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| Erasmus Universiteit Rotterdam |
| Disclosure quality and quantity  To what extent the quality and quantity of investment risk disclosures have increased since the financial crisis |
| A comparative research between larger and smaller Dutch pension funds |



Master thesis

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# Executive summary

The Dutch pension fund sector is an interesting, dynamic research field on which this thesis has focussed by providing an answer to the following main research question:

***“To what extent have the quantity and quality of investment risk disclosures in the financial statements of Dutch pension funds increased since the financial crisis and does pension fund size result in differences in disclosure quantity and quality?”***

Scientific research might contribute to increasing disclosure quality and help reduce problems with information asymmetry and agency conflicts that occur also in the pension sector. Buzby (1975) and Cooke (1989) concluded in their research that the larger a company, the higher the disclosure quality, which will be subject of research in this thesis as well. The financial crisis started in the United States in 2007 and spread all over the world since then (Dabrowski, 2010). This thesis aims to research if the disclosure quantity and quality of investment risks have increased since the financial crisis as well. Both disclosure quantity and quality will be researched, following Beretta and Bozzolan (2004) who emphasized to take into account not only “how much” (disclosure quantity), but also “what” and “in which way” (disclosure quality) is disclosed.

After an extensive selection procedure, content analysis and a disclosure index study have been chosen as research methods. To collect the data, a checklist has been applied to the financial statements of 25 Dutch pension funds. First of all has been tested if the financial crisis was a topic in the financial statements at all and if the disclosure quantity regarding financial crisis was bigger for larger than for smaller pension funds. This was indeed the case. Furthermore could be concluded that the financial crisis had resulted in a bigger disclosure quantity of investment risks. It was remarkable that indeed the larger pension funds disclosed the investment risks more frequently than smaller pension funds before the crisis, but this was not the case anymore after the start of the financial crisis. Regarding the asset category bonds could be concluded that the quality of investment risk disclosures has increased since the financial crisis which was to a lesser degree the case with real estate. With regard to the disclosure quality of investment risks, pension fund size resulted only partially in higher disclosure quality for bigger pension funds. However, like many other researches this research has his limitations as well. An important limitation is that there are possibilities for pension funds to voluntarily disclose information to reduce problems with information asymmetry and agency conflicts. These possibilities, such as newsletters, have not been taken into account as part of this research and are an interesting subject of research for further investigation.

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# List of abbreviations

AFM Autoriteit Financiële Markten (Authority of Financial Markets)

AIMR Association of Investment Management Research

AUM Assets Under Management

BW Burgerlijk Wetboek (Civil Code)

CBS Centraal Bureau voor de Statistiek (Statline)

COSO Committee of Sponsoring Organizations of the Treadway Commission

DNB De Nederlandsche Bank (Dutch Central Bank)

GIIPS Greece, Italy, Ireland, Portugal and Spain

IASB International Accounting Standards Board

IFRS International Financial Reporting Standards

NIVRA Nederlands Instituut Van Registeraccountants (Royal Dutch Institute for Certified Public Accountants)

PAT Positive Accounting Theory

RJ Raad voor de Jaarverslaggeving (Council of Annual Reporting)

# 1 Introduction

In this chapter, the reader will receive more details on what can be expected of the thesis. In the first paragraph, the motivation of this thesis will be presented. The next paragraph will present the problem definition with sub research questions. Furthermore, the methodology is described. In the last paragraph, the structure of this thesis is presented.

## **Motivation**

Claassen and Gotink (2010) have described that *“the Dutch pension sector is facing what may become the biggest overhaul since its inception”.* Volatile markets, the decrease of the interest rate and the growing life expectancy have resulted in tough decisions that have to be made in the Dutch retirement system (Claassen and Gotink, 2010). Moreover, countries around the world, including the Netherlands, experienced the consequences of the financial crisis (Van Ewijk, 2009; Dabrowski, 2010). Furthermore, the vast majority of the Dutch citizens participates in Dutch pension funds (Statistics Netherlands, 2012) and the amount that these pension funds invest is considerable (Dutch Central Bank, 2012), as will be further elaborated in paragraph 2.2. In addition, there is a trend visible in which smaller Dutch pension funds vanish and are consolidated into larger entities (Van der Westen, 2013; Frijns, 2010).

Despite these interesting developments and the size of this sector, during an explorative literature research, I noticed that the number of scientific research publications with regard to pension funds is quite low. As to be further elaborated during the literature research, the participants of the pension funds have to take into consideration that the pension funds might act in their own interest. For the participants of the pension funds, it is important that the disclosure quality of the financial statements is high. Scientific research can contribute to increasing disclosure quality by critically conducting research.

All in all, the Dutch pension fund sector seems to provide a very interesting research field on which this thesis will focus, more specifically on the investments risks of Dutch pension funds. It would be interesting to research if the disclosure quantity and disclosure quality have increased since the start of the financial crisis in 2007 and if there are differences noticeable regarding pension fund size.

## **1.2 Main research question and sub research questions**

Several researchers have conducted research on risk disclosures (e.g. Linsley and Shrives (2006); Blij and Mertens (2008)). Nevertheless, less research has been conducted specifically on pension funds and the financial crisis regarding risk disclosures. However, as described in the first paragraph, the number of stakeholders in Dutch pension funds is considerable and it is in the interest of these stakeholders to conduct more research on this topic.

The main research question can be defined as:

***“To what extent have the quantity and quality of investment risk disclosures in the financial statements of Dutch pension funds increased since the financial crisis and does pension fund size result in differences in disclosure quantity and quality?”***

To provide enough evidence to be able to formulate a conclusion, the following sub research questions have been composed:

* Which literature is already available and which prior research has already been conducted regarding the quality of investment risk disclosures and pension funds?
* Which law and regulation is applicable to investment risk disclosures of pension funds and more specifically, did law and regulation change since the start of the financial crisis?
* Did prior research already provide more information about a potentially positive relation between company size and the quality and quantity of risk disclosures?
* Which research methods can be distinguished regarding assessing disclosure quality and which method is the most appropriate to answer the research question?
* Is the financial crisis presented as a topic in the financial statements of Dutch pension funds, and if so, is there a positive relation between company size and disclosure quantity?
* Have the quantity and quality of investment risk disclosures in the financial statements of Dutch pension funds indeed increased since the financial crisis?
* Is there a positive relation between company size and the quantity and quality of investment risk disclosures?

## 1.3 Methodology

An extensive literature research has been executed. As part of the literature review, more information on prior research and different research methods regarding the topic of this thesis will be presented. The framework developed by Babbie (2007) has been applied during the research process, as presented in appendix 6. Part of this research process is the selection of the research method. The most appropriate research method to conduct the research has been selected by applying several criteria to each research method. This resulted in the application of content analysis and a disclosure index study to the financial statements of 25 Dutch pension funds. A checklist has been developed to collect the data regarding disclosure quantity and quality. The data has been filed in a SPSS database and processed within SPSS for further analysis.

## 1.4 Structure

The thesis is structured as follows. In chapter 2, the literature research will be presented. The different concepts that are part of the problem definition will be elaborated during the literature research, as well as prior research. Law and regulation regarding the disclosure of investment risks in the financial statements will also be described in chapter 2, because mutations in law and regulation might have an impact on the disclosure quality.

The research design will be elaborated in chapter 3 by applying the research design of Babbie (2007). In this chapter, the most appropriate research method or methods will be selected and further described.

In chapter 4, the analysis and results will be described. Finally, chapter 5 presents the conclusions and limitations of the research and recommendations for further research.

# 2 Literature research

In the previous chapter, different concepts have already been described as part of the main research question and subquestions. Before conducting further research, in this chapter, these concepts are elaborated as part of the literature research. In the first paragraph, important theories with regard to the thesis will be described, followed by a paragraph about the Dutch pension sector. The concepts of financial crisis, annual accounts versus annual reports, risk and disclosure will be presented as well, including different methods to measure the disclosure quality. Subsequently, the association between disclosure quality and company size is described. Finally, papers and articles will be described that concern empirical research, which will be also helpful to answer the research question in the remainder of this thesis.

## 2.1 Theory

Healy and Palepu (2001) describe that the request for financial reporting and disclosures is derived from information asymmetry and the agency problem. Information asymmetry will be described as part of the financial accounting theory. Subsequently, in this paragraph, the agency theory will be described as part of the Positive Accounting Theory (PAT).

**Information asymmetry as part of financial accounting theory**

Scott (2006) emphasizes the importance of information asymmetry as part of the financial accounting theory. Scott (2006) argues that in ideal conditions, there is no information asymmetry. However, such like other sectors, the Dutch pension sector is not characterized by ideal conditions.

Scott (2006) continues that there is information asymmetry in a situation in which parties that are part of business transactions benefit from having more information than others. Scott (2006) distinguishes two important information asymmetry types, adverse selection and moral hazard, as depicted in appendix 1.

Scott (2006) describes adverse selection as a kind of information asymmetry in which one or more participants of business transactions, or potential business transactions, have the benefit from having more information than others. Parties with information advantages are for example managers within the pension funds and other insiders. These parties have more information about the current situation of the company and also about future expectations.

Moral hazard is another type of information asymmetry and exists because of the separation between control and ownership that is the case in most of the large companies (Scott, 2006). One or more participants of a transaction are able to notice the efforts to meet the transaction, while other parties are unable to notice. In general, it is not possible for creditors and shareholders to assess the quality and extent of the top managers’ efforts to act on their own behalf. In response to this, top managers might avoid to do their duty in all due respect. Top management could blame a decrease in business performance on factors outside their control.

As depicted in appendix 1, providing full disclosure is a possibility to overcome information asymmetry. Participants of Dutch pension funds might gain more information about their contributions when pension funds provide more information in the financial statements.

**Positive Accounting Theory (PAT)**

A positive theory attempts to *“explain and predict particular phenomena”* (Deegan and Unerman (2006)). According to Deegan and Unerman (2006), PAT concentrates on the relations between the different persons that deliver resources to an enterprise and in which way accounting might help in the working of these relations. Research from a positive accounting perspective could focus on particular characteristics of an enterprise that can explain how management behaves with regard to disclosures. This thesis focuses on the characteristic pension fund size and will predict if and explain why pension fund size could result in differences in disclosure quantity and quality.

Deegan and Unerman (2006) present the agency theory as part of PAT and describe that in the agency theory, a firm is regarded as a nexus of contracts. Contracts that have been established to make sure that each party that behaves in his own self-interest, at the same time has a motivation to maximize the organizations value. Jensen and Meckling (1976) have defined an agency relation as *“a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent”.*

Maatman (2004) describes that the rights and obligations that exist in the relation between principal and agent often relate to conflicts of interest. These risks of conflicts of interest can be experienced by the principal in “serving two masters” as well as the agent by “self-dealing” (Jensen, 2000).

However, the legislator will search for possibilities to oppose agency problems. According to Maatman (2004), the agency problems of Dutch pension funds, can be solved by meticulously described rules regarding prudent asset management, reliability and integrity. Healy and Palepu (2001) state that to solve agency problems, the board of directors can play an important role by actively monitoring and disciplining the management of a company in the interests of the stakeholders. Healy and Palepu (2001) continue that information intermediaries, like rating agencies and financial analysts are able to produce information that might detect managers applying the resources of the firm for the wrong purposes.

A pension fund has several stakeholders and behaves in the interests of these stakeholders. As described above, meticulously described rules are a possibility to reduce the agency problems. In the Dutch Pension Law, the protection of the interests of the stakeholders of the Dutch pension funds is explicitly described. Article 105 paragraph 2 of the Dutch Pension Law describes the requirements with regard to the policymakers of Dutch pension funds. The persons that determine the policy of a pension fund or partly determine this policy have to act in the interest of several parties in performing their duty. Members, former members, others entitled to claim, pensioners and the employers have to be represented in a balanced way. In this chapter, these laws and regulations will also be further described.

## 2.2 Dutch pension sector

The Dutch pension sector is a dynamic sector. In the past decade, a lot of developments have taken place that had impact on Dutch pension funds and might have influenced the quality of risk disclosures as well. For this reason, these recent developments have been included.

**Dutch pension funds**

A pension fund is a legal entity, in which on behalf of at least two participants, former participants or their surviving relatives, money is raised or has been raised and is managed for the execution of at least one basic pension regulation (Pension Law [in Dutch: Pensioenwet] article 1).

In article 1 of the Pension Law three main types of pension funds are described. These three types are the company pension fund (in Dutch: ondernemingspensioenfonds), the sector pension fund (in Dutch: bedrijfstakpensioenfonds) and the compulsory sector pension fund (In Dutch: verplichtgestelde bedrijfstakpensioenfonds). The company pension fund is a pension fund that is linked to a company or a group or a pension fund linked to a number of companies or groups by a merger of the pension funds that are linked to the companies or groups. A sector pension fund is a pension fund for the benefit of one or more sectors or parts of a sector. A compulsory sector pension fund is a sector pension fund in which the company is obliged to participate as described in article 2 of the Pension Law.

The Dutch Central Bank distinguishes in addition to the three main types also occupational pension funds (in Dutch: beroepspensioenfondsen). Occupational pension funds are pension funds that operate for certain professions (Article 1, Wet verplichte beroepspensioenregeling). Requirements to qualify as occupational pension fund are also described in the Pension Law.

The number of pension funds in the Netherlands has decreased considerably during the past decade, as depicted in appendix 2 (DNB, 2012). On 31 December 2002, in the Netherlands, 926 pension funds had been registered, this number has decreased to 454 on 31 December 2011. Blokzijl and Slob (2012) describe two main arguments for the decline in number of Dutch pension funds, cost efficiency and a stronger interpretation of governance by the management of the pension funds.

An important part of the Dutch citizens is participant of a pension fund. Statistics Netherlands (2012) estimated 5.735.000 active participants of Dutch pension funds as per end of 2011. Statistics Netherlands considers participants active when these participants pay their premium at the end of the year and Statistics Netherlands estimated the number of former participants as per end of 2011 at 8.714.000. These participants have paid their premiums in the past and are non-contributory entitled to a pension in the future. Appendix 3 depicts an overview of Statline, in Dutch CBS. The appendix indicates that the investments of the Dutch pension funds amount to over 800 billion euro as per end of 2011.

**Report Commission Frijns**

The Commission Frijns (2010) analyses in her report the future developments of occupational pensions. The commission Frijns (2010) states that the pension sector is heterogeneous and becomes more complex. Due to the declining birth rates and the proportional increase of the ageing population, pension funds become more vulnerable (Frijns et al. (2010)).

According to the research of this commission, the risk profile of Dutch pension funds has changed considerably. Pension funds have become more and more dependent on financial markets. Pension funds invest increasingly in financial products such as shares, real estate and alternative investments in which investing is, in general, riskier than for example investing in government bonds of countries with a high credit rating. The tendency of Dutch pension funds to invest with more risk has been partially caused by the necessity to increase their yield, to keep the pension costs low (Frijns et al. 2010). Frijns et al. (2010) emphasize that in times of crisis, the increased risk profile may lead to considerable decreases of the funding ratio (the ratio of market value of assets to liabilities) of pension funds.

The Commission Frijns (2010) concluded also that pension funds have structurally too little attention for risk management and the implementation of an investment policy. Regarding the relation between the size of the Dutch pension funds and risk management, the Commission Frijns (2010) describes that there is no clear information available. The Commission continues that above mentioned challenges will set high standards to the Board of Directors and that given the large amount of Dutch pension funds, one may questions if these standards will be fulfilled. According to the Commission Frijns, further consolidation of pension funds can be expected, as already described in this chapter and depicted in appendix 2.

**Report Commission Goudswaard**

The Commission Goudswaard (2010) states that the participants of Dutch pension funds have increasingly been exposed to risks. Financial setbacks have an impact on the pension of the participants. The Commission Goudswaard (2010) describes that the trust of the participants in their pension funds and thereby the pension scheme is under pressure.

The Commission Goudswaard (2010) states that it will be hard to further increase the pension premiums. Solutions are further reduction of pension ambitions, changes in risk management or a combination of both. The Commission Goudswaard (2010) states that these solutions require pervasive and transparent communication. According to the Commission Goudswaard (2010), the participants have to be inquired as clear and comprehensible as possible about the expected purchasing power of the pension rights and the associated uncertainties. The financial statements of the pension funds could play an important role in this.

## 2.3 Financial crisis

There are several definitions with regard to financial crisis. Mishkin (1991) defines a financial crisis as *“a disruption to financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities”*. This definition of Mishkin (1991) is connected with the theory described in paragraph 2.1, as adverse selection and moral hazard problems are part of the concept of information asymmetry (Scott, 2006). Bordo et al. (2001) define financial crisis as an *“episode of financial-market volatility marked by significant problems of illiquidity and insolvency among financial-market participants and/or by official intervention to contain such consequences”*.

According to Mishkin (2009), the financial crisis, also known as the economic crisis or credit crisis, started in the United States. Dabrowski (2010) continues that summer of 2007, the global financial crisis started with the subprime mortgage crisis. Dabrowski (2010) described further that subsequently, the financial crisis in 2008 also spread to Europe.

Van Ewijk (2009) has conducted research specifically aimed at the financial crisis and Dutch pension funds and describes that in 2008, the problems for Dutch pension funds occurred as a result of the financial crisis. The stock market collapsed and due to the collapse, the Assets Under Management (AUM) of Dutch pension funds decreased with a total amount of around 130 billion euro. This represented a quarter of all the pension wealth that had been created.

