

Norwegian consumers' ability to make optimal financial decisions and save for retirement - A behavioural economic perspective

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ABSTRACT

The pension system in Norway has been challenged since the implementation of pension reforms in 2011. In line with the expected increase in the future pension burden, the government's intention is to build up an economic and social sustainable pension system, motivate people to continue working and provide satisfactory income distribution. The main focus of my thesis is the aspect of the pension reforms that raised huge controversy and resistance among employees in Norway. A completely reformed occupational pension system is supposed to go into effect in 2014 and that might result in substantial shift from defined benefit to defined contribution scheme. That further involves active participation of employees in retail investment market and eventually managing investment portfolio on their own. Are they prepared to be independent players in this market and how successful in making decisions are the aspects I have tested in my thesis.

Experimental results are not so promising. The key findings:

- Responders struggle to make optimal investment decisions. Male, self-employed, wealthier, higher educated and numerate individuals have greater chances to select optimal choice
- Participants have been influenced by behavioural biases and framing effects
- People are not confident in financial industry and they are quite insecure in retirement income adequacy
- Responders tend to be risk averse, seek to minimise losses rather than maximise gains

Government regulative of investment retail market and strategic cooperation with the employers could make better investment environment and facilitate successful implementation of pension reforms.

Key words: Pension reforms, Decision making, Investments, Risk, Behavioural biases

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1. INTRODUCTION

Norway is one of the countries going through intensive pension reforms. Funded pension programs controlled by the private sector become more and more essential in delivering retirement income in many countries. As a result ,privately managed pension assets will play an important role in financial markets, notably as a source of long-term savings.(The Organisation for Economic Co-operation and Development 2012)

The expected increase in the future pension burden is caused by higher life expectancy and by generations born in the years after the Second World War. These generations are now reaching the age of retirement. With fewer active workers financing larger share of retirees, premium payments become insufficient to cover increased pension expenses. That's why policy makers see pension reforms inevitable. Based on the latest predictions Norway's insurers need to build over NOK 50 billion additional reserves in coming years to cover for increasing life expectancy. Long term projections by Statistics Norway predict increase in life expectancy over 86 years by 2050 (Reuters, March 2013).

What does implementation of pension reform involve and why are people in Norway concerned about the same? The greater weight on participants owns ability to make retirement saving decisions is the main issue of the following reforms. Such a policy of transferring the responsibility for retirement saving from the state to individuals places greater demands on consumers' capacity to plan for their pensions.

The risk employees are exposed to in the new pension arrangements is the main obstacle and reason why the pension reforms got bad publicity and was criticized among people in Norway.

Introduced more than a decade ago, pension reforms in Norway caused confusion and some controversy. Norwegians became aware of possible effects and importance of their own decisions. Retirement income adequacy is uncertain if one is not able to select optimal fund choices. That just says how important transparency of the investment retail market is for potential investors.

According to the fourth Consumer Markets Scoreboard 2010, market for the “investments, pensions and securities” ranks worst out of fifty consumer markets for overall market

performance; worst for ease of comparing the products and services of different suppliers, worst in trust that providers will respect consumer protection rules; fourth worst in experiencing problems and worst in overall satisfaction. The financial environment has evolved so much that consumers are not well prepared to make sound decisions about increasingly complex retail financial products.(Chater et al. 2010)

Why do people keep being trapped, tricked and fooled by financial institutions? Is it possible not to make any mistake and always come up with the optimal investment decision? How do you explain irrational behaviour and whether behavioural biases always lead to failure? Finding the answers to all these questions and many other related was my motivation to analyse and identify factors important in decision making process.

In an era of market improvements and intensive competition the financial industry ignores the most important link in the chain – the consumer. As a result people are left alone in financial turmoil. Today, individuals are expected to be ‘homo-economicus’ in order to overcome financial traps. ‘Econs’ choose unfailingly well and fits the picture of human beings offered by economists(Thaler & Sunstein 2008).

The purpose of my thesis is to investigate decision making processes of consumers in retail investment market. The objectives were threefold:

- to obtain experimental evidence regarding behavioural biases and cognitive constraints that most influencing consumer decision making;

-to test for the general knowledge about saving products;

- to test for the risk attitude in different frames.

The final results are supposed to give the answers to who is prone to make mistakes in selecting the optimal investments and what are the main reasons for choosing sub-optimal decisions.

- ❖ The pension reform, as currently proposed, would introduce hybrid pension plans that appear to be defined contribution (DC).That involves transferring retirement saving risk from employer to plan member. In order to better understand each of the current

pension schemes, I found it necessary to briefly introduce the pension system in Norway. This will be subject of the next chapter.

- ❖ Potential investors follow intuition when making decisions. They are led by big letters, sweet bankers' talks and poor neighbour advices. Even well informed and numerate consumers fail to make an optimal decision that just proves existence of behavioural biases. The standard economic theory over-simplified human behaviour in making decisions, but behavioural approach opened new insights identifying the most common obstacles in selecting optimal decisions. Several studies agreed upon: choice and information overload, unstable or undefined preferences, heuristic decision-making, framing effects and investment menu design, myopic behaviour, procrastination and inertia, and overconfidence. My intention was to observe the results from web survey and if there is a pattern in answering that indicates deviations from optimal decisions, than it could be a sign of irrational behaviour.

2. BACKGROUND

2.1. Pension system in Norway

The Norwegian pension reform was initially announced in 2001 when the government set up a special pensions commission consisted of politicians and independent experts. The Parliament of Norway adopted the new regulations in the spring of 2009. The reform is supposed to be fully implemented in 2025. The new regulations of the new "Flexible Retirement Act" have been implemented gradually since 2010. The reason for introducing new regulations in the retirement plans schemes was to be able to maintain a sustainable pension system in order to handle an increase in the number of retired Norwegians/higher life expectancy, while at the same time less children are born. The pension reform is therefore aimed to encourage more people to stay for a longer period in the workforce after retirement age.¹

The Government pension fund Norway was valued at NOK 154,9 billion at the end of the 2012.(Statistics Norway 2012).

Statistical table provides good insight of the structure of pension fund assets in Norway.

	2nd half year 2012		2nd half year 2002	
	Million kroner	Percentage of total assets	Million kroner	Percentage of total assets
Deposits in total	8 759	5.7	144	0.1
Commercial papers	0	0.0	3 742	2.7
Bonds ¹	53 272	34.4	25 187	18.5
Shares and other equity	90 438	58.4	22 265	16.4
Loans ¹	0	0.0	80 578	59.2
Other financial assets	2 460	1.6	4 220	3.1
Non-financial assets	0	0.0	0	0.0
Total assets	154 930	100.0	136 136	100.0

¹ The Government Pension Fund - Norway's mandatory deposits with the Treasury was discontinued on 29 December 2006. The implication of this is a reduction in loans of NOK 101,8 billion and a conversion of loans of NOK 10 billion to bonds.

Figure 2.1 Government Pension Fund-Balance Sheet (Source: Statistics Norway 2012)

¹ Source: <http://www.nav.no/Pensjon/Tjenestepensjoner>

The Norwegian pension system consists of three parts: National Insurance scheme, different occupational schemes and various forms of savings especially for retirement.

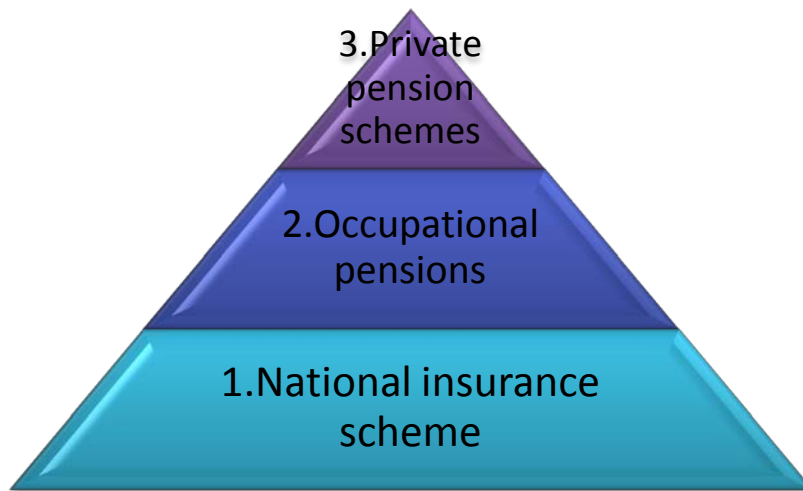


Figure 2.2: The Norwegian pension system structure

National Insurance Scheme was introduced in 1967 and represents mandatory insurance and pension scheme managed by Norwegian Labour and Welfare Service (NAV). The financing of the state pensions of National Insurance is based on a "Pay as you go" system. Today's work force is making the payments for the current retirees. When National Insurance was introduced it was 3,9 actively employed person per pensioner. This ratio today is 2,6 and it is predicted that in 2050 will be 1,8. That implies major rise in National Insurance costs and questions sustainability of the system without radical pension reforms.²

Occupational pensions were established by employers to provide pension and related benefits for their employees. In 2006 the Mandatory Occupational Pension (called "Obligatorisk tjenestepensjon" or OTP in Norwegian) was introduced in Norway. Before this, occupational pensions had been mandatory in the public and optional in private sectors. It means that a large proportion of private sector employees were not part of an occupational pension scheme. According to Statistics Norway out of 2,540,000 employees in Norway less than 2,192,000 had an occupational pension at the end of 2011. Approximately 1,375,000 employees who had an occupational pension worked in private sector. Insurance companies with the DNB liv and Storebrand are the main actors in the private sector market. The individual companies decide whether it will be a contribution scheme or a scheme based on the putting part of the employee's salary aside for them to have at retirement. The premium and the pension costs for the OTP pension scheme are paid by the employer. The minimum contribution is 2% of the salary funds.³

Private pension schemes; It is voluntary if someone wants to enter into savings or pension agreement in order to make pension larger. It is possible for an individual to save in unit trust

^{2,3}[https://www.spk.no/Global/Arsberetninger/%C3%A5rsberetning%202011/SPK%20in%20brief the%20pension%20system.pdf](https://www.spk.no/Global/Arsberetninger/%C3%A5rsberetning%202011/SPK%20in%20brief%20the%20pension%20system.pdf)

scheme enter into an individual private pension agreement with a bank or insurance company.⁴

2.2. Pension schemes in Norway

Employees in public sector have been covered by occupational pension for several years. A new legislation from 2006 regulated a mandatory occupational pension for the employees also in private sector. Occupational pension are either defined benefit schemes, where the pension for the employee is fixed, or defined contribution schemes, where the payment to the fund is a fixed percentage of the personal income. In private sector you can have both, but in public sector there are only defined benefit schemes. Defined benefit schemes(DB) can be established in life insurance companies or in pension funds, while defined contribution schemes(DC) also can be established in banks and mutual funds management companies.(Broadbent et al. 2006)

2.2.1. Defined benefit schemes

A defined benefit scheme is a pension scheme where the benefits payable to the employee on retirement are determined by the use of a formula, either alone or in combination with a guaranteed minimum amount payable. (Broadbent et al. 2006)

An employee's retirement benefits are calculated by averaging the employee's earnings during the last few years of employment (or, alternatively, averaging an employee's earnings for somebody's entire career), taking a specified percentage of the average, and then multiplying it by the employee's number of years of service.⁵

The risk of a defined benefit scheme to provide an adequate income in retirement is borne by the employer. In Norway, the payment guaranties a pension on a certain level in addition to National insurance, or that the payment is a fixed percentage level of their salary. You can have defined benefit schemes in life insurance companies or in pension funds.(Statistics Norway 2012)

2.2.2. Defined contribution schemes

A defined contribution scheme is a pension scheme where the benefits are defined exclusively in terms of the level of the fund built up from the contribution made over the employee's

⁴https://www.spk.no/Global/Arsberetninger/%C3%A5rsberetning%202011/SPK%20in%20brief_the%20pension%20system.pdf

⁵<http://www.axa-equitable.com/retirement/understanding-defined-benefit-plans.html>

working life. The increases in value of these funds depend of the yield on the investment and the saving period. The entire risk of the scheme to provide an adequate income in retirement is thus borne by the employee (*source: Eurostat*). In 2001, companies were allowed to establish defined contribution schemes with tax deduction. Defined contribution schemes can be established in life insurance companies, pension funds, banks and mutual funds management companies.(Tapia & Yermo 2007)

The transition from DB to DC plans in private sector pensions is shifting investment risk from the corporate sector to households. Households are therefore becoming increasingly exposed to financial markets, and retirement income may be subject to greater variability than before. That means in DB employer promises to pay you a certain amount at retirement and is responsible for making sure that there are enough funds in the plan to eventually pay out this amount, even if plan investments don't perform well. DC plan implies no obligation by employer for specified payment amount at retirement. Instead, the amount you receive at retirement will depend on the investments you choose and how those investments perform.(Tapia & Yermo 2007)

One could ask why traditional DB pension plans are gradually losing their dominance in the occupational pension systems of many countries. Norway is still in early stage of reforming pension system and DB plans are still dominant, so we can reformulate the question what are the factors influencing the shifts from DB to DC plans in future?

Factors such as increased workforce mobility associated with demographic and industrial change appear to have been important drivers of the shift away from DB pension plans. All else being equal, mobile workers have less of a preference for DB pensions mostly because benefits of this plan are not portable from one employer to another. Unless the DB pension plan is portable, which is uncommon in private sector plans, the backloading of DB plan benefits is huge for employees who change employers during their working career. Blake (2003) estimated the accrual losses from DB pension schemes under different assumptions. He found that a typical U.K. worker who changed the job around 6 times during their working career would suffer a loss of 25-30 per cent of the full service benefit they would have received had they remained with the same employer throughout their career (Bodie, et.al, 1985).

While the evolution towards DC pension plans can be beneficial for both employees and employers, there is a large body of evidence to suggest that there is substantial inertia and

myopia regarding retirement decisions, which may eventually threaten the capacity of DC plans to provide retirement security. These are just some of the behavioural biases that have great impact on decision making and that will be of the interest through my thesis.

For example, some studies have shown that in some DC plans employees are generally investing too heavily in their own company's stock. Furthermore, employees tend to remain in a plan's default option even if it does not provide sufficient portfolio diversification. Finally, employees in DC plans may not have an adequate number of investment options to create a portfolio suited for their investment goals, risk tolerance and constraints. Retirement security for some households is threatened by a lack of participation, low contribution rates, suboptimal asset allocation and early withdrawals. All those obstacles easily might be rooted in well documented behavioural biases and lack of basic financial literacy. Thus it is important for policymakers to address these issues. The experience of some institutional investors in emerging markets that created mandatory private pension funds may also be relevant for other countries moving from DB to DC schemes.(Broadbent et al. 2006)

3. BEHAVIOURAL ECONOMIC APPROACH

This chapter will serve as a theoretical framework through the evidences from Behavioural Economics (BE) literature related to consumer decision making in retail finance.

Since the main goal of this research is identification of the most vulnerable categories of consumers and factors that make them sensitive towards complexity of Investment retail products, I will stand out the most critical behavioural factors already observed in BE literature and later through my hypothesis shed light on some specifics.

Bringing together psychology and financial economics, behavioural finance approach stands out numerous biases. Exactly those ones in most cases are the reasons for the deviations from rational behaviour. Better understanding and higher level of awareness of behavioural biases might lead to less mistakes and better investment decisions.

3.1. Prospect theory and conventional weaknesses

Based on conventional economics, individuals would invest and hold a portfolio of financial assets with a risk-return combination consistent with their investment horizon, degree of risk aversion and the portfolio of other assets they hold, including their human capital. Emotions and other extraneous factors wouldn't influence people, they are typically rational and self-interested. In other words, people would be perfectly sensible, calculating machines.(Tapia & Yermo 2007)

Behavioural economists, on the other side, observe how people actually behave and usually their findings show that human beings are irrational. Rational economics stands on the firm foundation but some of the assumptions –people always make the best decisions, the mistakes are less likely when the decisions involve a lot of money, the market is self-correcting-can clearly lead to disastrous consequences.(Ariely 2010)

It is important to understand behavioural finance as supplement to standard theory of finance, as it is comparison of prospect theory with respect to the expected utility theory. Understanding the prospect and expected utility theory underlies real investors behaviour therefore I'm standing out some main features where these two theories have different views (Hogarth 1987).

Table 3.1: Prospect Theory vs. Expected Utility Theory (Hogarth 1987)

Prospect theory	Expected Utility theory
<p>1. Due to complexity of choice problems and decision maker's limited information-processing ability, preferences are not consistent. The way of presentation of alternatives strongly influences individual's decision.</p>	<p>1. Decision maker can value the alternatives on the attractiveness of each one, preferences are consistent, ordered, not influenced how the alternatives are presented to the decision maker</p>
<p>2. Decision makers do not always choose the alternative with highest utility result, decision weights are not linear, people give unlikely events more weights than they deserve.</p>	<p>2. The alternatives are determined by multiplying expected outcome by their probabilities (e.g., a 1% chance of winning \$1000 is better than a 99% chance to win \$10)?</p>
<p>3. People have tendency to view outcome from a subjective reference point. Decision makers make choices as deviation from current reference and they are more sensitive to losses than they are to gains.</p>	<p>3. Evaluation of alternatives is made from a single, unchanging reference point that is based on comprehensive understanding of different states of wealth. Decision makers make choices based on the change of the final outcome not whether the change is a gain or a loss.</p>
<p>4. Decision makers are risk averse when making decisions among alternatives that result in gains, and risk seeking when making decisions among alternatives that result in losses.(Figure 3.1)</p>	<p>4. Investors are risk averse. Utility function is concave downward for all levels of wealth.</p>

I would give a bit more space to the last point since this principle has large implications and evidences in real behaviour of investors.

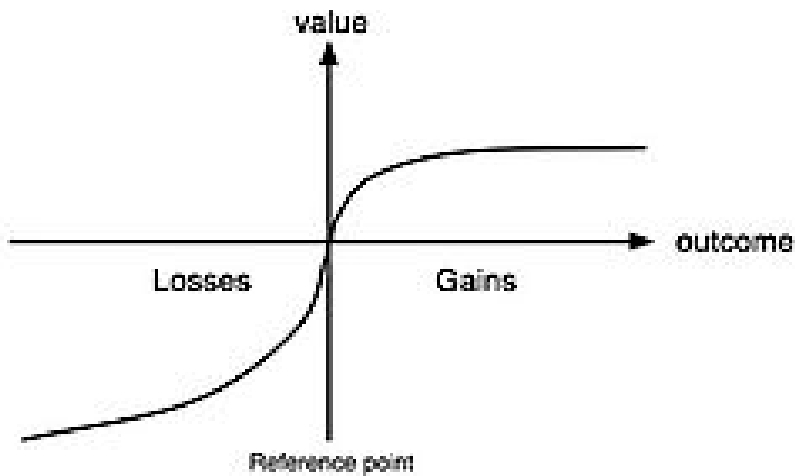


Figure 3.1: Kahneman & Tversky's Value function (Kahneman & Tversky 1979)

In summary, value function as essence of prospect theory is i) determined on deviations from the reference point, (ii) concave for gains and convex for losses, (iii) steeper for losses than for gains. (Kahneman & Tversky 1979)

Those properties of value function actually depict big part of irrational behaviour. Value function shows sharp asymmetry in approaching the gains and losses, weighting the losses about twice as heavily as gains (losing the 1\$ is twice as painful as the pleasure of gaining 1\$). This phenomenon is called **loss aversion**. It can be also expressed as a tendency for taking the risk when individual is confronted with losses. (Kahneman & Tversky 1979) Loss aversion also confirms that the decision making is sensitive to the way the choices are described (more about framing effects in following sections).

