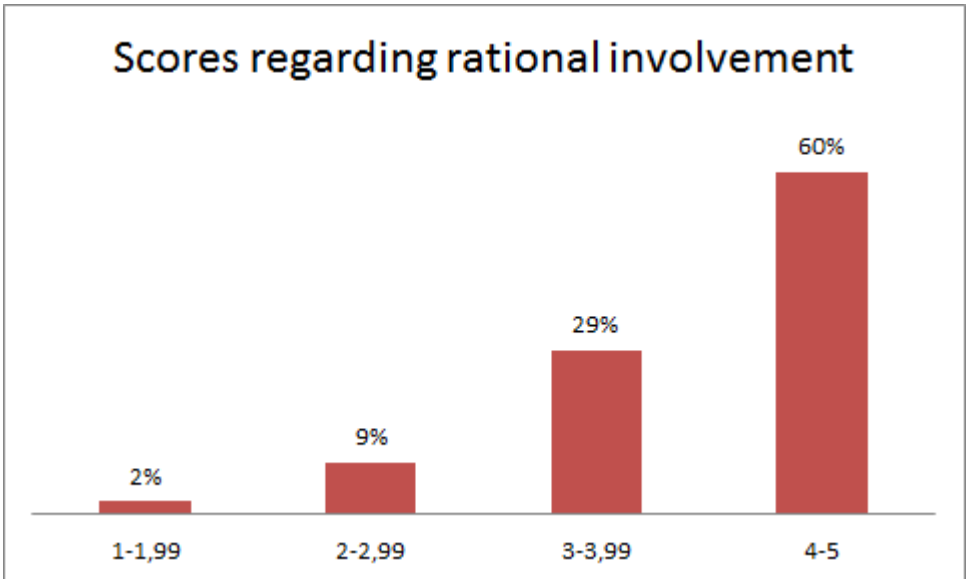


Figure 6.10 Histogram of scores regarding rational involvement

As for emotional involvement, focusing on joy and interest, the two remaining items included were:

- Item 30) I like thinking about my state income pension investments (mean 2,44 out of 5)
- Item 31) I like to read and learn more about my state income pension investments (mean 2,65 out of 5)

These two items all showed lower means. This is in line with previous studies of rational and emotional involvement as regards financial services (Hauff, 2006). Individuals did not seem to enjoy pension issues to the same extent as they understood their importance. The dispersion is shown in figure 6.11.

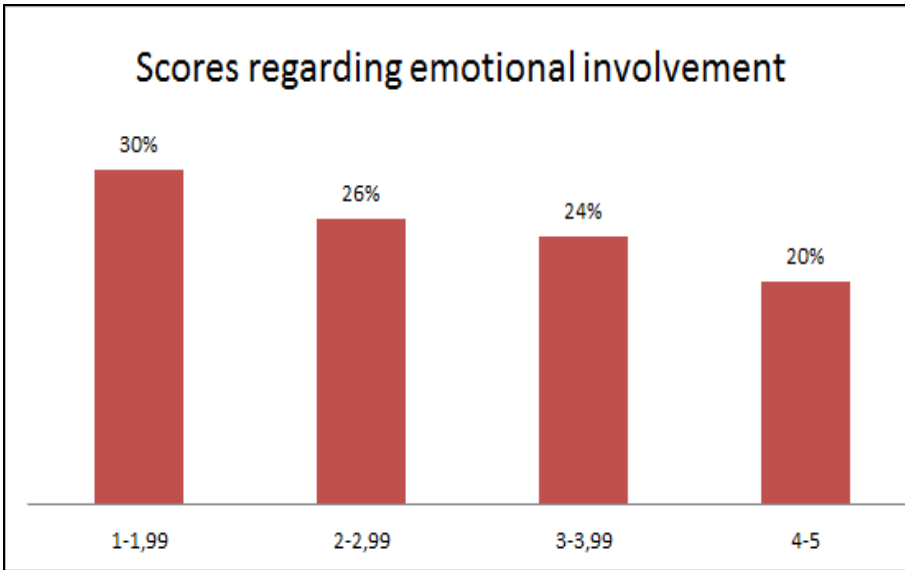


Figure 6.11 Histogram of scores regarding emotional involvement

Summing up, involvement ranged from medium-low (emotional involvement) to medium-high (rational involvement). The average of all four involvement items amounted to 3,1.

To get a feeling for the composition of the group of highly involved individuals and those low on involvement, a description of these groups based on the background variable age, gender and income is provided in table 6.14. “High” is here defined as above one standard deviation and “low” as below one standard deviation as regards involvement scores.

Table 6.14

Descriptive statistic regarding high and low involvement group

	% in sample	% in low involvement group	% in high involvement group
Income, low income (below 10.000 SEK)	4%	10%	2%
Income, high income (over 40.000 SEK)	36%	38%	35%
Age, born in the 1940's	23%	17%	36%
Age, born in the 1980's	6%	7%	3%
Gender, female	33%	39%	22%

The involved individual is typically an elder male, whereas the less involved individual is harder to characterise.

The results regarding involvement will be used to explain the choice of risk-level of individuals, and to understand how individuals use their feeling of trust when taking financial risk.

6.2 Regression results

In this section the hypothesized relations and the regression analysis performed in order to assess significance and strength of each relation (the standardized beta-values) are presented. The t-values and corresponding significance levels are presented in appendices 6.7-6.18. The percentage of variance explained (R^2) is also presented for

each regression, together with the corresponding F-test (significance value found in appendix).

6.2.1 Perceived aim of pension system explaining trust (hypothesis 1c)

Hypothesis 1c: Individuals perceiving the Swedish pension system as primarily a provider of basic security will have a higher level of trust than individuals perceiving the pension system as income-preserving.

The results from hypothesis 1a revealed that a majority of individuals perceive the Swedish state pension system as a provider of basic security. Hypothesis 1b showed that a few respondents, preferably elder respondents, view the system as income preserving. The incorporation of level of trust in the pension system held by individuals is next in turn. Will individuals perceiving the system as a provider of basic security be more inclined to trust the system, or is it the other way around?

Hypothesis 1c states that the way individuals regard the aim of the Swedish pension system will have a marked impact on their propensity to trust. To test this, a regression was run, with trust as dependent variable and perceived pension view as explanatory variable. The t-values and corresponding significance levels are found in Appendix 6.7.

Table 6.15

Effect of perceived view of pension system on trust

Dependent variable: Trust	
R ²	0,013
F-test	F(1,523)*
Perc. aim 1 (“The state income pension system of today has as main goal to preserve my level of income the day I choose to retire)	$\beta = 0,004$
Perc. aim 2 (“The state income pension system of today has as main goal to provide me with a basic security – extra individual savings will be needed to maintain my level of income)	$\beta = 0,114^{**}$

t-values within parenthesis, * indicating significance on the 5%-level and ** indicating significance on the 1%-level

Table 6.15 shows that respondents who view the pension system as providing a level of basic security are more inclined to trust the system than others. This implies that hypothesis 1c is supported by data for the case where the aim of the pension system is defined as providing a basic level of security. For the other statement, i.e. that the aim of the pension system is to preserve level of income, no significant effect on trust may be found.

6.2.2 Trust explaining risk-taking (hypothesis 2)

Hypothesis 2: Individuals with a high level of trust in the Swedish pension system will take more financial risk than individuals with a low level of trust.

Hypothesis 2 covers the central research question of the present thesis. The hypothesis put forward is that trust in the pension system will have a positive effect on individuals' willingness to take financial risks. This hypothesis is tested through a regression analysis, with trust as the explanatory variable and risk-taking as the dependent variable. The compound measures of trust and risk-taking, as described in sections 5.4.2 and 5.4.3 are used in the regression analysis.

In the regression, risk-taking is first explained by trust alone (as shown in column (1) in table 6.16). A positive statistically significant impact on risk-taking is observed for trust in the pension system. In subsequent analyses, income (2), gender (3) and age (4) are controlled for. The effect of trust on risk-taking is lower when controlling for the background variables (0,102 as compared to 0,172), but the effect is still statistically significant. The t-values and corresponding significance levels are found in Appendix 6.8.

Table 6.16

Effects of trust on risk-taking

Dependent variable: Risk-taking	(1)	(2)	(3)	(4)
R ²	0,030	0,076	0,103	0,109
F-test	F(1,411)***	F(1,406) ***	F(1,405) ***	F(1,404) ***
	β -values			
Trust (compound)	0,172***	0,139**	0,115*	0,102*
Income		0,218***	0,189***	0,192***
Gender 1=male, 2=female)			-0,168**	-0,173***
Age				-0,080

* indicates significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

The trust concept, in the framework of the present thesis, is composed of general trust, ability-based trust and willingness-based trust. Having concluded that trust as a composite measure affects individuals' risk-taking; the question is which of the trust subparts that has the greatest impact. Is it generally trusting individuals that take higher risks, is it trust in the skills and abilities of future governments, or is it the willingness of these governments to prioritise the elderly that influences risk-taking? A further analysis, shown in table 6.17, of the various sub-parts of the trust composite yields that it is the willingness-measure that accounts for all the positive impact on risk-taking. The influence of willingness-based trust on individuals' risk-taking is positive and statistically significant (0,172). This positive

influence is reduced to 0,121 after controlling for the background variables (income in column 2, gender in column 3 and age in column 4), but is still significant on the 5%-level. The t-values and corresponding significance levels are found in Appendix 6.9.

Table 6.17

Effects of trust sub-parts on risk-taking

Dependent variable: Risk-taking	(1)	(2)	(3)	(4)
R ²	0,031	0,083	0,108	0,115
F-test	F(1,409) = **	F(1,404)***	F(1, 403)***	F(1,402)***
	β-values			
Trust (general question)	0,039	0,022	0,016	0,016
Trust (willingness)	0,172* ^o	0,143**	0,124*	0,121*
Trust (ability)	0,041	0,036	0,027	0,012
Income		0,214***	0,186***	0,189***
Gender (1=male, 2=female)			-0,163**	-0,169**
Age				-0,081

* indicates significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

A higher tendency to take financial risk among individuals could be due to this group of individuals perceiving the pension system in a special way. It could be assumed that e.g. the view that the aim of the pension system is to preserve the final level of income could induce a tendency to engage in higher risk-taking. In order to separate the trust level from the general view of the pension system, a regression was run with the two general pension system questions (“The state income pension system of today has as main goal to preserve my level of income the day I choose to retire” and “The state income pension system of today has as main goal to provide me with a basic security – extra individual savings will be needed to maintain my level of

income”) as additional explanatory variables (and risk-taking still as the dependent variable). The first column of table 6.18 shows that the two general view-questions had a statistically significant impact on the level of risk-taking, whereas the impact of trust on risk-taking was practically unchanged (the initial 0,172 when used as the sole explanatory variable versus the 0,175 in table 6.18). However, when controlling for income, age and gender (in columns 2, 3 and 4 respectively), none of the general view-questions turned out to have a significant impact on risk-taking. The trust-effect, i.e. that the level of trust held in the pension system positively affects the individuals’ tendency to take on financial risk, is still significant. The t-values and corresponding significance levels are found in Appendix 6.10.

Table 6.18

Effects of trust on risk-taking, perceived aim of pension system controlled for

Dependent variable:	(1)	(2)	(3)	(4)
Risk-taking				
R ²	0,058	0,098	0,125	0,131
F-test	F(1,357)***	F(1,354)***	F(1, 353)***	F(1,352)***
	β -values			
Trust (compound)	0,175**	0,142**	0,117*	0,103
General view (preserve income)	-0,109*	-0,094	-0,098	-0,086
General view (basic security)	0,107*	0,105*	0,087	0,091
Income		0,207***	0,177**	0,178**
Gender (1=male,			-0,173**	-0,179**
Age				-0,075

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

6.2.3 Knowledge and involvement as explanatory variables (hypotheses 3a and 3c)

Hypothesis 3a: Individuals with high levels of knowledge in pension investment issues will take higher financial risk than individuals with low levels of knowledge.

Hypothesis 3c: Individuals with low levels of involvement in pension investment issues will take higher financial risk than individuals with high levels of involvement.

Hypothesis 3 a-d covers the influence on risk-taking by individuals' level of knowledge in pension issues and their level of involvement in the same questions. Knowledge and involvement have been hypothesized to have both a direct and a moderating effect on risk-taking. The direct effect is tested in table 6.19 and implies that the introduction of knowledge and involvement as explanatory variables in the regression (with risk-taking still the dependent variable) is hypothesized to yield significant regression coefficients for the two new variables and enhanced explanatory power for the model as a whole. Table 6.19 shows that both knowledge and involvement have statistically significant positive regression coefficients (column 1). These results hold even when income, gender and age are controlled for (column 2). The explanatory power of the model was also enhanced (percentage of variance explained now 0,084 as opposed to 0,03 in the model with only trust as explanatory variable, as depicted in table 6.16). For knowledge, this is exactly what was assumed in hypothesis 3a, and the hypothesis is accordingly corroborated. For involvement, however, the positive statistically significant relation detected in the sample is contrary to the assumed negative effect of involvement on risk-taking, implying that hypothesis 3c is rejected. These results will be discussed further in the subsequent chapter. The t-values and corresponding significance levels are found in Appendix 6.11.

Table 6.19

Effects of trust on risk-taking, knowledge and involvement controlled for

Dependent variable:	(1)	(2)
Risk-taking		
R ²	0,084	0,175
F-test	F(1,363)***	F(1,356)***
Trust (compound)	$\beta = 0,155^{**}$	$\beta = 0,095^*$
Involvement (compound)	$\beta = 0,118^{**}$	$\beta = 0,168^{**}$
Knowledge (compound)	$\beta = 0,184^{**}$	$\beta = 0,196^{***}$
Income		$\beta = 0,164^{***}$
Gender (1=male, 2=female)		$\beta = -0,148^{**}$
Age		$\beta = -0,176^{**}$

* indicating significance on the 5%- and *** on the 0,1%-level

Since the construct of knowledge is less homogenous, an additional regression with the three different subsets of the knowledge construct (familiarity, self-assessed knowledge and objective knowledge) as explanatory variables (together with compound involvement) was run. Table 6.20 shows that the only subsets of the knowledge construct that were found to have an impact on risk-taking were familiarity and self-assessed knowledge. The level of actual knowledge did not have a statistically significant effect on risk-taking. These results persisted even after controlling for income, gender and age. The t-values and corresponding significance levels are found in Appendix 6.12.