## **2.4 Annual reports versus annual accounts**

In the annual report, the Executive Board reports in writing the chronology of events at the legal entity and the policy of the legal entity. In reporting practice, this report is also denoted as “Report of the Executive Board” (Dutch Guidelines of Annual Reporting Guideline 400.101).

In contrast to the annual accounts, the annual reports are only verified marginally on the basis of article 2:393 (5f) of the Dutch Civil Code (NIVRA, 2010).

## **2.5 Risk**

In this paragraph, first, “risk” will be defined, subsequently different risk categories will be described.

***Risk***

Risk can be described as *“the possibility of a loss or harm to an entity”* (Fichadia and Raval, 2007). Like other entities, Dutch pension funds also face certain risks and uncertainties. However, according to the Dutch Guidelines of Annual Reporting, focussing only on losses is too minimalistic. The RJ states that for example the concept of price risk comprises not only the risk on losses but also the risk of gains (RJ 940).

Linsley and Shrives (2006) have presented a definition of risk disclosure that consists of *‘good’* and *‘bad risk’* and *‘uncertainties’*, so it contains also the risk of gains described in RJ 940. According to Linsley and Shrives (2006), risk disclosure occurs when a reader is acquainted of *“any opportunity or prospect, or of any hazard, danger, harm, threat or exposure, that has already impacted upon the company or may impact upon the company in the future or of the management of any such opportunity, prospect, hazard, harm, threat or exposure”.*

***Risk categories***

COSO (2004) and the RJ present different classifications of risk categories. COSO (2004) presents five types of risks, which are financial, operational, reporting, compliance and strategic risks. RJ 610.403 distinguishes matching risk, insurance risk, concentration risk, investment risks, operational risks, legal risks and outsourcing and associated risks as different risk categories (see appendix 5).

***Investment risks***

Regarding investment risks, the Dutch Guidelines of Annual Reporting provide in RJ 610.403 examples of five different investment risks. These investment risks are interest rate risk, price risk, credit risk, liquidity risk and specific investment risks regarding alternative investments. Furthermore, the RJ distinguishes three types of price risk, which are currency risk, interest rate risk and market risk (RJ 940). The overview of investment risks described by the RJ in RJ 610.403 is not limitative as the RJ has described only five *examples* of investment risks.

Christoffersen (2012) states that before the financial crisis, there was little attention in risk management to liquidity risk. According to Christoffersen (2012), since the financial crisis, the demand for treasury securities (like bonds) with a lower risk has increased considerably. The liquidity in markets for riskier securities dried up as result of this (Christoffersen, 2012).

## **2.6 Disclosure**

According to Healy and Palepu (2001), the request of the stakeholders for disclosures is derived from information asymmetry and agency conflicts between management and outside investors. These theoretical terms have already been elaborated in the first paragraph of this chapter. In this paragraph, fist ‘disclosure’ will be defined. Hassan and Marston (2010) describe that disclosures can be categorized in the broad categories ‘voluntary’ and ‘mandatory’, which will be described in further detail in this paragraph. The boundary between voluntary and mandatory disclosures will be described as well.

## **2.6.1 Definition**

Gibbins, Richardson and Wahterhouse (1990) define financial disclosure as *“any deliberate release of financial (and non-financial) information, whether numerical or qualitative, required or voluntary, or via formal or informal channels.”*

## **2.6.2 Mandatory disclosures**

Hassan and Marston (2010) define mandatory disclosure as *“information revealed in the fulfilment of disclosure requirements of statute in the form of laws, professional regulations in the form of standards and the listing rules of stock exchanges”.*

The financial statements of pension funds are examples of mandatory disclosures. Regarding the Dutch pension fund, the statements have to be presented in accordance with the Civil Code of the Netherlands, the Dutch Guidelines for Annual Reporting and the Dutch Pension Law. Further details with regard to the law will be presented below, including changes, if any, which have occurred since 2006, the year before the start of the financial crisis. These changes in law are important to take into account as part of the analysis of the research results, which will be presented in chapter 4.

Title 9 Book 2 of the Civil Code of the Netherlands

In Title 9 Book 2 of the Civil Code of the Netherlands (in Dutch: Titel 9 Boek 2 Burgerlijk Wetboek), the legal provisions are described that have to be taken into account for the preparation of the financial statements (Böhmer e.a., 2012).

Article 2:362 (1) of the Dutch Civil Code describes that the annual accounts have to provide, in accordance with the generally accepted accounting principles, that kind of insight that a sound judgment can be made about the capital and result, as well as, provided that the nature of the annual accounts permits, the solvency and liquidity of the legal entity.

Article 2:391 describes the minimum requirements of the annual report. The annual report should provide a description of the main risks and uncertainties to which the legal entity is exposed. This article describes also that the annual report should present the risk policy. More specifically, the annual report should describe the policy of hedging risks regarding major types of transactions and the exposure to price, credit, liquidity and cash flow risk.

Relating to the content, these articles have not changed since 2006, the year before the financial crisis in the Netherlands.

Pension Law

As of 1 January 2007, the Pension Law (in Dutch: Pensioenwet) has been initiated. With regard to risks, article 143 of the Pension Law describes that a pension fund has to arrange the organisation in such a way that a controlled and upright operational management is guaranteed. Rules by general measures of management concern among other things controlling of business processes and business risks and the solidarity of the pension fund. The solidarity of the pension fund means controlling financial risks and the control of other risks that might damage the solidarity of the pension fund.

Dutch Guidelines of Annual Reporting

The Dutch Guidelines of Annual Reporting (Dutch Guidelines from now, [in Dutch: Richtlijnen voor de Jaarverslaggeving]) aim to answer most of the questions that arise in practice (Böhmer e.a., 2012). In the Dutch Guidelines, The Raad voor de Jaarverslaggeving (RJ) distinguishes between convincing judgments and recommendations. The RJ does not pretend that the judgments are enforceable. However, court jurisdiction reveals the undeniable authority of the Dutch Guidelines (Böhmer e.a., 2012).

The RJ reviews critically if the standards of the International Accounting Standards Board (IASB), which will be presented in this chapter as well, could be applicable to Dutch legal entities. If these standards indeed contribute to further development of external financial reporting, certain standards can be introduced in the Dutch Guidelines (Böhmer e.a., 2012).

Chapter 610 of the Dutch Guidelines applies to Dutch pension funds. Chapter 610 has been revised significantly in the so-called “2007 revision” that is applicable to annual reports that start on or after January 1st of 2008. In the 2005 revision of chapter 610, the recommendations regarding risk disclosures were limited in scope. At the time, Dutch Guideline 610.504, part of the “Other subjects”, described that with regard to investments, certain risks, developments and break-downs *could* be presented.

The 2007 revisions resulted in the addition of specific and more extensive guidelines with regard to the risk paragraph of pension funds. In appendix 5, the risk paragraph has been translated. As presented in appendix 5, with regard to investments risks, RJ 610.403 recommends to present explanations from a policy point to interest rate risk, price risk, credit risk and liquidity risk. RJ 610.403 applies to annual reports, however, RJ 610.404 recommends to present further explanations to the risks described in RJ 610.403 in the annual accounts. This concerns the major risks.

RJ 610.507 recommends to apply the revised risk paragraph of chapter 610 to annual accounts beginning on or after 1 January 2007. Up and until the reporting year 2011, the guidelines regarding the risk paragraph have not changed. Hence, if the annual accounts have been presented in conformity with the recommendations of the RJ, there are no changes in the Dutch Guidelines regarding the risk paragraph that might lead to changes in the disclosure quality of the annual accounts *during* the financial crisis. However, regarding the annual reports of 2006, the year *before* the financial crisis, less specific and less extensive guidelines were applicable. During the research, this will have to be taken into account, as this might influence the research results.

## **2.6.3 Voluntary disclosures**

Lev (1992) describes voluntary disclosure as “*the information that is not required by laws or regulations”.* Gray et al. (2001) continue that voluntary disclosures concerns *“the information that goes beyond the minimum required in a mandatory area”.* A number of pension funds go indeed beyond the minimum that is required in the mandatory area as will be described below.

International Financial Reporting Standards (IFRS)

Pension funds are not obliged to publish the financial statements in confirmation with IFRS. However, pension funds are permitted to voluntarily apply IFRS (Böhmer et al., 2012). When a pension funds applies IFRS, a Dutch pension fund still has to take into account the requirements of the Pension law and Title 9 Book 2 of the Civil Code.

IFRS 7 concerns the disclosures and describes two parts, a part with quantitative disclosures regarding the positions on the balance sheet and the income statements and a second part with risk disclosures. These risk disclosures concern financial instruments and are presented ‘through the eyes of management’. The disclosures should present how management observes, quantifies and manages the risk of a fund (PricewaterhouseCoopers, 2010).

August of 2005, IFRS has been issued and IFRS 7 is applicable to financial statements beginning on or after January 1st of 2007, accordingly before the financial crisis took place. However, since January 1st of 2007, a number of amendments are effective, for example on liquidity risk (Deloitte, 2012). This might influence the outcomes of the research. Compared to pension funds that do not apply IFRS, this could result in differences in the risk disclosures. As described above, pension funds are not obliged to apply IFRS. However, Stichting Shell Pensioenfonds is an example of a pension fund that indeed applies IFRS.

## **2.6.4 Boundary between voluntary and mandatory disclosures**

There is no clearly defined boundary between voluntary and mandatory disclosures. Gray et al. (2001) state that within the mandatory area, the disclosure of information might go beyond the minimum that is required. However, it is difficult to assess what these minimum requirements are. Although regarding risk disclosures, the requirements from the Civil Code of the Netherlands, the Dutch Guidelines of Annual Reporting, the Pension Law and IFRS have already been presented, the boundary is still difficult to assess.

The principles-based law systems that have to be applied to the Dutch pension funds increase the difficulty. DiPiazza et al. (2008) state that one should acknowledge that no system exists that is purely based on principles nor a system that is purely based on rules. However, the law as described above focuses more on a principles-based system. In their paper, DiPiazzo et al. (2008) emphasize that the preparers of the financial statements should *“place more emphasis on the exercise of professional judgment”.* This is an important remark, both the preparers and the users will have to take this into account.

DiPiazza et al. (2008) exemplify this with an example about fair value measurement and risks and emphasize that disclosure quality might be enhanced by disclosing supplementary information. When certain investments of a pension fund have been presented at fair value, this will for several investments mean that risks of not or partially not receiving future cash flows have already been calculated in the fair value (DiPiazza et al., 2008). Since the financial crisis, the investments in for example Greece have been restructured and revaluation of these investments has already been priced in the fair value. However, additional information on the investments in Greece and the risks of these investments could enhance the faithful representation of the investments.

## **2.7 Measurement of disclosure quality**

Several authors (e.g. Healy and Palepu (2001); Beattie et al. (2004); Babbie (2007); Hassan and Marston (2010)) have made an overview of different approaches to analyse and measure the disclosure quality in annual reports.

Beattie et al. (2004) distinguish subjective ratings, disclosure index studies, content analysis, readability studies and linguistic analysis as proxies for disclosure measurement. Hassan and Marston (2010) have presented subjective ratings as part of the broader category “Disclosure survey”. All proxies will be described in this subparagraph, as depicted in appendix 4, in this thesis, subjective ratings will also be described as part of the disclosure surveys. Every research method will be accompanied by a general description, advantages and disadvantages and, if applicable, an example of previous research.

## **2.7.1 Disclosure survey (questionnaires and interviews)**

***General description***

Disclosure surveys are applied to investigate disclosure by the investigation of the perceptions of investors, financial analysts or other groups about the disclosures of certain firms with questionnaires or interviews (Hassan and Marston, 2010). In a typical survey research, a researcher selects a sample of respondents and supplies the respondents a standardized questionnaire (Babbie, 2007).

***Advantages and disadvantages***

Blumberg et al. (2011) describe versatility as the great strength of a survey. All types of information can be gathered by questioning respondents. Babbie (2007) adds that a survey is especially useful when the research involves the description of characteristics of a large population and that surveys make it possible to work with large samples.

However, surveys have also their shortcomings. Blumberg et al. (2011) explain that the quality and quantity of information is heavily dependent on the possibilities and willingness of the participants to cooperate in the survey. Babbie (2007) continues that surveys are subject to artificiality. An example to illustrate this, when a person gives conservative answers in a questionnaire, it does not necessarily mean that this person is conservative.

***Previous research***

Hassan and Marston (2010) describe the reports of the Association of Investment Management Research (AIMR) as one of the most cited examples of applying disclosure survey. Unfortunately, these reports concern American sectors, few if no disclosure surveys have been conducted in the Dutch pension fund sector, therefore, no example of previous research will be provided.

## **2.7.2 Disclosure index studies**

***General description***

Disclosure index studies acknowledge that measuring disclosure quality is difficult and these studies make the assumption that the number of disclosures of pre-defined subjects is a proxy for disclosure quality (Beattie et al., 2004).

Hassan and Marston (2010) describe that disclosure indices can include mandatory as well as voluntary disclosures. According to Beattie et al. (2004), the majority of disclosure index studies is aimed to research differences between companies and countries. Beattie et al. (2004) continue that in most cases, a binary coding scheme is applied in which the researcher records if an item is present or not. However, ordinal coding schemes are applied also frequently according to Beattie et al. (2004).

***Advantages and disadvantages***

Hassan and Marston (2010) describe the flexibility of this research method as a major advantage and emphasize that disclosure indices make it possible to make own customized indices that fits the needs of the researcher.

Hassan and Marston (2010) describe as disadvantages that the research is subject to the judgment of the researcher and that, in general, it is resource-intensive to collect data which results in small samples. Beattie et al. (2004) emphasize that problems with reliability and validity might occur.

***Previous research***

**Botosan (1997)**

Botosan (1997) has applied a disclosure index study and aimed to supply further evidence regarding the association between equity capital costs and the level of disclosure and the size of this effect. Botosan (1997) used a sample which consisted of the annual reports of 122 manufacturing enterprises. Botosan (1997) made a disclosure index which contained five different categories of voluntary information. The results of the research of Botosan (1997) revealed that for the sample with enterprises that were followed by a relatively smaller number of analysts, there was an association between more extensive disclosure and lower costs for equity capital. No association was measured for the sample with firms which were followed by a relatively larger number of analysts.

## **2.7.3 Content analysis**

***General description***

Krippendorf (1980) defines content analysis as *“a research technique for making replicable and valid inferences from data to their context”*.

Hassan and Marston (2010) distinguish between conceptual and relational content analysis. Conceptual content analysis is used for the determination of the occurrence of the frequency of certain concepts or key words in texts of fragments of texts. Relational content analysis goes further than conceptual content analysis. As the term already conveys, relational content analysis examines also the relations between the concepts.

Beattie et al. (2004) distinguish between partial and comprehensive content analysis. Partial content analysis examines only parts of the document or is restricted to selected keywords or items of information. Comprehensive content analysis, also referred to as holistic content analysis, examines the document as a whole.

***Advantages and disadvantages***

Babbie (2007) describes advantages in time and money of content analysis as major advantage compared to for example surveys. Babbie (2007) continues that an extensive research group is not necessary, special research tools are not needed and that in most cases, content analysis does not have impact on the subject under study.

However, content analysis has also disadvantages. Blumberg et al. (2011) state that content analysis depends heavily on the quality of the input and that the procedures for coding the information that have been established may lead to interpretation biases.

***Previous research***

Linsley and Shrives (2006)

Linsley and Shrives (2006) noticed that not much empirical research had been applied to study the risk disclosures of companies. Linsley and Shrives (2006) aimed to contribute to further empirical literature on this topic.

The researchers have applied a content analysis to the annual reports of 79 non-financial companies that are listed on the FTSE 100 Index of the London Stock Exchange. One single coder collected the data, however, the authors supported in composing a coding sample.

The research confirmed the hypothesis of Linsley and Shrives (2006) of the existence of a positive correlation between volumes of risk disclosure and company size. The researchers state that they have succeeded in providing more empirical literature. However, Linsley and Shrives (2006) emphasize that more industry-specific and cross-country research regarding risk disclosures has to be conducted to further extend the knowledge of this research topic.

## **2.7.4 Readability studies**

***General description***

Beattie et al. (2004) describe that readability studies have been developed to express as a quantity *“the cognitive difficulty of text”*. To measure the level of difficulty of material that has been written, readability indexes can be used. The Flesch Reading Ease Score, Flesch Kincaid Grade Level and Gunning’s Fog Index are three examples of readability indexes (Blumberg et al., 2011). Subsequently, the calculated scores will be compared with a benchmark to assess the readability.

***Advantages and disadvantages***

The objectivity is, according to Beattie et al. (2004) a major advantage of this research method. Blumberg et al. (2011) continue that readability indexes are relatively easy to apply.

Beattie et al. (2004) give as a disadvantage that the method is less appropriate for texts that are more technical, like annual reports. Beattie et al. (2004) continue that readability studies overlook aspects of the whole text and are more focused on features on sentence- and word-level. Moreover, according to Beattie et al. (2004), this research method does not sufficiently take the motivations and interests of the reader into consideration.

***Previous research***

No previous research will be further elaborated, because this research method is not appropriate for researching annual reports, an important part of this thesis.