In reality investment decision process is followed by several obstacles and behavioural challenges. Many individuals are not particularly good at the retirement savings planning either because they lack the necessary cognitive ability to solve the optimization problem, because they have insufficient will power to execute it, or even sometimes because they are overconfident. Surveys and empirical researches show that individuals do not follow the traditional assumptions about rational economic decision-making. Investors can and do try to maximize self-interest but not rare results are not optimal. The regularly observed deviations

in process of making decision violate the assumptions of conventional economics. They are essence and central part of the interests of behavioural economics. My intention is to detect those triggers of non-logical decisions, analyse them and through the results of my research identify the main reasons of errors in investment decision making. Growing body of evidences indicates and several analyses agreed about the main obstacles - choice and information overload, unstable or undefined preferences, heuristic decision-making, framing effects and investment menu design, myopic behaviour, procrastination and inertia, and overconfidence.(Tapia & Yermo 2007)

These are most frequently represented factors in literature served to explain consumer's decisions and deserve full attention of researchers since they are reasons of irrational and sub-optimal decisions. The special place in shaping the investment choices has level of financial literacy and numerical ability therefore I would stand out this point as well.

After thoroughly describing above mentioned behavioural determinants, we will have general picture of investment decision maker. Further we will see how EU study(Chater et al. 2010) see typical European investment consumer, which can be good benchmark for the results of my survey and guide to final conclusions.

3.2. Choice and information overload

Consumer's determination often calls into the question with the increased range of possible investment options.

Most of the research analyses confirmed that extending the range of the investment alternatives decreases contribution rates as a result of information overload and complexity of given options. As the result, default option stands out as easiest way out among consumer's solutions. Tapia and Yermo (2007) thoroughly analysed advantages and disadvantages of simplified investment packages vs. packages with many investment options through case study among two groups of countries.

They analysed Australia and Sweden as countries with almost unlimited investment options and Latin American (Chile, Mexico, Peru), Central and Eastern European (Estonia, Hungary, Latvia and Slovakia) and Hong Kong as an examples of countries with more limited range of choices.

Large international evidence together with this study have just confirmed that increasing the investment alternatives in the pension plan design creates information overload which further results with the default option as investor's choice. Percentages of individuals who made active choice is significantly greater in Chile (around 74%) and especially in Central and Eastern European countries (over 85%) than Australia and Sweden(less than 10%).(Tapia & Yermo 2007)

Agnew and Szykman (2004) went further and looked at the information complexity through more than one perspective including number of investment choices as well. They analysed presentation of products, number and similarity between investment options.

Actually many variables can contribute overload. Investors experience less information overload when it comes to asset allocation when information about investment alternatives is presented in easier way to obtain and evaluate. That means presentation of information can be one of the important reasons causing the possible information overload.

Another source is already mentioned in context of number of investment choices influencing decreasing contribution rate, now affecting active investment choice. Tendency towards the investment default can be explained within Sweden's public pension private accounts characterised with extreme number of choices. Over 80% of new participants in Sweden can be described and put into category of consumers with' path of least resistance '. (Agnew & Szykman 2004)

The similarity between investment options might be third potential source of information overload. Namely, in cases where participants choose among several vendors, it is high of possibility that the vendors offer similar types of funds. Similarities between offered funds make harder for individual to distinguish them which cause overload and obstacle for making the optimal decision.(Agnew & Szykman 2004)

Results from above mentioned research showed that plan design can help some of the investors. The research analysis also observed that individuals with higher financial knowledge felt less information overload when given fewer investment choices while low educated participants have been overwhelmed regardless of the plan features, which indicates financial literacy as very important in decision making.

Since the issue of active choices, default option and pension plan design is strongly related with procrastination and inertia it will be analysed in some of the following sections.

Information overload is just one of the features of investment retail market that with many other (hidden ,equivocal information etc.) contributes to ‘complexity and fogginess’ of products provided by this market.(Chater et al. 2010)

Carlin (2009) discussed issues related to retail financial markets pointing out *deliberately creation of complexity prices*. There are several ways of making prices more complex. Decomposing the prices through direct fees and indirect involuntary surcharges makes confusing to compute the actual price of the product. Different method of disclosure (new technical language for disclosures of the prices) makes prices difficult to compare. Leaving out important information in a disclosure blurs the real picture of the products. For example, low-price mutual fund stands out low management fee but high-price fund answered with advertising no management fee at all, but hiding much higher indirect costs, so people might be confused taking the latter option as optimal one.

Under such circumstances individual is obviously forced to be perfectly cautious, updated, keen, discerning to recognize the best deal in the market. Is it description of the average consumer of financial products?

Unfortunately financial institutions are taking advantage of naïve consumers by consciously making financial products complicate. Strategic price complexity allows producers to keep market power and that’s the reason why this problematic issue should be matter of higher instances.(Carlin 2009)

3.3. Unstable or undefined preferences

Benartzi and Thaler (2001) have been testing the investment portfolio within retirement participant’s plan. They discovered relatively weak preferences for the portfolio participants elected. Workers were given an option of holding the portfolio they originally selected and portfolio created as the statistical average of their colleagues. They expressed more preferences towards portfolio of average participant. Further observations come from Netherland where national survey confirmed unstable preferences to asset allocation. The typical individual possesses conservative portfolio with the stocks making up 30% of the average portfolio, but after disclosing the mean risk portfolio (larger share of stocks) they opted for the riskier option. In both cases responders showed not remarkable skills required to control their own pension investment portfolio. Lack of determination when it comes to asset

allocation might stem from insufficient understanding of the choices offered or low level of financial literacy, but also it can be out of some other behavioural biases.(Collard 2009)

3.3.1. Herding

There are two main reasons why herd behaviour appears. First one is desire of individual to be accepted in the group, and second is followed by logic that majority is less likely wrong. Herd behaviour takes important role in explanation of generation of speculative bubbles. Fashion and fad are synonyms for this kind of behaviour and unfortunately it occupies majority involving even rational individuals into irrational groups. Many financial market players even having thoughts about correct price of equity, refrain and do not want to combat the herd. Unfortunately, interpersonal communication, 'word of mouth', more than any media influence making decisions, people generally trust friends, relatives, co-workers. Herding is not usually profitable investment decision. It's very difficult to catch the right investment timing. By the time herd investor finds out about the trend many others already had taken advantage which means entering at that point might often result in losing the money.(Hede 2012)

3.3.2. Anchoring

People may attach their thoughts for the reference point (anchor) and out of it derivate prediction and make decisions. Considering the valuation of the stock market prices for instance, it's not hard to tell that estimation of stock prices based on past one or recent remembered one, is often way to be led astray. Company stock can drop in value due to lose of big customer and consequently big decline in revenue, but naïve investor observes the decrease of the prices as the chance to buy the same on discount because of anchoring on recent 'high' price. In other words anchoring is superficial and ignoring the underlying fundamentals of such a changes might be disappointing for investor.(Hede 2012)

3.4. Heuristic decision making

The rational decision making is not guaranteed once investor gathers all relevant information and objectively evaluates the same. Actually the real headache starts at that moment. People have been showered with large amount of information that drives them to apply ‘mental short-cuts’ or heuristics. In case of pension savings for instance, people face with the complex sequence of choices when allocate their money in different options. First they need to decide whether to rely on default option or make active choice. If they make active choice, they are supposed to know how many funds they will invest in and which one to choose. Finally, individual have to decide what percentage should be invested in each fund. Existence of “1/n” strategy also called naïve diversification strategy is example of heuristics in making investment decisions. Following this shortcut participant simply split their contribution equally between funds offered by the plan. People also rely on historic return (over the past few years) even though good results as indicators easily could be due to the luck and in that way give the wrong picture.(Tapia & Yermo 2007)

Heuristic in making decisions is widely applied among investors typically with the complex problems and incomprehensible information. When time is pressure ‘rule of thumb’ is way to reduce complexity and ease decision process. Unfortunately results of this investment decision approach are often sub-optimal.

3.5. Familiarity and representatives

Those two behavioural biases also affect decision process in a way to ignore the objective considerations.

There are several aspects of familiarity but I will point out one related to investing in your own company or brand you already know. Overweighting domestic companies or the ones somebody work for can be explained as comfort seeking and optimism about their markets relative to foreign markets. It is the fact that many investors put high percentage of their wealth in employer’s stocks and in that way forgo possible diversification and jeopardize their initial investment.(Hede 2012)

One more common mistake one might make is to judge the thing by how it appears than how statistically likely it is.

Looking at the interesting example provided by Kahneman & Tversky, this bias is highly presented. In this task, responders got description of one 31-year-old female person, single, outspoken very bright graduated in philosophy, concerned back in her student days with the issues of discrimination and equality. Responders were given two options: a) person work in bank b) person work in bank and is active in the feminist movement. Even though there must be always more people who work in banks than who work in banks and active in feminist movement, majority went for b) option. Responders have been blinded being driven by narrative description rather than by the logic and statistically probability.

How this bias found place in investment activities? Companies with high quality management, a strong image, good reputation, brand, consistent growth in earnings keep the attention, attract investors but not by default guarantee good investment. Serious estimator would take into account future cash flow discounted back to the present using appropriate risk adjusted discount rate. It implies good company will sell at high prices and bad at low prices but once market adjusted no reasons to favour any of those ones. In other words many investors are deceived that good company is necessarily representative of a good investment. (Hede 2012)

3.6. Framing effects

Framing is phenomenon where people alter decision making process by the different formulation of given options (Shefrin 2000). Many scientists dedicated intensive observations related to this cognitive bias because it has huge importance in particularly risky decision making (e.g. financial planning).I will go through couple of examples to explain how framing can significantly change one's opinion in different interests area.

I already mentioned that prospect theory suggest different approach when it is about gains than in case with the losses. Reframing the same question causes different effect and this phenomenon is analysed by Kahneman and Tversky: Participants were asked to choose between two treatments in sample of 600 people affected by deadly disease. In first treatment 400 people die while in second 33% chance no people die and 66% everyone die. (Kahneman & Tversky 2000)

Positive framing:

If program I is adopted, 200 people will be saved (72%)

If program II is adopted, 33% that 600 will be saved and 66% that no people will be saved (28%)

Or

Negative framing:

If program I is adopted, 400 people will die (22%)

If program II is adopted, 33% that nobody will die and 66% that 600 people will die (78%)

Percentages in brackets show us responder's results indicating risk averse in 'lives saved' version and risk seeking in 'lives lost' even both are the same in real terms.

Analogous to previous example, looking at the different approach to the gains and losses, if we apply to the gamble with monetary outcomes we got the same conclusion:

Choice between:

I A: a sure gain of \$3000 B: 80% chance to gain \$4000, and 20% chance to gain nothing

II C: a sure loss of \$3000 D: 80% to lose \$4000, and 20% to lose nothing

Results indicate the same, risk aversion with the sure gain over the positive gamble in the first frame, and risk seeking choice for the gamble over the sure loss in the second framing. Both of the choices are mathematically irrational in respect to the expected value.(Fontaine 2005)

As we could see, the options could be framed in different ways, and invariance means that changes don't have effect on final decision. It's obvious that framing effect causes violation of invariance. Since invariance is psychologically unfeasible, only way to guarantee the same is to get back to beliefs of conventional economics. Considering the decisions in terms of total assets rather than in terms of gains and losses would be good assumption for avoiding the violation of invariance. But reality is different, failure of invariance is established through the field and laboratory experiments. People do evaluate the option with the respect to the reference point that is implied by the statement of the problem, and choice option is definitely

influenced by non-linearity of decision weights as a result of framing phenomenon. (Kahneman & Tversky 2000)

There are numerous examples how framing shapes our minds, but I will stay within the range of the matter of my topic. I would extend this analyse on one more case where frame can be efficient tool in purchasing the insurance. This time responders have the choice between a sure loss of \$50 and 25% chance to lose \$200. It is reported that over 80% of subjects expressed risk seeking preference for the gamble over the sure loss, in other words, just 20% were ready to accept sure loss of \$50. But when they were asked if they are willing to pay \$50 for the insurance against a 25% risk of losing the \$200, 65% of responders decided to pay. So what happened? Obviously perception of payment as the cost of protection is way more acceptable than the same amount of money defined as a loss. (Kahneman & Tversky 2000)

Back in time when credit cards were introduced, lobbyists of the same one advocates for the label of price difference between credit card and cash purchase as a cash discount rather than a credit card surcharge. The same reason stays behind the producers intention to mark the food as 90% fat free than 10% fat product. Frame powering is applied widely to manipulate deliberately in a favour of one of the options. People unfortunately tend to be mindless, passive and unaware, that's one of the reasons why framing works. (Thaler & Sunstein 2008)

3.7. Overconfidence

Overconfidence is tendency for people to overestimate their ability to perform a particular task. Several studies identify huge part of overconfidence in investor behaviour (Fama 1998, Shefrin 2002, Barberis/Thaler 2003, Glaser/Noth/Weber 2004). There are several downsides of this behavioural bias. Overconfident investor will most likely trade frequently, being sure in his superior ability to pick the stocks or time of entry/exit of a position. As a result, trading costs might reach significant amount of money and multiplying by the years, one loses compounded interest you could have earned on that money as well. Barber and Odean (2000) conducted the study of the trading histories of more than 60000 households and found that investors who traded most frequently earned 11,4% net return, while those who traded least frequently earned 18,1% net return. Many people overrate themselves and as consequence put too much money in best idea increasing the risk of under diversifying.

Beside illusion of knowledge, literature states one more factor of overconfidence and that is illusion of control. When an investor has early success, he tends to address that one to his own abilities even it could be possibly random or the result of the general movements in the market. (Tapia & Yermo 2007) Interestingly, survey results show that male investor exhibits more overconfidence than female investors.

As for the most of the behavioural biases, overconfident might be mitigated with being aware of and controlling natural temperaments.

3.8. Myopic Loss aversion, Procrastination, Inertia

Myopia, in Greek, means close to eyes, or free translation in economic terms, short term satisfaction over the long term reward. Economic agents often make bad decision out of 'near-sightedness'. The most common symptom of economic myopia is tendency and bias towards immediate benefits and not clear, blurred distance vision. (American Optometric Association 1997) Myopic behaviour is widely present through investment behaviour in financial markets and saving for the retirement. Since retirement is long term distant, it looks that if saving starts later in life no big differences will make. That means procrastination as a result of myopia has huge implication not just on individuals retirement, but also important governmental issue (low saving rate and overconsumption).

Myopia as observed behavioural bias, undermines assumptions of conventional theory and one more time shows weaknesses of real economic agent model. Hyperbolic discount theory as alternative to discount utility theory offers advanced approach in inter-temporal choice explanation where immediate outcomes are discounted at the higher rates than the outcomes in far-away future. In behavioural literature individuals lack of self-control and that stems from impatience and impulsivity.(Thaler & Hersh 1981)

Changing the investment allocation, for instance, to get optimal saving strategy is complex decision therefore induces inertia (keep the things as they are) and procrastination (put the decision off until tomorrow). Those biases are relevant especially when pension participants play active role in financial retirement planning (defined contribution plan). People beside great desire and high awareness of the importance of saving for retirement can't find the 'power 'to execute the same. (Tapia & Yermo 2007)

Several research analyses clearly indicate presence and effects of these behavioural biases. Many of them are closely related to the pension plan design, investment allocation and its structure.

In well-known work 'Myopic Loss Aversion and Equity Premium Puzzle' Thaler and Benartzi continued to analyse why equity premium is so large, or how demand for the bonds still exists beside the historically confirmed huge discrepancy between the returns on stocks and fixed income securities. The answers on these questions came from psychology of decision making through two concepts. First one, loss aversion, already mentioned higher sensitivity to reductions of individual's welfare than increase, and second mental accounting as the implicit methods of evaluating the outcomes. It was found that when decision makers are loss averse, they are ready to take more risk if they don't evaluate their performance frequently. That means as investment period of holding stocks increase, more attractive asset will be, as long as the performances are not evaluated frequently. Put another way, two factors contribute aversion towards equity holding, loss aversion and short evaluation period-myopic loss aversion.(Thaler & Benartzi 1995)

Of course, this is just one of the explanations for the structure of investment portfolio, but for sure one that indicate great insight of average investor's behaviour. Even long term investors focus on short term result and in that way applies myopia to investing. Important behaviour feature that can be explanation for investing decision procedure is also observed in my conducting survey.

It's interesting to notice how agency problem can cause the myopic loss aversion. Namely as stated earlier, stocks will most likely outperform bonds as investment period is extended to infinity. In defined benefit pension plan, firms guarantee the pension and pension fund manager is supposed to get best out of the asset allocation how firm would have to make smaller contributions. Since managers don't have infinite period of time in one company, and reports on returns of the funds' assets are in short horizon, they put personal interests over the stakeholder's. That is why plan designs might be short sighted and not in interest of employees.(Thaler & Benartzi 1995)

Consequences of procrastination and inertia could manifest through behaviour as 'path of least resistance'. That means among other given options, default option, as the option which will be assigned to investor if he does nothing, will be chosen by most participants.

If we look at the graph below, (Figure 3.2) from the inspiring paper by Eric Johnson and Daniel Goldstein, representing the percentage of people who would be interested in giving the organs to donation, we will see how choice architecture is important in decision making. Why do people in some countries are more willing to donate their organs than in other countries? The answer that arises would be that the results has to have something about culture, religion, caring about society, but plot shows us different results between similar pairs of countries (e.g. Denmark and Sweden). The right answer is actually that design of the form of question about donation shaped the decision. In countries where form is set as ‘check this box if you want to participate in the organ donation program’, people do not check and don’t become participant. In countries where the form is set as ‘check the box if you do not want to participate in the organ donation program’, people also do not check the box and became automatically a part of the program. (Ariely 2008)

In this experiment framing effect with inertia together influence the decision making. It is proved again that people can’t cope with the difficulty and emotionality of decisions, in these situations they don’t know what to do and resort to default option (the same when people making investment and retirement decisions).