Table 6.20

Effects of trust on risk-taking, involvement and subsets of knowledge controlled for

Dependent variable: Risk-taking	
R ²	0,187
F-test	F(1,347)***
Trust (compound)	$\beta = 0,068$
Involvement (compound)	$\beta = 0,126^*$
Knowledge (familiarity)	$\beta = 0,132^*$
Knowledge (self assessed)	$\beta = 0,183^{**}$
Knowledge (actual)	$\beta = 0,049$
Income	$\beta = 0,133^{**}$
Gender	$\beta = -0,151^{**}$
Age	$\beta = -0,194^{**}$

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

The results in table 6.20 are in line with previous studies regarding the various subsets of financial knowledge (e.g. Hauff, 2006). Self-assessed knowledge, and to a certain extent familiarity, were the subsets of knowledge that were most closely associated with behaviour (in that case activity in the premium pension fund choice). It seems to be the familiar individuals, and the individuals with the highest levels of financial self-confidence that take the highest risks.

In the same way, it was asked what part of the involvement construct that had the greatest impact on risk-taking. Was it the individual well aware of the importance of financial matters, or was it the interested individual? The same regression operation as for the subsets of knowledge was performed with the subsets of involvement as explanatory variables (together now with compound knowledge). Table 6.21 shows that emotional involvement had a significant positive impact on risk-taking, whereas rational involvement did not, even after controlling for income, gender and age. It seems to be the interested individual, experiencing joy from reading about pension

issues that was more inclined to take financial risk. The t-values and corresponding significance levels are found in Appendix 6.13.

Table 6.21

Effects of trust on risk-taking, knowledge and subsets of involvement controlled for

Dependent variable: Risk-taking	
R ²	0,204
F-test	F(1,355)***
Trust (compound)	$\beta = 0,062$
Knowledge (compound)	$\beta = 0,161^{**}$
Involvement (rational)	$\beta = -0,056$
Involvement (emotional)	$\beta = 0,260^{***}$
Income	$\beta = 0,165^{**}$
Gender	$\beta = -0,109^*$
Age	$\beta = -0,169^{**}$

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

6.2.4 Moderating effect of knowledge and involvement (hypotheses 3b and 3d)

Hypothesis 3b: Individuals with low levels of knowledge in pension investment issues will reveal a stronger positive relation between trust and risk-taking than individuals with high levels of knowledge

Hypothesis 3d: Individuals with low levels of involvement in pension investment issues will reveal a stronger positive relation between trust and risk-taking than individuals with high levels of knowledge

The two constructs of knowledge and involvement have been shown to have a direct and statistically significant positive impact on risk-taking. The knowledgeable individual and the involved individual both seemed to be more inclined to take financial risk than their low-knowledge and low-involvement counterparts. The constructs of knowledge and involvement were also hypothesised to have a moderating effect on the association between trust and risk-taking. It was assumed that both the low knowledge individual and the low involvement individual would use trust to a greater extent when deciding on level of risk-level than would their more knowledgeable and involved counterparts. The following section accordingly analyses knowledge and involvement as moderating variables.

6.2.4.1 Assessing the moderating effect of knowledge

First, the moderating variable knowledge is analysed. In table 6.22 a stepwise regression is run: first testing the significance of coefficients in the equation

$$\text{risk-taking} = a + b_1 * \text{trust (z-score)} + \\ + b_2 * \text{knowledge (z-score)} + e,$$

and subsequently adding the interaction term and testing

$$\text{risk-taking} = a + b_1 * \text{trust (z)} + b_2 * \text{knowledge (z)} + \\ + \text{trust (z)} * \text{knowledge (z)} + e.$$

The t-values and corresponding significance levels are found in Appendix 6.14.

Table 6.22

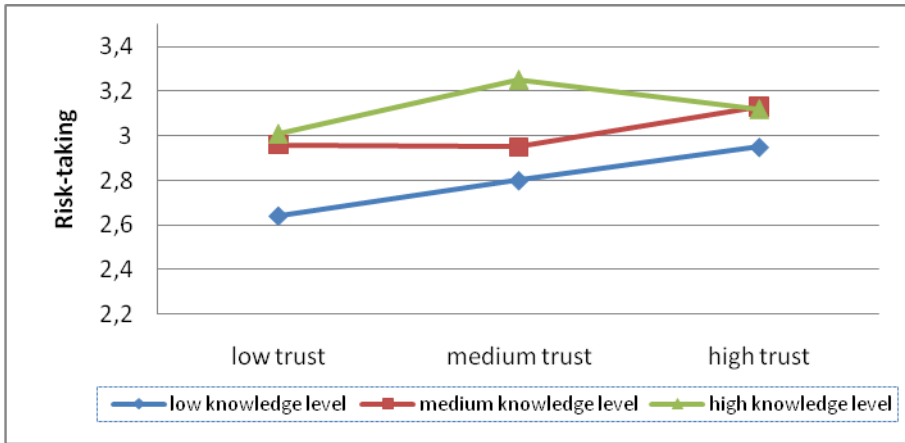
Effect of trust on risk-taking; knowledge controlled for and effect of knowledge as moderating variable assessed

Dependent variable: Risk-taking	
R ²	0,08
F-test	F(1,368)***
Step 1	
Trust (z)	$\beta = 0,149^{**}$
Knowledge (z)	$\beta = 0,229^{***}$
Step 2	
Trust (z)	$\beta = 0,152^{**}$
Knowledge (z)	$\beta = 0,230^{***}$
Trust x knowledge	$\beta = -0,015$
Increased R ²	0,0

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

The moderating effect, i.e. the interaction term trust x knowledge in table 6.22 was not statistically different from zero. This implies that the level of knowledge seems to have no influence on the relation between trust and risk-taking. It could not be shown that the less knowledgeable individual used trust to a greater extent than high knowledge individuals when choosing risk-level, as was assumed in hypothesis 3b. Hypothesis 3b is accordingly not supported by data.

A subgroup split was performed, and used to illustrate the relation between trust and risk-taking, and the moderating variable knowledge. The low group was defined as values lower than the mean minus one standard deviation, and the high group as values higher than the mean plus one standard deviation:



Trust low (<1,51) medium high (>2,70)

Knowledge	low (<1,51)	medium	high (>2,70)
high (>3,40)	2,64 (n=10)	2,96 (n=46)	3,01 (n=11)
Medium	2,8 (n=38)	2,95 (n=152)	3,25 (n=36)
low (<2,30)	2,95 (n=28)	3,13 (n=71)	3,12 (n=15)

Figure 6.12 Risk-taking for various levels of trust and knowledge

The slope of the various lines illustrates the interaction effect and figure 6.12 shows that the slope for one level of knowledge is not distinctively different from another. The non-significant interaction term in table 6.22 and in figure 6.12 indicate that the effect of trust on risk-taking is not different among respondents with varying level of knowledge. In order to tell if each slope differs from zero, a subgroup analysis of the groups defined by level of knowledge was performed.

Table 6.23

Effect of trust on risk-taking for subgroups defined by level of knowledge

Knowledge level	n	β
High (>3,40)	89	0,229 (2,066)*
Medium	339	0,199 (2,848)**
Low (<2,30)	173	0,107 (1,310)

t-values within parenthesis, * indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Both the group with a high knowledge level and the group with medium knowledge level have slopes that differ from zero. The coefficients in table 6.23 can be compared with the coefficient for the overall sample (0,172, as seen in table 6.15). These results imply that although the slopes for the various subgroups (with varying level of knowledge) cannot be significantly separated from each other, two out of three significantly differ from zero.

A possibility would be that the various subsets of knowledge (i.e. familiarity, self-assessed knowledge and factual knowledge) revealed relation between trust and risk-taking that differed from the average relation. In order to assess this, a regression was run with the subsets of knowledge as potential moderators. Table 6.24 shows that none of the subsets had a significant moderating effect on the relation between trust and risk-taking. The t-values and corresponding significance levels are found in Appendix 6.15.

Table 6.24

Effects of trust on risk-taking, subsets of knowledge controlled for and moderating effect of the subsets of knowledge assessed

Dependent variable: Risk-taking					
Familiarity (FA)		Self-assessed knowledge (SK)		Factual knowledge (FK)	
R ²	0,072	R ²	0,084	R ²	0,027
F-test	F***	F-test	F***	F-test	F**
Step 1		Step 1		Step 1	
Trust (z)	$\beta = 0,154^{**}$	Trust (z)	$\beta = 0,129^{**}$	Trust (z)	$\beta = 0,165^{**}$
FA (z)	$\beta = 0,208^{***}$	SK (z)	$\beta = 0,239^{***}$	FK (z)	$\beta = 0,035$
Step 2		Step 2		Step 2	
Trust x FA	$\beta = -0,011$	Trust x SK	$\beta = -0,010$	Trust x FK	$\beta = -0,028$
Incr. R ²	0,000	Incr. R ²	0,001	Incr. R ²	0,001

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

The overall conclusion is that the influence of knowledge on how individuals use trust when deciding on risk-taking was not large enough to render statistically significant results, nor did the various groups of individuals, defined by level of knowledge, use trust in different ways when taking risk. The hypothesis that low knowledge individuals would use non-rational input, such as trust, to a greater extent in their decision process was hence not supported.

6.2.4.2 Assessing the moderating effect of involvement

In the same fashion as for knowledge, the moderating effect of involvement was analysed. The question here was if less involved individuals used trust to a greater extent when deciding on choice of financial risk than did highly involved individuals. The analysis was performed by running a regression including an interaction term (involvement x trust). Table 6.25 shows that the direct effect of involvement on risk-taking was statistically significant, whereas the interaction effect of involvement on the trust-risk-taking relation could not be separated from zero. This implies that hypothesis 3d was not

supported by data. The t-values and corresponding significance levels are found in Appendix 6.16.

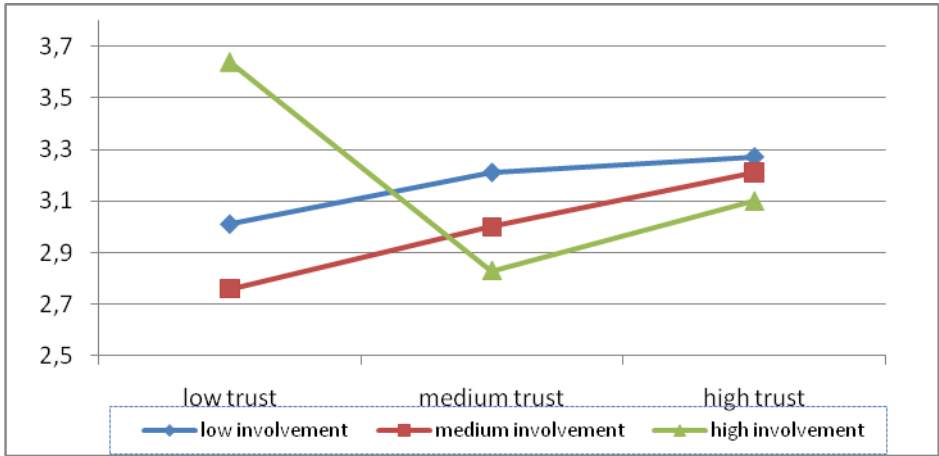
Table 6.25

Effect of trust on risk-taking; involvement controlled for and moderating effect of involvement assessed

Dependent variable: Risk-taking	
R ²	0,065
F-test	F***
Step 1	
Trust (z)	$\beta = 0,173^{***}$
Involvement (z)	$\beta = 0,194^{***}$
Step 2	
Trust (z)	$\beta = 0,179^{**}$
Involvement (z)	$\beta = 0,199^{***}$
Trust x involvement	$\beta = -0,033$
Increased R ²	0,0

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Three subgroups defined by level of involvement were created (high, medium and low in figure 6.13). The relation between trust and risk-taking for various levels of involvement may be illustrated as in figure 6.13:



	Trust	low (<1,51)	medium	high (>2,70)
Involvement				
high (>4,10)		3,01 (n=12)	3,21 (n=35)	3,27 (n=15)
Medium		2,76 (n=31)	3,00 (n=202)	3,21 (n=35)
low (<2,35)		3,64 (n=11)	2,83 (n=51)	3,10 (n=19)

Figure 6.13 Risk-taking for various levels of trust and involvement

The high involvement group seems to have a relation between trust and risk-taking that differs from respondents with lower level of involvement.

Table 6.26

Effect of trust on risk-taking for subgroups defined by level of involvement

Involvement level	N	β
High (>4,10)	96	0,110 (1,085)
Medium	421	0,184 (3,031)**
Low (<2,35)	84	0,233 (1,949)

** indicating significance on the 1%-level

Two of the three subgroups have regression coefficient that cannot be separated from zero, whereas the large medium involvement group reveals increased risk-taking due to level of trust. The coefficient (0,184) is however not statistically different from the regression coefficient for the entire sample, 0,172. This result does not support the hypothesis of a more marked use of trust when taking financial risk for low involvement individuals – the coefficient for the low involvement group cannot be statistically separated from the high involvement group.

In the same fashion as for knowledge, involvement was decomposed into emotional and rational involvement. Table 6.27 shows the moderating effect of the subsets of knowledge, indicating that neither of the two subsets has a relation between trust and risk-taking that is significantly different from the average. The t-values and corresponding significance levels are found in Appendix 6.17.

Table 6.27

Effect of trust on risk-taking, subsets of involvement controlled for and moderating effect of the subsets of involvement assessed

Dependent variable: risk-taking			
Emotive involvement (EI)		Rational involvement (RI)	
R ²	0,115	R ²	0,028
F-test	F(1, 409) = 26,544	F-test	F(1, 406) = 3,939
Step 1		Step 1	
Trust (z)	$\beta = 0,141^{**}$	Trust (z)	$\beta = 0,155^{**}$
EI (z)	$\beta = 0,294^{***}$	RI (z)	$\beta = -0,039$
Step 2		Step 2	
Trust x EI	$\beta = -0,024$	Trust x RI	$\beta = -0,005$
Increased R ²	0,00	Increased R ²	0,00

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

All in all, the results regarding involvement indicate a rejection of hypotheses 3b. The influence of trust when individuals take on

financial risk is not statistically different between less involved and highly involved individuals.

6.2.5 The combined effect of both knowledge and involvement

A remaining possibility is that low knowledge and low involvement combined has a significant effect on the use of trust in the decision-process of the individual. The combined effect of both these moderating variables is assessed and the results are shown in table 6.28. The t-values and corresponding significance levels are found in Appendix 6.18.