## **2.7.5 Linguistic analysis**

***General description***

Beattie et al. (2004) have added linguistic analysis as a separate research method to assess disclosure quality, although this research method is on certain parts similar to readability studies. Sydserff and Weetman (1999) have developed a research method with a more extensive collection of text characteristics. The research method moves further than word- or sentence level as applied in readability studies. The texture index that has been developed by Sydserff and Weetman (1999) makes it possible to consider the whole text of annual reports.

***Advantages and disadvantages***

Objectivity is a major advantage that is also applicable to linguistic analysis. Moreover, the disadvantages of readability studies are solved with this method. Unfortunately, it takes much more time to perform linguistic analyses than to perform a readability study. In the latter research method, computer-based formulas can be applied. Furthermore, as this research method is relatively new, appropriate benchmarks still have to be developed.

***Previous research***

This research method will not be accompanied by an example of research, because unfortunately, appropriate benchmarks are still not available.

## **2.8 Disclosure quality and company size**

Buzby (1975) has conducted research on the association between company size and the extent of disclosure and describes reasons for a positive association between the two. Buzby (1975) states that gathering and presenting information can be costly. According to Buzby (1975), smaller companies might not have the resources that are necessary to be able to collect and subsequently present a broader range of information. Cooke (1989) adds that the size of a company makes it possible to increase disclosure quality. According to Cooke (1989), to establish high disclosure quality, a company should employ a broad range of employees that are highly skilled. Cooke (1989) continues that the larger a company is, the larger the possibilities to attract those skilled employees.

Furthermore Buzby (1975) describes that larger firms are possibly monitored more strictly by the government. Buzby (1975) states that larger firms might assume that ‘fuller’ and ‘better’ disclosures might lead to less government pressure.

Cooke (1989) describes that there are various ways to measure the size of an enterprise. During his research, Cooke (1989) applied total assets, number of shareholders and annual sales as measures of company size. Cooke (1989) described that he had no preference for one of the size criteria.

## **2.9 Further research**

In the previous paragraphs, different papers and articles have already been described, which could be categorized as one of the measurement methods of disclosure quality as described in paragraph 2.7 or concerned the association between disclosure quality and company size. However, there has been conducted also other empirical research that cannot be categorized directly as one of the measurement methods as depicted in appendix 4. Nevertheless, other research can also be useful as input for the research which will be conducted within the context of this thesis. For this reason, these researches will be described in this paragraph.

The research of Beretta and Bozzolan (2004) further examines the difference between disclosure quality and quantity. The remaining articles and papers concern empirical research that is focused on Dutch sectors.

**Beretta and Bozzolan (2004)**

Beretta and Bozzolan (2004) have written a paper regarding disclosure and state that the quantity of disclosure is not sufficient to measure disclosure quality. Beretta and Bozzolan (2004) describe that not only “how much” is disclosed has to be taken into account, but also “what” and “in which way”. The researchers aimed to contribute to this research field by creating a framework to analyze the communication of risk and developing an index that measures the quality of risk disclosures.

Beretta and Bozzolan (2004) drew a sample from enterprises that are active in non-financial sectors and are listed on the Italian Stock Exchange. In the framework that the authors propose, disclosure quality is dependent on the quantity of the provided information as well as the *“richness”* that is provided by supplemental information. Beretta and Bozzolan measure “richness” as a function of indices of the kind of content that has been disclosed (the risk factors) and semantic properties such as the economic sign. Beretta and Bozzolan (2004) depicted the indices for several companies in a diagram and ranked the risk disclosure quality in a comprehensive index.

In their concluding remarks, Beretta and Bozzolan (2004) emphasize that their framework should be considered as one of the first efforts to take more than only disclosure quantity into account. Beretta and Bozzolan (2004) acknowledge that additional future research is necessary.

Blij and Mertens (2008)

Blij and Mertens (2008) aim to provide insight in risks and risk control of Dutch listed companies by highlighting the annual reports of the financial year 2007 with their research. Based on the required insights of the research, the researchers aim to contribute to the improvement of the reporting and transparency concerning risk management.

The researchers have conducted their research with a questionnaire that has been applied to 110 Dutch listed companies. The questionnaire enabled the research team to study the annual reports and websites of the companies unambiguously and record the information in a uniform way.

Blij and Mertens (2008) noticed that operational and financial risks are presented frequently. Reporting and compliance risks, other risks distinguished by COSO (2004) have apparently been presented less frequently. Furthermore, the researchers concluded that the number of risk disclosures decreased the smaller the companies.

**NIVRA (2010)**

The Royal Dutch Institute for Certified Public Accountants (NIVRA) has conducted subsequent research to the research conducted by Blij and Mertens (2008). According to the NIVRA researchers, the financial crisis revealed that risk control is very important. For that reason, the NIVRA researchers decided to conduct their follow-up research.

During the research, the 2009 annual reports of 63 Dutch listed companies have been examined. The research results have been compared as much as possible with the results of the research conducted by Blij and Mertens (2008). A detailed questionnaire has been applied, based on the questionnaire in the previous research of Blij and Mertens (2008). The NIVRA researchers concentrated on the Reports of the Executive Board, no attention was paid to the annual accounts.

The researchers have concluded that compared to the research of Blij and Mertens (2008) two years earlier, the quality of the risk paragraphs had increased. However, with regard to the presentation as well as the contents, the researchers concluded that the risk paragraphs allowed for further improvement. Moreover, the research indicated that it is difficult for a lot of companies to stick to the most important risks.

**AFM (2012)**

The Dutch Authority of Financial Markets (AFM) conducted in 2012 a thematic research regarding the financial crisis and the increased risk exposure to government bonds. The AFM (2012) aimed to encourage financial institutions to improve the quality and transparency of financial disclosure.

The AFM (2012) did research on the 2011 financial statements of ten financial institutions. The main focus was on the exposure to the risks of the GIIPS countries, the countries Greece, Ireland, Italy, Portugal and Spain. The AFM (2012) researched how the government bonds of these countries have been valued and processed in the financial statements.

The AFM (2012) noticed that, unlike the situation in the financial statements of 2010, all ten financial institutions had disclosed additional information about direct positions in government bonds as per GIIPS country. However, the AFM (2012) concluded that further improvement of the disclosures is possible. The researchers describe improvements such as providing further information about the duration and gross and net amounts of government bond positions and providing further details regarding the strategy of institutions towards risk exposures.

Meijer (2011)

Meijer (2011) describes that the financial crisis is one of the reasons for more attention to the reporting of risks. In his thesis, Meijer (2011) conducts research on the nature and type of the risk information that is disclosed in the annual report of companies.

Meijer (2011) has examined the annual reports of 21 AEX and 20 AMX listed companies and applied a combination of content analysis and disclosure index study to measure mutations in disclosure quantity and quality in the period 2005-2008. The research focuses on all possibly disclosed risk categories. During the research, company size has been taken into account and has been measured by means of market capitalization, total assets and market turnover.

Meijer (2011) concludes that the quantity and quality of risk disclosures have increased significantly in the years 2005-2006 and 2007-2008. Furthermore, Meijer (2011) concludes that in the same period, the number of categories of risk that have been disclosed has also increased. The research reveals that there is a positive relation between the quantity and quality of risk disclosures and company size.

## 2.10 Summary

As in other sectors, problems of information asymmetry and agency conflicts occur also in the pension sector. Some parties have more information than other parties and conflicts of interest exist in the relation between the principals and agents. Financial reporting and disclosures are important to decrease these problems (Healy and Palepu, 2001). Research from a positive accounting perspective can focus on particular characteristics of a company such like the company size to explain how management behaves regarding disclosures.

The Dutch pension sector is a dynamic sector. The number of pension funds has decreased considerably during the past decade. The Commissions Frijns (2010) and Goudswaard (2010) have conducted research within the pension sector and were very critical regarding the disclosures of risks and uncertainties. Frijns et al. (2010) even questioned if small pension funds are able to provide clear information regarding risk.

The financial crisis started in the summer of 2007 (Mishkin, 2009) and subsequently spread all over the world, including Europe in 2008 (Dabrowski, 2010). There is no unequivocal definition of risk, however, Linsley and Shrives (2006) emphasize that not only ‘bad risk’ but also ‘good risk’ should be considered. The Dutch Guidelines distinguish different types of investment risks such as price risk, credit risk, liquidity risk and specific investment risks regarding alternative investments (RJ 610.403).

Disclosures can be divided into mandatory and voluntary disclosures (Hassan and Marston, 2010). Regarding mandatory disclosures, the Dutch Pension Law and Guidelines are applicable. Although not mandatory, pension funds could apply IFRS, in that case, financial statements of a company could include voluntary elements. However, the boundary between voluntary and mandatory disclosures is not always crystal clear.

Subjective ratings, disclosure index studies, content analysis, readability studies and linguistic analysis are different research methods to measure disclosure quantity and quality (Beattie et al. (2004)). All of these measurement methods have their advantages and disadvantages. Buzby (1975) has conducted research on the association between the size of a company and disclosure quality. Cooke (1989) states that to establish higher disclosure quality, a company should employ a broad range of highly skilled employees. Cooke (1989) states that the larger a company is, the larger are the possibilities to attract those skilled employees.

Finally, papers and articles have been described that concern empirical research that cannot be categorized as part of the previous paragraph. Beretta and Bozolan (2004) have developed a framework that takes not only the quantity of disclosures but also the quality into account. Several other researchers (e.g. Blij and Mertens (2008), NIVRA (2010), Meijer (2011) and AFM (2012)) have conducted research regarding disclosures in the Netherlands. These researches will be used to answer the research question in the remainder of the thesis. Before conducting the research, the next chapter will present the research design.

# 3 Research design

The research design will be applied by use of a number of key elements of the overview of the research process of Babbie (2007), as depicted in appendix 6. The different elements of this research process will be described in separate paragraphs. First, the hypotheses will be presented. As made clear in the previous chapter, regarding several concepts no unequivocal definition exists. This chapter describes which definition will be applied for the purpose of the thesis and how different concepts are operationalized. Furthermore, the most appropriate research method will be chosen out of the in paragraph 2.7 presented research methods. Population and sampling, data collection and processing will also be described. This chapter aims to explain why certain definitions and measurement methods have been chosen as well.

## **3.1 Hypotheses**

In the first chapter, the main research question has been defined as:

***“To what extent have the quantity and quality of investment risk disclosures in the financial statements of Dutch pension funds increased since the financial crisis and does pension fund size result in differences in disclosure quantity and quality?”***

Six hypotheses will be tested to answer the main research question. These hypotheses will be presented and explained in the remainder of this paragraph.

**H1: The financial crisis is a topic in the financial statements of Dutch pension funds.**

The first hypothesis assumes that the financial crisis is a topic within financial statements of Dutch pension funds. The previous chapters already revealed that the financial crisis is frequently presented in literature (e.g. Van Ewijk, 2009; Mishkin, 2009; Dabrowski, 2010). However, this does not necessarily mean that this also applies to the financial statements.

As described in paragraph 2.6.2, article 2:362 of the Dutch Civil Code prescribes that annual reports provide that kind of insight that a sound judgment can be made about the capital and result. In addition, article 2:391 prescribes that the annual report should provide a description of the main risks and uncertainties. Given the importance of the financial crisis, I expect that the Dutch pension funds will not ignore the topic financial crisis in the financial statements.

**H2: The disclosure quantity of the financial crisis in the financial statements of Dutch pension funds is larger for bigger Dutch pension funds than for smaller Dutch pension funds.**

Buzby (1975) and Cooke (1989) have provided several reasons for a positive relation between company size and the extent of disclosure, as described in paragraph 2.8. I assume that Dutch pension funds are not different than the companies that Buzby (1975) and Cooke (1989) have researched. Therefore, I expect a positive relation between the size of a Dutch pension fund and the disclosure quantity of the financial crisis.

**H3: The quantity of investment risk disclosures in the financial statements of Dutch pension funds has increased since the financial crisis.**

The hypothesis presented above expresses the suspicion that the quantity of investment risk disclosures in the financial statements has increased since the financial crisis.

Since the financial crisis, the focus on risk has increased considerably. The reports of the Commission Frijns (2010) and Commission Goudswaard (2010) are only two of the many reports and articles that emphasize to focus more on risk and risk control. Moreover, the Dutch Guidelines of Annual Reporting recommend to pay attention to the major risks that are important to the pension funds (RJ 610.404). The RJ further recommends to disclose the adapted policy regarding these risks (RJ 610.403).

I assume that the financial crisis involves particular investment risks to which Dutch pension funds are exposed. I expect that Dutch pension funds describe investment risks and changes in risk policy more frequently in the financial statements since the financial crisis. Therefore, I assume that, compared to the financial statements of 2006, in the financial statements of 2007 and 2011, an increase of disclosure quantity of investments risks will be visible.

**H4: The quantity of investment risk disclosures in the financial statements of Dutch pension funds is bigger for larger Dutch pension funds than for smaller Dutch pension funds before and after the start of the financial crisis.**

This hypothesis suggests that before and after the beginning of the financial crisis the quantity of investment risk disclosures depends on the pension fund size. Buzby (1975) suggests that smaller companies are not able to collect and present a broader range of information. Furthermore, Frijns et al. (2010) question in their report if smaller Dutch pension funds can fulfill the high standards that are set on risk management. Therefore, I suspect that the bigger a Dutch pension fund, the more likely that a pension fund is able to disclose a bigger quantity of investment risks. I suspect that smaller Dutch pension funds encounter more difficulties to increase investment risk disclosures quality since the beginning of the financial crisis than bigger pension funds. Accordingly, I expect that stakeholders of smaller Dutch pension funds encounter more problems with information asymmetry than stakeholders of larger Dutch pension funds.

**H5: The quality of investment risk disclosures in the financial statements of Dutch pension funds has increased since the financial crisis.**

Beretta and Bozzolan (2004) have emphasized that disclosures have to be researched not only on “how much” but also “what” and “in which way” is disclosed. The fourth hypothesis focuses on “how much”, whereas this hypothesis will focus on “what” and “in which way”.

Regarding “what” is disclosed, for example Christoffersen (2012) states that the attention to liquidity risk has increased since the financial crisis. The disclosure quality with regard to the asset categories real estate and bonds might also have been increased. The same applies to “in which way” the risks are disclosed. I expect additional tables that provide insight in the financial positions of the Dutch pension funds in the GIIPS countries (Greece, Italy, Ireland, Portugal and Spain) as described in the article of AFM (2012). However, I am also curious about other ways of presenting investment risk disclosures in the financial statements. Summarized, I assume that the disclosure quality of the investment risk disclosures has increased significantly since the financial crisis. Obviously, liquidity risk, real estate, bonds and additional tables with GIIPS countries will be subject of research, but other risk types and asset categories will not be ignored during the research.

**H6: The quality of investment risk disclosures in the financial statements of Dutch pension funds is bigger for larger Dutch pension funds than for smaller Dutch pension funds before and after the start of the financial crisis.**

Regarding this hypothesis, the same arguments as described with hypothesis four with regard to disclosure quantity of investment risks are applicable.

## **3.2 Conceptualization and operationalization**

Babbie (2007) defines conceptualization as *“a process in which the researcher specifies what is meant with particular terms in the research”*. During the literature research, several definitions have already come across, however, in this paragraph will be described what is exactly meant with specific terms within the scope of this thesis.

Blumberg et al. (2011) define operationalization as “*a process in which concepts are turned into variables that can be measured and that are appropriate to test”*. With other words, in this paragraph will be decided how concepts will be measured. For a number of concepts, it will be obvious how to measure, however this is not the case for all concepts. Therefore, measurement of a number of concepts will be further elaborated.

***Financial statements***

In both the annual accounts and annual report is paid attention to the risks that the pension fund runs when performing his duties (RJ 610.401). For this reason, the financial statements, and in such way the annual accounts as well as the annual reports will be researched.

As described in paragraph 2.3, in Europe, the financial crisis started in 2008 (van Ewijk, 2009). However, the financial crisis can be characterized as a global financial crisis which started already in the summer of 2007 in the United States (Dabrowski, 2010). Although this research is focused on Dutch pension funds, the pension funds have invested their money worldwide, also in the United States.

Therefore, during the research, the financial statements of 2006, the year before the crisis, will be researched and also the financial statements of 2007, the first year of the worldwide financial crisis. The 2011 financial statements will be subject of research as well, because these financial statements are the most recent available statements for this research.

***Disclosures***

During the research, disclosures concern the risk disclosures in the financial statements of Dutch pension funds. In paragraph 2.6, a distinction between voluntary and mandatory disclosures has been presented, both disclosure types will be included in the research.

***Disclosure quantity and quality***

Beretta and Bozzolan (2004) have emphasized in their article that not only “how much” is disclosed (disclosure quantity) has to be taken into account, but also “what” and “in which way” (disclosure quality). In this thesis, both aspects will be researched.

To measure the disclosure quantity, the frequency of the use of words regarding financial crisis and investment risks will be counted throughout the financial statements.