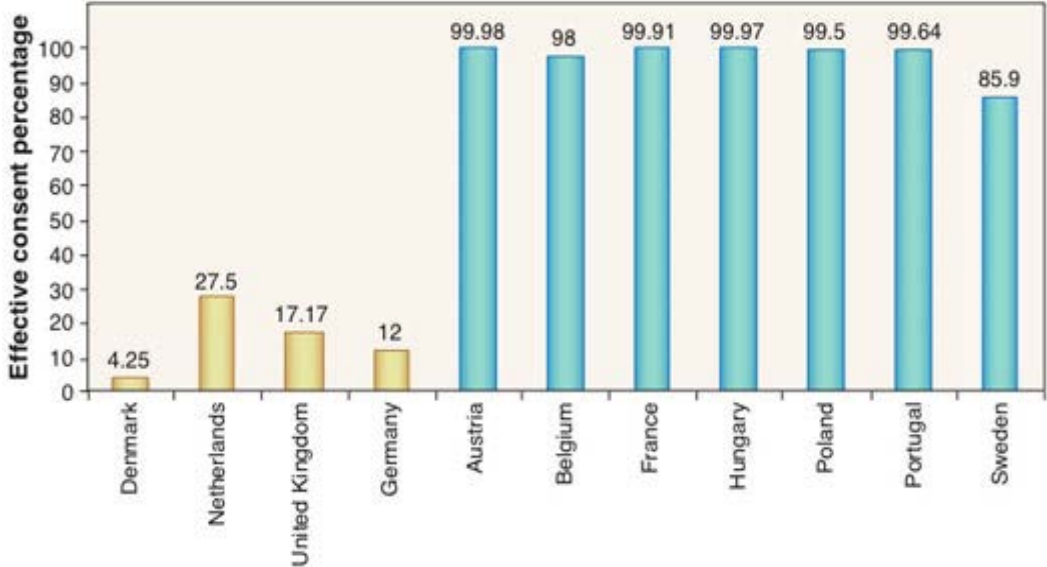


Figure 3.2: Effective consent rates for donation organ program, by country: Opt-In, gold, Opt-out, blue. Source: (Ariely 2008)

Considering the power of choice architecture, automatic enrolment can be perfect tool for increasing the contribution rate. Person would get the form indicating that he will be enrolled in the plan unless actively fills out a form requesting to opt out. That was the way how participation in U.S. defined contribution plan effectively increased.(Thaler & Sunstein 2008)

We should also keep in mind and be aware that default option is not necessary the optimal decision. The priority in designing might be minimizing the costs for the employers rather than best alternative, or it can be reflection of the asset allocation of an average investor. As a result such an option tends to be conservative and inadequate for investor's future retirement.

3.9. Financial literacy

Not so long ago basic literacy was defined as ability to read and write, but modern world moves further every day imposing new and higher criteria. In a world of improved technology, informatics literacy took over that role. Looking from that perspective, acting in the financial markets with new and complex financial products, without knowing basic financial principals, would be the same as reading the books and not knowing the letters.

Quoting the Peter Drucker : *"Today knowledge has power. It controls access to opportunity and advancement"*. In order to make sound financial decision now that will effect well-being in future, one needs to understand basics of financial mathematics and investment concepts, including terms of compound interest, discounting of future income and inflation effect on consumption, risk and return trade-offs, necessity of diversifying.(Clark 2012)

Large body of evidence shows that financial illiteracy has strong effect on low level of saving, poor risk diversification and inefficient portfolio allocation. At the same time many analyses have established insufficient level of financial capability required to make optimal investment decision. Basically it is found that better educated individuals have higher relevant knowledge therefore better investment decisions. Several studies showed that education, wealth and experience with risky investments are the characteristics that make investor less likely to make investment mistakes (e.g. to under-diversify, selling the winning and holding the losing stocks).One for sure, groups with the lack of financial knowledge have been exposed much more to behavioural biases therefore described as irrational investors.(Chater et al. 2010)

There are some opposite opinions about effects of financial education on investment behaviour where one group of researchers expressed suspicious of its significance, which is most likely because of nature of this variable. Education is long term process and it is not

strange when seminars and sponsored programs don't give instant results knowing the complexity of financial instruments. It is hard to believe that financial illiterate individual might become sophisticated investor in short term, but it may be feasible to teach them some basics about savings and investments that would increase quality in their decisions.

4. EMPIRICAL ANALYSIS AND FINDINGS AMONG EUROPEAN COUNTRIES

4.1. Retail investment purchase process

In the previous chapter my intention was to disclose the main behavioural biases and explain the most common obstacles and mistakes individuals make in retail investors market. Those deviations shape the irrational investors' behaviour. How this tailored behaviour fits into investment retail market among European countries will be subject in this section.

All results and findings in this section will be taken out of EU study: "Consumer decision making in retail investment services: A behavioural economics perspective" by Chater et al. 2010.

The most dominant types of investment products in EU are stocks and shares, personal pensions, life insurance and funds. Of course this is general picture and there are some differences between the countries (e.g. different pension systems). The main purpose of RIS purchase stated by consumers are saving for the future and effective use of extra income.

Significant number of investors is confused about the nature of their investment, especially when it is about structure of pensions and equity exposure. Also one in four purchasers of stocks and shares think that they have fixed rate of return and guaranteed minimum rate.

In order to recognize some of the biases noted before the purchase process will be broken down into the three main stages: **information search, consideration and choice**. In first one, purchasers search for general information about available options, in the second stage, using the heuristics they tend to narrow down the number of choices and in the final stage making in-depth assessment of the rest of the option results in one final choice.

The most common used sources of information are financial websites, employees from financial companies, newspapers and magazines. The greatest impact on making decisions have advises from financial advisors (34%), but still having in mind that friends, relatives and colleagues (22%) also have quite influence on investors. It is interesting to note that in the first phase of purchase process people generally don't put a lot of effort into researching, only a third of purchasers consider more than one provider. Many purchasers apply 'recognition

heuristic' to filter out alternatives and come to ones that will analyse more in depth. Investors feel comfortable to rely on familiar provider and in that way they limit time for search and overcome disability for setting the real criteria. After evaluating the most attractive options more into details, finding the optimal one for individual is led by different reasons. The final decision is most influenced by risk (35%) than by return as criterion (13%). Familiarity with the selected option is third cited reason. (Chater et al. 2010)

Further EU research categorizes purchasers into four groups depends on different approach to each of the above described stages in purchasing process. That means stage 'information search' might be marked as *research*, if investor did price comparison through websites, as *informal advice*, if one look for the advice from friends, colleagues, relatives, as *formal advice*, if one look for the financial adviser, as *knowledge*, if one relies on his ability and found easy to evaluate the best option and *uninformed*, as somebody who didn't have time to consider the alternatives. 'Consideration' stage factors are *shopped around*, as sign of spending a lot of time looking for option and *recognition heuristic*, considering the investment from the companies which have been recommended. (Chater et al. 2010)

Based on EU study, four types of purchaser profiles are:

Confused mainstream (CM) - not being extreme with any of the factors except *uninformed*. This investor has no idea which investment is best for him and doesn't understand the terms that investment option was described with.

Self-Sufficient (SS) - profile that scores on *knowledge* and have low level of *uninformed* and *informal advice*. Purchaser knows a lot about various investment options and understands information about the same.

Advised Sought (AS) - *Research, formal advice and informal advice* play important part in this type of purchase. Investors consider just familiar providers and products, they are not so independent and strong believer in making own decisions.

Limited Search (LS) - no efforts in any of search factors, this type consider only own company as provider of investment products.

Diagram below illustrates four investment behavioural profiles:

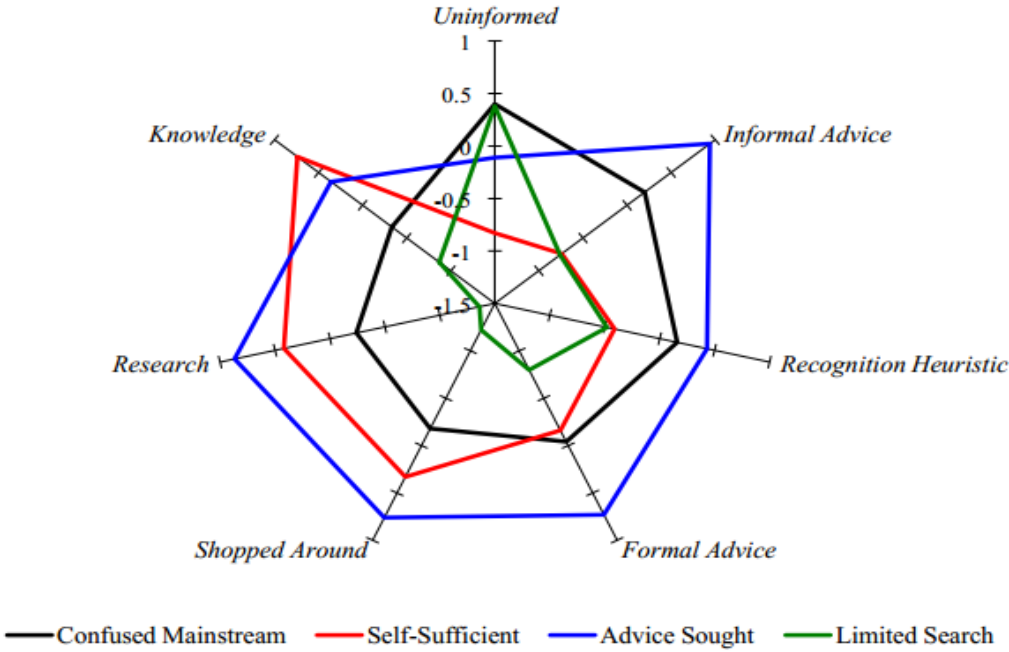


Figure 4.1: Characterisation of RIS purchase process(Chater et al. 2010)

Regarding the results it seems that the most frequently observed purchase process is Confused Mainstream process (34%), the next most common is Advise Sought by 27% of all retail investment purchasers. Relatively few follow the Limited Search process. These numbers tell us a lot about typical of the average purchaser indicating his characteristics as *non-financial educated, unsecure, non-systematic, and somewhat informed*. This type of investor most likely is advised by friends and family and applies heuristics in making the decisions. One more very intuitive fact is that Self Sufficient profile holds the widest range of investment products and tends to make more risky investments compare with other types. Although all groups showed risk aversion while LM and CM are least comfortable of taking the financial risk.(Chater et al. 2010)

As we could see every single profile described above reflects different way of making investment decision and as a consequence SS and AS are much more satisfy with their choice of investment option while other two groups usually regret about the selected option.

If we look at the demographic structure of the profiles exposed above, we will find out more about characteristics of each of the behavioural investment types. Based on EU research and data collected by this study Self-Sufficient purchasers are mostly male, self-employed, they usually have their own company and have some experience working in financial services

industry. Advice Sought investors are a bit younger and most of them are employed full time. Self-Sufficient and Advice-Sought purchasers belong to group of higher educated people whose education was devoted to economics and mathematics more than other types of investors. LM purchasers are the least likely well educated and have very low score on tests related to financial and numerical skills.

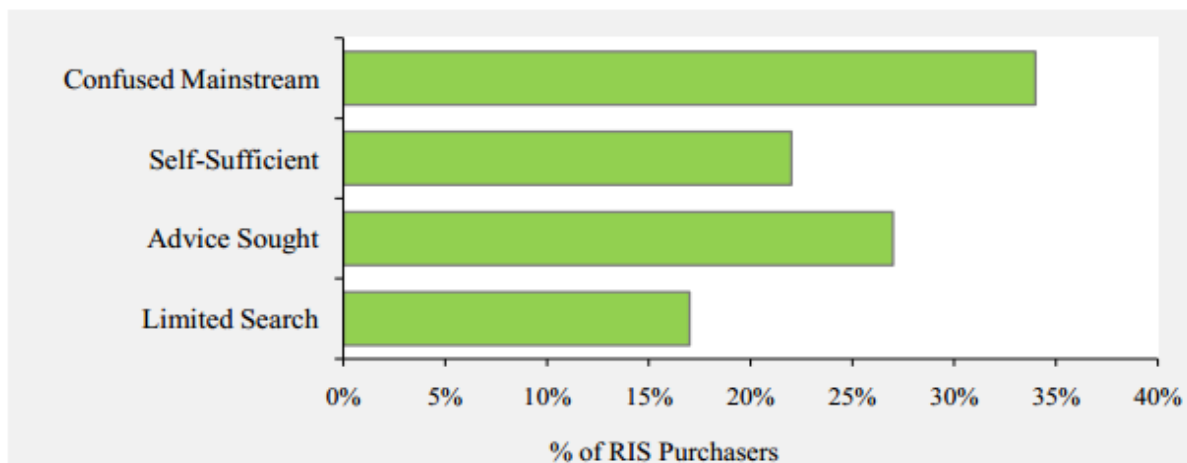


Figure 4.2: – Size of RIS purchase process segments ,EU average (Chater et al. 2010)

4.2. Marketing of retail investment products

There are several channels where retail investment products might be advertised. The most popular ones are websites, news, magazines and brochures .Presentation of these products (e.g. funds, bonds, insurance, structured products) is usually different among providers. Financial institutions advertise their products and attract the consumers with the wide range of attributes. The most common information in description of one retail investment product are: Risk (e.g. volatility of returns, risk to capital); Return (e.g. maximum return, capital guarantee); Investment (e.g. duration, minimum investment amount); Tax, Costs (e.g. set up fees, management fees); Reference point (e.g. past performance, competitor products); Provider attributes (e.g. expertise, efficiency, low cost) and Reasons for investments (e.g. income, tax efficiency, growth).(Chater et al. 2010)

Marketing examples collected and observed from eight European countries show that the most dominant category of information was Reason for Investment (91%) and Provider attributes (71%).The least mentioned information were Costs and Tax.(Chater et al. 2010).That just confirms lack of transparency and intention of providers to attract potential

investors by pointing the positive aspects and goals but hiding and ignoring the costs of the products.

The best way to talk about marketing aspect of retail investment services might be using the real examples, so have a look on next ones:



Figure 4.3: Example RIS web advertisement(Chater et al. 2010)

This web-advertisement of investment fund gives us comfort and assure that it is simple to handle (“easy to swallow”).The purpose of investing is clearly declared as “Saving for the future” while real costs are not specified even fees are mentioned (“SAVE 5% on up front charges).Imposing the expertise as “some of the world’s best investment managers “provider sent a message of security, certainty and quality of product. The advertisement applies framing strategies where up-front fees are disclosed in percentages compared with the previous higher level and not in absolute terms. Advert employs anchoring by suggesting the possible investment amount (\$7200). (Chater et al. 2010)

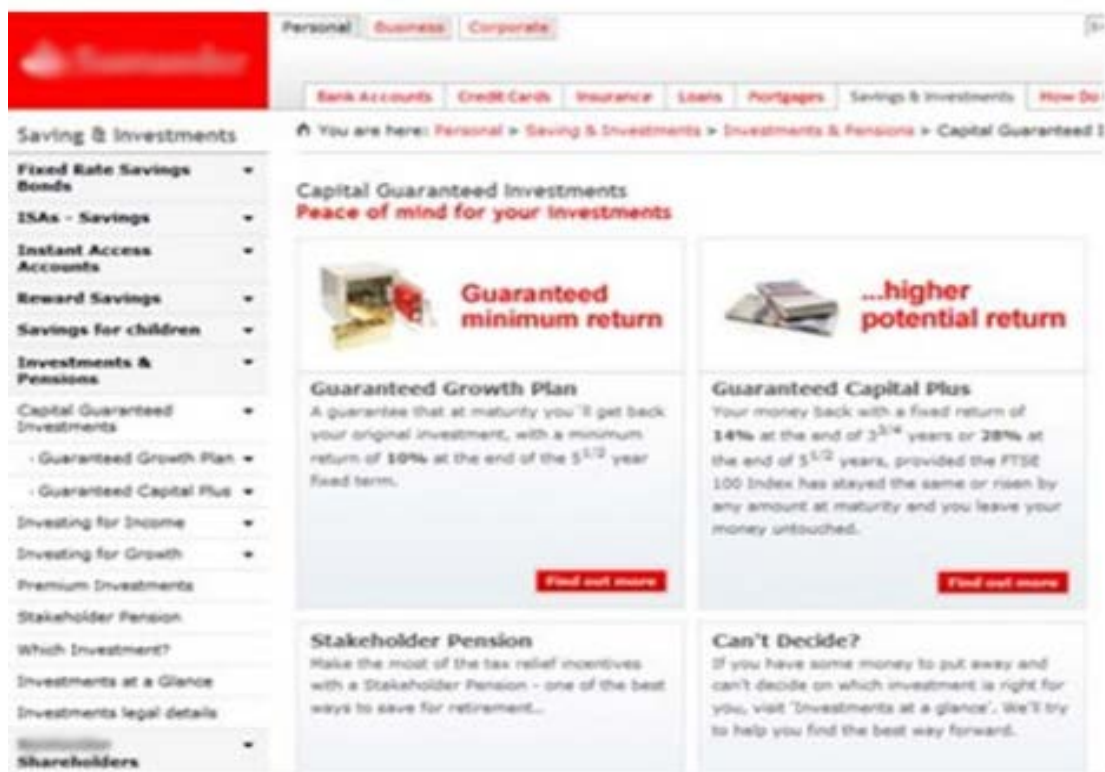


Figure 4.4: Example RIS product description(Chater et al. 2010)

Another example is found in website of the bank in UK, showing the description of two structured products. In both cases the main message sent to potential purchasers is principal protection (“peace of mind “, “your money back”) which by definition of structured product should be assumed. “Guaranteed growth” as reason for investment shown as minimum return of 10% after 5 year fixed term targets the risk averse group. Providers are well aware of framing effects therefore compounded return seems much more attractive than annual effective return under 2% that could barely keep the pace with the inflation. Second product has also compounded returns (28% at the end in 5 years) but now it is stressed higher potential return as a fixed return and later conditional on FTSE 100 share index (no information about historical performance of the index).(Chater et al. 2010)

Many financial instruments and especially structured products are considered in Norway as complex and hard to understand. I couldn't find strong evidence of misleading messages in marketing of investments products in Norway, but more frequent appeals stream in that direction.

4.3. Pension fund choices

People deal with complex decisions as pension fund choices in different ways. They are influenced in a number of ways that often result in making sub-optimal decisions. Pension plan designers play big role and should have huge responsibility in retirement adequacy. Some empirical findings from other countries can serve as a potential lecture on that ground, so I will mention some of the systems since Norway lacks on evidences that could provide reliable insights.

Based on UK qualitative research on investment decisions, level of risk, fees and fund size were mainly considered by financial sophisticated investor while those with lower financial sophistication found advisors as main support even though understanding of financial products remained poor. Results from researches on pension plans in US show that participants with more investment choices invest more likely in stocks. Also as I already mentioned information overload have impact on active choice but also on asset allocation therefore as number of investment funds increase the lower risk assets become more popular in investors' portfolio. Overall, members of mandatory individual account pension schemes display preference for equities. This may result from factors such as framing effects, the use of 'rules of thumb' or the professional advice that consumers receive. While general results from international surveys reveal preferences towards equity fund, in UK there is tendency towards property as a long term investment. Equity allocations are particularly observed with the higher earners and married participants. Dutch household survey found that respondents with low financial literacy were significantly less likely to invest in equities. Recent analyses of 401(k) administrative data match with the survey from Sweden where is found positive relationship between income and level of risk – risky assets held by higher income investors. Evidence from the US tells us that equity exposure is lowest for participants over 65 and highest for the age group between 25 and 54.(Collard 2009)

An Analysis of OECD Panel Data was conducted to test the understanding of asset allocation in retirement plans in six developed countries. Determination of retirement asset portfolio is greatly impacted by life expectancy and household net saving rate. Clearly, longer life expectancy requests more sufficient accumulation assets. Finally results indicate high concentration of equities (stocks, mutual funds) in US, Germany as only country where percentage of equities in portfolio has not decreased despite global financial crisis, Denmark and Czech Republic had bills and bonds as dominate in retirement assets and Korea with cash

and deposits. This study is interesting because it indicates necessity of rebalance of retirement assets as the result of the impact of external factors and market movements. That means US may consider rebalance since huge recessionary stock market impact in order to increase securities of retirees. Also those with low yield fund should consider in good economic time gradually rebalance the funds for the long term investment with higher returns. (Choi et al. 2012)With all mentioned above, it is clear that there is no simple and unique answer on asset allocation, but solution exists, as for the policy makers and investors as well.