Table 6.28

Effect of trust on risk-taking, knowledge and involvement controlled for and moderating effect of both knowledge and involvement assessed

Dependent variable: Risk-taking	
R ²	0,092
F-test	F(1,363)***
Step 1	
Trust (z)	$\beta = 0,155^{**}$
Involvement (z)	$\beta = 0,118^*$
Knowledge (z)	$\beta = 0,184^{**}$
Step 2	
Trust x Involvement	$\beta = 0,007$
Trust x Knowledge	$\beta = -0,023$
Increased R ²	0,0

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Neither of the interaction terms is statistically significant. A subgroup analysis was also performed in order to further investigate the combined effect of both knowledge and involvement. Due to small number of respondents in each cell, the sample was divided in four groups based on the mean for each variable. Table 6.29 shows that three of the four regression coefficients could not be statistically

separated from zero. The regression coefficient for the high knowledge – high involvement group was 0,188 which is not statistically different from the coefficient of the entire sample (0,172).

Table 6.29

Trust effect on risk-taking for subgroups defined by knowledge and involvement

Involvement	Knowledge			
	low (<2,80)		high (>2,80)	
high (>3,20)	0,021 (0,159)	n=74	0,188 (2,402)*	n=197
low (<3,20)	0,181 (1,692)	n=121	0,149 (1,494)	n=122

t-values within parenthesis, * indicating significance on the 5%-level

The results above imply that neither involvement or knowledge alone, nor taken together had a significant effect on how individuals use trust when taking financial risk.

All in all, the analysis of the moderating variables knowledge and involvement has shown that more knowledgeable individuals take on more financial risk, especially the familiar and self-confident individual. It has further been shown that involved individuals take on more financial risk, especially the emotionally involved individual. However, neither knowledge nor involvement was found to make trust a more influential variable when choosing level of financial risk.

7. DISCUSSION

The role of the individual as retirement investor has been changed during the last decades – a change that is visible in the present Swedish pension environment. From a situation during the 19th century and before where the family was the entity to rely on, the Swedish pension reforms during the 20th century introduced the state as main provider of income after retirement. This division of responsibilities is suggested to have been altered when introducing the new system during the 1990's. The lower levels of compensation inherent in the new Swedish pension system as well as the increased focus on investment management of own financial assets have put the individual more in focus.

The present thesis has identified several problems inherent in this new role: the uncertain perception regarding the aim of the pension system, the abilities of the individual as risk-taker and the potential influence of constructs such as trust, knowledge and involvement on the new task of pension fund investing (within the premium pension fund system).

After a presentation of the theoretical foundation for each of these constructs, i.e. trust, risk-taking, knowledge and involvement, several hypotheses were formulated pertaining to the specific Swedish pension environment. These hypotheses have then been rejected or supported based on an empirical investigation including a sample of around 900 bank customers in Sweden. Table 7.1 shows a list of the hypotheses and the result of the empirical investigation: supported or rejected.

7.1 List of hypotheses and map of relation strengths

In table 7.1, a list of all hypotheses that will be discussed in chapter 7 is provided, together with an indication as to whether the hypothesis was supported or rejected by the statistical analyses performed.

Table 7.1 Hypotheses

	Hypothesis	Result
1a	A majority of individuals perceive the aim of the Swedish state pension system as functioning as a provider of basic income security	Supported
1b	Elder individuals (defined as individuals born in the 1940's) will to a larger extent than younger individuals (defined as individuals born in the 1970's and 1980's) perceive the Swedish state pension system as having the aim to preserve level of income	Supported
1c	Individuals perceiving the Swedish pension system as primarily a provider of basic security will have a higher level of trust than respondents perceiving the pension system as income-preserving	Supported
2	Individuals with a high level of trust in the Swedish pension system will take more financial risk in their premium pension portfolio than individuals with a low level of trust	Supported
3a	Individuals with high levels of knowledge in pension investment issues will take higher financial risk than individuals with low levels of knowledge	Supported

3b	Individuals with low levels of knowledge in pension investment issues will reveal a stronger positive relation between trust and risk-taking than individuals with high levels of knowledge	Rejected
3c	Individuals with low levels of involvement in pension investment issues will take higher financial risk than individuals with high levels of involvement	Rejected
3d	Individuals with low levels of involvement in pension investment issues will reveal a stronger positive relation between trust and risk-taking than individuals with high levels of involvement	Rejected

The relations underlying the various hypotheses vary in strength. In figure 7.1, the strength of each relation, i.e. the various regression coefficients are shown. A * indicates that the coefficient can be statistically separated from zero with an alpha-level of 5%, whereas ** and *** refer to an alpha-level of 1% and 0,1% respectively.

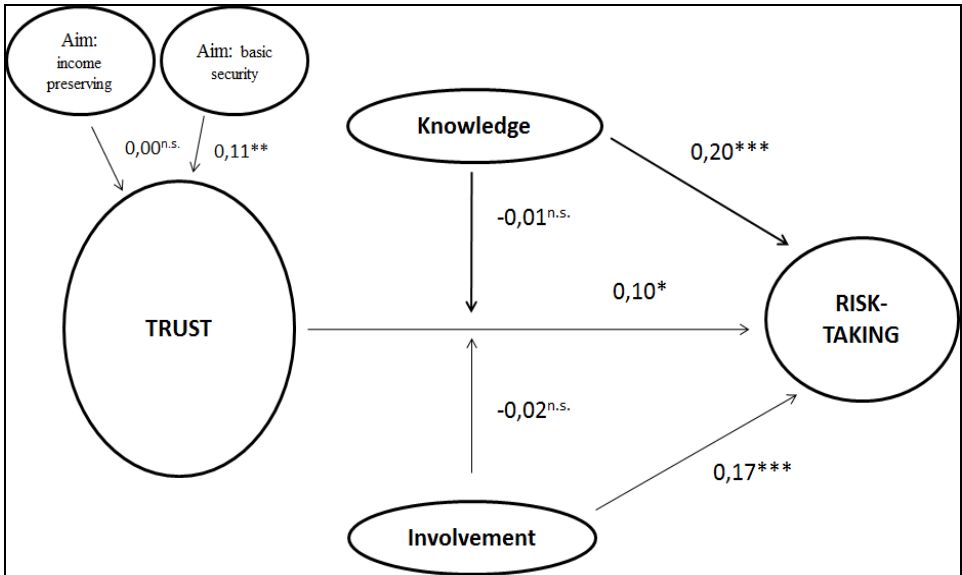


Figure 7.1 Map of relation strengths

7.2 The perceived aim of the pension system – first purpose of study

The Swedish pension environment, with a major restructuring taking place during the 1990's, poses some specific questions regarding the perception of the system. The behaviour studied in the present study, i.e. financial risk-taking, is not necessarily affected by the factual content of the prevailing pension system, but by individuals' perceptions of the system.

This is the foundation for the first research question formulated as to what individuals' perceptions of the present pension system look like, and to what extent they have an effect on level of trust. This research question is operationalised in the three first three hypotheses: one pertaining to how the perception may be described (income-preserving or provider of basic security), the second to whether age is a factor that will have an impact on perception, and third if the perception will influence the level of trust held in the pension system.

7.2.1 Income preserving or a guarantor of basic security – hypothesis 1a

The first topic concerns individuals' view of the present Swedish pension system. The two alternatives posed are whether the aim of the system is regarded as preserving level of income, or if the aim is seen as providing a level of basic security. The former alternative corresponds well to the traditional aim of the Swedish state pension system, and is also more similar to the factual content of the previous state pension system (basically promising 60% of level of final salary).

The two questions aimed at depicting the general view of the pension system both point in the same direction: the present Swedish pension system, introduced during the 1990's, is perceived as a provider of a level of basic security (question regarding level of basic security has a mean 4,29 where 5 means "fully agree") – 82% of the individuals responded that they agree or fully agree with this description. Very few people further agreed with the statement that the pension system is to be seen as preserving the level of income of the retiree: only 8% agreed or fully agreed and 50% did not agree at all (question regarding preservation of income had a mean of 1,82 out of 5). This implies that hypothesis 1a ("A majority of individuals perceive the aim of the Swedish state pension system as functioning as a provider of basic income security") is supported. The propensity to regard the pension system as a vehicle for providing basic security is more marked among men and among individuals with high income (see Appendix 7.1 for regression results).

The result suggests that the view among scholars, i.e. that the Swedish new pension system is more insurance-oriented and less income redistributive (Goodin and Rein, 2001) has also reached the minds of citizens. From the perspective of a recently changed pension environment, this finding is interesting. It seems that the changes implied when implementing a new pension system are known by individuals, and have altered their view of what is going to happen after retirement. This is important since the factual content of the pension system is one thing and the perception of the same system may be another. Since it is the behaviour of individuals that is of interest in this thesis, it is the perception rather than the factual content that is in focus.

The result of the two questions regarding the general view of the pension system also point at individuals perceiving a need for private savings to complement state pensions: an arrangement often associated with the liberal welfare state (c.f. Esping-Andersen, 1985 and 1990, discussed in section 2.3.1). As will be discussed in subsequent sections, this puts investments and investment behaviour in focus. It may be argued that the results indicate that the social-democratic characteristics of the Swedish welfare arrangements for pensions have been weakened, at least in the eyes of the Swedish citizen. These arrangements typically include principles of universalism and a promotion of equality of the highest standards, not an equality of the minimal needs (Esping-Andersen, 1990). Whether or not this situation applied for the previous pension system as well, i.e. that the old Swedish pension system was also perceived as a provider of basic security, cannot be verified by the present study.

7.2.2 Age effects on perception of pension system – hypothesis 1b

Inherent in the research question focusing on the perceived aim of the pension system is also a question of whether age might be a factor influencing the view chosen. A factual comparison between the old Swedish pension system and the new system shows that the differences are numerous: the pension level has been reduced (from previously 60% of final salary to between 40 and 50% for most individuals), and the pension is now based on the amount actually paid by the individual during the working years. The results of the present study point at this change being reflected in the perceptions of the individual: the perception of the pension system as a provider of basic security is widely agreed upon by individuals of all ages. The level of agreement varies from 79% for very young respondents to 87% for the oldest individuals. Here, age does not seem to have a visible impact.

The perception that the aim of the state pension system is to preserve previous income levels is significantly more marked among elder individuals. In the youngest group (born during the 1980's) it was rare (around 2 %) that individuals viewed the pension system as a preserver of income level. This view was more commonly found among the elder respondents (born in the 1950's and 1940's) where around 11% supported this view. These results may be discussed in light of the dissertation by Erika Werner: "Safe, betrayed or uncertain:

Thought and preparations for retirement” (2012). Werner also finds differences depending on age in how individuals prepare for retirement and in the general view of life after retirement. Individuals born between 1931 and 1942 are labelled “the secure” by Werner. They have, as a group, a high trust in the (former) pension system and are more worried about illness and deterioration of health. The second group, born between 1942 and 1959, are “the betrayed”. They make the majority of retirement preparations as if there had not been a system change: the previous pension system shapes most of their behaviour and trust. The youngest group in Werner’s classification, “the insecure”, are fully aware of the increased responsibility that has been transferred to the individual. However, interestingly, Werner also notes that it is the younger group that reflects on the possibility of future system changes, i.e. that the pension system when they retire may look different than the system of today. All in all, it is noteworthy that Werner has found significant age differences in terms of expectations of pension system, responsibilities and trust. The quantitative results of the present study are in this respect in line with Werner's qualitative findings.

The result that elderly individuals are more prone to view the pension system as income preserving may emanate from the sheer fact that older individuals to a larger extent are covered by the old pension system. For those born in the 1950's, however, this explanation does not hold: the view that the aim of the system is to preserve income is frequently occurring, but the actual influence of the old system ranges from 0 to 20% (an individual born 1950 gets 20% of his or her pension from the old system whereas a person born 1954 or later gets the entire pension from the new system). A possible reason for the result could instead be that the historical precedents linger on and still influence the perception in peoples’ minds. The elder individuals could then be viewed as carriers of history, and their perception of the pension system as a reflection of a contract between state, individual and market that no longer exists.

This interpretation would be consistent with the core of institutional theory: that the predecessors of institutions will be inherent in the institutions of today, and hence govern the individuals' perception of the present system (see description in section 2.4.1 – 2.4.2). This path dependency is a key component in institutional theory, and the present study has used the Swedish pension system as one such institution, potentially lingering on in individuals’ minds and perceptions. Part of

the perceptions, particularly among elder individuals, would then still be based on previous pension systems. A potential reason for this could be found in the historical move from one pension system to another. Institutional theory also offers a perspective on the dynamics of change and the forces needed in order to induce reform and change to a, initially, static structure. Many of these forces have been found to be applicable to the Swedish pension reform of the 1990's: the legitimacy question solved by the financial crisis, the pragmatic response to the mounting evidence of an instable pension system being the problem-solving motive needed and the equally pragmatic stance taken by both political sides explaining the endogenous force of change (see discussion in section 2.4.1). These facts all point in the direction of a "smooth" reform, without much political controversy. Perhaps the most surprising fact about the change of pension system is what didn't happen: no furious protests, no agitated debate in media or in the Parliament. It could be reasoned that this calm reform environment has made the awareness and perception of the content of the new system less marked. For those old enough to remember the fight around the ATP-reform during the 1960's, the fierceness of this battle may lead it to linger on and influence the current perception of the pension system, especially in the light of the mild debate surrounding the 1990's reform.

7.2.3 Perception of pension system as a factor influencing trust – hypothesis 1c

The third part of the research question covering the perceived view of the pension system is the possible connection to trust. Since pension payouts may be due decades in the future, trust in the promised payments actually being delivered is a variable of importance. Individuals' level of trust may be assumed to influence behaviour – such as extra voluntary savings or, as studied in the present thesis, risk-taking. From the results in the present thesis it may be concluded that individuals hold a low level of trust in the Swedish state pension system – invariant of trust being measured as trust in a more general sense, trust in the ability of the pension system to deliver, or in the willingness of the pension system to fulfil its obligations.

The perception of the Swedish state pension system – whether it is a preserver of level of income or a provider of basic security – is one factor assumed to influence level of trust held in future pension

payments actually being delivered. The underlying reasoning evolves around expectations: the more moderate expectations held by individuals viewing the pension system as merely providing basic security could make these individuals more inclined to trust that future pension payments will actually be delivered.

This reasoning is verified in the present study. The results show that individuals viewing the state pension system as provider of basic security have a higher level of trust in the pension system than individuals opposing to this view. Different beliefs regarding the pension system as a guarantor of unchanged income after retirement does not markedly influence level of trust.

A possible source of the higher trust among individuals viewing the state pension system as provider of basic security is that this group expects less from the state. They are, as inherent in the phrasing of the question posed (“...extra individual savings will be needed...”), aware of the necessity to contribute themselves and expect a smaller contribution from the state. Knowing that one of the subparts of the trust construct is ability-based trust, i.e. how individuals regard the financial ability of the state to fulfill future pension obligations, lower expectations may be viewed as more likely to fit in a future state budget.