With regard to disclosure quality, it will be possible to conduct more in depth research. Considering the articles regarding the financial crisis (e.g. Mishkin (2009) and Dabrowski (2010)) and several financial statements of Dutch pension funds, disclosure quality will be measured in two frequently quoted asset categories that encountered the consequences of the financial crisis. These asset categories are real estate and bonds, as the financial crisis started within real estate with the subprime mortgage crisis and subsequently strongly affected bonds (e.g. Dabrowski, 2010). Initially, the intention was to research the asset category loans at well. However, an exploration of the financial assets of the Dutch pension funds included in the sample, made clear that the vast majority of the smaller Dutch pension funds did not have a position in loans. Hence, a convincing comparison between smaller and larger Dutch pension funds regarding loans would not be possible. Therefore, further analysis on disclosure quality will be restricted to the asset categories real estate and bonds.

***Investment risks***

In paragraph 2.5, the risk classifications of COSO (2004) and the RJ have been presented. During this research, the risk categorization of the RJ will be applied as presented in RJ 610.403 (see appendix 5). This risk categorization specifically distinguishes investment risks as a separate category and, importantly, as described in paragraph 2.6.2, the financial statements of the Dutch pension funds have to be presented in accordance with the Dutch Guidelines of Annual Reporting.

In RJ 610.403 (see appendix 5), examples of five different investments risks have been described. As presented in RJ 610.403, the RJ considers concentration risk as a separate risk category, apart from investment risks. However, RJ 610.402 recommends to apply RJ 290 Financial Instruments as well with regard to investment risks. RJ 290.934 recommends to provide information on credit risk if concentrations might lead to considerable losses when a counterparty does not fulfill its obligation. During the research, these concentration risks will be considered part of credit risk, one of the investment risks and will not be treated as a separate category. The definitions of the investment risks are presented in appendix 7.

In paragraph 2.5 has been emphasized that the RJ has presented the investment risks as *examples*, hence, the overview of the RJ is not limitative. Therefore, the definitions of a number of additional investment risks that are part of the financial statements of the researched Dutch pension funds have been added to appendix 7.

In the financial statements, numerous asset specific investment risks have been disclosed, such as commodity risk, index linked bond risk, and so forth. The asset specific definitions have not been added in appendix 7, but all the asset specific risks are as a matter of course included during the research regarding disclosure quantity as investment risk.

In this paragraph has already been described that the focus with regard to the measurement of disclosure quality will be on real estate and bonds. The investment risks can be disclosed within separate tables, but also textual explained in the financial statements.

*Investment risks regarding real estate*

Specific investment risks regarding real estate are concentration risk and credit risk. RJ 290.934 recommends to provide information on credit risk if concentrations might lead to considerable losses when a counterparty does not fulfill its obligation. The financial crisis might indeed have lead to losses and it is possible that the disclosure quality of the financial statements has increased since the financial crisis regarding real estate. Further analysis will focus on the increase of disclosure quality regarding region allocations which enable to determine which part of the real estate has been invested in regions such as Europe and the United States, regions that have been affected considerably during the financial crisis (e.g. Dabrowski, 2010). Sector allocations (which part concerns housing, offices, shops, etcetera) and disclosures of relative large positions in real estate (e.g. by providing a top ten of real estate investments) will be part of the research as well.

*Investment risks regarding bonds*

Regarding investment risks of bonds, credit risk is a frequently quoted investment risk in the financial statement of Dutch pension funds. The credit risk of bonds is measured, as described in a number of the researched financial statements, by rating agencies like Moody’s, Fitch and Standard and Poor’s.

RJ 290.928 recommends to disclose the *important* concentration risks of financial assets such as bonds. There is no unequivocal method to measure concentration risk. As an example, Stichting Pensioenfonds Ballast Nedam operationalized concentration risk by presenting in the financial statements of 2011 all positions bigger than 2 percent of the Assets Under Management, whereas Stichting Pensioenfonds Sappi presented all positions bigger than 5 percent of the fixed income assets.

Regarding the investment risk of investing in particular countries that had been affected by the consequences of the financial crisis, there is no unequivocal disclosure method as well. In practice, the preparers of the financial statements apply professional judgment to decide what an important investment risk is and what not. This results in different overviews of country allocations regarding bonds. Stichting Pensioenfonds ING restricts the overview in the 2011 financial statements to positions in GIIPS countries. Stichting Bedrijfstakpensioenfonds voor de Bouwnijverheid presents for example an overview with in addition to the GIIPS countries also the positions in bonds issued by Belgium and France.

***Pension fund size***

The number of participants and the Assets Under Management (AUM) are both proxies to measure pension fund size. This thesis aims to research investment risks. The AUM relate to these investments of pension funds, this is a major advantage of using the AUM over applying the number of participants. Hence, the size of pension fund will be measured as a function of the average AUM of Dutch pension funds as presented in the financial statements per 31 December 2006 and 31 December 2011. The size of Dutch pension funds will be categorized as extra large, large, medium, small and extra small, making use of the following table.

|  |  |
| --- | --- |
| **Pension fund size category** | **Average Assets Under Management\*** |
| X (extra)Large | Bigger than or equal to 20,000 million euro |
| Large | Between 10,000 and 20,000 million euro |
| Medium | Between 5,000 and 10,000 million euro |
| Small | Between 1,000 and 5,000 million euro |
| X (extra) Small | Less than or equal to 1,000 million euro |

Table 1: Size categories of Dutch pension funds

\* measured as the average of the Assets Under Management as per 31 December 2006 and 31 December 2011, as published in the annual accounts of Dutch pension funds.

## **3.3 Choice of research method**

In paragraph 2.7, different research methods have been described. Although of each research method, the advantages and disadvantages have already been described, the most appropriate method has not been chosen yet. In this paragraph, first the selection criteria will be presented and subsequently applied to the different research methods. Finally, the most appropriate research method(s) will be selected.

## **3.3.1 Selection criteria**

First of all, the different selection criteria will be presented. The measurement quality of the different kind of research methods will be an important aspect when a research method will be chosen in this paragraph. According to Babbie (2007), key aspects in evaluating and measuring the quality of measurement methods are reliability and validity (Babbie, 2007). In addition to reliability an validity, the objectivity of the research methods and also the aspects budget and time will be taken into account.

Reliability

With regard to reliability, Babbie (2007) supplies the following description: *“That quality of measurement method that suggests that the same data would have been collected each time in repeated observations of the same phenomenon”.*

However, it is very important to be aware that reliability does not always make sure that a method is accurate. Babbie (2007) refers to the element bias that is described as *“that quality of a measurement device that tends to result in a misrepresentation of what is being measured in a particular direction”.*

Validity

Babbie (2007) defines validity as *“a term describing a measure that accurately reflects the concept it is intended to measure.”* A simple example by Babbie (2007) explains that IQ seems to be a more valid measure of intelligence than the number of hours that persons have spent in the library.

Objectivity

Objectivity is also an important aspect that has to be taken into account in assessing the quality of a research method. Objective evidence is considered more reliable than evidence that is more dependent on judgement of the researcher (e.g. Arens et al., 2012).

***Budget***

The budget for this thesis is limited. However, as a student of the Erasmus, applications such as SPSS and Company info are free accessible.

***Time***

The thesis as a whole is worth 16 credits (ECTS). One ECTS involves a workload of 28 hours of study or research. Hence the total available hours are 448 hours. Unfortunately, a number of research methods might involve more hours.

## **3.3.2 Criteria applied to research methods**

In appendix 8, the five criteria explained in the previous subparagraph have been applied to each research method. This subparagraph presents further explanations per research method.

**Disclosure survey (questionnaires and interviews)**

In general, a survey research is weak on validity and strong on reliability (Babbie, 2007). The weak validity is mainly caused by the artificiality of the research format. The reliability is strong, because the researcher is able to eliminate observations that are not reliable and the researcher has the possibility to reduce the unreliability of the subject by careful formulation of the questions. The objectivity is weak, this research method is heavily dependent on the subjective judgement of the participants of the research (Babbie, 2007).

**Disclosure index studies**

Hassan and Marston (2010) describe that a disclosure index that is constructed by a researcher is subject to the judgment of this researcher. Beattie et al. (2004) emphasize that problems with reliability and validity might occur.

**Content analysis**

Babbie (2007) describes that problems of content analysis with regard to reliability are inevitably. The tangibility of the components that are researched in content analysis enhances the likelihood of reliability (Babbie, 2007). By applying precise operational definitions and an accurate coding process, the objectivity can be enhanced to a moderate level.

**Readability studies**

Jones and Shoemaker (1994) state that reliability and objectivity are strengths of readability indexes. However, the validity is weak and unfortunately, this research method is less appropriate to conduct on financial statements (Sydserff and Weetman, 1999).

**Linguistic analysis**

Reliability and objectivity are, similar to the situation of readability studies, in linguistic analysis a strength. Compared to readability studies, the issue with validity has been resolved as a result of the ‘whole text approach’ (Sydserff and Weetman, 1999). However, no appropriate benchmarks are available and this method is time-consuming.

## **3.3.3 Selection of research method(s)**

It is obvious that it is preferable to select a research method that measures as reliable, valid and objective as possible. Unfortunately, there is a tension between the aspects reliability and objectivity that usually forces researchers to make a trade-off between reliability and validity (Babbie, 2007).

As described above, disclosure survey, disclosure index studies and content analysis are the remaining appropriate research methods. Babbie (2007) states that research can be executed in a safe way when different research methods are applied. However, budget and in particular time are too limited to conduct all three research methods. It is not practical to give an answer on the research question by interviewing the preparers of financial statements. Therefore, during the research, no disclosure survey will be conducted. The remaining research methods that will be applied are content analysis and disclosure index study.

To research disclosure quantity, partial content analysis will be applied, as the examination of the financial statements is restricted to selected keywords (Beattie et al., 2004). Regarding disclosure quality, comprehensive content analysis will be applied as the document as a whole will be examined more in-depth as described by Beattie et al. (2004). In addition, questions 11, 12, 14 and 15 of the checklist depicted in appendix 10 represent binary coding schemes that are typical for disclosure index studies, as described in paragraph 2.7.2.

## 3.4 Population and sampling

Company pension funds, sector pension funds, compulsory sector pension funds and occupational pension funds, the types of pension funds described in chapter 2, are all included in the population. The population consists of the 454 Dutch pension funds that are supervised by the Dutch Central Bank as per 31 December 2011, as depicted in appendix 1.

Of every pension fund size category, 5 pension funds are included in the sample, which amounts to a total sample of 25 Dutch pension funds. The specific pension funds included in the sample have been presented in appendix 9.

|  |  |  |
| --- | --- | --- |
| **Total average Assets Under Management sample\* (A)** | **Total average Assets Under Management whole population\*\* (B)** | **(A) / (B)** |
| 534,768 | 822,385 | 0.6503 |

Table 2: Total average Assets Under Management sample as a percentage of the total average Assets Under Management of the whole population.

\* see appendix 9

\*\* as published by Statline, in millions euro (see appendix 3)

Table 2 makes clear that the 25 pension funds in the sample contain approximately 65% of the total average Assets Under Management of the whole population. Although only 25 of the 454 Dutch pension funds have been included in the sample, this percentage provides a sound basis for the remainder of the research.

## 3.5 Data collection

The major databases do not provide information about proxies that could be used to measure the disclosure quality of the financial statements of the Dutch pension funds. For this reason, most of the proxies will need to be hand-collected from the financial statements.

The financial statements have been collected by using the database of Company.info. To collect the necessary information to test the six hypotheses as presented in paragraph 3.1, the checklist presented in appendix 10 has been applied to the financial statements of the sample.

## 3.6 Data processing

The collected data will be filed directly in a SPSS database and further processed within SPSS. The analysis and results will be presented in the next chapter.

## 3.7 Summary

In this chapter, the research design of Babbie (2007) has been applied as depicted in appendix 6. To answer the research question, six hypotheses have been formulated. Chapter 2 made already clear that different definitions with regard to terms such as risk and disclosures can be applied. For this reason, in the paragraph “conceptualization and operationalization” has been specified what is meant with these terms and how certain concepts can be turned into variables that can be measured.

In order to test the hypotheses, a research method has to be selected out of the different research methods described in paragraph 2.7. Reliability, validity, objectivity, budget and time are important criteria that have been applied to each research method. Subsequently, content analysis and a disclosure index study have been selected as the most appropriate research methods.

The population consists of the 454 Dutch pension funds as supervised by the Dutch Central Bank as per 31 December 2011. The sample (in Dutch “deelwaarneming”) consists of 25 pension funds that have been divided in 5 size categories. These 25 pension funds in the sample contain approximately 65% of the total average Assets Under Management of the whole population, a sound basis for the remainder of the research.

Unfortunately, the major databases do not provide information about proxies that could be used to measure the disclosure quality of the financial statements of the Dutch pension funds. For this reason, most of the proxies will need to be hand-collected from the financial statements by use of a checklist. The financial statements have been collected by using the database of Company.info.

The collected data will be filed directly in a SPSS database and further processed within SPSS. The analysis and results will be presented in the next chapter.

# 4 Analysis and results

In the previous chapter, the research design has been elaborated. In this chapter, the data that have been collected by applying the checklist (appendix 10) to the financial statements of 25 Dutch pension funds. Furthermore, the results will be analyzed using SPSS, the statistical application described in the previous chapter.

This chapter starts, same as the checklist (appendix 10), with general characteristics. Subsequently will be researched if the financial crisis is a subject within the financial statements of the Dutch pension funds at all. Finally, the quantity and quality of investment risk disclosures will be analyzed. When applicable, the size of the pension funds will be taken into account as part of the analysis and results.

## 4.1 General characteristics

IFRS and pension fund type are important general characteristics that will be presented in this paragraph. Another general characteristic, the pension fund size has already been elaborated in paragraph 3.4. More information regarding the characteristic pension fund size was already necessary to be able to compose the sample.

*IFRS*

In paragraph 2.6.3 has been described that it is possible for Dutch pension funds to present the financial statements in accordance with the International Financial Reporting Standards. In the same paragraph has also been described that whether or not applying IFRS could result in differences in the risk disclosures.

The answers on question 3 of the checklist as depicted in appendix 10 made clear that none of the pension funds in the sample presented the financial statements in accordance with IFRS. However, the answers on question 4 of the checklist elucidated that pension funds in the sample indeed mention IFRS in parts of the financial statements.

In the financial statements of 2011, Stichting Philips Pensioenfonds and Stichting Pensioenfonds DSM Nederland describe that the presented fair value hierarchy of the investments is based on IFRS 7. Furthermore, Stichting Rabobank Pensioenfonds described in the financial statements of 2011 that changes in IFRS guidelines could possibly have impact on the pension schemes.

In the 2006 financial statements of Stichting Spoorwegpensioenfonds and Stichting Pensioenfonds Openbaar Vervoer the Excecutive Boards of Directors described that in 2006, these pension funds changed their asset mix amongst other this things by changes in international financial reporting standards. However, these parts of the financial statements do not concern specifically investment risks or the financial crisis and therefore this will not influence the results of the analyses in the remainder of this chapter.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Pension fund type*  The Dutch Central Bank maintains a number of general characteristics of Dutch pension funds, including the pension fund type. The pension fund type applied to the pension funds in the sample results in the following table.   |  | | Pension fund type | | | | Total | | --- | --- | --- | --- | --- | --- | --- | | sector pension fund | compulsory sector pension fund | company pension fund | occupational pension fund | | Size | X Large | 0 | 5 | 0 | 0 | 5 | | Large | 1 | 1 | 3 | 0 | 5 | | Medium | 0 | 2 | 2 | 1 | 5 | | Small | 2 | 1 | 1 | 1 | 5 | | X Small | 0 | 0 | 5 | 0 | 5 | | Total | | 3 | 9 | 11 | 2 | 25 | |

Table 3: Pension fund size and pension fund type (sourceRecords of pension funds, DNB (2013)).

It is noticeable that all the X large pension funds in the sample are compulsory sector pension funds. All the X small pension funds that are part of the sample are company pension funds. However, inversely, not every compulsory sector pension fund or company pension fund in the sample is a X large pension fund respectively a X small pension fund.

To determine which test will be applied to determine if there is a relation between pension fund size and pension fund type, the decision schedule depicted in appendix 11 is used. There is one, categorical outcome variable, the pension fund type. The predictor variable, pension fund size, is categorical as well. Therefore, a Chi-Square test has been applied.

| **Chi-Square Tests** | | | |
| --- | --- | --- | --- |
|  | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 23.283a | 12 | .025 |
| N of Valid Cases | 25 |  |  |
| a. 20 cells (100.0%) have expected count less than 5. The minimum expected count is .40. | | | |

Table 4: Chi-Square test Pension fund size and pension fund type

Table 4 reveals that there is evidence (X2 is 23.28, 12 degrees of freedom and Sig smaller than 0.05) that there is a statistical significant relation between the variables pension fund size and pension fund type. This is an interesting feature for further research in the future. However, within the scope of this research, the focus will remain on the size of the pension fund as one of the variables.

## 4.2 Disclosure quantity of financial crisis in financial statements

Before focusing on potential changes in the quantity and quality of investment risk disclosures since the financial crisis, it is interesting to research if the financial crisis is a subject in the financial statements of Dutch pension funds at all.

Paragraph 2.3 of the literature research with regard to the financial crisis made already clear that there are several definitions and names regarding the financial crisis. In the financial statements of 2011, the 25 Dutch pension funds in the sample have reported no less than 39 different words with “crisis” in it. In the 2007 financial statements, this number was restricted to 11 different words with “crisis“ in it.