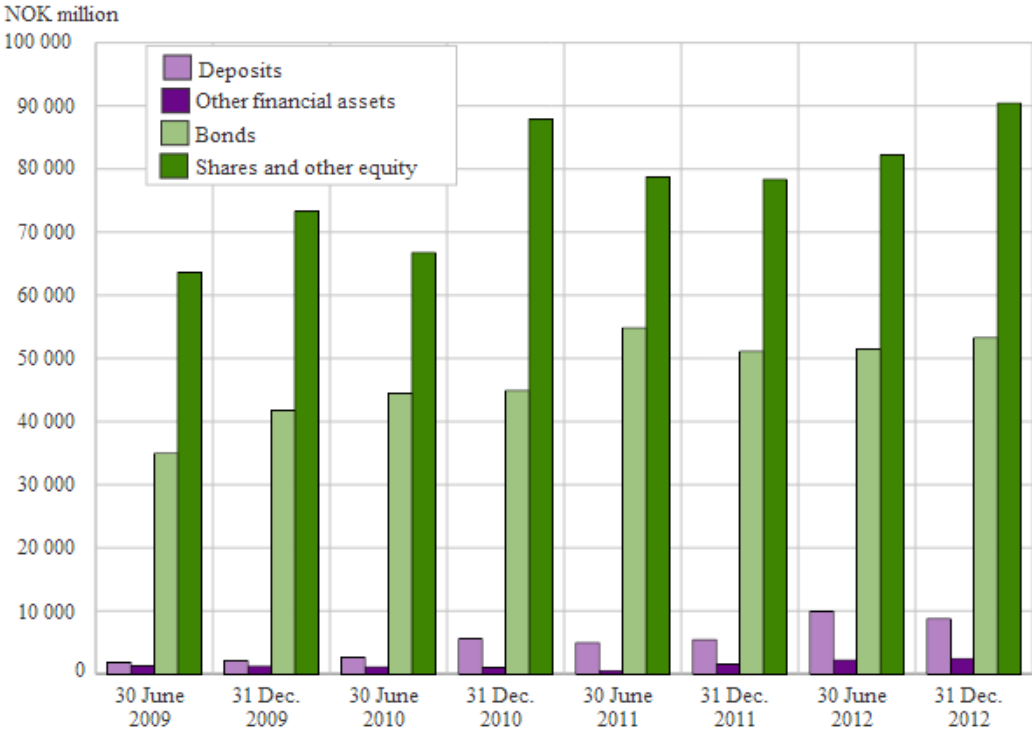


Figure 4.5: Government pension fund Norway-Total assets (Statistics Norway 2012)

Structure of total assets of pension fund Norway definitely shows the biggest share of equities. Shares and other equity were valued at a total of NOK 90,4 billion at the end of the 2012 that is increase of 10% from the end of the June. The value of bond portfolio increased by 3,6% and amounts to NOK 53,3 billion while deposits and other financial assets worth respectively NOK 8,8 billion and NOK2,5 billion. (Statistics Norway 2012)

Participants of the several surveys on investments for retirement didn't express confidence in adequacy of pension savings. They usually have no idea if their savings will provide an adequate income in retirement. Seven US firms analysed their employees contributions and found out that 20-60% of them didn't match threshold that provides employers contribution, therefore giving up of free significant financial incentive. Results of the research also showed

that great impact among members with contribution below threshold had low financial literacy and procrastinate.(Tapia & Yermo 2007)

Why I'm emphasising the asset allocation and contribution rate here? Basically, how much and where to invest are crucial decisions and that will define adequacy of future retirement income. Pension plan design plays big role in investor's choice. If the green market dominates with the apples your fruit salad will most likely have the highest proportion of apples. That put the highest responsibility on policy makers, employees and financial institutions in order to create understandable and efficient investment menu.

4.4. Policy intervention

4.4.1. Financial transparency

From policy perspective it is crucial to identify factors influencing investor's making decision. Once it is established why most likely poor decision was made, measures should be applied. If it is found that majority made bad investment decision because of cognitive limitations policy makers should consider two approaches, either to improve transparency of operating in retail investment market or to equip the investor with the knowledge necessary to make sound decisions.(Chater et al. 2010)

Transparency will be achieved when information between two dissimilar options are comparable and when you are able to extract important information out of complex investment description. *Pre-calculation, simplification* and *standardization* might be solution for that kind of issue. Disclosure of the most relevant information in standardized format will make it easier to understand structure of investment products. Many European countries use Key Investor Information (KII) Document to provide pre-calculated and comparable data about investments and in that way to improve quality of decision making.(Chater et al. 2010) The regulation of this aspect of the retail investment market would have to be mandatory. Providing this sort of documents would make potential investor much more comfortable to invest.

4.4.2. Financial education

As noted earlier we could simplify making decision by providing pre-calculated, standardised and pertinent comparable information or try to serve financial knowledge crucial for selecting optimal investment choice. Explanation of some of the economic terms used in investment description might be of huge help for individual. That can be for instance definition of annual

return- increase or decrease in your investment per year. If you invest NOK 5000 and get NOK 5500 back each year your annual return is NOK 500 or 10%. Or Gross return: The increase or decrease in the amount held in your investment, before any fees and taxes are deducted(Chater et al. 2010).In same way terms as nominal and effective interest rate, indexation ,stocks, bonds, mutual funds, compounding, fixed gross return, cash deposit and many other used finance phrase have to be understandable.

Another way to financial educate retail investors is giving advices that is guide to the best decision. Even we assume that one can understand finance terminology, lack of proficiency and experience might be huge obstacle. Look at the some of the advice examples:

- *For the investments with the variable rate of return it is difficult to estimate what is the best in short term, but for the long term, historical average rate might be approximate for such investments (e.g. stocks,shares)*
- *If the annual return is 10% your final amount after 5 years will be calculated as NOK 10 000 at an annual rate of 10% = $NOK 10\ 000 * 110\% * 110\% * 110\% * 110\% * 110\% = NOK 16105$ after 5 years but if the rate of return is paid after 5 years than NOK 10 000 at a rate of 10% is $NOK 10\ 000 * 110\% = NOK 11\ 000$*
- *Set up fees are charged at the start of the investment period but annual fees are applied to the total investment amount (include return) at the end of the each year of investment period (Chater et al. 2010)*

4.4.3. De-biasing

All behavioural biases described earlier lead to irrational behaviour and only prevention is to increase awareness of the same. In that way investor can mitigate or avoid bias and raise the quality of decision making. Even financial literate and cognitively capable investors make errors just because they are also vulnerable to behavioural biases. If they are introduced with possible and most common mistakes that biased investor usually makes, there is a chance the investor reconsider intuition and come up with the optimal investment decision.

We can apply ‘de-biasing’ on results from my experiment where I observed that people are highly sensitive towards losses. In this case, de-biasing information is supposed to shed a light on tendency of people to be biased toward investment option without initial fees (seen as a loss) regardless of overall return. People should be told that an investment with higher start-up fee may have lower annual fee which in long term more than makes up for initial fee, as we will see in my experimental design. Also responders tend to be highly risk averse in my

survey therefore that might be sign for resistance towards riskier investments. That means they should be informed that even though returns on risky investments might change too often, in long term they should be concerned just with the average return of risky investment that is often higher than the one with fixed return and capital guarantee.

4.4.4. Choice architecture

Choice architects play very important part when it comes to pension plan designs, since their power to shape investors opinion is tremendous therefore their responsibility is huge. As I already mentioned, automatic enrolment is very popular and efficient in many countries. Participation rate increases since people join the plan sooner they would have otherwise. Instead of making very complex decisions, how much to invest, how to allocate investments, one can be automatically enrolled unless he asks to opt out. If they choose latter option they will need to make an active decision among the funds offered in the plan.

In the beginning of the implementation of define contribution scheme default option didn't exist. Adopting the automatic enrolment, default option has been imposed as necessary since participants needed to be enrolled into some specific asset portfolio. Traditionally it was quite conservative option since employers could be sued if the default participant goes into more risky direction. Later default options developed into something that can be good example for current employers. Namely, plan sponsors may offer conservative, moderate and aggressive 'lifestyle' portfolios and all participants need to do is to select their portfolio depends on risk preferences. 'Target maturity funds' might also be effective possible solution, in this case participant is supposed to choose the fund that fits their retirement date.(Thaler & Sunstein 2008)

People showed inertia with the reconstruction of their portfolio and contribution rate as well. Plan members usually got stuck with initial asset allocation and contribution rate all their pension arrangements period. 'Save more for tomorrow' is program where people accept to increase contribution rate in line with the raise of the salary. In that way participants who were unwilling in the first place to accept higher contribution in future, ended up with even higher rate with this program.(Thaler & Sunstein 2008)

I found that experience from other countries could be good indicator how programs mentioned above work in reality and with that said government incentives and wisely pre-default organised pension plan could significantly help potential investors.

5. METHOD; DATA

5.1. Data collection

The research analysis in my thesis is based on data collected by web survey. TNS Gallup has conducted data collection on the behalf of the National Institute for Consumer Research of Children, Equality and Social Inclusion (SIFO). Gallup Panel is pre-recruited sample of people over 15 years of age who are willing to participate surveys (currently around 45,000). The panel size indicates that it is possible to extract representative sample. Web based design provides great flexibility in the design of questionnaire allowing graphic illustration, filter options etc. Electronic communication allows fast implementation at a low cost therefore this method can be considered as very effective method, both in terms of sample quality and collection costs⁶. The survey was sent out as an e-mail invitation to participate, along with the link to the questionnaire address on the Internet.

A common issue for web-based survey is selection and sampling biases. The sampling bias, caused by the on-line population differing from the general population, might reduce representativeness of the results. Since in Norway internet penetration is very high (93% internet penetration in age group 15-80 years in 2012)⁷ we can consider sampling bias insignificant.

Data collection was conducted in February-March 2013. Number of respondents is 73% of those who opened the survey which comes to 1823 respondents in total. Even though financial saving is matter of all working activate people including the youngest ones with their early stage of working life, respondents will be in range of 40-65 years old regardless of employment. It is assumed that this group is more relevant when it is about attitude to financial savings considering their working experience and not many years of working life left.

⁶ [http://wybowiersma.net/pub/essays/Wiersma,Wybo.The validity of surveys online and offline.pdf](http://wybowiersma.net/pub/essays/Wiersma,Wybo.The%20validity%20of%20surveys%20online%20and%20offline.pdf)

⁷ <http://www.mvfglobal.com/scandinavia>

5.2. Experimental design

5.2.1. Experiment 1-Choice of saving products

This experiment plays central role of the survey. Responder's answers should reflect how they think in process of making decisions and what drives them to select particular choice. They are supposed to choose between three saving products that have the same risk profile but different composition of the fee structure. Each of the saving products has different start-up fee, an annual fee in absolute amount and annual fee as a percentage of the amount paid.

Table 5.1: Fee structure of investment alternatives

Fee type	Fee Level				
	← Lowest level				Highest
One-time fee in NOK	0	1250	2500	3750	5 000
Annual fee in NOK	0	250	500	750	1 000
Annual percentage fee	0	0,5	1	1,5	2

The group of 75 saving alternatives will make up 25 different choice sets. Each of the respondents will randomly be assigned with three choice sets where they are supposed to choose the highest and lowest profitable option. The choice sets consist of three different investment saving products as the text and example below shows:

Suppose you plan to save ten thousand NOK per year for the next ten years. You can choose between three saving products, which are identical except for the size of the set-up fee and the annual fees. The annual fees are either fixed and/or percentage and deducted from the balance amount at the end of the each year. We assume that there is no inflation in the period and the annual return is 5% before fees.

Your task is to rate saving products A, B and C based on what you think would be the most and least profitable savings product for you.

Saving 10 000 per year for 10 years in a saving product with 5% return before fees.

Q 4a. Which of the three savings products do you think are the most and the least profitable?

Type of fee	Saving product		
	A	B	C
One-time fee in NOK	0	5 000	2 500
Annual fee in NOK	0	750	500
Annual percentage fee	2	0	1
Your rank			
Most profitable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Least profitable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 5.1: Screenshot of Experiment 1

5.2.2. Experiment 2: Purchase of insurance against losses

As the text of this experiment says, many saving products have uncertain return and investor may lose all or part of the invested money. Risk is very important factor of savings therefore many financial institutions offer an insurance against loss. The purpose of the experiment is to test willingness to pay for such insurance and whether it matters if the insurance is presented in absolute amount or percentage. That means the aim of the experiment is twofold, analysis of risk aversion and effects of framing.

Let's assume you have a hundred thousand NOK that you should spend on a saving product that has a ten year binding term. The saving product has an uncertain return. There is a third of a chance that it shrinks by 3% per year, one-third chance that it grows by 5% per year and one-third chance that it grows by 13% per year. Over a decade, this will make a big difference.

If the amount shrink by 3% per year, this will result in parts of the deposit is lost.

The Bank offers insurance against losses that ensures that you still have at least a hundred thousand NOK in saving product after 10 years. The insurance premium is deducted annually from the amount deposited. The policy entails avoiding losses if the market goes down, but that you get a little lower return if the market goes up than if you did not have insurance.

Q.5a. Do you want to buy such insurance, and what are the highest annual premiums you would pay?

Price per year on insurance against losses	Would not buy insurance	Would buy insurance
500 kr	<input type="radio"/>	<input type="radio"/>
750 kr	<input type="radio"/>	<input type="radio"/>
1 000 kr	<input type="radio"/>	<input type="radio"/>
1 250 kr	<input type="radio"/>	<input type="radio"/>
1 500 kr	<input type="radio"/>	<input type="radio"/>
1 750 kr	<input type="radio"/>	<input type="radio"/>
2 000 kr	<input type="radio"/>	<input type="radio"/>
2 250 kr	<input type="radio"/>	<input type="radio"/>
2 500 kr	<input type="radio"/>	<input type="radio"/>
2 750 kr	<input type="radio"/>	<input type="radio"/>
3 000 kr	<input type="radio"/>	<input type="radio"/>

Figure 5.2: Screenshot of Experiment 2, Kr-framing

Since half of the respondents did experiment in NOK-framing and other half in percentage-framing, we are applying “between subject design” in this analysis. The text of the experiment stays the same.

Price per year on insurance against losses. The price is % of the deposited 100 000 NOK	Would not buy insurance	Would buy insurance
0,50 %	<input type="radio"/>	<input type="radio"/>
0,75 %	<input type="radio"/>	<input type="radio"/>

1,00 %	<input type="radio"/>	<input type="radio"/>
1,25 %	<input type="radio"/>	<input type="radio"/>
1,50 %	<input type="radio"/>	<input type="radio"/>
1,75 %	<input type="radio"/>	<input type="radio"/>
2,00 %	<input type="radio"/>	<input type="radio"/>
2,25 %	<input type="radio"/>	<input type="radio"/>
2,50 %	<input type="radio"/>	<input type="radio"/>
2,75 %	<input type="radio"/>	<input type="radio"/>
3,00 %	<input type="radio"/>	<input type="radio"/>

Figure 5.3: Screenshot of Experiment 2 , %-framing

5.2.3. Experiment 3: Risk preferences

Compared with the previous one, this experiment will measure risk preferences in situation of potential gains. The respondent is supposed to choose between safe monetary outcome or gamble with two monetary outcomes with different probabilities. Each of the responders will make 10 choices. This version of experiment is modelled by experiment in Masatlioglu et al. (2012).

Choice between sure or uncertain return

You should take 10 choices. In each of these 10 choices you will make a choice between option 1 and 2

You will make 10 choices between sure pay- out of NOK 2500 and the lottery where the pay-out will be NOK 1500 or NOK 3500. The probability for NOK 1500 pay-out and 3500 NOK pay-out varies between ten choices.

Situation nr.	Alternativ 1	Alternativ 2	Your choice
1	10 % probability 3 500 kr 90 % probability 1 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2
2	20 % probability 3 500 kr 80 % probability 1 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2
3	30 % probability 3 500 kr 70 % probability 1 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2
4	40 % probability 3 500 kr 60 % probability 1 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2
5	50 % probability 3 500 kr 50 % probability 1 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2
6	60 % probability 3 500 kr 40 % probability 1 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2
7	70 % probability 3 500 kr 30 % probability 1 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2
8	80 % probability 3 500 kr 20 % probability 1 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2
9	90 % probability 3 500 kr 10 % probability 1 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2
10	Sure 3 500 kr	Sure 2 500 kr	<input type="radio"/> 1 <input type="radio"/> 2

Figure 5.4: Screenshot of experiment on risk preferences

Selected options by respondents should reflect their attitude to risk in situation with hypothetically monetary outcomes. In order to prevent misinterpretation of the results and to get reliable results some respondents were excluded. The respondent who has more than one break-even point (those who switched between the options more than once), and the respondents with selected option “2” in last choice set (who prefers 2500 NOK over 3500 NOK), had problems with understanding the experiment therefore have not been considered in representative sample. By this selection final sample in this experiment consists of 1387 respondents representing the 76% of the main sample.

5.2.4. Questionnaire

Questions addressed to respondents have two main goals. One group of questions was created in order to gather socio-demographic information about individuals, and second group was related to their attitude, knowledge and potential to understand savings for retirement. Since one of the goals of my research is to identify the vulnerable categories of respondents in the sample, background information will serve on that purpose. Whether they are well informed about pension savings, what are their expectations and do they have adequate skills to understand saving products will be matter of additional questions in this part of the survey.