This result could have implications for the communication of the new pension system. If, as suggested by the results of hypothesis 1c, the perception of the pension system has an influence on level of trust, then clear and concrete information of what may be expected at retirement is of utter importance. The “orange envelope”, i.e. yearly information sent out by the Pension Authority (Pensionsmyndigheten) plays an important part in this perspective. Here, forecasts regarding the actual future payouts are provided and, given that the envelope is opened and read, this information may shape individuals’ expectations and accordingly influence their level of trust. In other words, if a higher level of trust in the pension system is a goal, then shaping the view of the system via pension information may be a useful tool.

All in all, the first research question results in a picture of a changed perception of the pension system (perhaps with the exception of a group of the elderly individuals), and with a marked influence of this perception on individuals’ level of trust.

7.3 The influence of trust on risk-taking – second purpose of study

Central in the present study is the connection between trust in the present pension system and choice of risk-level. This is the core of the second research question, and is operationalised in hypothesis 2: level of trust in the Swedish state pension system is assumed to have an impact on the level of financial risk chosen. Risk, measured as a generally phrased risk question, gambling characteristics along with two different asset allocation tasks, was in the present study found to, on average, be of medium magnitude. A significant positive relation was further found to prevail between trust in the pension system and level of risk-taking, also when income, gender and age were controlled for. This implies that hypothesis 2 is supported by the data-set.

This result is consistent with previous findings, both within consumer behaviour (e.g. Morgan and Hunt, 1994; Järvenpää et al, 2000; Zhao et al, 2010) and in more financially oriented studies (e.g. Ryan and Buchholz, 2001; Guiso et al, 2008). Consumer behaviour studies typically use perceived risk as a mediating variable between trust and intention to buy (e.g. Garbarino and Strahilevitz, 2004 or in an e-commerce setting Grabner-Kräuter and Faullant, 2008). Given the definition of trust, with the absence of a counterparty (e.g. a seller) acting opportunistically as one of the central points, these studies show that an increased level of trust will lead to reduced perceived risk and hence an increased willingness to buy. The present study uses the results on perceived risk and assumes that this will lead to increased risk-taking; i.e. a positive relation between trust and risk-taking. Some financial studies obtain the same positive relation between trust and risk-taking directly (e.g. Guiso et al, 2008).

The concept of trust in the present study is composed of three components: general level of trust, trust in the willingness of the state to financially support the elderly and trust in the ability of the state to fulfill its obligations. Consequently, a more detailed description of what part of the trust construct that induces risk-taking may be provided. The analysis in the present study shows that it is the willingness of the state to provide the elderly with financial support that is the crucial factor. There is a significant positive relation between a respondents' level of trust in the willingness of the state to support the pension system and subsequent risk-taking. These results point at state priorities as the key to understand risk-taking. It is not

the perceived weakness of the state finances as such (i.e. ability) that is regarded as the major threat to future pensions, but rather the state priorities between different groups in society (i.e. willingness). A belief that the retired citizens will not be down-played in future state budgets therefore seems to be a major driver of financial risk-taking. The important part of the trust held by individuals seems to be the part that makes you as an individual vulnerable, and a possible goal of down-prioritising activities from the counterparty.

Discussing the possible use of this result, i.e. what does it matter that we now know that trust in the willingness has the greatest impact on risk-taking, a step back to contemplate the effects of increased trust and increased risk-taking may be taken. Is a high level of trust in the pension system something that is good per se? Is a higher financial risk-level among individuals something to strive for? The results outlined here do not answer these questions. It could be argued that the level of risk in the retirement portfolio is of utter importance, and hence a variable to bear in mind when making legislative changes and rearranging the pension setting of a country. In order to make such legislative changes or rearrangements, the authorities would need a clear picture of factors that affects risk-taking. The results of the present study imply that the level of trust could be one such factor to focus upon. Consequently, it could be in the interest of legislators and politicians not to "force" individuals into a low risk investment due to lack of trust in the willingness of the state to support its promises. In other words, knowing the importance of the retirement portfolio risk-level, legislators would want to assess the reasons for an individual holding e.g. only low risk assets in the portfolio. Is it due to a financial inability to bear a higher risk (associated with increased volatility) or is it due to a lack of trust? Having seen that trust in the willingness of the state to support the elderly is tightly connected to risk-taking, it could be discussed how to practically raise this particular type of trust. Perhaps a situation as was the case when forming the new pension system is the best: an agreement supported by (almost) all political parties and therefore possibly viewed as withstanding political tug-of-wars in the future. Prioritising of state resources is close to the heart of politics, but perhaps a broad agreement could increase the trust that the priorities manifested in decisions and legislation now will be the priorities delivered in the future.

A source of inspiration to the present study has been research showing that well-educated parents serve as implicit insurers and induce a risk-taking element in their children (Dohmen et al, 2008). The

corresponding argument for the present study would be that trust in the pension system would serve as such an implicit insurance and correspondingly induce increased risk-taking. This insurance hypothesis would be more in line with trust in the ability of the state to fulfill its obligations having significant influence on risk-taking, since the well-educated parents have a better ability but not necessarily a higher willingness to support their children. The insurance hypothesis is not supported by the present results, since trust in the ability of the state pension system proved to have no significant effect on risk-taking.

7.4 The effect of knowledge and involvement – third purpose of study

Consumer behaviour studies have defined certain characteristics that substantially affect the behaviour of individuals. Two such characteristics are knowledge and involvement (e.g. Mårtenson, 2005; Laroche et al, 2010). The last research question hence focuses on if knowledgeable or involved individuals reveal a different relation between trust and risk-taking than other individuals, and if the level of knowledge or the level of involvement would make an individual less or more prone to take financial risks? The research question is operationalised in four hypotheses: two focusing on the direct effect of knowledge and involvement on risk-taking, and two on the effect on the relation between trust and risk-taking obtained by altering the levels of knowledge and involvement.

7.4.1 The behaviour of knowledgeable and less knowledgeable individuals – hypothesis 3a and 3b

The knowledge construct was in the present study decomposed into three subsets: familiarity, factual knowledge and self-assessed knowledge.

Looking first at the descriptive results for the three subsets, these revealed a high familiarity with pension issues (i.e. a high frequency of financial choices), a medium level of self-assessed knowledge and a low actual level of pension knowledge (measured as percentage of

respondents with a close to correct anticipation of their future pension). As has been discussed, the level of familiarity in the sample is likely to be higher than the level of familiarity in the whole nation.

The results obtained regarding individuals' actual pension knowledge deserve some discussion. The results showed that half of the population has expectations regarding their future pension that are more than 10% higher than a (crude) estimate based on current income. Over 30% of individuals were more than 20% too optimistic. A question is what implications a (too) optimistic view may have. Will individuals save adequately if they think that they will receive 20% more than will actually appear as pension income when that day comes? Will these individuals with too high expectations give rise to a generation of disappointed retirees after having retired? These questions may be tied to the debate around the new pension system that has been coming and going during the last years.

Another interesting finding, corroborating the results in previous studies (e.g. Hauff, 2006), is that a majority of respondents were far away from a correct estimate of their future pension level, whereas the average respondent had a view of his or her own pension knowledge level as fairly good. There is hence a discrepancy between objective knowledge and subjective, self-assessed knowledge. As shown in Hauff (2006), the self-assessed part of the knowledge construct is what most markedly drives active choice and switching activity in the premium pension fund system.

Focusing not on the level of knowledge but on the consequences of knowledge, several studies have reported an influence on individuals' behaviour (e.g. Jacoby et al, 2001). Knowledge has also been explicitly connected to the concept of risk-taking: high knowledge individuals have been found to be more inclined to take higher risks (Fischhoff et al, 1978; Nasic and Weber, 2010; Mårtenson, 2005). This positive relation is corroborated by the results in the present study: knowledge in pension related issues is found to have a significant positive impact on the level of financial risk-taking. This implies that hypothesis 3a is supported.

The analysis of which subparts of the knowledge construct that affect risk-taking reveals that the major impact seems to come from familiarity and self-assessed knowledge. Starting with familiarity, this construct measures how many pension decisions the individual has made, if he or she has made an active choice in the premium pension

fund choice and if he or she has opened the envelope containing the pension estimate (a yearly estimate sent out by the Pension authority). An area that is well-known to the individual is seen as less risky (i.e. influencing the risk perception of an individual) – something that is in line with previous research where previous encounters with a certain risk reduce the perceived riskiness (Fischhoff et al, 1978). The fact that the area of pensions and investments is not new to the individual will accordingly make the investment task at hand seem less risky and thereby encourage risk-taking. The second finding, that self-assessed knowledge breeds risk-taking, is in line with the observation that self-assessed knowledge is the main driver of active choice and switching activity of savers within the Swedish premium pension fund system (Hauff, 2006). It is also in line with what has been found in studies within the area of investments (Wang, 2009; Hadar et al, 2013) as well as results from the overconfidence-literature (e.g. Barber and Odean, 2001). In the pension setting of the present study, this translates to the situation where an individual being confident in his or her knowledge in pension matters actually ends up with a more risky investment portfolio.

Level of knowledge was also assumed to affect the degree to which trust influences risk-taking. Individuals with a lower level of knowledge have in previous studies been found to rely more on less factual cues, among which trust (Earle and Cvetkovich, 1995; Bettman and Park, 1980; Alba and Hutchinson, 1987), whereas knowledgeable individuals have been found to rely on a more cognitive information-process with less room for trust (Maheswaran and Sternthal, 1990). Accordingly, hypothesis 3b stipulated that the relation between trust and risk-taking would be stronger for individuals with lower levels of knowledge. However, this hypothesis was not corroborated in the present study. The results indicate that level of knowledge does not affect the relation between trust and risk-taking. Knowledgeable individuals have a positive relation between trust and risk-taking and so do less knowledgeable individuals. Hypothesis 3b was consequently rejected.

7.4.2 The behaviour of involved and less involved individuals – hypothesis 3c and 3d

Involvement is also a variable well-known to influence individuals' behaviour (e.g. Howcroft et al, 2003). The connection to risk-taking is

not straight-forward: the negative connection evident in hypothesis 3c stems from the fact that less involved individuals are assumedly less active, and perceives the alternative as less risky – and accordingly are willing to take on more risk (e.g. Weber, 2004). This negative relation was not evident in the present study: involvement was found to have a positive and statistically significant impact on level of risk-taking, and hypothesis 3c was subsequently not supported. These results may be compared to the results in Mårtenson (2005) where involvement was found (by comparison of several alternative models of relations) to (positively) affect risk-willingness. A possibility is that the discrepancy between studies with a negative relation between involvement and risk (as e.g. Weber, 2004), and studies where involvement and risk are positively connected (e.g. Mårtenson, 2005) focus on different aspects of the risk construct. Webers (2004) (theoretical) reasoning is centred on the negative aspects of risk, such as fear and anxiety. Involvement in this setting leads to the individual becoming aware of potential dangers, and hence reducing level of risk taken. Mårtensons (2005) methodology instead focuses on, among other things, percentage invested in the stock market; a decision that is more driven by the possibility of achieving a good return by taking on more risk. Hence, a positive relation between involvement and risk is found in the study. This is an interesting distinction, well worth investigating further.

When divided into rational and emotional involvement, the positive impact on risk-taking was found to stem only from emotional involvement; i.e. from the personal relevance and interest in pension issues. The assumption in hypothesis 3c was the opposite: that low emotive involvement would lead to less visceral cues, low perceived risk and accordingly high risk-taking. This assumption was grounded in previous research where emotive involvement was seen as a necessary prerequisite for risk-management, i.e. lowering of risks, but where retirement investing at the same time was seen as lacking of emotions and visceral cues (Weber, 2004). "Who's afraid of a poor old age", as was the title of Weber's paper, sums up the standpoint: feelings such as fear and anxiety are simply not evoked by retirement investment issues. As stated, the negative hypothesised relation between (emotive) involvement and risk-taking was not found in the present study. The positive relation between emotive involvement and risk-taking found, i.e. that higher emotive involvement leads to more financial risk needs to be further explored. One explanation could be that individuals with a high level of emotive involvement, for whom retirement investments are more connected to positive factors such as

interest and joy, are focusing more on the possibility than the danger part of risk-taking.

Level of involvement has further been shown to have an impact on mode of decision-making, with low involvement leading to a reliance on non-factual, peripheral cues (Devlin, 2011). Level of involvement was however not found to have any effect on the relation between trust and risk-taking in the present study. The hypothesis of a central, more rational information-process for involved individuals (without much impact of factors such as trust) as opposed to a peripheral information-process containing elements such as context, feelings and trust (Petty and Cacioppo, 1986) is not confirmed in the study and hypothesis 3d was accordingly rejected.

All in all, both knowledge and involvement were shown to have significant positive direct effects on risk-taking. The individual who is familiar with pension-related issues was found to take more financial risk, as was the individual with a high pension-related confidence. The individual interested in pension-related issues was also found to take higher risks. The moderating effect of knowledge or involvement on the trust - risk-taking relation was however not statistically significant. This implies that this study does not find evidence of low knowledge and/or low involvement individuals adopting a decision-making process with trust as a more important component. Trust seems to be of no less importance for the high knowledge and/or high involvement individual. The combined moderating effect of both knowledge and involvement was also shown to be non-significant.

7.5 Theoretical implications

The role as consumer of financial services is far from new to consumer behaviour research. Much has been written about the purchase process regarding financial services (e.g. Ennew and McKechnie, 1998; Mishra and Kumar, 2011), including the less rational cues and emotions' influence on the purchase steps (Bagozzi et al, 1999). The conclusion has been drawn that consumption of financial services is different from regular consumption in several important aspects. Much has also been written in consumer behaviour studies about trust (e.g. Morgan and Hunt, 1994). The present thesis builds on previous studies of consumer behaviour regarding financial services, but explicitly incorporates trust as an influential variable.

How may trust in future pensions being delivered alter the behaviour, i.e. financial risk-taking, of individuals today?

First, to what extent may the discussion in the present study confirm or contradict previous research regarding consumption of financial services? The special pension environment influences the traditional consumer behaviour concepts and consumer behaviour theories in certain ways. One such way is the time-span of the consumption. The focus of the present thesis lies on long-term retirement investing, i.e. where the benefits of consumption may lie decades ahead. Focus more specifically lies on a special subset of long-term investing, where the behaviour of the consumer will depend on an assessment of factors such as the probability of getting a good life after retirement by means of the state income pension, and the probability of pension promises actually being delivered in the future. This implies that the behaviour studied is similar but not identical to the financial behaviour described in e.g. Ennew and McKechnie (1998). Similarities include many characteristics of the steps in the purchase process: limited need due to limited interest and difficulties in correctly interpreting the content of the offer at hand (or in this case the future pension). The dissimilarities include an increased focus on trust as an influential factor, and a redefinition of some of the concepts used.