The average number of times that the word “crisis” is disclosed per pension fund in the financial statements has been presented as an average per pension fund size in table 5.

|  |  |  |
| --- | --- | --- |
| Pension fund size | Financial statements 2007 word count “crisis” | Financial statements 2011 word count “crisis” |
| X Large | 16.80 | 35.80 |
| Large | 7.60 | 16.40 |
| Medium | 10.60 | 21.60 |
| Small | 6.00 | 13.80 |
| X Small | 1.80 | 10.00 |
| Total | 8.56 | 19.52 |

Table 5: Average number of times the word “crisis” is mentioned in the financial statements 2007 and 2011 per pension fund as an average per pension fund size category.

Remarkably, the X small Dutch pension funds mentioned the word “crisis” in the financial statements extremely sporadic. More specific information is presented in tables 6 and 7, which reveal that 2 X small Dutch pension funds did not mention the word “crisis” at all in the 2007 financial statements. However, it seems that in the 2011 financial statements, the X small Dutch pension funds have recognized the importance of the financial crisis. The average number of times the word crisis has been disclosed by X small pension funds increased considerably in the 2011 financial statements.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Size \* Crisis 2007 classes Crosstabulation** | | | | | | | | |
|  | | Crisis 2007 classes | | | | | | | | Total |
| 0 | 1-5 | 6-10 | 11-15 | 16-20 | 21-30 | 31-40 | >40 |
| Size | X Large | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 5 |
| Large | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 5 |
| Medium | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 5 |
| Small | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 5 |
| X Small | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Total | | 3 | 8 | 5 | 4 | 4 | 1 | 0 | 0 | 25 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Size \* Crisis 2011 classes Crosstabulation** | | | | | | | | |
|  | | Crisis 2011 classes | | | | | | | | Total |
| 0 | 1-5 | 6-10 | 11-15 | 16-20 | 21-30 | 31-40 | >40 |
| Size | X Large | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 5 |
| Large | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 5 |
| Medium | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 5 |
| Small | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 5 |
| X Small | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | 5 |
| Total | | 0 | 2 | 6 | 3 | 3 | 7 | 3 | 1 | 25 |

Table 6 and 7: Crosstabs pension fund size and frequency disclosure of the word “crisis” in financial statements 2007 respectively 2011

*Parametric versus nonparametric distributions*

Looking at table 5, it seems that both in 2007 and 2011, the larger the pension fund, the more frequent the word “crisis” is disclosed in the financial statements. Before analyzing if there is a significant relation, first has to be determined if the AUM 2007 and AUM 2011 distributions are close to normality (parametric) or not (nonparametric). Parametric distributions involve other possible statistical tests than nonparametric distributions. During the remainder of this chapter, it will also be important to determine if the AUM 2006 distribution is close to normality or not. Therefore, in this paragraph the AUM 2006 distribution will already be tested on normality as well.

Field (2005) describes that the Kolmogorov-Smirnov and Shapiro-Wilk tests make it possible to test if the scores in the sample are close to a normal distribution or not. Both the Kolmogorov-Smirnov and Shapiro-Wilk test have been applied to the AUM 2006, AUM 2007 and AUM 2011 distributions.

| **Tests of Normality** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
|  | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
| Statistic | df | Sig. | Statistic | df | Sig. |
| AUM 2011 | .360 | 25 | .000 | .451 | 25 | .000 |
| AUM 2007 | .348 | 25 | .000 | .449 | 25 | .000 |
| AUM 2006 | .334 | 25 | .000 | .444 | 25 | .000 |
| a. Lilliefors Significance Correction | | | | | | |

Table 8: Tests of normality applied to AUM 2006, AUM 2007 and AUM 2011

De Vocht (2011) recommends to apply the Shapiro-Wilk test when the sample size is smaller than 50, which is the case during this research. However, both the Kolmogorov-Smirnov and Shapiro-Wilk test present significant values of 0.000. Field (2005) describes that significant values (Sig. smaller than .05) indicate that the AUM 2006, 2007 and 2011 distributions are not normal. Therefore nonparametric tests have to be applied.

* *

Figure 1: Normal QQ-plot AUM 2006 Figure 2: Normal QQ-plot AUM 2007

**

Figure 3: Normal QQ-plot AUM 2011

In figure 1, 2 and 3, the normal Q-Q charts plot the expected values in case of a normal distribution against the values that have actually been observed in the financial statements (Field, 2005). This supports also visually the application of nonparametric tests regarding the AUM 2006, 2007 and 2011 as the majority of the observed values, depicted as dots, are plotted very distant to the expected values which have been depicted as the straight line (Field, 2005).

*(Cor)relation between pension fund size and the frequency of the use of the word crisis in the financial statements*

To decide which statistical test fits the best to research the (cor)relation between the pension fund size and the frequency of the use of the word crisis in the financial statements, the decision schedule of Field (2005) depicted in appendix 11 has been applied. There is one outcome variable, the frequency of the disclosure of the word crisis in the financial statements, which is a continuous outcome variable. Furthermore, for the purpose of this research, there is one predictor variable, the size of the pension fund, which is a continuous variable. As described above, the data do not meet the assumptions for parametric tests, which leads to two possible statistical research methods, Spearman’s Correlation and Kendall’s Tau.

Field (2005) describes that Kendall’s Tau should be preferred over Spearman’s correlation when all scores are ranked and a lot of these scores have the same rank. However, only a few scores have the same rank. Therefore, Spearman’s Correlation has been applied which resulted in table 9 and 10.

| **Correlations** | | | | |
| --- | --- | --- | --- | --- |
|  | | | Financial statements 2007 word count crisis | AUM 2007 |
| Spearman's rho | Financial statements 2011 word count “crisis” | Correlation Coefficient | 1.000 | .561\*\* |
| Sig. (1-tailed) | . | .002 |
| N | 25 | 25 |
| AUM 2007 | Correlation Coefficient | .561\*\* | 1.000 |
| Sig. (1-tailed) | .002 | . |
| N | 25 | 25 |
| **Correlations** | | | | |
|  | | | Financial statements 2011 word count crisis | AUM 2011 |
| Spearman's rho | Financial statements 2011 word count “crisis” | Correlation Coefficient | 1.000 | .664\*\* |
| Sig. (1-tailed) | . | .000 |
| N | 25 | 25 |
| AUM 2011 | Correlation Coefficient | .664\*\* | 1.000 |
| Sig. (1-tailed) | .000 | . |
| N | 25 | 25 |
| \*\*. Correlation is significant at the 0.01 level (1-tailed). | | | | |

Table 9 and 10: Spearman’s correlation between the variables ‘Financial statements 2007 respectively 2011 word count “crisis”’ and ‘AUM 2007’ respectively ‘AUM 2011’

The significance value for the correlation coefficient is below 0.05, both in 2007 and 2011. De Vocht (2011) describes that the correlation coefficients are significant when Sig. is smaller than 0.05 which is the case in 2007 as well as in 2011. Both correlation coefficients are positive and significant. Therefore can be concluded regarding the year 2007 and 2011 that the larger a pension fund, the more frequent the use of the word crisis in the financial statements.

## 4.3 Quantity of investment risk disclosures

Initially, the intention was to measure the quantity of investment risk disclosures by counting the words regarding the investment risks in the risk paragraph. However, going properly through the financial statements, it became clear that, in conformity with RJ 610.405, the disclosure of investment risks was not restricted to the risk paragraph. As described in RJ 610.405 (see appendix 5), the preparers of the financial statements have also the possibility to present investment risk disclosures in the notes to specific items in the annual accounts. Obviously, this was the case in the financial statements of the researched pension funds.

For this reason, to measure the quantity of investment risk disclosure, the number of times words regarding investment risk have been disclosed throughout the whole financial statement have been counted. In appendix 7, the words regarding investments risks that have been included in the research, have been presented.

| Pension fund size | Financial statements 2006 word count investment risk (a) | Financial statements 2007 word count investment risk (b) | Mutation (b-a)/a in % | Financial statements  2011 word count  investment risk (c) | Mutation (c-b)/b in % |
| --- | --- | --- | --- | --- | --- |
| X Large | 38.80 | 58.40 | 51 | 88.20 | 51 |
| Large | 13.00 | 52.40 | 303 | 71.60 | 37 |
| Medium | 20.80 | 49.00 | 136 | 82.00 | 67 |
| Small | 16.00 | 56.40 | 253 | 68.00 | 21 |
| X Small | 11.60 | 44.40 | 283 | 77.80 | 75 |
| Total | 20.04 | 52.12 | 160 | 77.52 | 49 |

Table 11: Average number of times words regarding “investment risks” are disclosed in the financial statements of 2006, 2007 and 2011 per pension fund size category.

It is remarkable that the average number of times words regarding investment risks are disclosed in the financial statements has at least doubled for all pension fund size categories between 2006 and 2007, with the exception of the category of X Large pension funds. It seems that the quantity of the investment risk disclosures of the X Large pension funds was already moderately high in 2006 compared to the other pension fund size categories. Apparently, the X large pension funds are companies that employ highly skilled employers that already recognized the importance of investment risks in 2006 in accordance with the theories of Buzby (1975) and Cooke (1989) which have been described in paragraph 2.8. In 2007 and 2011, the average number of times that investment risks were disclosed by the pension fund size categories excluding X large pension funds came closer to the disclosure quantity of X large pension funds. However, the disclosure quantity of X large pension funds is in 2007 and 2011 also larger, keeping intact the ideas of Buzby (1975) and Cooke (1989).

***Quantity of investment risk disclosures compared between 2006, 2007 and 2011***

Looking at table 11, it seems that since 2006, the disclosure of investment risks has increased considerably. In this paragraph will also be researched if this increase is significant.

*Selection of appropriate statistical test*

To select an appropriate statistical test, first has to be determined if the 2006, 2007 and 2011 distributions regarding the frequency of disclosure of words with regard to investment risks are close to normality (parametric) or not (nonparametric). For the same reasons as elaborated in the previous paragraph, the Shapiro-Wilk test will be applied to determine if the distributions are parametric or nonparametric.

| **Tests of Normality** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
|  | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
| Statistic | Df | Sig. | Statistic | df | Sig. |
| 2006 Word count investment risk | .199 | 25 | .012 | .828 | 25 | .001 |
| 2007 Word count investment risk | .088 | 25 | .200\* | .970 | 25 | .633 |
| 2011 Word count investment risk | .092 | 25 | .200\* | .978 | 25 | .850 |
| a. Lilliefors Significance Correction  \*. This is a lower bound of the true significance. | | | | | | |

Table12: Test of normality applied to word count investment risk 2006, 2007 and 2011

Applying the Shapiro-Wilk test, the significant value is with 0.001 regarding the word count investment risk in 2006 lower than 0.05. Therefore, the 2006 data is not normally distributed. With regard to the 2007 and 2011 data, the significant values are higher than 0.05, and the distributions can be considered as normally distributed.

In figure 4, 5 and 6, the normal Q-Q charts plot the expected values in case of a normal distribution against the values that have actually been observed in the financial statements (Field, 2005). This supports also visually that the 2007 and 2011 data are normally distributed as the majority of the observed values, depicted as dots, are plotted very close to the expected values which have been depicted as the straight line (Field, 2005). It is remarkable that the 2006 figures are that distant of normality, compared to the 2007 and 2011 figures. The earlier in this paragraph referenced theories of Buzby (1975) and Cooke (1989) will have had their impact on the nonparametric features of the 2006 figures.

Figure 4: Normal QQ-plot word count Figure 5: Normal QQ-plot word count

investment risk financial statements 2006 investment risk financial statements 2007



Figure 6: Normal QQ-plot word count

investment risk financial statements 2011

Field (2005) describes Friedman’s ANOVA as a method to test differences between more than two experimental conditions in the situation that not all data have been distributed normally. Field (2005) continues that Friedman’s ANOVA may only be applied when in all the conditions the same participants are included. Applied to this case, in condition 2006 (the year before the start of the financial crisis), 2007 and 2011 (respectively one and four years after the start of the financial crisis) the data have been extracted from the same sample of Dutch pension funds. Therefore, Friedman’s ANOVA will be applied.

| **Test Statisticsa** | |
| --- | --- |
| N | 25 |
| Chi-Square | 46.080 |
| Df | 2 |
| Asymp. Sig. | .000 |
| Exact Sig. | .000 |
| Point Probability | .000 |
| a. Friedman Test | |

*Friedman’s ANOVA applied to the quantity of investment risk disclosures*

Field (2005) emphasizes that Friedman’s ANOVA uses ranks and not the scores.

**Ranks**

|  | Mean Rank |
| --- | --- |
| 2006 Word count investment risk | 1.04 |
| 2007 Word count investment risk | 2.00 |
| 2011 Word count investment risk | 2.96 |

Table 13: Ranks from Friedman’s ANOVA Table 14: Output Friedman’s ANOVA test

applied to word count investment risk applied to word count investment risk

For each pension fund, the data in the three conditions (word count in 2006, 2007 and 2011) have been ranked, giving the lowest frequency of investment risk in the financial statements a rank of 1, the next a 2 and the highest a 3. Table 13 reveals that nearly all pension funds in the sample had their lowest rank in 2006, all pension funds had their second highest rank in 2007 and nearly all pension funds in the sample had their highest rank in 2011.

Given these ranks, it is not surprising that the significance value depicted in table 14 is with 0.000 far below 0.05. Therefore can be concluded that since 2006, the year before the start of the financial crisis, the frequency of the use of the word investment risk has increased significantly in 2007 and 2011.

***Quantity of investment risk disclosures and pension fund size***

Unlike table 5, regarding the average number of times the word “crisis” had been presented in the financial statements, with regard to “investment risks”, a potential relation between pension fund size and disclosure quantity is more difficult to detect at first sight as presented in table 11, especially in 2007 and 2011.

*Selection of appropriate statistical test*

The decision schedule of Field (2005), depicted in appendix 11, has been applied to decide which statistical test fits the best to research the relation between the pension fund size and the frequency of the disclosure of words regarding investment risks in the 2006, 2007 and 2011 financial statements.

There is one outcome variable, the frequency of the use of words regarding investment risks, which is a continuous outcome variable. Furthermore, for the purpose of this research, there is one predictor variable, the pension fund size, which is a continuous variable. In the previous paragraph has already been concluded that the AUM distributions of 2006, 2007 and 2011 are not normally distributed, therefore a nonparametric test will be conducted. Applying the decision schedule of Field (2005), there are two possible nonparametric tests, Spearman correlation and Kendall’s Tau. Field (2005) describes that Kendall’s Tau should be preferred over Spearman’s correlation when all the scores are ranked and a lot of these scores have the same rank. However, only a few scores have the same rank, therefore, Spearman’s Correlation will be applied.

*Spearman’s Correlation applied to predictor variable pension fund size and outcome variable frequency of the use of words regarding investment risks in the financial statements*

| **Correlations** | | | | |
| --- | --- | --- | --- | --- |
|  | | | AUM 2006 | Financial statements 2006 word count investment risk |
| Spearman's rho | AUM 2006 | Correlation Coefficient | 1.000 | .429\* |
| Sig. (1-tailed) | . | .016 |
| N | 25 | 25 |
| Financial statements 2006 word count investment risk | Correlation Coefficient | .429\* | 1.000 |
| Sig. (1-tailed) | .016 | . |
| N | 25 | 25 |
| \*. Correlation is significant at the 0.05 level (1-tailed). | | | | |

Table 15: Spearman’s correlation between the variables ‘Financial statements 2006 word count “investment risk”’ and ‘AUM 2006’

The significance value for the correlation coefficient is, as depicted in table 15, with 0.016 below 0.05. Therefore can be concluded that the relation between the variables ‘Financial statements 2006 word count “investment risk”’ and ‘AUM 2006’ is significant. The correlation coefficient is significant and positive, so regarding the year 2006 can be concluded that the larger a pension fund, the more frequent the disclosure of investment risks in the 2006 financial statements.

| **Correlations** | | | | |
| --- | --- | --- | --- | --- |
|  | | | AUM 2007 | Financial statements 2007 word count investment risk |
| Spearman's rho | AUM 2007 | Correlation Coefficient | 1.000 | .190 |
| Sig. (1-tailed) | . | .182 |
| N | 25 | 25 |
| Financial statements 2007 word count investment risk | Correlation Coefficient | .190 | 1.000 |
| Sig. (1-tailed) | .182 | . |
| N | 25 | 25 |
| **Correlations** | | | | |
|  | | | AUM 2011 | 2011 Word count investment risk |
| Spearman's rho | AUM 2011 | Correlation Coefficient | 1.000 | .232 |
| Sig. (1-tailed) | . | .133 |
| N | 25 | 25 |
| Financial statements 2011 word count investment risk | Correlation Coefficient | .232 | 1.000 |
| Sig. (1-tailed) | .133 | . |
| N | 25 | 25 |

Table 16 and 17: Spearman’s correlation between the variables ‘Financial statements 2007 respectively 2011word count “investment risk”’ and ‘AUM 2007’ respectively ‘AUM 2011’.

Table 16 and 17 reveal significance values that are with 0.182 in 2007 and 0.133 in 2011 higher than 0.05. Therefore can be concluded that in 2007 and 2011, there is no (cor)relation between pension fund size and the frequency of the use of the word investment risk in the financial statements of 2007 respectively 2011.