Socio-demographic variables of interested area are:

- *Age*
- *Gender*
- *Number of children in household*
- *Marital status*
- *Household income and personal income*
- *Education level*
- *Municipality, location*
- *The main source of livelihood*
- *Industry working experience*
- *Sector (private or public)*
- *Occupation*
- *Main bank; Main insurance company*

Self-reported questions related to saving products:

- *How little or much knowledge do you have about savings products?*
- *How bad or good overview do you have over your rights for pensions savings?*

- *How bad or good overview do you have of your pensions from the government?*
- *How good or bad overview do you have of your pensions from other sources?*
- *How do you imagine your life as a pensioner?*
- *In witch degree are mathematics, economics, and/or statistics part of your education?*
- *Comment the statement: "The financial industry is in general good to inform about the products' costs/products' risk?"*
- *Comment the statement: "The information from the advisors in my bank is trustworthy"*
- *Comment the statement: "My bank is good to inform about the products' costs/products' risk"*
- *Do you possess life insurance/bonds/stocks/funds/structural products/individual pension's savings?*
- *When do you plan to retire?*
- *How big share of your pension will come from the government?*
- *Have you experienced a situation where you were not able to pay bills or debt at maturity?*
- *How often have these payment problems happened?*
- *What is 4% of 50?*

6. ANALYSIS OF RESEARCH RESULTS

The lesson of my analysis is supposed to shed a light on capability of responders to make optimal investment decision, familiarity with the pension arrangements and their risk attitude. What are the main obstacles in process of selecting the right investment alternative, who is the most vulnerable and prone making the mistakes and how they understand the saving products in general are the goals of this study. In order to get the answers I will apply descriptive statistics and regression analysis on data obtained from the experiment already described. Analysis will be broken down to the three sections respect to the each of the experiments. Questionnaire will serve as base for findings whether people are aware of importance of investment decisions and understanding the same, experiment 1 will guide us to the potential and most frequent mistakes in choice of saving products and experiment 2 and 3 will disclose risk preferences and possible framing effects.

6.1. Pension comprehension

6.1.1. Pension savings adequacy

Time when risk for retirement savings from employers to employees will be shifted is coming. Where to invest, how much to contribute, when to retire, and many other decisions will effect optimal pensions. First of all institutions need to earn the trust because everything starts with the source of information and understanding of different pension arrangements.

Where the responders stand when it is about their saving portfolio and ages of retirement will be just introduction for further investigation. Figure 6.1 shows the most common used saving products of the responders from the sample:

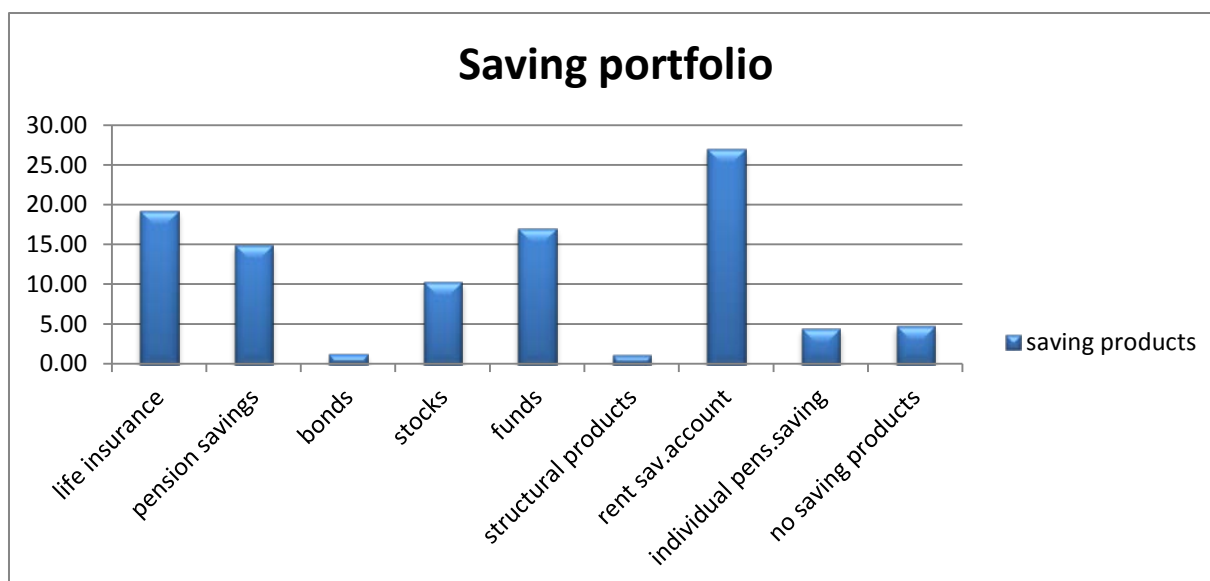


Figure 6.1: Private saving portfolio in percentages; N=1798

The first thing that stands out of this Figure is the greatest share of high rent saving account and the lowest share of structural products. I assume that the results of high saving account are primarily rooted in easiness of understanding and investing. It is very transparent and not time consuming way of saving. On the other side the lowest percentage of structural products again show how important the complexity of the product can be. One of the crucial elements in deciding the right investment choice is risk attitude. The irony of the results is that structural product is created to facilitate risk return objectives but the difficulties of the understanding keep them out of traditional retail investment portfolio. In other words, high saving accounts that might go up with the annual interests around 4% prevailed the structural products that in year with no radical fluctuation rise over 10%⁸. Basically structured products main purpose is protection principal from the loss giving the opportunity to earn high interest at the same time. That is feasible because of the structure of this product where one component (traditional security) provide the deposit back regardless of the market risk and other component as underlying asset gives the opportunity of achieving very attractive interest rates⁹. Since my findings regarding risk preferences (next point of discussion) show risk aversion among respondents, than significant differences between stocks and structural products could be explained just over the lack of capacity for understanding the complex saving products.

⁸ <https://www.dnb.no/en/personal/savings-and-investments/investment-products/investment-account.html>

⁹ http://www.investopedia.com/articles/pf/07/good_investment.asp

My further analysis hasn't showed significant differences in education and gender with holding the different saving products even the graphs confirmed the trend from the previous studies. Previous researches indicated that highly educated, especially with greater numerical skills and men are holding the more risky assets (Banks & Oldfield 2004).

The interesting results might be regarding income of individuals and investment portfolio (Figure 6.2)

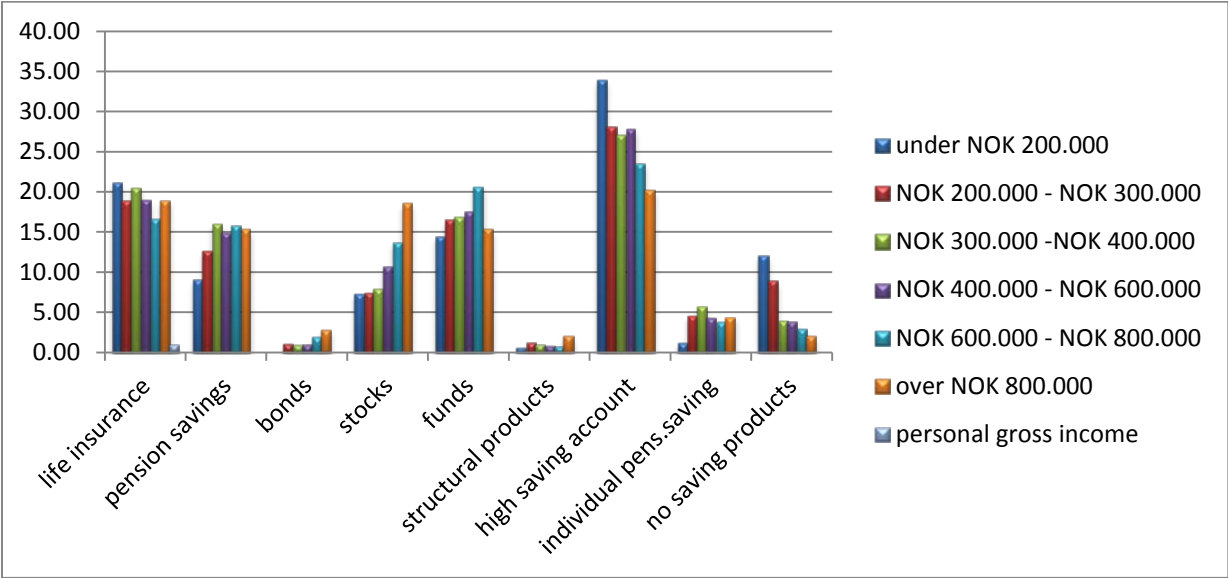


Figure 6.2: Private saving portfolio wrt. Personal income (High saving account; Stocks) T-test; Significant differences at the 5% -level. (t=2,93, p=0.0035)

My findings that higher income individuals allocate a greater share of savings to stocks (equities) might be interpreted in different ways. It is possible that wealthier individuals are less risk averse than lower income individuals. Second guess would include education since lower educated most likely are lower income individuals, those who make the optimization error by holding too large share of their portfolio in fixed-income assets. (high saving account- 34% among individuals under NOK 200.000).

The second point that affects optimality of retirement income and that is of huge matter for policy makers refers to ages of retirement. In order to maintain the sustainable pension model government tends to keep active workers as long as possible. The shorter one stay in workforce, the longer retirement will be and more money will be necessary to fund it. That means those ones who decide for early retirement might reconsider their financial planning and maybe applies more aggressive approach to investing.

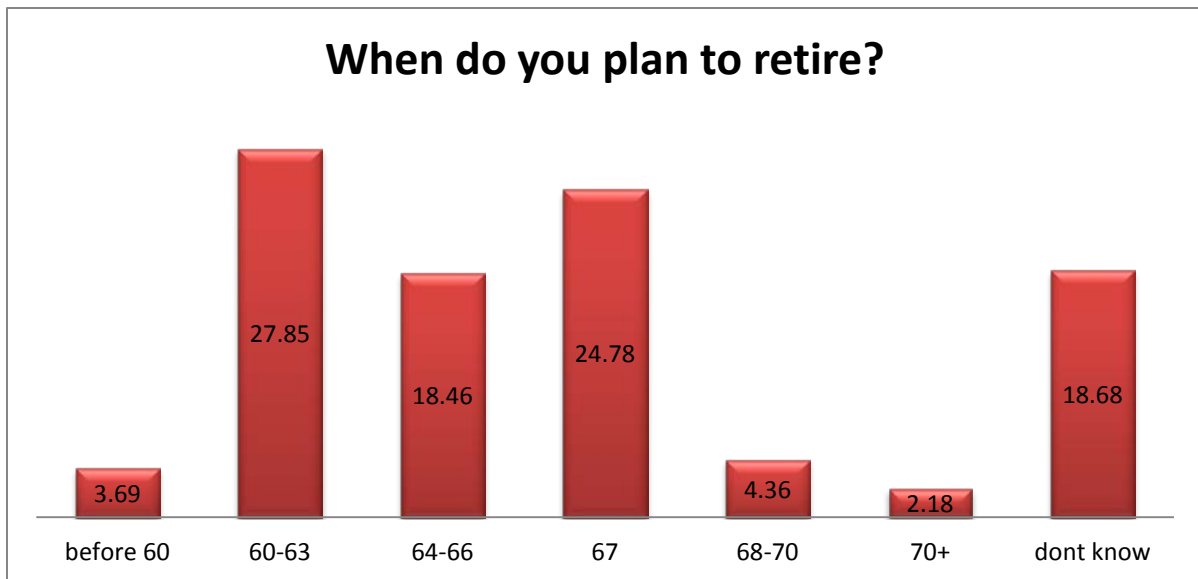


Figure 6.3: Planned retirement ages in percentages; N=1798

We could interpret the graph as a warning for the great percentage of the individuals who plan to retire before 67 years of ages and especially concern grows with the proportion of those in group 60-63 (around 28%).

The questions above, related to the optimal saving for retirement, are subject of much deeper analysis and extent. The issue that is even more important is whether individuals make fully informed decisions and what is the level of understanding the saving products. That is the subject of next discussion.

6.1.2. Confidence in financial institutions and own retirement security

Looking at the Figure 6.4 and 6.5 we can see how different socioeconomic groups are confident with their knowledge over pension rights and saving products. Self-rated answers will serve to find out whether they are comfortable with the knowledge they have about pension's related issues.

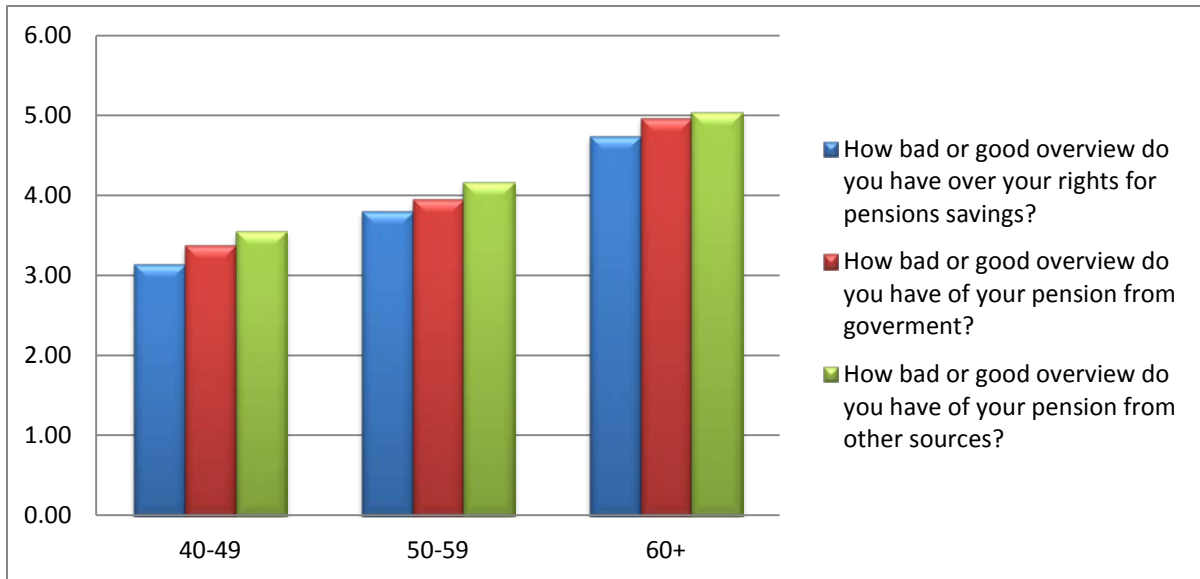


Figure 6.4: Overview of pensions distributed by ages. Average value scale from 1-7 where 1-very poor overview and 7-very good overview

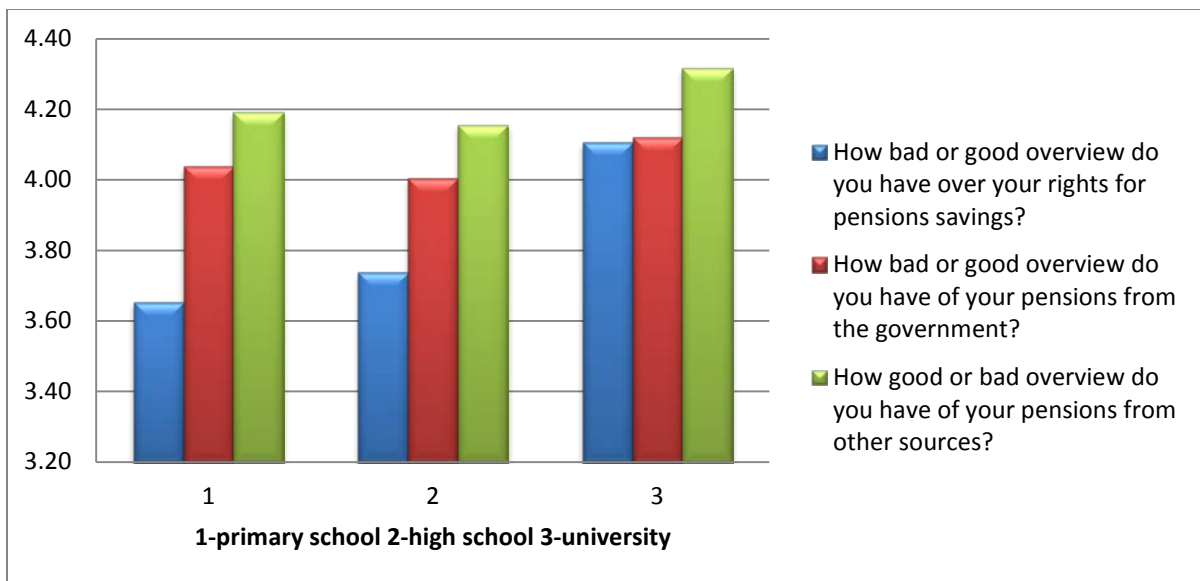


Figure 6.5: Overview of pensions distributed by education. Average value scale from 1-7 where 1-very poor overview and 7-very good overview

Population approaching the ages of retirement showed greater awareness over pension rights and reasonably more interests for this topic than younger population (Figure 6.4). That is not indicator of higher capacity to understand but getting more into pensions problematic closing the ages of retirement. Also with the line of my expectation, higher educated individuals showed more confidence about their pension knowledge (Figure 6.5).

Do wealthier individuals have better knowledge about saving products? Some logic and results from Figure 6.6 might lead us to unequivocal answer but we should consider and be cautious about causality in this case.

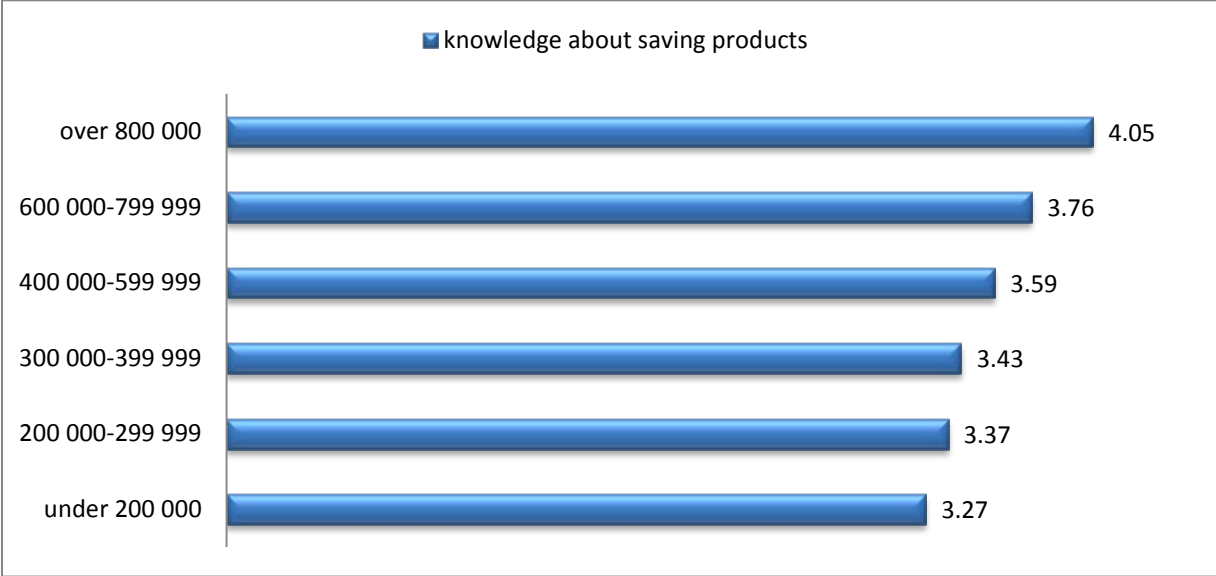


Figure 6.6: Knowledge about saving products wrt. personal income. Average value scale from 1-7 where 1-very poor overview and 7-very good overview

Better knowledge about saving products definitely can bring up the individual’s wealth, but also direction of causality could run in reverse direction- wealthier people could afford to hold in large and more complex types of assets and in that way to learn and increase the financial knowledge.

It might be weakness of previous questions that is too broad and could be difficult to get real picture of their knowledge (e.g. more concrete could be, will pension go up more than prices or how much one can expect to get in retirement?)