Trust is one such concept, central to the present thesis. Trust is in the present thesis defined as trust in the state to, when that day comes, be both able and willing to deliver a pension to its citizens. Trust in this narrow definition is not something similar to a legal contract with a company. A conflict, i.e. one party breaking the contract, cannot be solved in court. The responsibilities borne by the state evolve over time, and are changed by both financial necessity and contemporary spirit of society – such as in the pension case e.g. freedom to choose and individualism (Thaler and Sunstein, 2003). The concept of trust is visible in two of the three research questions of the present thesis. The first research question was formulated as if and how the view of the pension system was manifested in the level of trust held in the same pension system, i.e. focusing on the antecedents of trust. The second research question was centred around the connection between the level of trust in the pension system and the level of financial risk-taking in the pension environment, i.e. focusing on the consequences of trust.

Starting with the antecedents, the existence of non-binding contracts or the possibility of the other party to act contrary to set promises is one foundation for trust to build (Gargiulo and Ertug, 2006). In order

to assess this foundation in a pension context, an examination of both defined contribution pension systems and defined benefit pension systems was carried out. It was found that no binding contracts existed: both types of systems varied in terms of actual level of pensions paid out. The possibility for the state to defect (or alter benefits) exists under both systems, and the individual cannot be 100% sure of the size of future pensions. There is, accordingly, a practical foundation for trust in the promised pension pay-outs to build (or not build) among citizens, and hence a theoretical interest to study the level of trust in a pension setting. Another antecedent to trust is similarity. In the present study similarity may be defined as the correspondence between the perceptions of the pension system held by the individual and the actual benefits of the system. The more similar the expectations held by the individual are to the actual outcomes (presented each year in the orange envelope), the more trust is built. The similarity arguments stem from varying areas of research. Coulter and Coulter (2002) e.g. study the similarities between a salesperson and the customer – and its implications on level of trust. Morimoto and La Ferle (2008) among others have examined the effect of cultural similarities, and their effect on behavioural outcomes. The present study focuses on the similarity between a *perceived* benefit and *actual* benefit. It could be argued that the similarity – or the discrepancy – hence lies in the mind of the individual. With the debate circling around economic downturn and financial difficulties of states, it is perhaps not surprising that a large discrepancy (i.e. wishing for an unchanged level of salary but receiving maximum 50% of final salary) results in less trust. This is exactly the results of the present study: the view that the pension system provides basic security instead of a maintained level of income is proven to increase level of trust held in the pension system.

Well-documented are further the consequences of trust, such as cooperative behaviour (Morgan and Hunt, 1994), reduced need for monitoring (Malhotra and Murnighan, 2002), reduced transactions costs (Hau-Siu Chow, 2008), increased loyalty (Shainesh, 2012), higher levels of commitment (Gargiulo and Ertug, 2006) and effects on intention to purchase (Hong Cho, 2011). It could be assumed that the way in which level of trust is measured will have an impact on the consequences assessed. Trust measures in the literature range from very crude measures aiming to capture a general form of trust (such as the question in Dohmen et al, 2005: “Do you see yourself as a person fully prepared to take risks?”) to more specific trust measures (often,

as in e.g. Sirdeshmukh et al (2002) working with scales regarding a particular vendor or company anchored by “very undependable” and “very dependable”, “very incompetent” and “very competent”, and “of very low integrity” and “of very high integrity”). Frequently, (e.g. Sirdeshmukh et al, 2002; Shainesh, 2012) the aim is to link trust to loyalty and loyal behaviour by a customer towards a vendor or company. The aim of the present study is to assess the level of trust held in a pension system, where loyalty as a behavioural outcome is of less importance. The reason for structuring the trust items of the present study around the willingness of the pension system to deliver as contrasted by the ability of the pension system to deliver (a distinction discussed in e.g. Gargiulo and Ertug, 2006 and Snijders and Keren, 1999) hence has to do with the setting and the behavioural outcome studied. A very specific question regarding an entity (i.e. the state pension system) that for most people is rather vague would probably not have rendered any useful answers. It is in hence broad scope trust that is in focus, not the narrow, more vendor-oriented scope (Hansen, 2012). However, the ambition of the present thesis was also to nuance the results stemming from broader self-assessed questions. As stated in Snijders and Keren (1999), the processes behind trust in willingness and trust in ability may be deferred to different cognitive processes: one focusing on the perceived aim of the counterparty and the other focusing on an assessment of the actual capability of the counterparty. It could be argued that this division follows the different paths of decision-making used by the individual: the rational fact-based (aligned with forming trust in the ability of the counterparty) and the more emotional, experiential (aligned with forming trust in the willingness in the counterparty). Interestingly, the results of the present study point at willingness being the key component of the trust construct. It hence seems as though trust in a seemingly rational entity such as a state pension system is based primarily on an emotional assessment – at least when it comes to studying the behavioural outcome of financial risk-taking.

The second concept in line to be confirmed or contradicted is accordingly risk-taking. Risk is far from new to marketing and consumer behaviour studies. Focus on potential losses and fears stemming from risks of consuming a particular product are an important factor in consumers’ decision-making. It should hence be of importance to managers and marketing scholars as well (Conchar et al, 2004). The present study focuses on a particular aspect of risk and risk-taking, narrowly defined as taking on financial risk. For pension

purposes, this financial risk-taking could be narrowly defined as choice of risk-level within the premium pension fund system, i.e. making the fund choice enabled in the present state pension system. Financial risk-taking could however also take into account the risk-level chosen in other types of investments. Very practical, the issue is here the need to put aside private money in order to compensate for lower levels of state pension benefits. Putting aside this extra private money, or investing, inevitably implies taking risks in one way or the other: avoidance of risk or low risk-taking when putting money in a bank account or more marked investment risks when entering the mutual fund market. Investing in this respect could hence be viewed as consumption of financial products with varying degree of risk (where decision depends on risk preferences), and accordingly fit in the traditional consumer behaviour setting.

It may be needed to again state that whereas the activity to set aside private funds as a consequence of lower expected future pensions may be seen as something inherently positive (people prepare for life after retirement in accordance with their view of what to expect from the state, as stated in Werner (2012)), this is not the case as regards risk-taking. It is not obvious that a higher risk-level in investments is per se desirable. It could, perhaps, be argued that most people may benefit from the possibility to (cheaply) invest in risky assets in the premium pension fund system, since part of their pension assets may be locked in a low-risk alternative (or at least in an alternative not dependent on market risk), and hence not available for the individual to invest according to own preferences or situation. Recommendations in this more financially oriented line, aiming primarily to increase the level of diversification in individuals' pension portfolio have however not been the focus of the present thesis.

The connection between trust and risk-taking has been elaborated upon in several consumer behaviour articles. The inverse connection between trust and decision-making uncertainty has been stated (Morgan and Hunt, 1994), as has the positive relation between trust and risk-taking (e.g. Das and Teng, 2004; Zhao et al, 2010). This positive relation has also been empirically verified in an investor setting (Guiso et al, 2008). As stated, several consumer behaviour-studies share the trust - risk-taking focus of the present thesis, especially since the mid 2010's within the field of e-commerce (e.g. Yousafzai, et al, 2003; Kassim and Abdulla, 2006; Zhao et al, 2010). The results of the present study are in line with findings of previous

studies. Trust in the pension system is a factor positively influencing the financial risk the individual decides to take. The more trust that is held in the pension system, the more financial risk the individual takes.

Since risk-taking is known to be context-dependent, an understanding of the environment in which the individual chooses level of risk is needed. Looking at previous research where the positive relation between trust and risk-taking has been established, these vary as regards setting. The seminal Morgan and Hunt-article (1994) uses the relationships between car tire retailers and suppliers in order to assess the various relationship strengths. Uncertainty is here only one of many relations focused upon, not as in the present study the sole outcome. Zhao et al (2010) study the trust – risk-taking relation in a financial setting, focusing on Internet bank relations in China. The model used is similar to the model in the present study: trust in an Internet bank is supposed to decrease level of perceived risk. Some important differences however exist. Trust is in the Zhao et al article measured in a way often observed when assessing trust in a company (and a financial institution, see e.g. Ennew, Kharouf and Sekhon, 2011): items covering aspects such as benevolence, competence and integrity. As opposed to the dimensions used in the present article, namely willingness and ability, the company-variables could be regarded as requiring a more concrete object in which to assess level of trust, not a rather vague entity such as a pension system. Again, a comparison may be made to broad scope trust versus narrow scope trust (Hansen, 2012). Another difference is further the focus on perceived risk, not on the behavioural outcome risk-taking (as used in the present study). The risk-taking focus is instead found in a more financially oriented article: Guiso et al (2008). The context is here the individual as financial decision-maker, and a survey to a large sample of Dutch citizens captures both trust (measured with a very general question) and risk aversion (measured through willingness to pay for different lottery alternatives). The context hence resembles the present study in some aspects – the focus on the individual as financial decision-maker, the focus on risk-taking not perceived risk, and the more general investment-perspective – but lacks the pension focus of the present study.

Interestingly enough, the results from the above listed studies are exactly the same: trust breeds risk-taking. It is hence not the obtained result of the present study itself that might be the most interesting. The

varying contexts where the trust – risk-taking relation has been previously observed pose an interesting question as whether the trust building base may vary accordingly. It has been suggested that trust stems from three different bases of trust (Lewicki and Bunker, 1995): calculative (i.e. where costs and benefits of a trusting behaviour is assessed), predictive (i.e. the possibility to predict the behaviour of the other party) and identification (focusing on similarities and shared values). The calculative trust base has further been suggested to be more common in a commercial exchange setting (Koehn, 1997). For the present study, the predictive base seems more appropriate. Prediction would then come from the fact that, as described in the overview of pension system changes, individuals are able to observe the behaviour of policy-makers and politicians as regards pensions. The historical dependency is in this sense emphasised, something that is in line with the perspective of the present thesis, namely that the historical pattern of pension system changes lingers on and affects the behaviour of current citizens.

Zhao et al (2010) mention a difficulty when addressing these various trust bases in an Internet bank setting. “*Do customers trust in a ‘thing’ (person, organisation or brand for example), if that singularity does not exist what does that mean for any of the possible bases of trust*” (p. 21). The very same question may be posed with the pension system in mind. This is, in the same fashion as an Internet-based bank service, an interwoven entity, consisting of expectations, previous encounters, the public debate and experiences of relatives just to mention a few of the inputs. Interestingly enough, the suggestions provided by Zhao et al (2010) is for banks to credibly demonstrate the willingness to uphold the customer relation, e.g. by financing losses incurred by Internet bank users. This is in line with the results of the present study, where willingness on behalf of the government was found to have a larger impact on risk-taking than the perceived ability of the same government. The suggestions in Zhao et al (2010) are hence explicitly confirmed in the present study.

On a more conceptual level, the results obtained in the present study as regards the effect of trust on risk-taking may be compared with the findings from behavioural finance and psychology. As argued by, among others Slovic (1999), subjective judgements and evaluations are affected by factors other than purely financial considerations. The underlying explanations to the results of the present study, i.e. the importance of factors such as trust, familiarity, financial self-

confidence and emotional involvement all point in the direction of emotions being highly involved in the rational task of risk-taking. The “human” financial decision-maker is more governed by emotions and feelings than has perhaps been previously anticipated. The connection to the two parallel information systems as described by Kahneman (2011) is here obvious: the intuitive, emotionally-driven system is clearly visible in the pension setting of the present study.

The present study points at trust being one of those psychological, non-factual variables influencing perception of risk, and subsequently investor behaviour. One of the most important investment tasks, the choice of risk-level, has been shown to depend not only on an objective assessment of risk, but also on trust. Trust, it must be acknowledged, is far from the most important factor in determining the choice of risk-level, but the results of the present study show that it does have a significant positive impact on individual risk-taking. This implies that consumer behaviour within a state pension setting (where trust is narrowly defined as trust in the pension system delivering in the future) follows the path laid out by a number of behavioural finance studies: affective components do matter. This implies that the case for developing a model of financial consumer behaviour based on the existence of dual information processing systems; both the rational and the experiential (with more marked input from affective components), is strengthened by the results obtained in the present thesis. In order to understand the risk-taking inherent in a new pension system, in order to understand other related topics such as individuals’ provisioning for health care and behaviour associated with this specific need, the focus must be wider than the purely rational risk assessment. Building on this, more focus on other more affective input into the models regarding consumption of financial services – such as mood, affect and feelings, could be anticipated. How can policy-makers and financial institutions better understand an emotionally driven financial consumer, bound to be affected by human feelings such as trust, fear and joy?

7.6 Sample discussion

Data for the present study was obtained through a mail survey to the mail database of Skandiabanken, a bank with some 300.000 customer, almost all included in the database. Age-wise, a comparison of Skandiabanken and the nation shows rather good correspondence, whereas the gender comparison revealed an overweight of male customers in the bank database. The theoretical possibility of a sample stemming from the Skandiabanken mail database being generalised to hold for all of Sweden must be seen as good.

The obtained sample was biased in a few important aspects. Fewer young people answered the survey (26% born 1970 or later as compared to around 40% in the whole database and in the country), fewer women answered (33% as compared to 46% in the database and 50% in the country) and fewer individuals with low income (38% with salary below SEK 30.000 per month as compared to 70% in the country). In order to reduce these effects of the sample obtained, the regression results will all be controlled for effects of age, gender and income.

The response rate was also low, around 9%. This is not unusual when it comes to surveys with a financial focus. The consequences of this low ration must be taken into account, since involvement and familiarity are two measures focused upon in the present study. A response rate as low as 9% almost certainly indicates that it is the interested individuals, and the ones that have a rather high view of themselves as investors (no feelings of guilt or neglect interfering with the decision to participate in the survey) that will answer. The levels of involvement and familiarity are therefore assumed to be higher in the sample than in the nation. To bear in mind, however, is that both involvement and familiarity are used as moderating factors (the latter as a sub-part of the knowledge construct). It is consequently not the level of involvement or familiarity in itself that is of interest, but rather the way that it affects risk-taking, or the trust – risk-taking relation.

The obtained sample is not unique when it comes to financial surveys. It is not uncommon to find very low response rates, and the high level of involvement is also commonly visible (Howcroft et al, 2002). The three research questions may therefore be analysed one at a time and connected to the possible drawbacks of the sample. The first research question (regarding the view of the pension system and its possible

connection to level of trust) may be viewed as largely unaffected by the biased sample. It is not obvious that interest and the willingness to respond to a mail-survey would be connected to the individuals' view of the pension system, neither is the connection between willingness to respond and level of trust straightforward. The second research question concerns the relation between trust and risk-taking. As seen in the results, emotional involvement (or interest) with savings issue had a positive impact on inclination to take financial risk. It could hence be anticipated that the risk-level in the sample obtained would be higher than in a generalised sample. The third research question, the connection between the variables of knowledge and involvement and risk-taking as such and the relation between trust and risk-taking, has been elaborated on in the section above. Since the level of involvement or knowledge itself is not the focus of the present thesis, the drawbacks of the sample obtained may be seen as limited.