## 4.4 Quality of investment risk disclosures

As described in paragraph 2.9, Beretta and Bozzolan (2004) state that only taking into account the quantity of risk disclosures is not sufficient to measure the disclosure quality. Beretta and Bozzolan (2004) emphasize that also “what” and “in which way” is disclosed should be part of the research. As explained in paragraph 3.2, the research regarding disclosure quality will focus on the asset categories real estate and bonds, because these asset categories have been strongly affected by the financial crisis.

## **4.4.1 Real estate**

Before continuing with further analysis, first has to be determined if there are pension funds that have no or relatively very small positions in real estate. These pension funds will not be taken into account during further analysis. One might not expect pension funds to disclose many data in high quality on non-existent or very small real estate positions. The remaining pension funds will be further analyzed regarding region, sector and position allocations.

| ***Position in real estate*** | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Real estate 2006 as a percentage of AUM 2006 | | | | | | Total |
| 0 | 0-2 | 2-5 | 5-10 | 10-20 | >20 |
| Pension fund size | X Large | 0 | 0 | 0 | 1 | 3 | 1 | 5 |
| Large | 0 | 0 | 0 | 4 | 1 | 0 | 5 |
| Medium | 0 | 0 | 0 | 3 | 1 | 1 | 5 |
| Small | 0 | 1 | 1 | 1 | 1 | 1 | 5 |
| X Small | 2 | 1 | 0 | 2 | 0 | 0 | 5 |
| Total | | 2 | 2 | 1 | 11 | 6 | 3 | 25 |

|  | | Real estate 2011 as a percentage of AUM 2011 | | | | | | Total |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0-2 | 2-5 | 5-10 | 10-20 | >20 |
| Pension  fund size | X Large | 0 | 0 | 0 | 1 | 4 | 0 | 5 |
| Large | 0 | 1 | 0 | 3 | 1 | 0 | 5 |
| Medium | 0 | 0 | 1 | 3 | 1 | 0 | 5 |
| Small | 0 | 1 | 1 | 1 | 1 | 1 | 5 |
| X Small | 1 | 2 | 1 | 1 | 0 | 0 | 5 |
| Total | | 1 | 4 | 3 | 9 | 7 | 1 | 25 |

Table 18 and 19: Crosstabs pension fund size and real estate investment 2006 respectively 2011 as a percentage of AUM 2006 respectively AUM 2011

Four Dutch pension funds with a position in real estate of less than 2% of the AUM both in 2006 and 2011 will be excluded from further research in this paragraph due to above mentioned reason.

Having a closer look at the tables, the position smaller than 2% of the AUM of one of the large Dutch pension funds in 2011 is remarkable. Other larger Dutch pension funds all have positions bigger than 5% of the AUM in 2006 as well as 2011. However, this exception seems explainable, as this pension fund is Stichting Philips Pensioenfonds, which encountered serious issues regarding the real estate portfolio in 2011 (Financial statements Stichting Philips Pensioenfonds 2011).

***Quality of real estate investment risk disclosures compared between 2006 and 2011***

| Disclosed in financial statements? | Region allocation | | Sector allocation | | Position allocation | |
| --- | --- | --- | --- | --- | --- | --- |
| 2006 | 2011 | 2006 | 2011 | 2006 | 2011 |
| Disclosed | 9 | 17 | 11 | 14 | 4 | 5 |
| Not disclosed | 12 | 4 | 10 | 7 | 17 | 16 |
| Total | 21 | 21 | 21 | 21 | 21 | 21 |

Table 20: Presence of disclosures of region, sector and position allocations regarding real estate

As the real estate positions in Europe and the United States are under pressure (e.g. Dabrowski, 2010; Ball (2010)), it is interesting to analyze if this has lead to an increase in disclosures of region allocations. These region allocations make the users of the financial statements clear in which regions, under which Europe and the United States, the investments regarding real estate have been invested. Table 20 reveals that the number of pension funds that disclosed a region allocation in the financial statements has increased from 9 in 2006 to 17 in 2011.

Furthermore, with the financial crisis in mind, it is interesting for the users of the financial statements to have more insight in the part that has been invested in residential buildings and offices. The number of pension funds that disclose this overview has increased from 11 in 2006 to 14 in 2011. The disclosure of a position allocation which presents relative large positions regarding real estate has weakly increased from 4 in 2006 to 5 in 2011.

To test whether the frequency of the disclosure of region, sector and position allocations has increased significantly or not between 2006 and 2011, first will be tested if the variables are distributed normally or not.

| **Tests of Normality** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
|  | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
| Statistic | df | Sig. | Statistic | df | Sig. |
| Real Estate 2006 region allocation | .388 | 25 | .000 | .625 | 25 | .000 |
| Real Estate 2006 sector allocation | .347 | 25 | .000 | .639 | 25 | .000 |
| Real Estate 2006 position allocation | .488 | 25 | .000 | .493 | 25 | .000 |
| Real Estate 2011 region allocation | .449 | 25 | .000 | .565 | 25 | .000 |
| Real Estate 2011 sector allocation | .388 | 25 | .000 | .625 | 25 | .000 |
| Real Estate 2011 position allocation | .469 | 25 | .000 | .533 | 25 | .000 |
| a. Lilliefors Significance Correction | | | | | | |

Table 21: Tests of normality applied to disclosures of region, sector and position allocations regarding real estate

Both the Kolmogorov-Smirnov and Shapiro-Wilk test present significant values of 0.000. These values are well below a Sig. of 0.005, therefore can be concluded that the region, sector and position allocations are not normally distributed in 2006 as well as in 2011. For this reason, nonparametric tests will be applied.

De Vocht (2011) describes that paired tests can be used to compare variables on two points in time under the condition that the same cases are compared on both points in time. The distribution is not normally, so, according to de Vocht (2011), the Wilcoxon matched pairs test can be applied.

| **Ranks** | | | | |
| --- | --- | --- | --- | --- |
|  | | N | Mean Rank | Sum of Ranks |
| Real Estate 2011 region allocation - Real Estate 2006 region allocation | Negative Ranks | 0a | .00 | .00 |
| Positive Ranks | 8b | 4.50 | 36.00 |
| Ties | 17c |  |  |
| Total | 25 |  |  |
| Real Estate 2011 sector allocation - Real Estate 2006 sector allocation | Negative Ranks | 3d | 5.00 | 15.00 |
| Positive Ranks | 6e | 5.00 | 30.00 |
| Ties | 16f |  |  |
| Total | 25 |  |  |
| Real Estate 2011 position allocation - Real Estate 2006 position allocation | Negative Ranks | 1g | 2.00 | 2.00 |
| Positive Ranks | 2h | 2.00 | 4.00 |
| Ties | 22i |  |  |
| Total | 25 |  |  |
| a. Real Estate 2011 region allocation < Real Estate 2006 region allocation  b. Real Estate 2011 region allocation > Real Estate 2006 region allocation  c. Real Estate 2011 region allocation = Real Estate 2006 region allocation  d. Real Estate 2011 sector allocation < Real Estate 2006 sector allocation  e. Real Estate 2011 sector allocation > Real Estate 2006 sector allocation  f. Real Estate 2011 sector allocation = Real Estate 2006 sector allocation  g. Real Estate 2011 position allocation < Real Estate 2006 position allocation  h. Real Estate 2011 position allocation > Real Estate 2006 position allocation  i. Real Estate 2011 position allocation = Real Estate 2006 position allocation | | | | |

Table 22: Ranks applied to disclosures of region, sector and position allocations regarding real estate

There outcome variables are dichotomous (allocation disclosed, 0=no, 1=yes). In table 22 the positive rank of 6 regarding the pair ‘Real Estate 2011 sector allocation – Real Estate 2006 sector allocation’ shows that in 2011, 6 pension funds disclosed a sector allocation, whereas in 2006, the same 6 pension funds did not disclose a sector allocation (outcome variable 1 in 2011 is bigger than outcome variable 0 in 2006). The negative rank of 3 means the opposite, 3 pension funds disclosed a sector allocation in 2006 but the same 3 pension funds did not disclose a sector allocation in 2011 anymore (outcome variable 0 in 2011 smaller than outcome variable 1 in 2006). A total of 16 Dutch pension funds did not change their disclosure, these funds either disclosed both in 2011 and 2006 a sector allocation or did not disclose a sector allocation in both years (outcome variable both in 2006 and 2011: 0, or outcome variable both in 2006 and 2011: 1).

| **Test Statisticsb** | | | |
| --- | --- | --- | --- |
|  | Real Estate 2011 region allocation - Real Estate 2006 region allocation | Real Estate 2011 sector allocation - Real Estate 2006 sector allocation | Real Estate 2011 position allocation - Real Estate 2006 position allocation |
| Z | -2.828a | -1.000a | -.577a |
| Asymp. Sig. (2-tailed) | .005 | .317 | .564 |
| a. Based on negative ranks.  b. Wilcoxon Signed Ranks Test | | | |

Table 23: Test statistics applied to disclosures of region, sector and position allocations regarding real estate

Table 23 reveals that the calculated value of the Z-score of -2.828 is significant at p=0.005 regarding the region allocation. For this reason can be concluded that since 2006, the year before the beginning of the financial crisis, there has been a significant increase in the disclosure of region allocation regarding the asset category real estate (z=-2.828 and p<0.05). With regard to the disclosure of sector (p=0.317) and position allocations (p=0.564), the p values are bigger than 0.05, therefore can be concluded that these variables entail no significant relations.

***Quality of real estate investment risk disclosures and pension fund size***

To decide which test to apply, the decision schedule depicted in appendix 11 has been applied. There is one, categorical outcome variable (region allocation disclosed, 0=no, 1=yes). The predictor variable, the size of the pension fund is a continuous variable. Appendix 11 reveals that a logistic regression or a biseral/point-biseral correlation could be applied (Field, 2005). De Vocht (2011) describes that samples bigger than 30 meet the pre-assumptions of

biseral correlation, therefore, with a sample of 25, a logistic regression is preferred.

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 28.511a | .008 | .011 |
| a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001. | | | |

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 20.029a | .020 | .032 |
| a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001. | | | |

Table 24: Logistic regression with dependent Table 25: Logistic regression with dependent

variable disclosure region allocations in financial variable disclosure region allocations in financial

statements 2006 and as covariate AUM 2006 statements 2011 and as covariate AUM 2011

De Vocht (2011) describes that the Nagelkerke R Square measures the quality of the model and has always a value between 0 and 1. The Nagelkerke R2 of 0.011depicted in table 24 indicates that in 2006, there is a weak relation between AUM and the disclosure of a region allocation.

Table 25 reveals a Nagelkerke R2 of 0.032 which indicates that in 2011, there is also a weak relation between AUM and the disclosure of a region allocation.

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 28.980a | .004 | .005 |
| a. Estimation terminated at iteration number 2 because parameter estimates changed by less than .001. | | | |

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 26.723a | .000 | .001 |
| a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001. | | | |

Table 26: Logistic regression with dependent Table 27: Logistic regression with dependent

variable disclosure sector allocations in financial variable disclosure sector allocations in financial

statements 2006 and as covariate AUM 2006 statements 2011 and as covariate AUM 2011

Regarding the relation between AUM and the disclosure of a sector allocation, table 26 and table 27 reveal in 2006 and 2011 with a Nagelkerke R2 of 0.005 respectively 0.001 a very weak relation in both years.

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 13.974a | .265 | .426 |
| a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001. | | | |

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 21.544a | .069 | .104 |
| a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001. | | | |

Table 28: Logistic regression with dependent Table 29: Logistic regression with dependent

variable disclosure position allocation in financial variable disclosure position allocation in financial

statements 2006 and as covariate AUM 2006 statements 2011 and as covariate AUM 2011

Regarding the relation between AUM and the disclosure of a position allocation, table 28 reveals in 2006 with a Nagelkerke R2 of 0.426 a reasonably strong relation. With 0.104, the relation is weak in 2011.

| **Variables in the Equation** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | B | S.E. | Wald | df | Sig. | Exp(B) |
| Step 1a | AUM\_2006\_billion\_eur | .051 | .035 | 2.184 | 1 | .139 | 1.053 |
| Constant | -2.588 | .921 | 7.899 | 1 | .005 | .075 |
| a. Variable(s) entered on step 1: AUM\_2006\_billion\_eur. | | | | | | | |

Table 30: Building blocks regarding the regression equation between dependent variable position allocations in financial statements 2006 and as covariate AUM 2006

Given the reasonably strong relation between AUM 2006 and the disclosure of a position allocation in the 2006 financial statements, this relation will be further analyzed. Although ‘AUM 2006’ is with 0.139 not significant, De Vocht (2011) recommends to present the independent variable in the logistic regression equation. This leads to the following logistic regression equation:

Logit = -2.588 + 0.051\* AUM 2006 in billion euro

The regression coefficient is with 0.051 positive. In other words, the larger the pension fund in 2006, the bigger the chance on disclosure of a position allocation.

## **4.4.2 Bonds**

Regarding bonds, first will be determined if there are pension funds with relatively small or no positions in bonds.

| ***Position in bonds*** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
|  | | Bonds 2006 as a percentage of AUM 2006 | | | | Total |
| 20-30 | 30-40 | 40-50 | >= 50 |
| Pension fund size | X Large | 1 | 4 | 0 | 0 | 5 |
| Large | 1 | 0 | 2 | 2 | 5 |
| Medium | 2 | 0 | 3 | 0 | 5 |
| Small | 1 | 1 | 2 | 1 | 5 |
| X Small | 0 | 0 | 1 | 4 | 5 |
| Total | | 5 | 5 | 8 | 7 | 25 |
|  | | | | | | |
|  | | Bonds 2011 as a percentage of AUM 2011 | | | | Total |
| 20-30 | 30-40 | 40-50 | >= 50 |
| Pension fund size | X Large | 2 | 1 | 1 | 1 | 5 |
| Large | 0 | 1 | 2 | 2 | 5 |
| Medium | 2 | 1 | 1 | 1 | 5 |
| Small | 0 | 2 | 1 | 2 | 5 |
| X Small | 0 | 0 | 0 | 5 | 5 |
| Total | | 4 | 5 | 5 | 11 | 25 |

Table 31 and 32: Crosstabs pension fund size and bonds 2006 respectively 2011 as a percentage of AUM 2006 respectively AUM 2011

Table 31 and 32 make clear that all pension funds have considerable positions in bonds as per end of 2006 as well as per end of 2011. Therefore, all 25 Dutch pension funds will be included in the remainder of the research in this paragraph.

***Quality of bond investment risk disclosures compared between 2006 and 2011***

| Disclosed in financial statements? | Rating allocation | | Position allocation | | | GIIPS allocation | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2006 | 2011 | | 2006 | 2011 | | 2006 | 2011 | |
| Disclosed | 9 | 20 | | 5 | 15 | | 1 | 11 | |
| Not disclosed | 16 | 5 | | 20 | 10 | | 24 | 14 | |
| Total | 25 | 25 | | 25 | 25 | | 25 | 25 | |

Table 33: Presence of disclosures of rating, position and GIIPS-allocations regarding bonds

As described in paragraph 3.2, rating agencies determine the creditworthiness of counterparties, also with regard to bonds. The disclosure of rating allocations by Dutch pension funds in the financial statements has increased considerably from 9 funds in 2006 to 20 in 2011. The disclosure of position and GIIPS allocations has also increased considerably between 2006 and 2011.

To test whether the frequency of the disclosure of rating, position and GIIPS allocations has increased significantly or not between 2006 and 2011, first will be tested if the variables are distributed normally or not.

| **Tests of Normality** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
|  | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
| Statistic | df | Sig. | Statistic | df | Sig. |
| Bonds 2006 rating allocation | .409 | 25 | .000 | .610 | 25 | .000 |
| Bonds 2006 position allocation | .488 | 25 | .000 | .493 | 25 | .000 |
| Bonds 2006 GIIPS allocation | .539 | 25 | .000 | .203 | 25 | .000 |
| Bonds 2011 rating allocation | .488 | 25 | .000 | .493 | 25 | .000 |
| Bonds 2011 position allocation | .388 | 25 | .000 | .625 | 25 | .000 |
| Bonds 2011 GIIPS allocation | .367 | 25 | .000 | .634 | 25 | .000 |
| a. Lilliefors Significance Correction | | | | | | |

Table 34: Tests of normality applied to rating, position and GIIPS allocations regarding bonds

Both the Kolmogorov-Smirnov and Shapiro-Wilk test present significant values of 0.000. These values are well below a Sig. of 0.005, therefore can be concluded that the rating, position and GIIPS allocations are not normally distributed in 2006 as well as in 2011. For this reason, nonparametric tests will be applied.