The banking sector and financial services industry in general have gotten negative publicity in the recent years. The latest news regarding the case of the Norway’s biggest bank DNB and disillusioned savers finally got the last word on the Supreme Court. Namely, one individual’s complain of being misled by financial advisor with the loan financed investment products extended on more than 1500 customers claims. It turns out that the sold products contained errors and risk was not transparent. Now the bank faces the possibility of paying out several hundred million kroner worth of compensations for those who bought the same product and formally complained.(Supreme Court ruling encourages disillusioned savers 2013)

Increasing number of unsatisfied retail investors was the reason to investigate how responders estimate bank sector and financial industry in general as suppliers of necessary information.

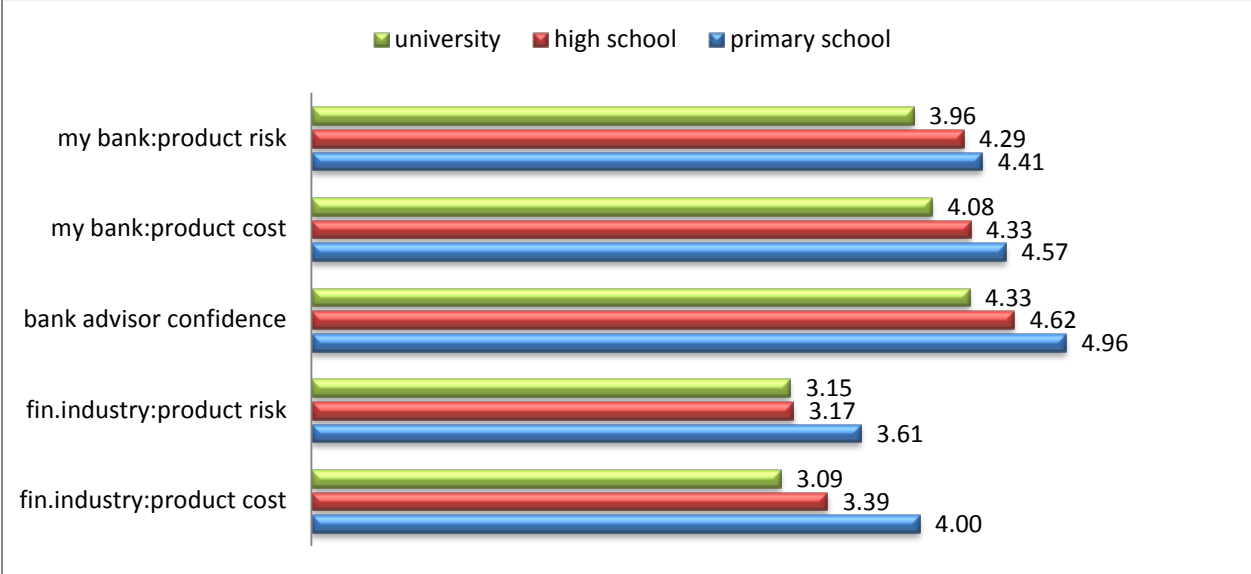


Figure 6.7: The quality of information provided by bank and financial industry wrt education. Average value on scale of 1-7, where 1 = very poor and 7 = very good

As we could see from Figure 6.7 people are not so confident in financial industry as source of reliable information. More confidence they expressed with the banks and particularly in case with bank advisors that might be sign of the important effect of interpersonal communication between investor and bank’s official. We saw also trend where higher educated responders have lower confidence that in some way tells that they are more updated with the potential threats and financial traps than less educated group.

Figure 6.8 discloses one more potential vulnerable group. As matter of fact, it turns out female are more confident and have higher trust in financial industry and banks, while male are more cautious and might be possible more comfortable with their own assessment.

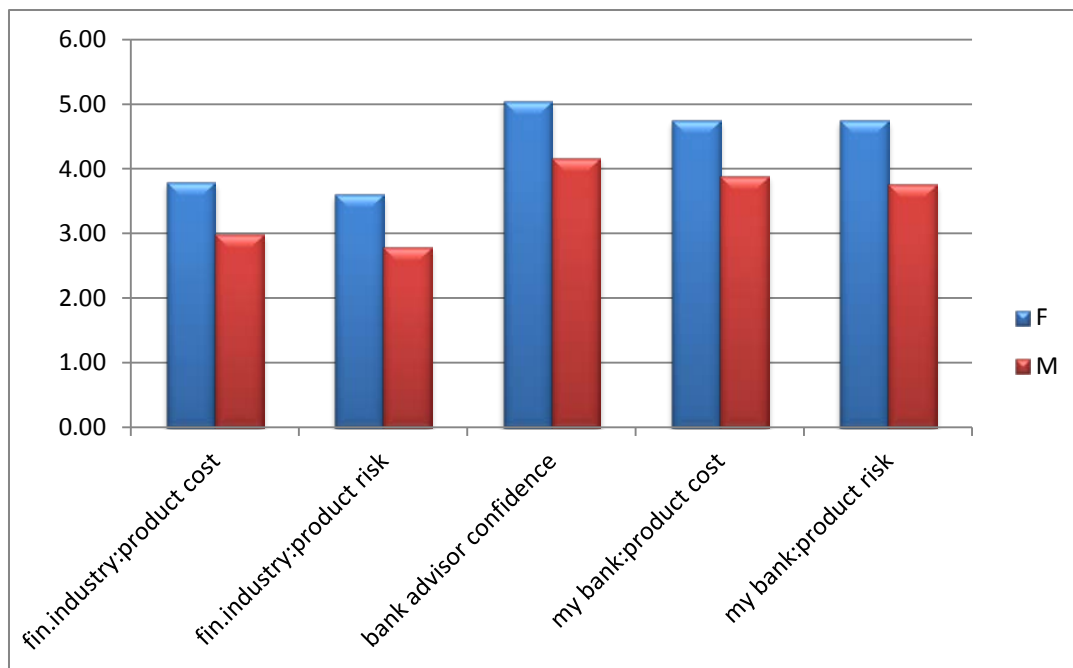


Figure 6.8: The quality of information provided by bank and financial industry wrt gender. Average value on scale of 1-7, where 1 = very poor and 7 = very good

It is interesting to analyse the answers on one of the questions from the survey related to individual's expectations in the future that in some way actually reflects their understanding of saving products. Specifically the question is how they see themselves as pensioners, if they expect good, bad economy or they don't know. Significant majority (38,6%) of the responders didn't know what to expect in future expressing great financial insecurity and lack of financial knowledge.

The 2nd and 4th columns in Table 6.1 report the results of a probit regression analysis indicating the impact of several factors on individual's financial insecurity. More precisely, dependent variable takes value 0 if they are sure about expectations in retirement and 1 if they can't predict about their wealth state in future. The latter state is quite alarming because uncertainty is most likely result of bad financial planning that eventually might bring suboptimal retirement resources. As we can see with the increase of responder's ages predicted probability of financial insecurity decrease. The same is with the education which is in line with my expectations therefore more educated people and people with more experience, closer to the retirement, expressed more security and awareness of their future wealth state. That is another sign for policy makers to apply efficient tools in order to raise awareness for younger population about importance of saving products and to help less educated to cope with current financial innovations.

Table 6.1: Financial insecurity and socio-economic factors

Fin.insecurity	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
personal income	.0070105	.0240283	0.29	0.770	-.0400841	.0541052
education	-.0529665	.0300479	-1.76	0.078	-.1118593	.0059262
Ages	-.0094276	.0043771	-2.15	0.031	-.0180066	-.0008486
Gender	-.0059167	.0655577	-0.09	0.928	-.1344074	.1225739
_cons	.3318185	.2853865	1.16	0.245	-.2275288	.8911658

Note: Probit analysis, Number of obs=1639

As I can see results from my sample pictured average Norwegian as quite conservative and restrained. He chooses saving account as common financial instrument and still hesitates to experiment with the more complex product even it might promise better return. Some trends showed that higher educated and wealthier population is more comfortable with the riskier assets and their portfolio is most likely more diversified than less educated and those with the lower income. Almost 50% of the sample would like to retire before 67 years old which is not in a line with government tendency considering longer life expectation and larger share of retirees than active workers.

Responders seem to have less confidence in financial industry in general as reliable source of necessary information, but still they consider their knowledge about saving products above average. This should be taken with the reserve since self-reported answers could be result of overconfidence therefore not accurate indicator. Higher educated individuals expressed cautious and not remarkable level of trust in institutions while wealthier people believe in their knowledge about saving products. People are still insecure about future retirement income, 38,6% are not sure what to expect and it seems majority belongs to younger population(in our sample closer to 40 years old).

6.2. Attitudes to investment risk

6.2.1. Risk as important on different levels

Before analysing the risk preferences among responders from the survey I would like to shed some light on risk as important factor in decision making process. I already mentioned several

times and shortly discuss asset allocation and importance of portfolio therefore risk as the factor that shapes potential funds in one's saving package. But we should bear in mind that risk doesn't represent just market risk, might be a superficial view especially when we talk about retirement savings. Table 6.2 below will clear my point out:

Table 6.2: The Risk Trade-Offs in the Retirement-Savings Problem

Type of risk	'Safer assets''	'Riskier assets''
Market	Cash	Equities
Saving Shortfall	Equities	Cash
Longevity	Equities	Cash
Inflation	Equities, Inflation-protected Securities	Cash, Bonds

Source: (Fontaine 2005)

As we could see, considering short-term market risk, equities don't look like as the smartest solution, but represent far less longevity or inflation risk which is more important in case of retirement saving goals. With cash investments individual is not concerned with short market risk but all other types of risk significantly increase. Importance of each of the risk type is relative and changes over participant's life span. It is so crucial for design fund's plan that for instance working years are followed by risk of not contributing enough or too conservatively, in retirement is longevity (risk of outliving your savings) and inflation risk (savings will lose purchase power). Young savers should be more aggressive seeking for higher returns since their contribution is not considerable, also midlife savers could follow that strategy considering the great results from the potential compounding returns on already significant savings, while retirees should seek to cut the chances of capital loss. (Fontaine 2005)

Back to my experimental design, specifically experiment 2 and 3 (5.2.2 and 5.2.3.), my intention was to investigate attitude towards investment risk in both situations when investor faces the loss and gain and to test for the framing effects.

6.2.2. Risk insurance

Equity investments are exposed to market risk including possibility of loss principal. Bonds are influenced by interest rate so when interest rates rise, the price of bonds can decrease and even lose principal value. An investment in money market fund is not insured by some of the government agency. Many long term investments have the risk of losing the initial deposited

amount but numerous analyses showed that individuals were not even aware of this fact implying poor financial knowledge¹⁰. In description of experiment 2 possibility of losing some of the initial investment is transparent therefore I want to test their willingness to protect themselves from such a risk.(Figure 6.9 and 6.10)

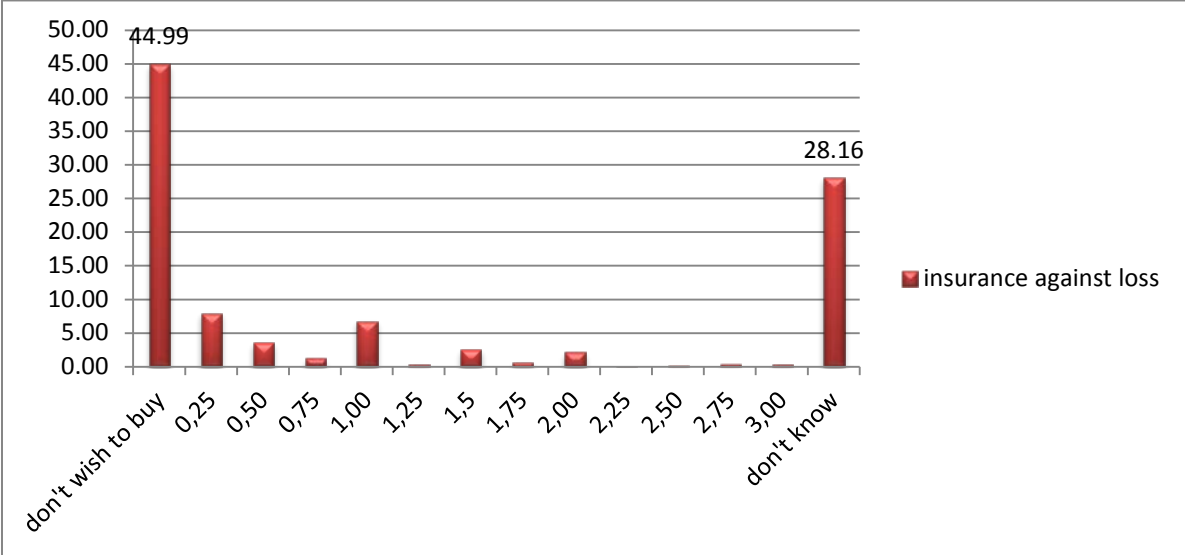


Figure 6.9: Willingness to pay for the insurance against loss by percentage framing. N=921.

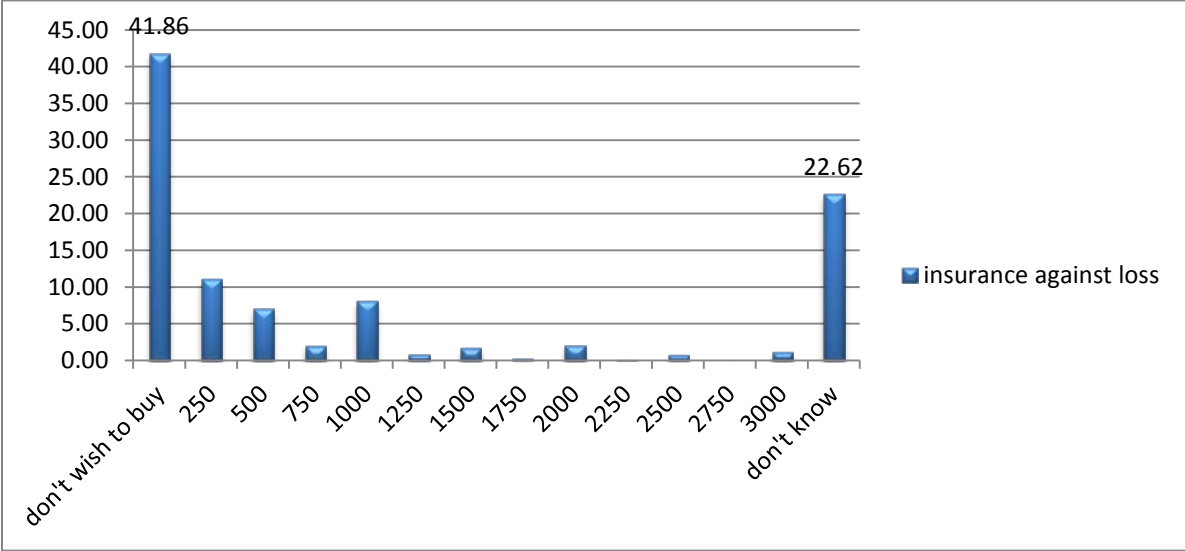


Figure 6.10: Willingness to pay for insurance against loss by kr-framing. N=899.

¹⁰ <http://www.axa-equitable.com/retirement/how-much-do-you-need-to-retire.html>

Both graphs show the willingness to pay insurance against potential loss in two frames, percentage and absolute values. The most frequent answers in both cases were ‘don’t wish to buy’ and ‘don’t know’.

The greatest share of those two groups indicates resistance and confusion towards uncertain events, in this case potential loss. Uncertain return could make responders undetermined but also overoptimistic since beside one third of chance of losing some deposit (3% loss per year), there are also equal chances for market to go up by 5% and 13%. In latter case people might count on positive market movements ignoring the possibility to secure their initial amount in case of bad scenario.

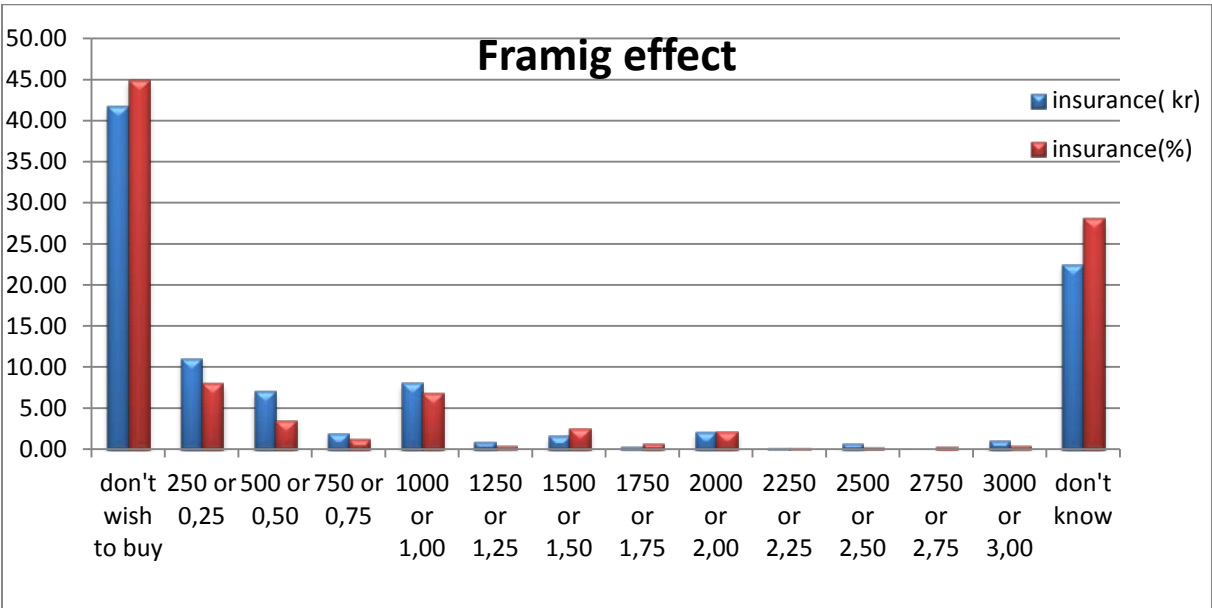


Figure 6.11: Framing effects-willingness to pay for the insurance in kr vs % frame. T-test. Significant differences at the 5% level ($t=2,701$)

If we analyse both insurance price in NOK and % (Figure 6.11), there is no significant difference between percentage and absolute value price among those who don’t want to pay but still greater proportion is on side of percentage framework group.

There is significant difference between responders who didn’t know how much they would pay for the insurance. The group that got percentage framework expressed greater confusion. The possible answer on such outcome is that people have difficulties with the percentages and hardly deal with this shape of price. It is possible that beside essential doubts of paying the insurance, transferring the percentages into real value just make their decision even harder to make.

Complete answer on why people behave as risk seekers in this situation, we will get after discussing the risk preferences through experiment 3, but for the start let's explain by conventional economics why it is better to pay some of the prices than to be extreme risk seeker (Table 6.3).