As stated, the sample of the present thesis has certain biases not unusual for studies in a financial setting. These biases implies certain potential drawbacks discussed above, but also makes the study a good example of a part of the population perhaps more willing to explore the possibilities of the current pension system and savings environment: more self-assured, more knowledgeable and more interested individuals.

7.7 Practical implications

From a practical point of view, the present study contributes to the knowledge about the lay-man investor and retirement saver. The risk-taking focus of the present study is in line with the present shift in legislation for financial institutions. Since the incorporation of the Markets of Financial Instruments Directive (MiFID), institutions are urged to reflect upon factors such as the risk profile and risk perceptions of their customers. Institutions also need this kind of information in order to be able to individualize and tailor-make their products: it is the risk-taking of the individual investor that is to be matched. The result of the present study, i.e. that trust, knowledge and involvement are factors that are of importance should therefore be of value to all practitioners involved in personal finance: banks, fund companies and private banking corporations.

Since the inclusion of individual investment choices in the state pension system, the risk-taking of individuals is of interest for the state as well. An erroneous choice of risk-level may have severe consequences for the financial situation of the individual after retirement. The state may be described as being equipped with a toolbox of actions to take in order to guide and incentivise its citizens. The state may focus on increasing the level of financial knowledge, it may focus on encouraging activity and – as discussed in the present study – it may focus on the level of trust in the pension system. Knowing that trust in the willingness of the state to fulfill its obligations plays an important role in determining risk-taking, the tone in the public debate surrounding the pension system may prove to be of importance for trust-building. A populist debate where it is obvious that too much is promised, or where the pension system is “sold out” in order to gain political advantages in other areas may deplete the level of trust in the pension system and consequently reduce risk-taking.

The results that emotionally tilted factors such as trust play a role in the decision-making of financial consumers still remain to be analysed as to practical impact. How can policy-makers and financial institutions better understand an emotionally driven financial consumer, bound to be affected by human feelings such as trust, fear and joy?

The trust-tool may be valid even outside the pension system. As shown in previous studies, the level of trust has an impact on stock market participation in general (Guiso et al, 2008), not only on risk-level chosen in a pension investment setting. If it is a set policy goal to promote stock market participation and to increase financial risk-taking, then a potential parameter at hand for policy makers has been shown to include level of trust.

A particular tool in the state toolbox deserves a final comment. Financial knowledge has been in focus lately and it has been explicitly stated by the authorities that an increase of financial knowledge is desirable. The results of the present study show that a raised level of knowledge may have an impact on risk-taking: more knowledgeable individuals seem to have an inclination for higher risk-taking. This is an implication that will have to be considered by policy-makers.

7.8 Speculations

The pension setting is central to the present thesis and is also the subject of much debate in the Swedish media. A system as important as a nation's pension system is most likely constantly evaluated and commented upon. An important issue related to the topic of risk-taking is the substantial dispersion of results as regards the premium pension funds of individuals. As has been shown in the thesis, an obtained difference of ten percentage-points is not unlikely during a ten-year period. A longer time period and more money invested in the premium pension fund system will imply that the percentage differences are larger and the impact for the individual larger. The implications for the Swedish society, with even more varying pensions for different individuals have been reflected upon in the present study.

The present study focuses on the financial behaviour of the individual, especially connected to pension investing. The analysis of this particular behaviour is based on an overview of the context in which the individual operates, namely the pension system environment. It could be argued that the results obtained regarding pension investments could be generalised to hold for other areas as well. The areas of e.g. education and health care may be areas similar to the studied pension investment area. The decision taken in all three areas will be important for a long period of time, and trust may be hypothesised to be of importance in all three settings. A generalisation into these areas would then imply an understanding of the specificities regarding e.g. privately paid university, just in the same fashion as the pension system specificities have been the subject of the present thesis.

The results obtained may, given the possibility for generalisations, be used to sketch a new area of consumption. Welfare consumption, an area historically catered for by the government, is now increasingly becoming the responsibility of the individual. Thinking ahead – sometimes decades ahead – inevitably makes concepts such as trust central. The present study has focused on one of the consequences of trust, namely risk-taking. It is however not inconceivable that a non-trusting citizen will have a different view than his fellow trusting citizen regarding consumption of future welfare altogether. Examples here would be e.g. the extent to which you as an individual rely on society, how much you involve yourself when planning for future needs and who, society or the individual, it is that bears the ultimate responsibility when it comes to precautionary savings for health care.

A connection may also be made to the sustainable consumer, thinking even further ahead and consuming in order to ensure a sustainable future for generations to come. The similarities are many: the shared timespan and the consumption pattern not quite fitting with consumption of regular goods or services. Here, more research is needed: how may these two aspects of consumer behaviour be tied together – consumption of needs after retirement with a financial focus and consumption in order to ensure a stable and sustainable world.

7.9 Suggestions for future research

One area that would be interesting to further explore is the possibility to expand findings from the present study into other parts of the welfare system of states. When responsibility is shifted from state to individual, the consumption pattern arising is bound to rely more on investments for future consumption. To privately finance part of what used to be the sole responsibility of the state is now a very real possibility. This future type consumption could benefit from a more in-depth description regarding e.g. the area of education and health care.

Another area where more research is needed is the connection between involvement and risk-taking. The present study relied on the findings of e.g. Weber (2004) when hypothesising that low emotive involvement would lead to lower levels of perceived riskiness and hence increased risk-taking. The results, however, did not corroborate this hypothesis and an interesting topic for future research could be to better understand the connection between involvement and risk-taking.

A stated possibility is that individuals that are interested in savings (i.e. with a high level of emotive involvement) focus on the possibilities of a high risk-level, not the negative consequences. The feelings of interest and joy could hence be seen as a primer, a setting in which the subsequent risk-taking decision is taken. This is in line with the discussion in Mårtenson (2005) where the construct of consumer risk behaviour is decomposed into risk avoidance (related to negative expectations) and risk willingness (related to rewards and positive expectations).

In this sense, risk avoidance and risk willingness may be connected to the stated difference between the traditional ways to treat the concept of risk within consumer behaviour and within finance. Consumer behaviour, as stated in e.g. Stone and Grønhaug (1993), treats risk as something inherently bad, something to avoid, whereas traditional finance and portfolio theory connects risk with return and emphasizes the possibilities. A future research task could hence be to distinguish between positive and negative visceral cues and see what effect on risk-taking they have.

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APPENDICES

Chapter 5:

Appendix 5.1 Questionnaire in Swedish (omitted variables in grey)

The sent out questionnaire (in Swedish) is reported below. The item number, referring to chapter 5, is given after each question.

BAKGRUND

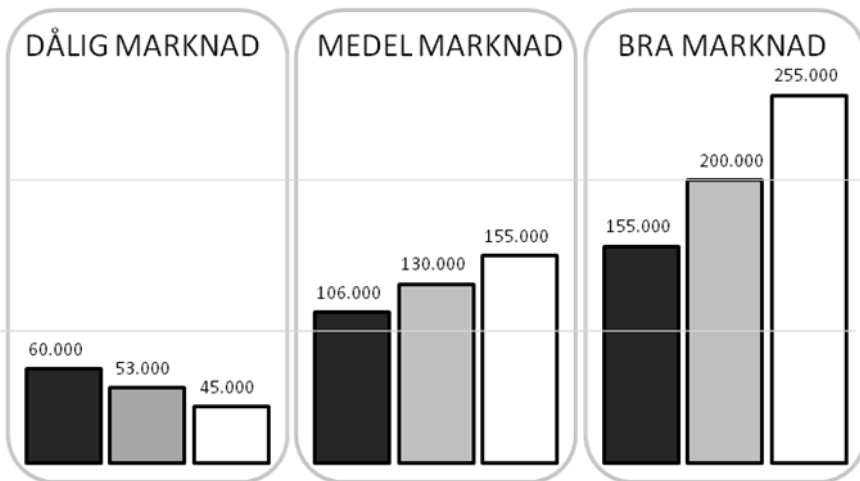
Nedanstående frågor handlar om pensioner och pensionsparande. De behandlar områden som risktagande, förtroende, kunskap och engagemang. Frågorna är dels generella, dvs avsedda att fånga t.ex. din riskvilja när det gäller investeringar rent generellt. De är ibland specifikt inriktade på det svenska statliga pensionssystemet. Grovt sett består det statliga pensionssystemet av två delar: inkomstpensionen och premiepensionen. Inom premiepensionssystemet kan du sedan 2000 själv vara med och välja fonder. Din statliga pension stammar från båda dessa delar och redovisas varje år i "det orange kuvertet". Försök att ha de val du ställs inför inom premiepensionssystemet, dvs ditt val mellan de olika fonderna, i huvudet när du svara på frågorna.

<i>RISKTAGANDE</i>					
	<i>Stämmer inte alls</i>				<i>Stämmer helt och hållet</i>
1. Jag är generellt en person som är villig att ta risker. (item 11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Jag gillar spänningen med att kunna uppnå hög avkastning (item 12)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Jag ser risk som en möjlighet att tjäna pengar (item 13)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Jag föredrar aktier som varierat mycket – där finns en möjlighet till hög avkastning (item 14)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. När jag investerar är hög avkastning det viktigaste – även om det innebär hög risk (item 15)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. När jag investerar ser jag framför mig ett fastställt belopp vid en viss framtida tidpunkt (item 16)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. När jag investerar är en säker avkastning viktig för mig (item 17)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Jag föredrar banksparande – då vet jag säkert hur mycket pengar jag kommer att ha i framtiden (item 18)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. När jag investerar vill jag kunna förutse framtida avkastningar (item 19)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MER OM RISK

Tänk dig att du tänker pensionera dig om tio år. Din pension kommer att bero dels på vilken risk du tar (låg, medel eller hög), dels på hur marknaden utvecklas (dålig, medel eller bra marknad)..

Låt oss ta ett exempel. Rutan med rubriken ”DÅLIG MARKNAD” visar vad som händer med dina pengar om börsen går riktigt dåligt: tar du hög risk (vita stapeln) har du 45.000 kvar, tar du medelhög risk (grå stapeln) har du 53.000 kronor och tar du låg risk (svarta stapeln) har du 60.000. Rutan längst till höger, med rubriken ”BRA MARKNAD” visar på samma sätt vad som händer om marknaden utvecklas riktigt bra: högriskportföljen (vit) ger dig nu 255.000, portföljen med mellanrisk (grå) ger dig 200.000 kronor och portföljen med låg risk (svart) ger dig 155.000 kronor.



	Låg risk	Medium risk	Hög risk
10. Baserat på informationen ovan, skulle du välja en portfölj med hög, mellan eller låg risk? Sätt ett kryss i rutan bredvid det alternativ du väljer. (item 10)		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

19. Tänk dig nu att du skall placera pengar i några av de premiepensionsfonder som finns att välja mellan. I tabellen nedan finns några olika fondtyper angivna. För varje fondtyp finns ett ungefärlig **risktal** angivet: ju högre risktal, desto mer svänger värdet upp och ned. Detta innebär att om börsen går ned sjunker fonder med höga risktal troligen mer än andra fonder, och om börsen går upp ökar de troligen mer än resten.

Hur skulle du välja att fördela pengarna – tänk fritt eller försök att komma ihåg hur du gjorde när du genomförde ditt verkliga premiepensionsval. Markera i högra kolumnen ("vald procentandel") hur stor procentandel du väljer att placera i de olika typerna av fonder. Kolla så att dina procentsatser summerar till 100!

De som inte själv vill välja fonder kommer att få pengarna placerade i Premiesparfonden. Cirka 85% av Premiesparfonden består av aktier och resten av räntebärande tillgångar. Är detta alternativet för dig: sätt ett kryss i rutan under tabellen. (item 9)

Fondtyp	Risktal	Vald procentandel
Räntebärande fonder	5	
Blandfonder (50% aktier, 50% räntebärande placeringar)	10	
Globala aktiefonder	16	
Aktiefonder med inriktning USA	17	
Aktiefonder som täcker enskilda sektorer (t.ex. läkemedel eller teknologi)	18-22	
Svenska aktiefonder	24	
Aktiefonder med inriktning Asien	26	
Aktiefonder med inriktning nya marknader (hög tillväxt)	30	

Jag vill inte välja fonder själv utan vill ha mina pengar i Premiesparfonden (med 85% aktier)

ÅSIKT OM PENSIONSSYSTEMET

	<i>Instämmer inte alls</i>				<i>Instämmer helt och hållet</i>
21. Det statliga svenska pensionssystemet har som främsta mål att bevara min inkomstnivå den dagen jag väljer att gå i pension (item 1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Det statliga svenska pensionssystemet har som mål att ge mig en grundtrygghet – extra sparande kommer att behövas för att bibehålla min inkomstnivå (item 2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FÖRTROENDE

	<i>Instämmer inte alls</i>				<i>Instämmer helt och hållet</i>
11. Det statliga svenska pensionssystemet kommer att ge mig en tillräcklig och stabil inkomstnivå när jag blir pensionär (item 3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Tillräcklig hänsyn till pensionärernas ekonomiska behov är tagna i den svenska statsbudgeten (item 4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. De ekonomiska behoven hos de framtida pensionärerna kan komma som en överraskning – något som kan leda till sänkta framtida pensioner (item 5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Det svenska pensionssystemet är stabilt, och kapabelt att ge en tillräcklig inkomst åt framtida pensionärer (item 6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Det kan komma att bli nödvändigt att göra stora förändringar i den svenska statsbudgeten för att säkra framtida statliga pensioner (item 7)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Jag fruktar att en framtida regering kan komma att prioritera pensionärer lägre – något som kan leda till lägre pensioner (item 8)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>KUNSKAP</i>					
	<i>Mycket dålig</i>		<i>Varken bra eller dålig</i>		<i>Mycket bra</i>
17. Hur skulle du själv bedöma din kunskap om pensioner? (item 24)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Stämmer inte alls</i>				<i>Stämmer helt och hållet</i>
18. Jag har själv gjort flera aktiva pensionsval (item 21)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Jag har gjort ett aktivt val i PPM-valet (item 22)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Jag har öppnat mitt orange kuvert (med uppgifter om inkomst- och premiepension) och tagit del av dess innehåll (item 23)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Instämmer inte alls</i>				<i>Instämmer helt och hållet</i>
23. Jag har en klar bild över hur stor min pension kommer att bli den dagen jag går i pension (item 25)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>40% eller mindre av slutlön</i>	<i>50% av slutlön</i>	<i>60% av slutlön</i>	<i>70% av slutlön</i>	<i>80% eller mer av slutlön</i>
24. Jag tror att min framtida statliga inkomstpension – förutsatt att jag jobbar tills jag är 65 - är i storleksordningen (item 20)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ENGAGEMANG