As also described in the previous paragraph with regard to real estate, de Vocht (2011) describes that paired tests can be used to compare variables on two points in time under the condition that the same cases are compared on both points in time. The distributions are not normally, so the Wilcoxon matched pairs test will be applied also regarding bonds.

| **Ranks** | | | | |
| --- | --- | --- | --- | --- |
|  | | N | Mean Rank | Sum of Ranks |
| Bonds 2011 rating allocation - Bonds 2006 rating allocation | Negative Ranks | 1a | 7.00 | 7.00 |
| Positive Ranks | 12b | 7.00 | 84.00 |
| Ties | 12c |  |  |
| Total | 25 |  |  |
| Bonds 2011 position allocation - Bonds 2006 position allocation | Negative Ranks | 1d | 6.50 | 6.50 |
| Positive Ranks | 11e | 6.50 | 71.50 |
| Ties | 13f |  |  |
| Total | 25 |  |  |
| Bonds 2011 GIIPS allocation - Bonds 2006 GIIPS allocation | Negative Ranks | 0g | .00 | .00 |
| Positive Ranks | 10h | 5.50 | 55.00 |
| Ties | 15i |  |  |
| Total | 25 |  |  |
| a. Bonds 2011 rating allocation < Bonds 2006 rating allocation  b. Bonds 2011 rating allocation > Bonds 2006 rating allocation  c. Bonds 2011 rating allocation = Bonds 2006 rating allocation  d. Bonds 2011 position allocation < Bonds 2006 position allocation  e. Bonds 2011 position allocation > Bonds 2006 position allocation  f. Bonds 2011 position allocation = Bonds 2006 position allocation  g. Bonds 2011 GIIPS allocation < Bonds 2006 GIIPS allocation  h. Bonds 2011 GIIPS allocation > Bonds 2006 GIIPS allocation  i. Bonds 2011 GIIPS allocation = Bonds 2006 GIIPS allocation | | | | |

Table 35: Ranks applied to disclosures of rating, position and GIIPS allocations regarding bonds

For further details on how to read table 35, I refer to the explanation on table 22.

| **Test Statisticsb** | | | |
| --- | --- | --- | --- |
|  | Bonds 2011 rating allocation - Bonds 2006 rating allocation | Bonds 2011 position allocation - Bonds 2006 position allocation | Bonds 2011 GIIPS allocation - Bonds 2006 GIIPS allocation |
| Z | -3.051a | -2.887a | -3.162a |
| Asymp. Sig. (2-tailed) | .002 | .004 | .002 |
| a. Based on negative ranks.  b. Wilcoxon Signed Ranks Test  Table 36: Test statistics applied to disclosures of rating, position and GIIPS allocations regarding bonds | | | |

Table 36 reveals that the calculated values of the Z-score of -3.051, -2.887 and -3.162 are significant at p=0.002, respectively p=0.004 and p=0.002 regarding the rating, position and GIIPS allocations. For this reason can be concluded that since 2006, the year before the beginning of the financial crisis, there has been a significant increase in the disclosure of rating, position and GIIPS allocations regarding the asset category bonds (z=-2.828, respectively, z=-2.887 and z=-3.162 and p<0.05).

***Quality of bond investment risk disclosures and pension fund size***

For the same reasons as described in paragraph 4.4.1, logistic regression is applied to determine if there is a relation between the AUM in 2006 respectively 2011 and the disclosure of investment risks regarding bonds in 2006 and 2011.

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 27.694a | .181 | .248 |
| a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001. | | | |

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 24.183a | .033 | .052 |
| a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001. | | | |

Table 37: Logistic regression with dependent Table 38: Logistic regression with dependent

variable disclosure rating allocation in financial variable disclosure rating allocation in financial

statements 2006 and as covariate AUM 2006 statements 2011 and as covariate AUM 2011

De Vocht (2011) describes that the Nagelkerke R Square measures the quality of the model and has always a value between 0 and 1. The Nagelkerke R2 of 0.248 depicted in table 37 indicates that in 2006, there is a weak relation between AUM and the disclosure of a rating allocation. Table 38 reveals a Nagelkerke R2 of 0.052 which indicates that in 2011, there is a weak relation between AUM and the disclosure of a rating allocation.

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 19.346a | .203 | .321 |
| a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001. | | | |

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 33.650a | .000 | .000 |
| a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001. | | | |

Table 39: Logistic regression with dependent Table 40: Logistic regression with dependent

variable disclosure position allocation in financial variable disclosure position allocation in financial

statements 2006 and as covariate AUM 2006 statements 2011 and as covariate AUM 2011

Regarding the relation between AUM and the disclosure of a position allocation, table 39 reveals in 2006 with a Nagelkerke R2 of 0.321 a reasonably strong relation. With 0.000, the relation hardly exists in 2011.

| **Variables in the Equation** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | B | S.E. | Wald | df | Sig. | Exp(B) |
| Step 1a | AUM\_2006\_billion\_eur | .042 | .029 | 2.024 | 1 | .155 | 1.043 |
| Constant | -2.172 | .721 | 9.084 | 1 | .003 | .114 |
| a. Variable(s) entered on step 1: AUM\_2006\_billion\_eur. | | | | | | | |

Table 41: Building blocks regarding the regression equation between dependent variable position allocations regarding bonds in financial statements 2006 and as covariate AUM 2006

Given the reasonably strong relation between AUM 2006 and the disclosure of a position allocation regarding bonds in the financial statements of 2006, this relation will be further analyzed. Although ‘AUM 2006’ is with 0.155 not significant, De Vocht (2011) recommends to present the independent variable in the logistic regression equation. This leads to the following logistic regression equation:

Logit = -2.172 + 0.042\* AUM 2006 in billion euro

The regression coefficient is with 0.042 positive. In other words, the larger the pension fund in 2006, the bigger the chance on disclosure of a position allocation regarding bonds.

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 6.729a | .065 | .226 |
| a. Estimation terminated at iteration number 11because parameter estimates changed by less than .001. | | | |

| **Model Summary** | | | |
| --- | --- | --- | --- |
| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
| 1 | 33.728a | .022 | .030 |
| a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001. | | | |

Table 42: Logistic regression with dependent Table 43: Logistic regression with dependent

variable disclosure GIIPS allocation in financial variable disclosure GIIPS allocation in financial

statements 2006 and as covariate AUM 2006 statements 2011 and as covariate AUM 2011

Regarding the relation between AUM and the disclosure of a sector allocation, table 42 and table 43 reveal in 2006 and 2011 with a Nagelkerke R2 of 0.226 respectively 0.030 a weak and very weak relation.

## 4.5 Summary

The analyses in this chapter have been undertaken on the data that have been collected by applying the checklist of appendix 10 to the financial statements of 25 Dutch pension funds. First of all can be concluded from the analyses that there is a statistical significant relation between the variables pension fund size and pension fund type. Furthermore can be concluded that regarding the year 2007 and 2011 that the larger the pension fund, the more frequent the word crisis has been disclosed in the financial statements.

With regard to 2006, the disclosure quantity of words regarding investment risks is much larger for X large pension funds than for the other pension fund size categories. The in paragraph 2.8 described theories elaborated by Buzby (1975) and Cooke (1989) provide an answer to the noticed differences in disclosure quantity between larger and smaller Dutch pension funds. In 2006 can be concluded that the larger the pension fund, the more frequent the disclosure of investment risks. In 2007 and 2011 these differences are not noticeable. However, irrespective of pension fund size can be concluded that since 2006, the year before the financial crisis, the frequency of the disclosure of words regarding investment risks in the financial statements has increased significantly in 2007 and 2011.

For reasons explained in paragraph 3.2, the analyses of the disclosure quality of investment risks focus on the disclosure of different allocations for the asset categories real estate and bonds. Regarding real estate can be concluded that since the year before the financial crisis, there has been a significant increase in the disclosure of region allocations. However, this is not the case for sector and position allocations of real estate. Regarding bonds can be concluded that since 2006, there has been a significant increase in the disclosure of all the bond allocations that were subject of research.

A relation between pension fund size and the disclosure quality of bond and real estate investment risks is harder to detect. Although indeed can be concluded that the larger the pension fund, the bigger the chance on position allocations for bonds and real estate in 2006.

In the next chapter will be found out if the results and analyses regarding disclosure quantity and quality have lead to sufficient information to give an answer to the hypotheses and main research question. Furthermore, research limitations and recommendations for further research will be described.

# 5 Conclusions, limitations and recommendations

In the previous chapter, the research results have been presented and analyzed. This chapter presents the conclusions from the results and analyses by giving an answer to the research question and hypotheses as presented in chapter 3. Furthermore, this chapter aims to present limitations of the research and recommendations for further research.

## 5.1 Conclusions

This thesis aims to research if disclosure quantity and disclosure quality have increased since the start of the financial crisis in 2007 and if there are differences noticeable regarding pension fund size. Although several researches have been conducted regarding disclosure quantity and disclosure quality, less research has been conducted specifically on pension funds regarding the financial crisis and investment risk. In particular, few or no scientific researches seem to have been conducted, that take also into account pension fund size. However, the number of stakeholders in Dutch pension funds is considerable and it is in the interest of these stakeholders to conduct more research on this topic.

Constructing the research design in chapter three, six hypotheses have been formulated. In chapter four, the research results and analyses have been presented. As part of the conclusions, these hypotheses will be repeated and accompanied by an answer to make sure that all hypotheses have been tested sufficiently.

**H1: The financial crisis is a topic in the financial statements of Dutch pension funds.**

The first hypothesis is not rejected as the financial crisis is certainly a topic in the financial statements. The analysis on the conducted research in paragraph 4.2 reveals that the word financial crisis and words regarding the crisis have been mentioned frequently in the financial statements of both 2007 and 2011.

**H2: The disclosure quantity of the financial crisis in the financial statements of Dutch pension funds is larger for bigger Dutch pension funds than for smaller Dutch pension funds.**

On the basis of the analysis conducted in paragraph 4.2 can indeed be concluded that both in 2007 and 2011, the larger a pension fund, the more frequently words regarding the financial crisis are disclosed in the financial statements.

**H3: The quantity of investment risk disclosures in the financial statements of Dutch pension funds has increased since the financial crisis.**

The analysis in paragraph 4.3 supports this hypothesis, since 2006, the year before the start of the financial crisis, the frequency of the use of words regarding investment risks has increased significantly in 2007 and 2011.

**H4: The quantity of investment risk disclosures in the financial statements of Dutch pension funds is bigger for larger Dutch pension funds than for smaller Dutch pension funds before and after the start of the financial crisis.**

This hypothesis is supported by the analysis conducted in paragraph 4.3 regarding 2006, the year before the financial crisis. However, with regard to the years 2007 and 2011, the hypothesis cannot be supported.

**H5: The quality of investment risk disclosures in the financial statements of Dutch pension funds has increased since the financial crisis.**

The analysis in paragraph 4.4 only supports this hypothesis partly. The quality of real estate investment risk disclosures has only increased since the financial crisis regarding the region allocations. For bonds, the quality of the investment risk disclosures has increased significantly for all allocations that have been researched.

**H6: The quality of investment risk disclosures in the financial statements of Dutch pension funds is bigger for larger Dutch pension funds than for smaller Dutch pension funds before and after the start of the financial crisis.**

For this hypothesis, the analysis in paragraph 4.4 supplies only partially support. From the analyses regarding the quality of both real estate and bond investment risk disclosures can only be concluded that both in 2006 and 2011, the bigger the pension fund was, the bigger the chance of the disclosure of a position allocation.

Given these answers on the hypotheses, the answer on the main research question that has been repeated below will be formulated.

***“To what extent have the quantity and quality of investment risk disclosures in the financial statements of Dutch pension funds increased since the financial crisis and does pension fund size result in differences in disclosure quantity and quality?”***

The quantity of investment risk disclosures in the financial statements of Dutch pension funds has increased significantly since the financial crisis. Only in 2006, the year before the start of the financial crisis, pension fund size resulted in differences, in 2006, the larger the pension fund, the more frequently investment risks were mentioned in the financial statements.

Buzby (1975) and Cooke (1989) explain these differences between larger and smaller pension funds amongst others by stating that smaller companies do not have the resources to be able to collect and present a broader range of information. Although smaller Dutch pension funds have not been able to increase the investment risk disclosure quantity in 2006 due to a lack of resources, the differences between smaller and larger Dutch pension are not significant in 2007 and 2011 anymore. Smaller pension funds have probably increased their investment risk disclosure quantity easily in 2007 and 2011 by critically going through and learning of the financial statements of larger pension funds, despite their potential lack of resources.

The quality of investment risk disclosures has only partly increased since the financial crisis. Differences in pension fund size resulted only very limited in differences in disclosure quality of investment risks. Regarding disclosure quality, the different preparers of the financial statements have other ideas of what major investment risks are and what not, regardless of the size of a pension fund. The preparers of the financial statements have the possibility to apply professional judgement in their decisions, this has probably resulted in differences in the disclosure quality of investment risks.

## 5.2 Limitations

A limitation of this individual research is that no 4-eyes principle could be applied, while during the research, unfortunately, mistakes like typo’s might occur easily and could have impact on the research results.

The applied research methods, disclosure index study and content analysis, involve problems with validity and objectivity. The frequent application of nonparametric tests for data analysis has also a limitation. These tests are often less ‘powerful’ than parametric tests as the chances of rejecting a false nil hypothesis are smaller (De Vocht, 2011).

Smaller pension funds might publish (almost) the same financial statements as larger pension funds when these pension funds have the same administration organization. This could also ensue limitations and have impact on research results.

The research has been restricted to the financial statements. However, information asymmetry does not necessarily need to be declined by disclosures in the financial statements. There are also other ways such as overviews on the website of pension funds and newsletters to inform stakeholders like the participants of pension funds of certain investment risks.

Moreover, it could possibly be not in the interest of participants of pension funds to enhance disclosure quality for example by providing detailed position allocations. The managers of a number of Dutch pension funds might have decided for example to avoid disclosing certain overviews due to competition considerations. Enhanced disclosure quality might in that case harm the returns of pension funds.

## 5.3 Recommendations for further research

This thesis focuses on investment risks, further research could be conducted on the investment risk *policy* and more specifically on crisis plans that Dutch pension funds have developed. Subsequently, investment risks and investment risk policy can be brought together by applying a relational content analysis, as described in paragraph 2.7.3.

Further research can take pension fund type into account as the Chi-square test in paragraph 4.1 revealed a relation between pension fund type and pension fund size. In addition, the administration organizations of the Dutch pension funds can be considered for reasons described in the previous paragraph.

It would be interesting to conduct cross-sectional research and compare outcomes of pension funds in this research with outcomes for companies in other sectors. More frequently researched sectors such as the banking sector could provide valuable reference.

Future research could focus on overviews on voluntary disclosures such like web publications that are also used to inform stakeholders of pension funds of certain investment risks. The motivations of preparers of financial statements whether or not to disclose certain overviews provides also a very interesting subject of research that can be further investigated by applying a disclosure survey.

Finally, going through the financial statements of the pension funds in the sample, I noticed that several pension funds restricted their definitions on investment risks to the risk on losses (e.g. Stichting Pensioenfonds Openbaar Vervoer and Campina, financial statements 2011). The interpretation of Dutch pension funds of investment risks could be an interesting subject for further research as well, as the Dutch Council of Annual Reporting recommends for investment risks such as price risk to focus on the risk of gains as well.

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Pensioenwet

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<http://statline.cbs.nl/StatWeb/publication/default.aspx?VW=T&DM=SLNL&PA=37179pfd&D1=0%2c2-4%2c9&D2=a&D3=(l-6)-l&HD=100411-0914&HDR=G2%2cG1%2cT>

(3-5-2013)

Wet verplichte beroepspensioenregeling <http://wetten.overheid.nl/BWBR0018831/volledig/geldigheidsdatum_16-02-2013> (1-3-2013)

# Appendix 1 Financial accounting theory

**Ideal Information User Decision Accounting Mediation**

**Conditions Asymmetry Problem Reaction**

Decision usefulness, full disclosure

Rational investment decision

Adverse selection problem

Standard setting

Fair value-based accounting

Precise and sensitive information reperformance

Motivate and evaluate manager performance

Moral hazard problem

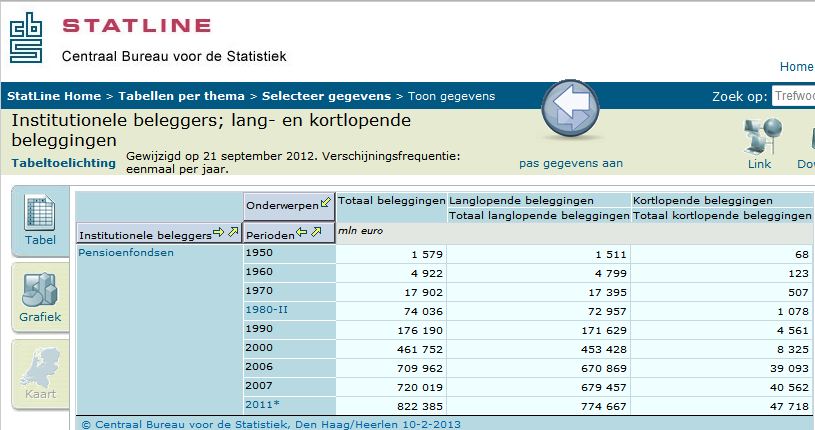
Financial accounting theory (Scott, 2006)

# Appendix 2 Number of Dutch pension funds

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |
| **Supervised Dutch pension funds** |  |  |  |  |  |  |  |  |  |  |
| Number of institutions as per end of the year |  |  |  |  |  |  |  |  |  |  |
|  | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |  |  |  |  |
| Bedrijfspensioenfondsen verplicht | 71 | 75 | 78 | 78 | 78 | 71 | 69 | 68 | 65 | 63 |
| Bedrijfspensioenfondsen niet verplicht | 31 | 28 | 24 | 25 | 25 | 25 | 26 | 19 | 17 | 14 |
| Ondernemingspensioenfondsen | 804 | 753 | 714 | 676 | 643 | 597 | 543 | 474 | 414 | 359 |
| Ondernemingsspaarfondsen | 7 | 6 | 8 | 7 | 7 | 7 | 4 | 5 | 5 | 5 |
| Beroepspensioenfondsen | 11 | 11 | 13 | 12 | 12 | 12 | 13 | 12 | 12 | 12 |
| Speciale wetgeving | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
|  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
| **Total** | **926** | **875** | **839** | **800** | **767** | **713** | **656** | **579** | **514** | **454** |

Source: DNB; <http://www.statistics.dnb.nl/index.cgi?lang=nl&todo=PenReg> (29-4-2012)

# Appendix 3 Investments of Dutch pension funds



Source: CBS;

<http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=70140ned&LA=NL> (10-2-2013)

# Appendix 4 Overview research methods

Narratives in annual reports\*

Disclosure survey questionnaires and interviews (2.6.1)

Semi-objective

Textual analyses

Subjective ratings

Linguistic analysis

(2.6.5)

Readability

Studies (2.6.4)

Content analysis (2.6.3)

Disclosure index studies (2.6.2)

* Underlying construct of these studies is often ‘disclosure quality’

Source: Beattie et al. (2004)

Between brackets the paragraph in which the research method is further explained

# Appendix 5 Dutch Guidelines of Annual Reporting – Risk paragraph (revised 2007)

RJ 610.401

In the annual accounts and annual report is paid attention to the policy of the pension fund and the risks that the pension fund runs when performing his duties. Regarding the risk paragraph, the RJ recommends to disclose measures in accordance with risk policy in the annual report. The RJ recommends to present qualitative and quantitative explanations on items on the balance sheet in the annual accounts.