Table 6.3 shows expected value of investment during ten year period according different premiums (insurance price) and three possible scenarios, loss 3%, gain 5% and 13% respectively. As we can see the last column represents expected investment value depends on insurance payment in range of 0-NOK 3000 .It's not hard to notice that paying the insurance all the way up to NOK 750, including that price as well, (NOK 771.8 is the price where expected values are equal) results in increasing the expected value and reasonably reducing the risk. That means those premiums are under-priced and one who would choose some of these prices would be better off than not paying at all. Despite that fact, around 40% of people reported not to pay for the insurance. One of the reasons might come from financial retail market where people are overwhelmed by different insurance deals. The customers are showered with the wide range of insurance products so they started to lose the trust in this kind of financial instrument.

Table 6.3: The expected investment value after insurance payment

Premium	Loss 3%	Gain 5%	Gain 13%	Expected value
0	73742.41	162889.5	339456.7	192029.54
250	100000	159587.8	334253.2	197946.98
500	100000	156286.1	329049.6	195111.88
750	100000	152984.4	323846	192276.79
1000	100000	149682.7	318642.4	189441.70
1250	100000	146381	313438.8	186606.61
1500	100000	143079.3	308235.3	183771.52
1750	100000	139777.6	303031.7	180936.42
2000	100000	136475.9	297828.1	178101.33
2500	100000	129872.5	287420.9	172431.15
3000	100000	123269.1	277013.8	166760.96
771.8	100000	152696.5	323392.2	192029.57

I keep tracking two groups with the most frequent answers on insurance question in order to find out if there is some particular factor affecting the individual not to pay or not to know the answer. Two regression analyses will help us to get some conclusions regarding those correlations. First probit regression (Table 6.4) will have dependent variable (noins) that takes value 0 if they want to pay some amount and value 1 if they don't wish to pay. Second probit regression (Table 6.5) has dependent variable taking the value 0 if they decide to pay any of the insurance prices and value 1 if they do not know the answer.

Table 6.4: Unwillingness to pay for the insurance wrt. socio-economic factors

noins	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
personal income	.0115321	.026429	0.44	0.663	-.0402679	.063332
education	-.0360525	.0368961	-0.98	0.329	-.1083675	.0362625
ages	.0195312	.004891	3.99	0.000	.0099449	.0291174
male	-.0473618	.0725465	-0.65	0.514	-.1895503	.0948267
math	.1436178	.1256974	1.14	0.253	-.1027444	.3899801
_cons	-1.745901	.2994768	-5.83	0.000	-2.332865	-1.158937

Note: Probit analysis ,Sample size=1639

Looking at the significance of the results from Table 6.4, personal income, education, gender are not significant at 5% level, while increasing the ages causes increase probability of not paying the premium. It seems that older people showed more unwillingness towards insurance prices.

Table 6.5: Undecided about insurance vs. socio-economic factors; Probit analysis, Number of obs=1639

notknow	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
personal income	.0007016	.0288471	0.02	0.981	-.0558377	.0572408
education	-.0947153	.0407182	-2.33	0.020	-.1745215	-.0149091
ages	-.0106189	.0053881	-1.97	0.049	-.0211793	-.0000585
male	-.3097649	.0805802	-3.84	0.000	-.4676992	-.1518306
Math	-.2740474	.1653849	-1.66	0.098	-.598196	.0501011
_cons	-.0518227	.3216345	-0.16	0.872	-.6822146	.5785693

Table 6.5 shows that with increasing education, ages and mathematic skills of the responders, probability of not to know the answer decrease therefore higher educated, more numerate and older people are surer about their decision and price they would pay for the insurance. The same conclusion refers to gender where man are more decisive therefore taking the value 1 of dummy variable ‘male’, decrease probability of not knowing the answer. It might be that man are more confident and overestimate their own skills giving the less undefined answers.

6.2.3. Risk preferences

The purpose of experiment 3 was to test for the risk preferences in situation where one is supposed to choose between safe monetary outcome and gamble with different combinations of outcomes and probabilities (5.2.3.).

Indicator for risk preferences is switching point between the choices in ten different situations. (Figure 5.4) Classification was modelled on Holt and Laury (2002), but in addition I went further and made even more detailed categorisation. There are six risk categorised groups: extreme risk seeker (start with 1st choice and end up the same or start 2nd choice and switch in situation 2); quite risk seeker (start with 2nd ,switch in situation 3 or 4);low risk seeker (switch in situation 5); low risk aversive(switch in situation 6);quite risk aversive(switch in situation 7 or 8);extreme risk aversive(switch in situation 9 or 10)

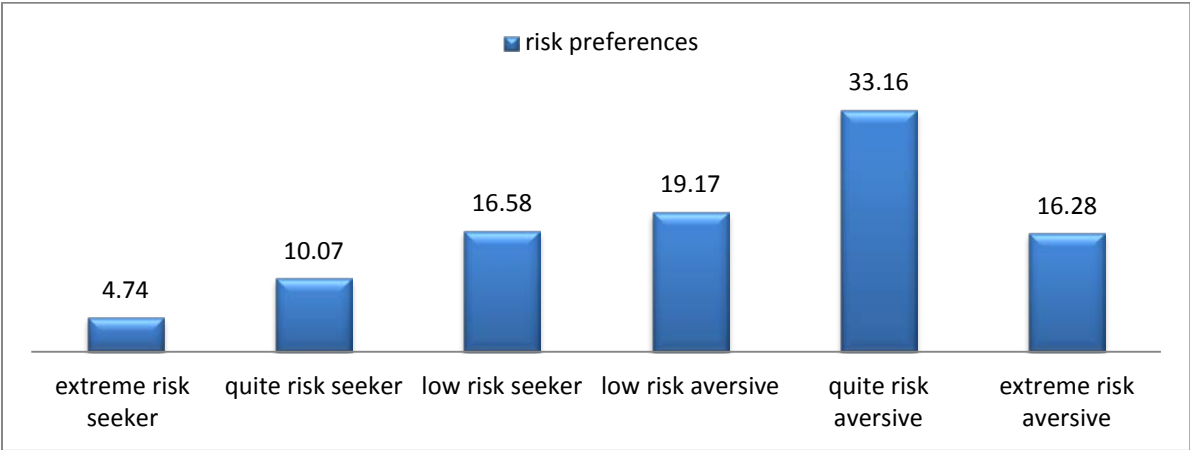


Figure 6.12: Risk preferences derived from experiment 3 (percentages)

Looking at the Figure 6.12 we can conclude that Norwegians are highly risk averse with close to 70% of sample (three risk aversive groups together) showing the safe option as preferable up to the situation nr.5 and further.

Table 6.6 will serve to make risk preferences even more understandable.(Follow the Figure 5.4)

Table 6.6: Expected monetary outcome vs. sure gain

Situation nr.	Alternative 1 (Expected value)	Alternative 2
1	1700 kr	Sure 2500 kr
2	1900 kr	Sure 2500 kr
3	2100 kr	Sure 2500 kr
4	2300 kr	Sure 2500 kr
5	2500 kr	Sure 2500 kr
6	2700 kr	Sure 2500 kr
7	2900 kr	Sure 2500 kr
8	3100 kr	Sure 2500 kr
9	3300 kr	Sure 2500 kr
10	3500 kr	Sure 2500 kr

Note: Derived from experiment 3(attitude towards risk)

As we can see from the table, situation nr.5 results in equal monetary outcome. I assumed that is a break-even point, and one who chooses sure outcome in that case have been categorised as risk averse (specifically low risk averse) and taking the monetary gamble over sure outcome as risk seeker (low risk seeker).

Following the logic above, I considered answers in situation nr.5 as indicators of riskiness and dependent variable in probit analysis. It will take value 0 if responder shows risk seeking behaviour (alternative 1) and value 1 if one shows as risk averse (alternative 2).

Table 6.7: Risk preferences wrt. socio-economic factors

riskiness	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
personal income	-.0356079	.0261524	-1.36	0.173	-.0868655 .0156498
education	.0274676	.0312183	0.88	0.379	-.0337191 .0886542
ages	-.0026924	.0046444	-0.58	0.562	-.0117951 .0064104
livelihood	-.0015437	.0177176	-0.09	0.931	-.0362695 .0331822
female	.243937	.0685372	3.56	0.000	.1096066 .3782674
_cons	.6156173	.276734	2.22	0.026	.0732286 1.158006

Note: Probit analysis: Number of obs=1639

Testing the risk preferences didn't show significant differences on the basis of demographic factors (personal income, education and ages) except the gender. It turns out female are significantly more risk averse than man, that one more time indicates female as vulnerable group considering potential inadequacy in retirement savings.

It is easy to notice both experiment 2 and 3 have the same purpose to test the attitude towards risk investment, but with different approach (frames).The risk insurance analysis is related to risk towards potential loss and latter one connected to potential gains.

6.2.4. Loss aversion

We saw that over 40% of the sample demonstrated unwillingness towards insurance price therefore people showed they would rather gamble with the potential loss than to pay and secure invested money. That means people who didn't wish to pay insurance expressed risk seeking behaviour which lead us to believe that the same responders will show the same behaviour in experiment 3 (risk preferences).That was my next task, to test for the risk preferences those who were reluctant to premium prices.

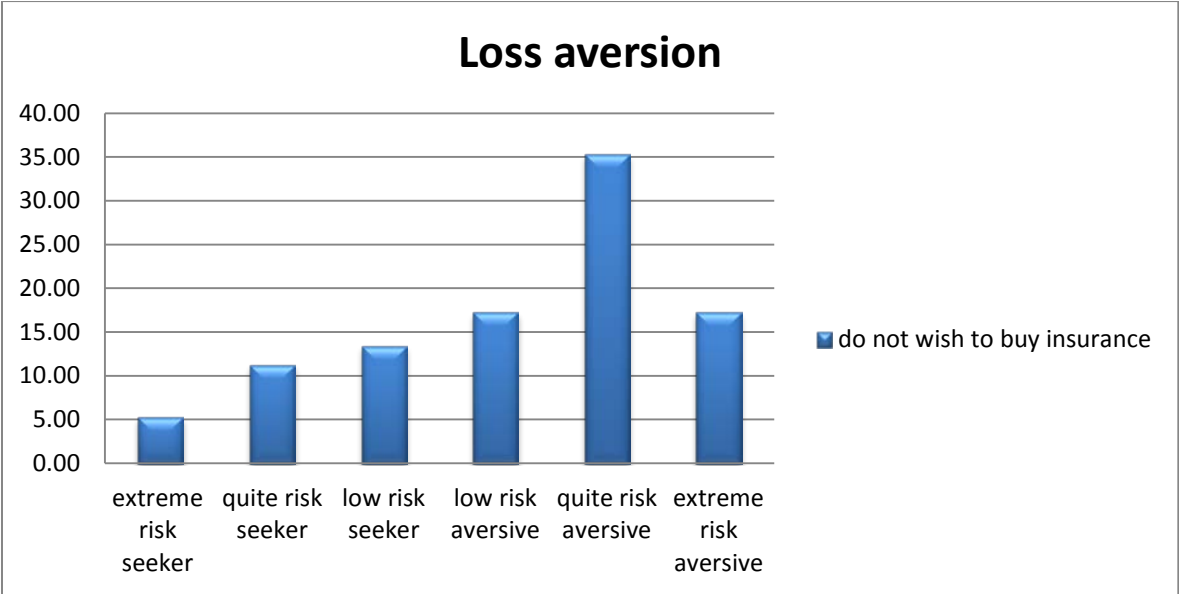


Figure 6.13: Risk attitude of those who don't want to pay insurance

The results are contradictory looking at the Figure 6.13 where actually individuals who didn't wish to pay for the insurance are predominantly risk averse. Why? By intuition we could expect greater percentage of risk seekers among these responders.

The answer lies in key concept of the prospect theory already observed in second chapter. This analysis just confirmed what many researchers have proved before that people don't

process information in such a rational way. Back to the behavioural economics, Kahneman and Tversky came up with the prospect theory, saying that people value losses and gains differently. Losses are weighted more heavily than an equivalent amount of gains, or we can say people experience stronger the pain of losing than joy of gaining the same amount of money. The implication is that they are ready to settle for some reasonable level of gains - risk averse (even there is chance to earn more), but also are willing to engage the risk-seeking behaviour in situation where they can limit their losses. Since potential investors are not aware of this behaviour, institutions, knowing the weaknesses of individuals, can take advantage of it. We can see through one example how that can be possible.

If one investor was offered with the same mutual fund but from different bank advisors the choice will depend on presentation of product. The first advisor described the mutual fund with an average return of 7% over the past five years. The second advisor told investor that mutual fund has been producing above average return in the past 10 years but recent years have been observed in declining returns. Based on prospect theory, investor will more likely choose the first advisor over the second one even though it is about the same product¹¹. That actually gives the space to financial institutions to manipulate and shape the products in a way that is more attractive and preferable for investors hiding the information of the crucial matter. As Dan Ariely said: 'We are not only irrational, we can be predictable irrational!'

The responders behaved as a risk averse, near 70% of participants would rather settle for safe amount than go for the gamble, but when it comes to losses they become riskier. They didn't find necessary to pay for the insurance and secure their deposit (over 40%). People look at the insurance as pure loss and if there is a chance of not paying the same and still not losing the deposit they would go for that scenario and in that way reflect typical irrational behaviour. Results also showed that women are more risk averse than men. There is significant fraction of responders who didn't know what to pay for the insurance but that % decrease with increasing the education, ages and mathematical skills.

Beside behavioural biases, investment decisions are prone to framing effects. People don't like percentage frames. When insurance was presented in percentages they expressed more unwillingness to pay for such insurance and more confusion (answer- 'do not know') than in case where insurance was in absolute values.

¹¹ <http://www.independentinvestor.info/content/view/966/236/1/2/>

6.3. Choice of saving products

The main objective of the experiment 1 is to test consumer's ability to make retail investment decisions. Some demographic groups will be identified as better decision makers and weaknesses in process of making decisions will be observed. Responders will show if they are capable to recognize the lowest priced product or in other words, the one with the highest effective return. On their way of making decisions, they can express either cognitive limitations or some of the behavioural biases. Even though investment alternatives in the experiment are simplified version of investment products in reality, it reflects credible picture of investments with the fee structure of the most common products in retail investment market. The group of 75 different investment options are categorised in 25 sets and each of the responders have been assigned with three random investment sets. (Table 6.8-example of the first three choice sets with fee structure of investment choice and balance amount at the end of the 10 year saving period)

Table 6.8: Example of Investment alternatives-fee structure and final balance amount

Choice set	Alternative	Start	Yearlig	Percent	Year 10
1	1	0	0	0.01	124514.5
1	2	5000	750	0	114490
1	3	2500	250	0.02	111241.4
2	1	1250	1000	0.01	110694.8
2	2	3750	750	0.005	113216.7
2	3	2500	250	0	124851.2
3	1	5000	250	0.01	114154.2
3	2	1250	750	0.015	110393.6
3	3	3750	1000	0	113381.6

Note: Experiment 1(Choice of saving products)

Estimates of the balances at the end of year t are done as follows:

$$I_t = (10000 - x)(1 + r)(1 - y) - z \text{ for } t = 1$$

$$I_t = (I_{t-1} + 10000)(1 + r)(1 - y) - z \text{ for } t > 1$$

where I_t represents the balance amount at the end of year t , x is the start-up fee, r is the interest rate at 5%, y is the percentage fee and z is the annual fee. Percentage fee and the annual fee deducted either at the end of each year.

My goal is to recognise the most vulnerable groups, or whether particular socio-economic group is less able to make right decision and what kinds of fee structure of the investment makes them mistakable. In order to get the answers on those questions, we will compare the balance amount at the end of the ten year saving period of selected option and best option in each set and that difference will be indicator of the sub-optimal decision and dependent variable of following regression analysis.

6.3.1. Who makes mistakes?

Before we start analysing the groups who make worse or better investment decisions I would like to present general figures showing how responders from the sample are successful in selecting the best option (Figure 6.14)



Figure 6.14: Success in selection the best choice in percentages

In order to find out whether differences in gender, education, personal income, occupation and ages influence decision making, I will first apply some descriptive statistics and then by linear regression try to expose marginal effects and significance of each of the corresponding factors.

Several times through my observations we could notice gender difference in investments attitude in general. It turns out again that female on average have greater loss compare with male therefore make worse decisions.(Figure 6.15)

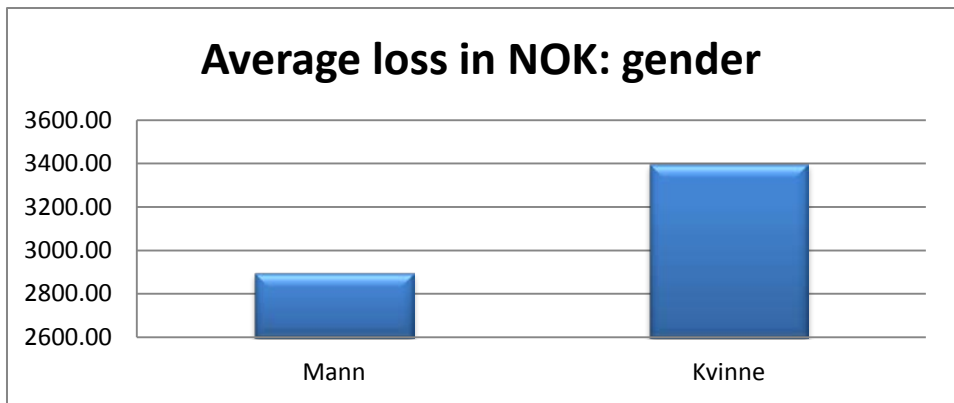


Figure 6.15: An average loss distributed by gender (NOK)

Men have NOK 2898 and women NOK 3400 average loss made by selecting the wrong choice. When it is about investing in future, men and women may not be on equal footing. Women generally spend less working years and on average earn less than men which means lower pension and social security benefits. That means women may need to invest more aggressively and be even less fallible when it comes to the investing. In addition women have longer life expectancies and starting to contribute as early as possible is one of the conditions for longer retirement¹².

In a line with my expectations, higher educated people perform on average better than those with lower education. It doesn't have to be default, but the fact is that highly educated individuals are more able to process information and understand the issue which proves cognitive skills as important in investment decision making.