	<i>Instämmer inte alls</i>				<i>Instämmer helt och hållet</i>
25. För mig är det viktigt att veta hur stor min framtida inkomstpension kommer att bli (item 26)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Jag har mycket att vinna på att ha en god kunskap om min framtida inkomstpension (item 27)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Jag läser ibland artiklar (t.ex. i tidningen) om det svenska pensionssystemet (item 28)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Att bestämma sig för vilket pensionssparande man skall ha är ett beslut som involverar känslor (item 30)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Jag tycker om att fundera över mitt pensionssparande (item 31)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30..Jag tycker om att läsa och ta reda på mer om mitt pensionssparande (item 29)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Jag upplever reell oro när jag tänker på min ekonomiska situation som pensionär (item 32)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BAKGRUNDSINFORMATION

32. Är du man eller kvinna? Kvinna Man

33. Vilket år är du född? 19__

34. Vilket år började du jobba? 19__

35. Hur stor är din nuvarande månadslön (före skatt)

Mindre än 10.000 10.000-20.000 20.000-30.000 30.000-40.000 över 40.000
 Vet ej

36. När planerar du att gå i pension?

Vid 55 Runt 60 Runt 65 Runt 70

(Dvs. tidigaste möjligt)

Appendix 5.2 Test of multicollinearity

Independent variable	R ²	Tolerance	VIF
Trust	0,01	0,99	1,01
Knowledge	0,17	0,83	1,20
Involvement	0,17	0,83	1,20

Appendix 5.3 Reliability of the trust items

Item-to-total analysis (Cronbach's Alpha)

Item	Item-to-total correlation	Cronbach's Alpha if item deleted
General	0,365	0,702
Ability 1	0,549	0,652
2	0,321	0,722
3	0,590	0,635
Willingness 2	0,532	0,635
3	0,387	0,701

Correlation analysis

	General trust	Average ability	Average willingness
General trust	1		
Average ability	0,425	1	
Average willingness	0,175	0,490	1

Appendix 5.4 Reliability of the risk-taking items

Item-to-total analysis (Cronbach's Alpha)

Item	Item-to-total correlation	Cronbach's Alpha if item deleted
General	0,546	0,691
Speculative 1	0,576	0,684
2	0,515	0,694
3	0,581	0,682
4	0,584	0,683
Control (inv.) 1	0,167	0,747
2	0,301	0,725
3	0,231	0,737
4	0,260	0,731
Asset allocation (1)	0,367	0,721
Asset allocation (2), incl. 7 th AP-fund	0,467	0,736
Asset allocation (2), Excl. 7 th AP-fund	0,467	0,736

Correlation analysis

	General question	Speculative average	Control average	Asset alloc. (1)	Ass. alloc. (2) incl. 7 th AP-fund	Ass. alloc. (2) excl. 7 th AP-fund
General question	1					
Speculative average	0,740	1				
Control average	-0,064	-0,025	1			
Asset alloc. (1)	0,473	0,563	-0,045	1		
Ass. alloc. (2) with 7 th AP-fund	0,404	0,488	-0,057	0,478	1	
Ass.alloc (2) ex. 7 th AP-fund	0,480	0,576	-0,079	0,541	1	1

Appendix 5.5 Reliability of the knowledge items

Item-to-total analysis (Cronbach's Alpha)

Item	Item-to-total correlation	Cronbach's Alpha if item deleted
Self-assessed knowledge 1	0,372	0,420
2	0,300	0,465
Familiarity 1	0,085	0,526
2	0,073	0,528
3	0,050	0,530
Corrected knowledge (without age)	0,364	0,420
Corrected knowledge (with age)	0,418	0,392

Correlation analysis

	Self-assessed average	Familiarity average	Corrected knowledge (without age)	Corrected knowledge (with age)
Self-assessed average	1			
Familiarity average	0,024	1		
Corrected knowledge (without age)	0,079	-0,023	1	
Corrected knowledge (with age)	0,123	-0,016	0,719	1

Appendix 5.6 Reliability of the involvement items

Item-to-total analysis (Cronbach's Alpha)

Item	Item-to-total correlation	Cronbach's Alpha if item deleted
Rational involvement 1	0,388	0,637
2	0,456	0,621
3	0,481	0,608
Emotional involvement 1	0,307	0,660
2	0,504	0,600
3	0,577	0,566
Worry-item	0,042	0,734

Correlation analysis

	Rational involvement	Emotional involvement	Worry-item
Rational involvement	1		
Emotional involvement	0,518	1	
Worry-item	0,126	-0,032	1

Appendix 5.7: Factor analysis of the trust items

Item	Factor 1	Factor 2
General trust item	0,804	
Ability 1	0,848	
2		0,696
3	0,778	0,521
Willingness 1		0,817
2		0,690

Appendix 5.8 Factor analysis of the risk-taking items

Item	Factor 1	Factor 2	Factor 3
General	0,823		
Speculative 1	0,861		
2	0,818		
3	0,832		
4	0,817		
Control (inv.) 1		0,551	
2		0,843	
3		0,796	
4		0,867	
Asset allocation (1)	0,573		0,678
Asset allocation (2), incl. 7 th AP-fund			0,972
Asset allocation (2), Excl. 7 th AP-fund			0,972

Appendix 5.9 Factor analysis of the knowledge items

Item	Factor 1	Factor 2	Factor 3
Self-assessed knowledge 1			0,877
2			0,879
Familiarity 1		0,805	
2		0,792	
3		0,548	
Corrected knowledge (without age)	0,927		
Corrected knowledge (with age)	0,926		

Appendix 5.10 Factor analysis of the involvement items

Item	Factor 1	Factor 2
Rational involvement 1		0,804
2		0,743
3	0,795	
Emotional involvement 1		0,465
2	0,883	
3	0,916	
“Worry”-item		0,609

Appendix 5.11: Squared correlation between risk-taking and other constructs

Risk-taking with trust	0,0185
Risk-taking with knowledge	0,0001
Risk-taking with involvement	0,0010

Appendix 5.12 Squared correlation between trust and other constructs

Trust with risk-taking	0,0185
Trust with knowledge	0,0100
Trust with involvement	0,0000

Appendix 5.13 Squared correlation between knowledge and other constructs

Knowledge with risk-taking	0,0010
Knowledge with trust	0,0000
Knowledge with involvement	0,0008

Appendix 5.14 Squared correlation between involvement and other constructs

Involvement with risk-taking	0,0001
Involvement with knowledge	0,0008
Involvement with trust	0,0100

Chapter 6:

Appendix 6:1, Descriptive statistics regarding the perceived aim of the pension system

Response frequencies regarding the perceived aim of the pension system

Alternative	Number of respondents	Percentage	Number of respondents	Percentage
Do not agree at all	404	50%	31	4%
	230	29%	46	5%
	103	13%	75	9%
	50	6%	183	22%
Agree totally	18	2%	507	60%
	805		842	

Respondents that did not know account for the difference between obtained number of responses and the total 909

95% confidence interval for young respondents (defined as born during the 1970's and 1980's) and old respondents (defined as born during the 1940's and earlier) regarding the question "The aim of the state pension system is to preserve level of income" (1 indicates "do not agree", 5 indicates "fully agrees")

	Mean	Lower limit	Upper limit
Young	2,15	1,73	2,58
Old	1,88	1,72	2,04

Appendix 6:2, Descriptive statistics regarding trust (* indicating that scale will be reversed in computations)

"I personally rely on the state pension system to provide a sufficient level of income after retirement" (item 3)

Alternative	Number of respondents	%
Do not agree at all	412	50%
	272	33%
	99	12%
	42	5%
Agree totally	7	1%
	<hr/> 832	

Three questions measuring trust in society's ability to fulfill its obligations

Alternative	Item 4	%	Item 5*	%	Item 6	%
Do not agree at all	269	34%	47	6%	228	29%
	304	39%	92	11%	276	35%
	148	19%	95	12%	175	22%
	43	6%	290	36%	79	10%
Agree totally	17	2%	278	35%	23	3%
	<hr/> 781		<hr/> 802		<hr/> 781	

Item 4: I feel that the financial needs of retired persons are sufficiently budgeted for in the Swedish state budget

Item 5: I fear that future costs of the retired population will come as a negative surprise for a future government, resulting in lower future pensions

Item 6: I would characterise the new state pension system as well thought-through and thus sustainable for generations to come

Two questions measuring trust in society's willingness to fulfill its obligations

Alternative	Item 7*	%	Item 8*	%
Do not agree at all	30	4%	60	8%
	59	8%	135	17%
	142	19%	216	27%
	286	37%	201	25%
Agree totally	249	33%	187	23%
	<hr/> 766		<hr/> 799	

Item 7: It may be necessary to make some major changes in the financial priorities in the state budget in order to ensure financial support to the elderly

Item 8: I fear that a future government will prioritise the retired population lower, resulting in future lower pensions

Appendix 6:3, Descriptive statistics regarding risk-taking

Asset Allocation, Choice of Funds (item 9)

Risk indicator	Number of respondents	Percentage
1	31	5%
2	67	10%
3	261	41%
4	168	26%
5	116	18%
	<hr/>	
	643	

Note: The risk indicator is computed as :

1: portfolio risk lower than 10%

2: portfolio risk between 10% and 14%

3: portfolio risk between 14% and 18% (mean of all respondents 16%)

4: portfolio risk between 18% and 22%

5: portfolio risk over 22%

Asset allocation, high-medium-low (item 10)

Portfolio risk	Number of respondents	Percentage
Low	43	5%
Medium	504	58%
High	318	37%
	<hr/>	
	865	

General Risk Question: "I'm generally a person who is prepared to take risks" (item 11)

	Number of respondents	Percentage
Do not agree at all	64	7%
	159	18%
	321	36%
	271	30%
Agree totally	82	9%
	<hr/>	
	897	

Four questions measuring the importance of “gambling” elements when investing

	Item 12	%	Item 13	%	Item 14	%	Item 15	%
Do not agree at all (i.e. low on gambling characteristics)	109	12%	79	9%	145	17%	153	17%
	200	22%	161	18%	227	26%	247	28%
	289	32%	222	25%	285	33%	274	31%
	226	25%	316	35%	166	19%	159	18%
Agree totally (i.e. high on gambling characteristics)	<u>67</u>	8%	<u>117</u>	13%	<u>44</u>	5%	<u>48</u>	5%
	891		895		867		881	

Item 12: I like to seek thrills in having high returns on investment

Item 13: I see risk as an opportunity to make money

Item 14: For my personal investments I prefer equity funds that have fluctuated significantly in price during the last six months because then there is a potential for a high return on the investment

Item 15: When I invest money, a high return on my investment, even if it means accepting a high risk, is the most important aspect

Four questions measuring the importance of control when investing (note that the four questions were eliminated when forming the compound risk-taking measure)

	A	%	B	%	C	%	D	%
Do not agree at all (i.e. low on control characteristics)	160	18%	23	3%	186	21%	51	6%
	265	30%	145	16%	271	31%	180	20%
	247	28%	275	31%	232	26%	308	35%
	162	18%	292	33%	143	16%	239	27%
Agree totally (i.e. high on control characteristics)	<u>42</u>	5%	<u>156</u>	18%	<u>49</u>	6%	<u>104</u>	12%
	876		891		881		882	

Item 16: When I invest money, a safe return is very important to

Item 17: I prefer putting money into a low-risk fixed income fund because then I know exactly how much money I will have in the future

Item 18: When I invest money, I want to be in control regarding the return

Item 19: When I invest, I plan on having a specific amount at a future date

Appendix 6:4 Correlation matrix

Asset class	Fixed income	Mixed funds	Global equity	US equity	Sector equity	Swedish equity	Asian equity	"New market" equity
Fixed income	1	0,7	0,3	0,3	0,2	0,4	0,1	0,1
Mixed funds		1	0,5	0,5	0,45	0,55	0,4	0,4
Global equity			1	0,75	0,5	0,6	0,5	0,4
US Equity				1	0,4	0,5	0,34	0,3
Sector equity					1	0,5	0,3	0,3
Swedish equity						1	0,25	0,2
Asian equity							1	0,6
"New markets" equity								1

Appendix 6:5 Descriptive statistics regarding knowledge

Three questions measuring familiarity

	Item 21	%	Item 22	%	Item 23	%
Yes (i.e. familiar)	655	74%	731	83%	866	96%
No (i.e. not familiar)	234	26%	155	17%	34	4%
	889		886		900	

Item 21: I have actively made several decisions concerning my pension savings

Item 22: I have made an active choice in the premium pension fund choice

Item 23: I have opened and read the information in the orange envelope (containing information about both income- and premium pension)

Two questions measuring self-assessed knowledge

Alternative	Item 24	%	Item 25	%
Do not agree at all (i.e. low level of self-assessed knowledge)	182	20%	110	12%
	151	17%	195	22%
	177	20%	308	34%
	203	23%	219	24%
Agree totally (i.e. high level of self-assessed knowledge)	180	20%	69	8%
	893		901	

Item 24: How would you yourself grade your knowledge of pensions in general?