RJ 610.402

Regarding the notes to the investment risks, Guideline 610 Pension Funds is connected to the disclosure requirements as presented in RJ Guideline 290 Financial Instruments.

RJ 610.403

The RJ recommends Dutch pension funds to disclose explanations from a policy point of view on the risks at present and the accordingly adapted policy in the annual report. This includes explanations on:

* matching risk
* insurance risk
* concentration risk
* investment risks, such as interest rate risk, price risk, credit risk and liquidity risk
* investment risks alternative investments
* operational risks (including internal control, IT and integrity risk)
* outsourcing and associated risks
* legal risks

Notes to the policy of the fund regarding the management of risks:

* Asset and Liability Management policy and duration matching
* funded status (i.e. the ratio of market value of assets to liabilities)
* funding policy
* premium policy
* indexation policy
* reinsurance policy
* risk policy alternative investments
* policy regarding outsourcing

RJ 610.404

In the notes to the annual accounts is recommended regarding the in paragraph 402 and 403 mentioned risks at least to present further notes to the major risks that are particularly important for the fund. These notes are quantitative as well as qualitative, whereas the method of the notes is also associated with the insight in the financial position (article 2:362 Dutch Civil Code).

Regarding the investments:

* Asset mix
  + real estate portfolio to currency, category and region
  + equity portfolio to currency, industry and region
  + fixed income portfolio to maturity, currency and credit rating
  + degree of investments in the sponsor
  + data of each investment bigger than 5 percent of the total investments or bigger than 5 percent of the asset category to which the investment is part
* sensitivity of the investments including derivatives to market developments
* the method of hedging the risks and the positions that have been taken as a result (in addition to the notes to derivatives)
* duration of fixed income

Regarding pension obligations:

* actuarial risks
* indexation risks
* premium rate and standards
* specification of the premium to yearly generation in accordance with the Pension Law
* ratios such as with regard to maturity, stating the for these results used definitions
* duration of the pension obligations
* sensitivity analysis

RJ 610.405

If the above requested explanations are already part of the notes to items in the annual accounts the notes do not need to be presented in the risk paragraph.

# Appendix 6 Research process

Theory

Idea

Interest

Analysis and results *(4)*

Data processing *(3.6)*

Population and sampling *(3.4)*

Data collection *(3.5)*

Choice of research method *(3.3)*

Operationalization

*(3.2)*

Conceptualization

*(3.2)*

*(1 + 3.1 (Hypotheses))*

# 

Source: Babbie, E. 2007. The practice of social research. Belmont, USA: Thomson Wadsworth, p. 10 Source: Babbie, E. 2007. The practice of social research. Belmont, USA: Thomson Wadsworth, p. 108

# Appendix 7 Definitions investment risks

***Definitions derived from Dutch Guidelines of Annual Reporting***

Credit risk: the risk that a counterparty cannot fulfill its obligation, which causes financial loss to the legal entity (RJ 940).

Currency risk: the risk that the value of a financial instrument will fluctuate as a result of changes in currency rates (RJ 940).

Interest rate risk: the risk that the value of a financial instrument will fluctuate as a result of changes in the market based interest rate (RJ 940).

Liquidity risk: the risk that the legal entity has no opportunity to obtain the financial resources that are necessary to meet its obligations based on the financial instruments, also called the ‘funding risk’. Liquidity risk can among other things arise because a financial asset cannot be sold in the short-term at almost fair value (RJ 940).

Market risk: the risk that the value of a financial instrument changes of market prices, caused by factors that apply exclusively to the individual instrument or its issuer, or by factors that influence all instruments that are traded in the market (RJ 940).

Price risk: risk that comprises currency risk, interest rate risk and market risk (RJ940).

***Additional definitions derived from financial statements Dutch pension funds\****

Bankruptcy risk: the risk that a pension fund faces, when the counterparty due to a (fully or partly) bankruptcy cannot fulfill its (full or in part) fulfill the payment obligations (Stichting Pensioenfonds Ballast Nedam, financial statements 2011).

Collateral risk: the risk that a pension fund faces, when the underlying asset of a loan, debtor or obligation changes in value (Stichting Pensioenfonds Ballast Nedam, financial statements 2011).

Concentration risk: the risk that a too large part of the assets has been concentrated at one debtor (Stichting Pensioenfonds Metaal en Techniek, financial statements 2011). The risk that due to inadequate diversification in the portfolio a certain development or event will cause an above-average impact on the value of a portfolio (Stichting Pensioenfonds ING, financial statements 2011).

Investment risk: risk regarding investments; the expected returns might actually be higher or lower (Stichting Pensioenfonds Aviko, financial statements 2011).

Settlement risk: the risk that a pension fund faces, when a counterparty (whether or not) consciously does not keep to what has been agreed regarding the settlement of transactions (Stichting Pensioenfonds Ballast Nedam, financial statements 2011).

\*Within brackets the source of the presented definition.

# Appendix 8 Analysis of Research Methods

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Criteria** | | | | | | |
| **Research method** | **Relia-**  **bility** | **Vali-**  **dity** | **Objec-**  **tivity** | **Bud-**  **get** | **Time** | **Additional**  **Limitation(s)** | **Appro-priate?** |
| Disclosure survey | + | - | - | + | +/- | - Dependency on respondents  - Artificiality | Yes |
| Disclosure index studies | +/- | +/- | - | +/- | -/- | - resource-intensive | Yes |
| Content analysis | + | - | +/- | + | - | - Coding procedures may lead to interpretation biases | Yes |
| Readability studies | + | - | + | + | +/- | - Less appropriate to annual reports | No |
| Linguistic analysis | + | + | + | + | - | - No appropriate benchmarks available  - Time consuming | No |

Strength of aspect:

+ High

+/- Medium

- Low

# Appendix 9 Pension funds included in sample and average AUM

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Num-ber | Pension fund | Size | Assets Under Management 2011\* | Assets Under Management 2006\* | Average Assets Under Management\* |
| 1 | Pensioenfonds ABP | X Large | 265,683,000 | 205,323,000 | 235,503,000 |
| 2 | Pensioenfonds Zorg en Welzijn | X Large | 130,002,000 | 80,769,000 | 105,385,500 |
| 3 | Pensioenfonds Metaal en Techniek | X Large | 40,883,000 | 32,159,000 | 36,521,000 |
| 4 | Bedrijfstakpensioenfonds voor de Bouwnijverheid | X Large | 32,787,000 | 24,937,000 | 28,862,000 |
| 5 | Pensioenfonds van de Metalektro (PMT) | X Large | 25,799,000 | 20,714,000 | 23,256,500 |
|  | Total sample X Large |  | 495,154,000 | 363,902,000 | 429,528,000 |
|  |  |  |  |  |  |
| 6 | Philips Pensioenfonds | Large | 14,738,000 | 14,725,400 | 14,731,700 |
| 7 | Pensioenfonds ING | Large | 15,931,141 | 10,413,498 | 13,172,320 |
| 8 | Rabobank Pensioenfonds | Large | 15,946,000 | 9,850,800 | 12,898,400 |
| 9 | Spoorwegpensioenfonds | Large | 11,685,000 | 11,798,000 | 11,741,500 |
| 10 | Pensioenfonds voor de Grafische Bedrijven | Large | 11,740,000 | 9,503,000 | 10,621,500 |
|  | Total sample Large |  | 70,040,141 | 56,290,698 | 63,165,420 |
|  |  |  |  |  |  |
| 11 | Bedrijfspensioenfonds voor de Landbouw | Medium | 9,395,166 | 6,502,653 | 7,948,910 |
| 12 | Pensioenfonds voor Huisartsen | Medium | 7,594,147 | 7,612,565 | 7,603,356 |
| 13 | Pensioenfonds voor de Woningcorporaties | Medium | 6,838,631 | 4,458,580 | 5,648,605 |
| 14 | Algemeen Pensioenfonds KLM | Medium | 5,678,700 | 4,930,800 | 5,304,750 |
| 15 | Pensioenfonds DSM Nederland | Medium | 4,976,000 | 5,269,000 | 5,122,500 |
|  | Total sample Medium |  | 34,482,644 | 28,773,598 | 31,628,121 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 16 | Bedrijfstakpensioenfonds voor de Media PNO | Small | 3,440,621 | 2,269,038 | 2,854,829 |
| 17 | Pensioenfonds Openbaar Vervoer | Small | 2,613,126 | 2,294,737 | 2,453,932 |
| 18 | Pensioenfonds voor het Slagersbedrijf | Small | 1,562,888 | 1,191,185 | 1,377,037 |
| 19 | Pensioenfonds Campina | Small | 1,081,448 | 1,093,687 | 1,087,568 |
| 20 | Notarieel Pensioenfonds | Small | 1,101,840 | 938,934 | 1,020,387 |
|  | Total sample Small |  | 9,799,923 | 7,787,581 | 8,793,753 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 21 | Stichting Pensioenfonds Ballast Nedam | X Small | 718,601 | 612,234 | 665,418 |
| 22 | Stichting Pensioenfonds Sappi Netherlands | X Small | 384,054 | 355,220 | 369,637 |
| 23 | Stichting Pensioenfonds Unisys Nederland | X Small | 361,510 | 287,098 | 324,304 |
| 24 | Stichting Co-op Pensioenfonds | X Small | 174,322 | 144,241 | 159,282 |
| 25 | Stichting Pensioenfonds AVIKO | X Small | 170,487 | 98,128 | 134,308 |
|  | Total sample X Small |  | 1,808,974 | 1,496,921 | 1,652,949 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Total sample |  | 611,285,682 | 458,250,798 | 534,768,243 |

Source: Annual accounts of the presented pension funds (found at Company.Info)

\* Amounts x1000 euro.

# Appendix 10 Checklist to collect data

*General characteristics (paragraph 4.1)*

1. What is the size of the pension fund, measured in Assets Under Management, as per:
   1. 31 December 2006
   2. 31 December 2007
   3. 31 December 2011
2. Does the audit report mention that the financial statements have been presented in conformity with the International Financial Reporting Standards (IFRS), as per:
   1. 31 December 2006
   2. 31 December 2007
   3. 31 December 2011
3. Do the financial statements specifically mention that other parts of the financial statements have been presented in accordance with the International Financial Reporting Standards (IFRS), as per:
   1. 31 December 2006
   2. 31 December 2007
   3. 31 December 2011
4. What is the type (sector pension fund, company pension fund, compulsory sector pension fund or occupational pension fund) of the pension fund, as distinguished paragraph 2.2?
   1. Sector pension fund (not mandatory)
   2. Compulsory sector pension fund
   3. Company pension fund

d. Occupational pension fund

1. Did the pension fund outsource the administration to an administration organization (in Dutch: uitvoeringsorganisatie)?
   * + If yes, continue with question 6
     + If no, continue with question 7
2. To which administration organization has the pension fund outsourced the administration as per:
   1. 31 December 2006
   2. 31 December 2007
   3. 31 December 2011

*Financial crisis in financial statements ( 4.2)*

1. How many times is the word “crisis” mentioned and as part of which complete word is “crisis” mentioned in the annual accounts and annual reports\* as per:
   1. 31 December 2007
   2. 31 December 2011

\*including the preface of the Executive Board but excluding the table of contents and the summary when applicable

*Quantity of investment risk disclosures (4.3)*

1. Which types of investment risks have been presented, as per 31 December 2006, 31 December 2007 and 31 December 2011 and how many times are these investment risks disclosed?

- prijsrisico (in English price risk)

- valutarisico (currency risk)

- renterisico (interest rate risk)

- marktrisico (market risk)

- kredietrisico (credit risk)

- liquiditeitsrisico (liquidity risk)

- inflatierisico (inflation risk)

- concentratieriscio (concentration risk)

- aandelenrisico (stock risk)

- vastgoedrisico (real estate risk)

- grondstoffenrisico (commodity risk)

- zakelijke waardenrisico (fixed income risk)

- beleggingsrisico (investment risk)

- other specific investment risk disclosures

*Quality of investment risk disclosure (4.4)*

1. Are there specific investment risks regarding investments related to the financial crisis which are disclosed as per 31 December 2011, for example?

* breakdown of investments in GIIPS countries (Greece, Ireland, Italy, Portugal and Spain)
* additional notes to collateral (cash, bonds, in case of bonds which credit rating?) for example for securities lending
* additional notes to other investment risks such as loans?

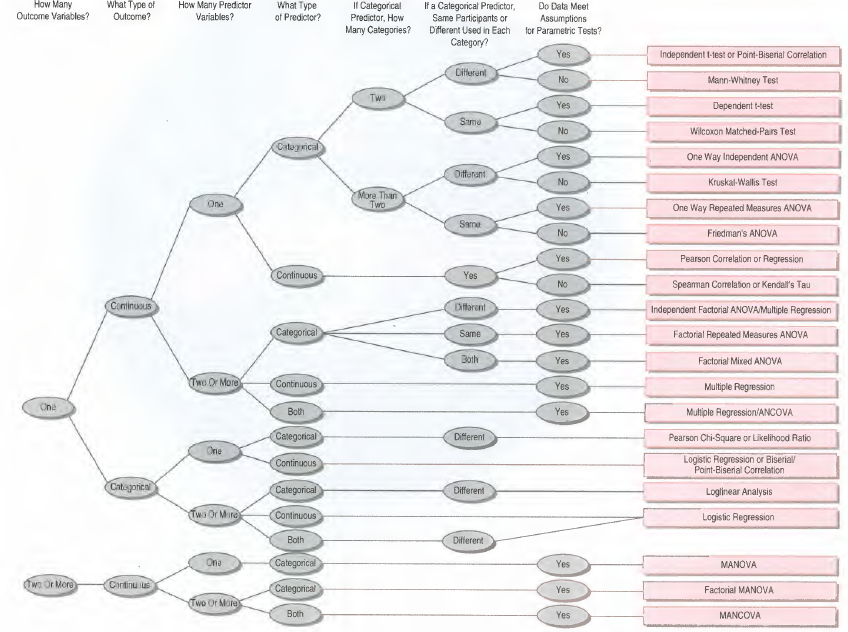
*Quality of investment risk disclosure regarding real estate (4.4.1)*

1. What is the position of the pension fund in real estate, as per:
   1. 31 December 2006
   2. 31 December 2011
2. Are the following investment risks regarding real estate disclosed, in separate tables, textual or in another way, as per 31 December 2006?
3. region allocation including regions Europe and United States/North America
4. sector allocation including sector such as residential buildings, offices, etcetera
5. position allocation in which relative large positions in real estate have been disclosed
6. Are the following investment risks regarding real estate disclosed, in separate tables, textual or in another way, as per 31 December 2011?
7. region allocation including regions Europe and United States/North America
8. sector allocation including sector such as residential buildings, offices, etcetera
9. position allocation in which relative large positions in real estate have been disclosed

*Quality of investment risk disclosure regarding bonds (4.4.2)*

1. What is the position of the pension fund in bonds, as per:
   1. 31 December 2006
   2. 31 December 2011
2. Are the following investment risks regarding bonds disclosed, in separate tables, textual or in another way, as per 31 December 2006?
3. rating allocations provided by rating agencies such as Moody’s, Fitch and Standard and Poor’s
4. position allocation position allocation in which relative large bond positions have been disclosed
5. GIIPS allocation, disclosing at least the position in Greece, Ireland, Italy, Portugal and Spain
6. Are the following investment risks regarding bonds disclosed, in separate tables, textual or in another way, as per 31 December 2011?
7. rating allocations provided by rating agencies such as Moody’s, Fitch and Standard and Poor’s
8. position allocation position allocation in which relative large bond positions have been disclosed
9. GIIPS allocation, disclosing at least the position in Greece, Ireland, Italy, Portugal and Spain

# Appendix 11 Decision schedule statistical methods



Source: Field (2005), p. 781