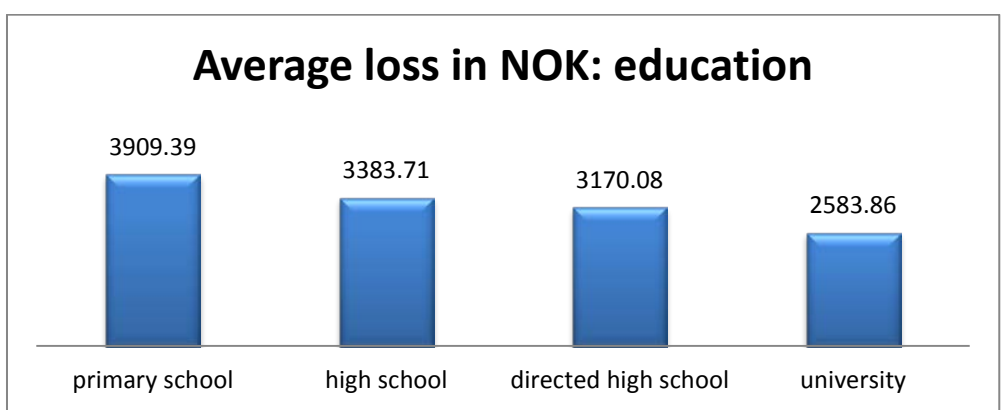


Figure 6.16: An average loss distributed by education (NOK)

Very interesting findings are related to responders' occupation and how their working status influence quality of selected investment choice (Figure 6.17)

¹² Source, internet: <http://www.axa-equitable.com/>

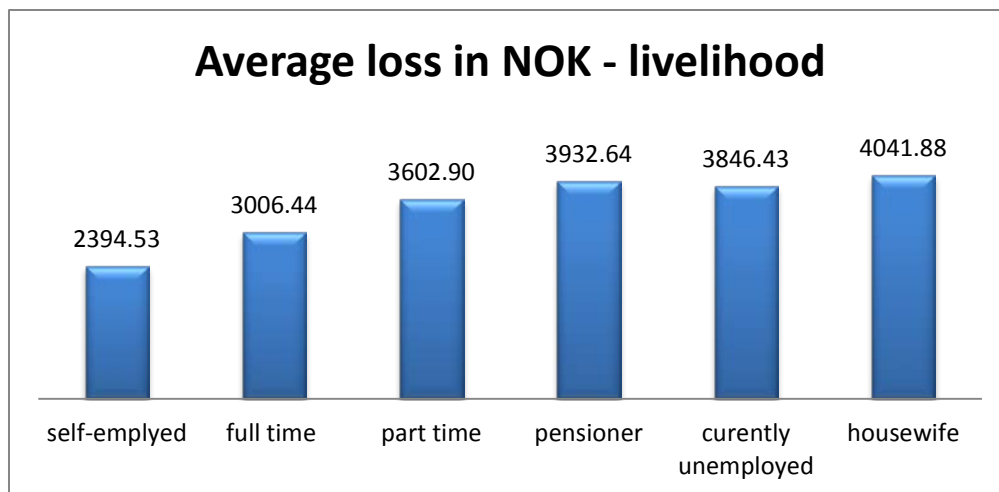


Figure 6.17: An average loss distributed by occupation (NOK)

I would like to discuss the result that obviously stands out and refers to self-employed group. People who have their own business showed the best results in selecting the optimal investment options. It might be possible that entrepreneurs have the least average loss since they are dealing with the costs and financial planning very often. Being directly involved in operating the business they developed numerical skills and improved decision making in general.

Regressing the average loss on already mentioned independent variables we are getting even more transparent interpretation of how each of the socio-economic factors influence making optimal decision keeping other factors constant.

Table 6.9: An average loss vs. socio-economic factor

averageloss	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
personal income	-120.6606	44.14165	-2.73	0.006	-207.198	-34.12316
Education-primary school						
2-high school	-661.6599	211.0861	-3.13	0.002	-1075.483	-247.8366
3-directed high school	-1154.204	232.4127	-4.97	0.000	-1609.837	-698.5708
4-university	-1836.966	274.0554	-6.70	0.000	-2374.238	-1299.695
Livelihood-self employed						
2-full time	710.6301	259.3129	2.74	0.006	202.2606	1219
3-part time	354.6704	306.4178	1.16	0.247	-246.0457	955.3865

4-unemployed	858.534	295.5443	2.90	0.004	279.1349	1437.933
5-housewife	424.3843	632.5884	0.67	0.502	-815.7723	1664.541
6-pensioner	1671.114	416.6492	4.01	0.000	854.2949	2487.933
7-other	1537.554	437.2764	3.52	0.000	680.2964	2394.811
ages	9.064555	7.519725	1.21	0.228	-5.677474	23.80658
female	412.914	114.4052	3.61	0.000	188.6287	637.1994
_cons	3035.72	530.133	5.73	0.000	1996.422	4075.018

Note: Linear (OLS) regression ; Number of obs=4917

Reading the results from the table we can say that higher income individuals made better decisions, specifically, one point increase of personal income decrease average loss for NOK 120. Following the education we see gradually decreasing average loss with the increasing the education, therefore the university educated individuals have decreased average loss for NOK 1836 in compare with the lowest educated group. Female significantly did worse than male population and increased on average the loss for NOK 413. As we've already observed, self-employed people have made the least mistakes and that can show the table with significant result in points-2, 4, and 6. in the table. That means for instance that compare with the self-employed individual, being the full time worker increase the average loss for NOK 710 the same with unemployed(NOK 858) and pensioners (NOK 1671). It is indicative that people get used to be protected and provided either by state (social and other benefits) or employers (defined-benefit scheme).That is why current retiree who spent all their working period without questioning their retirement income adequacy or workers under defined benefit plan who didn't have burden of uncertainty now struggle and have less chance to invest smart than group who rely on and develop their own skills.

6.3.2. Why do they make mistakes?

The primary goal of answering this question is not supposed to uncover numerical or calculation abilities of individuals. Many of the investment options require high mathematical skills to be resolved in short time so it would be unrealistic to expect from responders to know resulted balances at the end of the saving period. Analysing the selected choices of responders I was trying to figure out the pattern of their answers and what makes them to end up with wrong alternative. You may compare fee structure of the saving products and if someone

relies on mathematical logic he will be closer to the right answer, but if you let yourself to be ruled by behavioural biases than most likely you will regret.

My intuition regarding procedure of selecting the optimal investment option guided me to the possible myopic behaviour, loss aversion and difficulties with the percentages fees, therefore I compared the answers on investment sets with special characteristics (fees structure). One group of investment set that I observed was with the highest start-up fee but the best outcome at the end of ten year saving period. Before I compare the results of this group with the results of other investment set groups I will provide how actually fees structure influence possible loss or sub-optimal decision by next regression:

Table 6.10: The impact of fee structure on average loss

averageloss	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
start up fee	333.7624	32.21755	10.36	0.000	270.6027	396.9221
yearly fee	862.4677	35.07971	24.59	0.000	793.697	931.2384
percentage fee	833.6121	33.9146	24.58	0.000	767.1256	900.0987
_cons	179.2909	91.72184	1.95	0.051	-.5216353	359.1035

Note: OLS regression; Number of obs=5304

Table shows that one unit (0,005%) increase of percentage fee causes increase of average loss for NOK 834 in same way one unit (NOK 250) of yearly fee leads to increase of NOK 862 and unit (NOK 1250) of start-up fee results with the increase of NOK 334. That means that responders were supposed to be far more concerned with yearly and percentage fee than with the start-up fee since their impact on selected option is much more significant. But how they actually behave? As already mentioned I compared the success in choosing the right option between two different groups of investment sets (Figure 6.18)

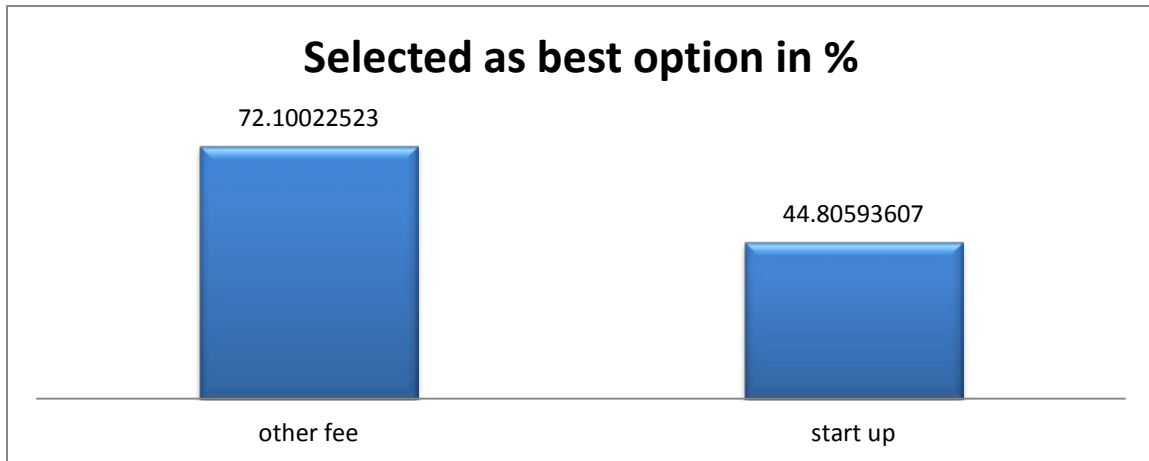


Figure 6.18: Success of making decisions in two groups of investments

As we could see significantly less number of responders found optimal investment option in group of investment set where options with highest start-up fee result as best alternative. If we break down these two comparative groups related to education and income we get the results from the Figures 6.19 and 6.20.

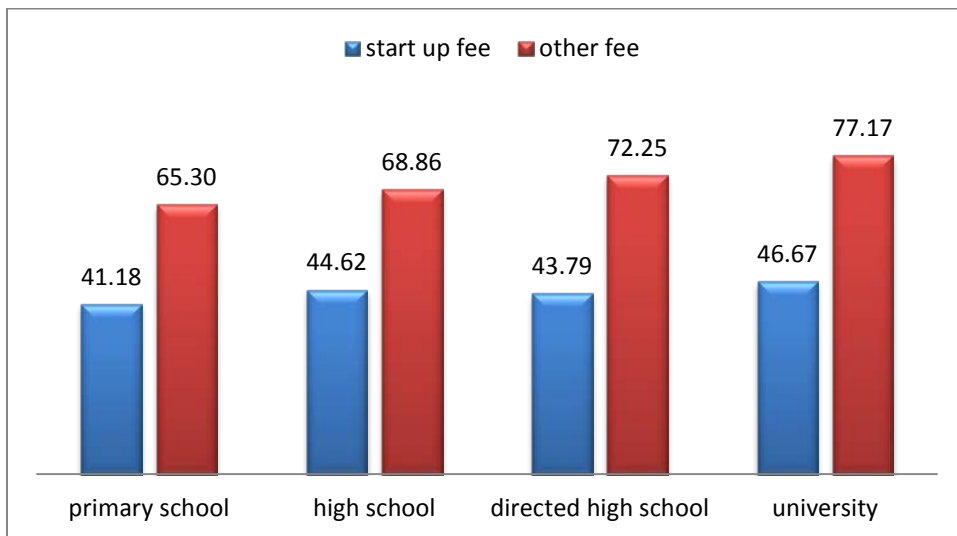


Figure 6.19: Success of making decisions in two groups of investments distributed by education

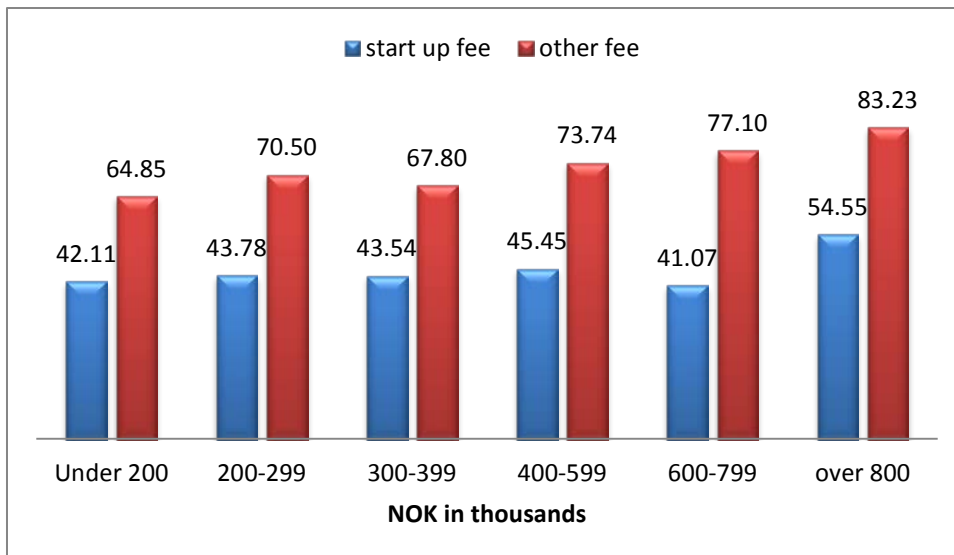


Figure 6.20: Success of making decisions in two groups of investments distributed by personal income

Both graphs show that on all levels of education and income greater success in selecting the optimal option have responders who were not dealing with the investment sets that have highest start-up fee and best effective return.

These results can be interpreted as myopic behaviour where individuals are not able to see and to act according the nature of investment (10 year binding period) but perceive start up fees as instant loss therefore as the most important feature of saving product. With that said we can confirm again high sensitivity towards losses that in this case blurs the other parameters in fee structure which are of the greater impact on final balanced amount. As we could see from regression just 0,005% of percentage fee increase causes almost three times higher loss than increase of NOK 1250 in start-up fee. The responders might be aware that the options with the highest start-up fee in the first couple of years most likely have less balance amount than other options but obviously not aware that lower percentage fee with the other alternatives at the end will overcome that gap and possible result as the best option. Around 60% of individuals who have selected wrong choice just reflect the problem they have with the percentage fees and its calculation. If we in addition consider compounding interest rate and respective percentage fee than the problem even becomes more complicated and final outcome less transparent. Start-up fee will be calculated up front just once but percentage fee will compound annually during 10 year period which gives explanation of its huge effect on balance amount at the end of the saving period. That indicates importance of knowing the basic economic principles, numerical skills but also the transparency of financial institutions.

The participants of the survey were assigned with the three random investments sets. Just 30.94% of the sample was unmistakable and selected best choice in all three sets.. There is one third of chance that 36.37% of responders will always make the best choice while 8.99% individuals should be concerned since they made all three mistakes. Men, people with higher education and personal income and entrepreneurs have greater chance to make optimal investment decisions.

The main obstacle was the fee structure of the investment sets where options with the highest start-up fee have the best effective return. Responders were short sighted, selecting the lower start-up fee over the higher percentage fee expressing again difficulties and bad understanding of the costs in percentage form.

6.4. Validity, Limitations, Further research

Data obtained from the survey serve as a base for all my inferences. In order to trust my conclusions as reliable and valid, I will briefly expose some of the characteristic of web survey as a method of collecting the data and some limitations regarding results extracted from the survey.

Web designed surveys are flexible and effective. Less expensive method and short time frame for collection data justify growing number of electronically administered surveys over past several years. Easy transfer data into a data-base, cost saving and convenience for the responders are just some of the features of on line surveys¹³.

One of the main concerns of the web surveys is related to external validity that is foundation of every good experimental design. The main criterion of the external validity is the process of generalization, and whether results obtained from a sample group can be extended to make prediction about the entire population.

As noted earlier, representativeness of the results in web survey might be jeopardized since on-line population in most countries differ from the general population. Internet penetration in Norway is around 93% so we can say that selection bias is avoided and sample has randomly recruited responders¹⁴.

¹³ [http://wybowiersma.net/pub/essays/Wiersma,Wybo.The validity of surveys online and offline.pdf](http://wybowiersma.net/pub/essays/Wiersma,Wybo.The%20validity%20of%20surveys%20online%20and%20offline.pdf)

¹⁴ <http://www.mvfglobal.com/scandinavia>

In survey like this designer have to be sure that questions are understandable, unequivocal and focused to extract valuable information for further researching. That means it is supposed to be simple as possible but at the same time reflect real investment market conditions. Some responders found the survey quite difficult even I think it is simplified version of the tasks that they can face in the market environment. Even though most of the questions are very clear and transparent there is still room for improvement.

One of the treats of web survey is bias from self-reported answer. Fortunately experience from other on line surveys showed not big effect from this bias and I don't see the reason that some of the answers were not objective in my survey.

It is hard to say how good results from the experiments testing risk attitude, reflect real behaviour. We could assume that one would be more cautious if deals with real money than hypothetical, but on other hand that would mean that they could be just more risk averse and that doesn't change overall conclusion.

Finally, monetary incentives for responders are low and they do not spend vast amount of time on their hypothetical decisions therefore we shouldn't over-interpret the level effects that I found.

There are no reasons to believe that the behavioural biases I found would not matter in real life. If such systematic deviations (myopic behaviour, loss aversion, framing effects) occur in these stylised and simple situations it would be naïve to believe they would not occur in more complex real-life situations.

The issues of pension reforms, retail investment market and capability of individual to respond on the actual problems are too broad therefore further research might capture different areas. If the sore spot is investment retail complexity and diagnosis is cognitive constraints and behavioural biases than only logical next step is medication. That means I would like to see further research questions related to effects of policy measures on quality of making the decision and overall pension system improvement.

7. CONCLUSION

Implementation of pension reforms in Norway will get its full power and purpose in years to come. In order to make it happen for the benefits of current and future generations, strategically formed system chain between government, financial institutions, employers and employees is inevitable.

If we start from the last link in the chain, we should ask ourselves whether potential investors are able to make optimal investment decisions on his/her own and to cope with the challenges imposed by increasingly complicated financial markets. If the answer is yes and individuals are confident players in retail investment markets than conducting the reforms is less painful. But what is the reality? Research evidence from my experiment tells that around 70% of the responders have at least one mistake in selecting the best investment option given three investments sets. We should bear in mind I didn't manipulate with the fee structure in order to trigger all described behavioural biases but when I did it with the sets where highest start-up fee option has the best balance outcome, responders showed vulnerability and inconsistency in the answers. Building the trust in financial institutions is supposed to be a foundation for further improvements in the retail investment market, but the survey showed that people are not confident in financial industry. They are risk averse and almost 40% of my sample is insecure in adequacy of retirement income. The way how investment alternatives were presented strongly influences individual's decision.

It is hard to believe based on research evidence that Norwegians are well prepared for the challenges of the new pension system. Reality is not different. The Norwegian Air Shuttle and airline Widerøe employees are just some of the cases ended up at the court claiming the old pension rights.¹⁵ Those reactions are more than expected even Government's actions are planned for the benefit of current and future generations. But somebody missed the fact that pensions system in Norway is in transition and that means patience and strategically well organised adaptation program.

Nobody can expect a new-born baby to walk after two weeks. She needs to practice, to become strong and confident than parents will be happy to witness her first steps.

¹⁵ <http://www.newsinenGLISH.no/2013/06/06/norwegian-air-loses-pensions-trial/>

Analogically, it is important to regulate the investment retail market, increase transparency, organize educational campaigns, build up teams of expertise who would be responsible for default funds considering different preferences, provide incentives for saving programs, simplify enrolment and finally protect the pension rights. That leads to the term of *Libertarian Paternalism*. Libertarian aspect is supposed to give people freedom to do what they like- to opt out of undesirable arrangements if they want to do so. Paternalistic aspect of strategies lies in the claim that it is legitimate for the choice architect to steer people's behaviour in the direction to improve their lives (Thaler & Sunstein 2008).

The retirement landscape is changing and the retail investment world is not a quiet, pleasant place where asset managers efficiently manage investment portfolios for their clients. Financial innovation changed that and made pension reforms even harder to conduct. Days are numbered when most Norwegian workers could rely on employers to manage their retirement savings. Despite all the challenges, with the regulation of retail investment market and paternalistic approach of the government, no reason to question consumer's potential to handle their portfolio themselves and enjoy well-deserved pensions.

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