Item 25: I have a clear view of the level of my total pension the day I choose to retire

Appendix 6:6 Descriptive statistics regarding involvement

Three questions measuring rational involvement

Alternative	Item 26		Item 27		Item 28	
		%		%		%
Do not agree at all (i.e. low level of rational involvement)	22	2%	22	3%	88	10%
	91	10%	69	8%	133	15%
	214	24%	157	18%	188	21%
	276	31%	295	34%	268	30%
Agree totally (i.e. high level of rational involvement)	287	32%	333	38%	217	24%
	890		876		894	

Item 26: Knowing about my future level of state income pension is important/not important to me

Item 27: I have a lot to lose/little to lose by ignoring the information about my future state income pension

Item 28: I am interested/not interested in reading evaluations and articles about the state pension system

Three questions measuring emotional involvement

Alternative	Item 29	%	Item 30	%	Item 31	%
Do not agree at all (i.e. low level of emotional involvement)	145	17%	276	31%	212	24%
	162	19%	220	25%	223	25%
	213	25%	189	21%	213	24%
	215	25%	131	15%	147	17%
Agree totally (i.e. high level of emotional involvement)	<u>120</u>	14%	<u>71</u>	8%	<u>95</u>	11%
	855		887		890	

Item 29: I really enjoy/ do not enjoy reading and finding out more about my state income pension

Item 30: I like thinking/do not like thinking about my state income pension investments

Item 31: I like to read and learn more/do not like to read and learn more about my state income pension investments

Involvement question measuring how much the individual worries (item 32) Note that the item was removed when performing the computations

Alternative	n	%
Do not agree at all (i.e. does not worry)	145	17%
	162	19%
	213	25%
	215	25%
Agree totally (i.e. worries)	<u>120</u>	14%
	855	

Appendix 6.7

Effect of perceived view of pension system on trust

Dependent variable: Trust

R ²	0,013
F-test	F(1,523) = 3,473 p < 0,032*
Perc. aim 1 (“The state income pension system of today has as main goal to preserve my level of income the day I choose to retire”)	$\beta = 0,004$ t(523) = 0,102 p < 0,919
Perc. aim 2 (“The state income pension system of today has as main goal to provide me with a basic security – extra individual savings will be needed to maintain my level of income	$\beta = 0,114$ t(523) = 2,626 p < 0,009**

Appendix 6.8

Effects of trust on risk-taking

Dependent variable:	(1)	(2)	(3)	(4)
risk-taking				
R ²	0,030	0,076	0,103	0,109
F-test	F(1,411) = 12,555 p < 0,000***	F(1,406) = 16,773 p < 0,000***	F(1,405) = 15,461 p < 0,000***	F(1,404) = 12,354 p < 0,000***
Trust (compound)	$\beta = 0,172$ t(411) = 3,543 p < 0,000***	$\beta = 0,139$ t(406) = 2,881 p < 0,004**	$\beta = 0,115$ t(405) = 2,395 p < 0,017*	$\beta = 0,102$ t(404) = 2,097 p < 0,037*
Income		$\beta = 0,218$ t(406) = 4,525 p < 0,000***	$\beta = 0,189$ t(405) = 3,915 p < 0,000***	$\beta = 0,192$ t(404) = 3,978 p < 0,000***
Gender (1=male, 2=female)			$\beta = -0,168$ t(405) = - 3,454 p < 0,001**	$\beta = -0,173$ t(404) = - 3,574 p < 0,000***
Age				$\beta = -0,080$ t(404) = - 1,680 p < 0,094

* indicates significance on the 5%-, ** on the 1% - and *** on the 0,1%-level

Appendix 6.9

Effects of trust sub-parts on risk-taking

Dependent variable: risk-taking	(1)	(2)	(3)	(4)
R ²	0,031	0,083	0,108	0,115
F-test	F(1,409) = 5,426 p < 0,001**	F(1,404) = 9,159 p < 0,000***	F(1, 403) = 9,776 p < 0,000***	F(1,402) = 8,665 p < 0,000***
Trust (general question)	$\beta = 0,039$ t(409) = 0,811 p < 0,418	$\beta = 0,022$ t(404) = 0,461 p < 0,645	$\beta = 0,016$ t(403) = 0,339 p < 0,734	$\beta = 0,016$ t(402) = 0,346 p < 0,730
Trust (willingness)	$\beta = 0,172$ t(409) = 3,291 p < 0,001**	$\beta = 0,143$ t(404) = 2,768 p < 0,006**	$\beta = 0,124$ t(403) = 2,409 p < 0,016*	$\beta = 0,121$ t(402) = 2,355 p < 0,019*
Trust (ability)	$\beta = 0,041$ t(409) = 0,778 p < 0,437	$\beta = 0,036$ t(404) = 0,706 p < 0,481	$\beta = 0,027$ t(403) = 0,542 p < 0,588	$\beta = 0,012$ t(402) = 0,232 p < 0,817
Income		$\beta = 0,214$ t(404) = 4,435 p < 0,000***	$\beta = 0,186$ t(403) = 3,847 p < 0,000***	$\beta = 0,189$ t(402) = 3,899 p < 0,000***
Gender (1=male, 2=female)			$\beta = -0,163$ t(403) = - 3,3363 p < 0,001**	$\beta = -0,169$ t(402) = - 3,486 p < 0,001**
Age				$\beta = -0,081$ t(402) = - 1,697 p < 0,091

* indicates significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Appendix 6.10

Effects of trust on risk-taking, perceived aim of pension system controlled for

Dependent variable:	(1)	(2)	(3)	(4)
Risk-taking				
R ²	0,058	0,098	0,125	0,131
F-test	F(1,357) = 7,369 p < 0,000***	F(1,354) = 9,588 p < 0,000***	F(1, 353) = 10,122 p < 0,000***	F(1,352) = 8,831 p < 0,000***
Trust (compound)	$\beta = 0,175$ t(357) = 3,359 p < 0,001**	$\beta = 0,142$ t(354) = 2,762 p < 0,006**	$\beta = 0,117$ t(353) = 2,269 p < 0,024*	$\beta = 0,103$ t(352) = 1,970 p < 0,050
General view (preserve income)	$\beta = -0,109$ t(357) = - 2,123 p < 0,034*	$\beta = -0,094$ t(354) = -1,848 p < 0,065	$\beta = -0,098$ t(353) = - 1,786 p < 0,075	$\beta = -0,086$ t(352) = - 1,715 p < 0,087
General view (basic security)	$\beta = 0,107$ t(357) = 2,067 p < 0,039*	$\beta = 0,105$ t(354) = 2,057 p < 0,040*	$\beta = 0,087$ t(353) = 0,542 p < 0,085	$\beta = 0,091$ t(352) = 1,804 p < 0,072
Income		$\beta = 0,207$ t(354) = 4,055 p < 0,000***	$\beta = 0,177$ t(353) = 3,469 p < 0,001**	$\beta = 0,178$ t(352) = 3,496 p < 0,001**
Gender (1=male, 2=female)			$\beta = -0,173$ t(353) = - 3,340 p < 0,001**	$\beta = -0,179$ t(352) = - 3,451 p < 0,001**
Age				$\beta = -0,075$ t(352) = - 1,484 p < 0,139

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Appendix 6.11

Effects of trust on risk-taking, knowledge and involvement controlled for

Dependent variable: Risk-taking	(1)	(2)
R2	0,084	0,175
F-test	F(1,363) = 12,246 p < 0,000***	F(1,356) = 12,561 p < 0,000***
Trust (compound)	$\beta = 0,155$ t(363) = 3,074 p < 0,002**	$\beta = 0,095$ t(356) = 1,917 p < 0,050*
Involvement (compound)	$\beta = 0,118$ t(363) = 2,141 p < 0,033**	$\beta = 0,168$ t(356) = 3,081 p < 0,002**
Knowledge (compound)	$\beta = 0,184$ t(363) = 3,342 p < 0,001**	$\beta = 0,196$ t(356) = 3,597 p < 0,000***
Income		$\beta = 0,164$ t(356) = 3,334 p < 0,001***
Gender (1=male, 2=female)		$\beta = -0,148$ t(356) = -2,981 p < 0,003**
Age		$\beta = -0,176$ t(356) = -3,350 p < 0,001**

* indicating significance on the 5% - and *** on the 0,1% -level

Appendix 6.12

Effects of trust on risk-taking, involvement and subsets of knowledge controlled for

Dependent variable: Risk-taking	
R ²	0,187
F-test	F(1,347) = 9,952 p < 0,000***
Trust (compound)	$\beta = 0,068$ t(347) = 1,331 p < 0,184
Involvement (compound)	$\beta = 0,126$ t(347) = 2,128 p < 0,034*
Knowledge (familiarity)	$\beta = 0,132$ t(347) = 2,503 p < 0,013*
Knowledge (selfassessed)	$\beta = 0,183$ t(347) = 2,722 p < 0,007**
Knowledge (actual)	$\beta = 0,049$ t(347) = 1,008 p < 0,314
Income	$\beta = 0,133$ t(347) = 2,623 p < 0,009**
Gender	$\beta = -0,151$ t(347) = -2,994 p < 0,003**
Age	$\beta = -0,194$ t(347) = -3,487 p < 0,001**

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Appendix 6.13

Effects of trust on risk-taking, knowledge and subsets of involvement controlled for

Dependent variable: Risk-taking	
R ²	0,204
F-test	F(1,355) = 12,970 p < 0,000***
Trust (compound)	$\beta = 0,062$ t(355) = 1,238 p < 0,216
Knowledge (compound)	$\beta = 0,161$ t(355) = 2,954 p < 0,003**
Involvement (rational)	$\beta = -0,056$ t(355) = -1,104 p < 0,270
Involvement (emotional)	$\beta = 0,260$ t(355) = 4,744 p < 0,000***
Income	$\beta = 0,165$ t(355) = 3,402 p < 0,001**
Gender	$\beta = -0,109$ t(355) = -2,171 p < 0,031*
Age	$\beta = -0,169$ t(355) = -3,263 p < 0,001**

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Appendix 6.14

Effects of trust on risk-taking, knowledge controlled for and effect of knowledge as a moderating variable assessed

Dependent variable: Risk-taking	
R ²	0,08
F-test	F(1,368) = 15,972 p < 0,000***
Step 1	
Trust (z)	$\beta = 0,149$ t(368) = 2,977 p < 0,003***
Knowledge (z)	$\beta = 0,229$ t(368) = 4,566 p < 0,000***
Step 2	
Trust (z)	$\beta = 0,152$ t(367) = 2,973 p < 0,003**
Knowledge (z)	$\beta = 0,230$ t(367) = 4,570 p < 0,000***
Trust x knowledge	$\beta = -0,015$ t(367) = -0,302 p < 0,763
Increased R ²	0,0

Appendix 6.15

Effects of trust on risk-taking, subsets of knowledge controlled for and moderating effect of the subsets of knowledge assessed

Dependent variable: Risk-taking

Familiarity (FA)		Self-assessed knowledge (SK)		Factual knowledge (FK)	
R ²	0,072	R ²	0,084	R ²	0,027
F-test	F(1,410) =15,999	F-test	F(1,405) =18,699	F-test	F(1,365) =5,143 p = 0,006**
Step 1		Step 1		Step 1	
Trust (z)	$\beta = 0,154$ t(410) = 3,216 p < 0,001**	Trust (z)	$\beta = 0,129$ t(405) = 2,672 p < 0,008**	Trust (z)	$\beta = 0,165$ t(365) = 3,179 p < 0,002**
FA (z)	$\beta = 0,208$ t(410) = 4,347 p < 0,000***	SK (z)	$\beta = 0,239$ t(405) = 4,942 p < 0,000***	FK (z)	$\beta = 0,035$ t(365) = 0,682 p < 0,496
Step 2		Step 2		Step 2	
Trust x FA	$\beta = -0,011$ t(409) = -0,233 p < 0,816	Trust x SK	$\beta = -0,010$ t(404) = -0,204 p < 0,838	Trust x FK	$\beta = -0,028$ t(364) = -0,528 p < 0,598
Incr. R ²	0,000	Incr. R ²	0,001	Incr. R ²	0,001

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Appendix 6.16

Effects of trust on risk-taking, involvement controlled for and effect of involvement as a moderating variable assessed

Dependent variable: Risk-taking	
R ²	0,065
F-test	F(1,405) = 13,984 p < 0,000***
Step 1	
Trust (z)	$\beta = 0,173$ t(405) = 3,589 p < 0,000***
Involvement (z)	$\beta = 0,194$ t(405) = 4,042 p < 0,000***
Step 2	
Trust (z)	$\beta = 0,179$ t(404) = 3,645 p < 0,000**
Involvement (z)	$\beta = 0,199$ t(404) = 4,092 p < 0,000***
Trust x involvement	$\beta = -0,033$ t(404) = -0,302 p < 0,763
Increased R ²	0,0

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Appendix 6.17

Effects of trust on risk-taking, subsets of involvement controlled for and moderating effect of the subsets of involvement assessed

Dependent variable: risk-taking			
Emotive involvement (EI)		Rational involvement (RI)	
R ²	0,115	R ²	0,028
F-test	F(1, 409) = 26,544	F-test	F(1, 406) = 3,939
Step 1		Step 1	
Trust (z)	$\beta = 0,141$ t(408) = 3,004 p < 0,003**	Trust (z)	$\beta = 0,155$ t(406) = 3,106 p < 0,002**
EI (z)	$\beta = 0,294$ t(408) = 6,276 p < 0,000***	RI (z)	$\beta = -0,039$ t(406) = -0,789 p < 0,431
Step 2		Step 2	
Trust x EI	$\beta = -0,024$ t(408) = -0,496 p < 0,620	Trust x RI	$\beta = -0,005$ t(405) = -0,093 p < 0,926
Increased R ²	0,00	Increased R ²	0,00

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Appendix 6.18

Effect of trust on risk-taking, knowledge and involvement controlled for and moderating effect of both knowledge and involvement assessed

Dependent variable: Risk-taking	
R ²	0,092
F-test	F(1,363) = 12, 246 p < 0,000***
Step 1	
Trust (z)	$\beta = 0,155$ t(363) = 3,074 p < 0,002**
Involvement (z)	$\beta = 0,118$ t(363) = 2,141 p < 0,033*
Knowledge (z)	$\beta = 0,184$ t(363) = 3,342 p < 0,001**
Step 2	
Trust x Involvement	$\beta = 0,007$ t(361) = 0,134 p < 0,894
Trust x Knowledge	$\beta = -0,023$ t(361) = -0,418 p < 0,676
Increased R ²	0,0

* indicating significance on the 5%-, ** on the 1%- and *** on the 0,1%-level

Appendix 7:1 Regression with perceived aim of pension system as dependent variable (“*The state income system of today has as main goal to provide a basic security – extra individual savings will be needed to obtain a pension level close to the level of final salary*”)

	Pension view (basic security)
R2	0,013
F-test	5,571**
Gender (men =1, women=2)	-0,174 (-2,173)*
Income	0,067 (2,044)*
Age	0,001 (0,0272)

Appendix 7:2

Perceived aim of pension system	Risk-taking average	Standard deviation
Male	3,09	0,7
Female	2,74	0,58
Test for equality of means (equal variance not assumed)	t-value 6,310***	

Income	n	Risk-taking average
Under 10.000 SEK/month	21	2,60
10.000 - 20.000 SEK/month	38	2,92
20.000 - 30.000 SEK/month	131	2,83
30.000 - 40.000 SEK/month	153	2,97
Over 40.000 SEK/month	213	3,14

Perceived aim of pension system	Risk-taking average	Standard deviation
Monthly income less than 20.000 (2 lowest groups above)	2,80	1,14
Monthly income above 40.000	3,14	0,55
Test for equality of means (equal variance not assumed)	t-value -2,215*	