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Economic consequences of SFAS No. 150

The relation between the introduction of Statement of Financial Accounting Standards No. 150 and firms' perceived systematic risk and their required rate of return on common stock

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Preface

This thesis is based upon a paper that is made in conjunction with Gert-Jan van der Maas, prepared during the seminar Advanced Financial Accounting. At this point, I would like to thank him for his work relating to this paper.

I would like to appear my sincere thanks to my leading supervisor, Mr. Van der Boom, lecturer at the Erasmus University Rotterdam. Without his recommendations and heartfelt support, this thesis would never had become a reality. Also thanks to my co-supervisor, Mr. De Knecht (lecturer at the Erasmus University Rotterdam), for his co-operation.

Besides, I wish to acknowledge the heartwarming support of my girlfriend Jacquelien van Splunder. She has shown sincere interest in my activities and delivered moral support to me during the preparation of this thesis. Like my girlfriend, I thank my family and friends for supporting. Especially Coen Slurink, for co-reading my thesis.

Finally, I wish to express my greatest thanks to God. He has given the physical strength and wisdom to complete my thesis. Moreover, God will give 'wisdom' which is of greater dimension than the wisdom generated during the preparation of this thesis, and broader, the worldly wisdom. Namely, it is a transcendental wisdom. Jesus Christ is the personification of this wisdom. He shows the eternal love and forgiveness of God who sends his Son to this earth. I wish that you, reader of this thesis, learn many from the contents of this thesis, but above all, I wish that you may acquire the wisdom as outlined in Proverbs 9:10. Indeed: nobody is wise who do not know God (Ambrosius, de Off. I, p. 117).

Matthias Stout

Goedereede, January 2011

—Nemo enim prudens qui Dominum nescit—

(Ambrosius, De Officiis Ministrorum of Saint Ambrose. I, p. 117)

—The fear of the LORD is the beginning of wisdom: and the knowledge of the holy is understanding—

(The Holy Bible (King James version), Proverbs 9:10)

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1. Introduction

1.1 Introduction

This thesis investigates whether the transition of Mandatorily Redeemable Preferred Stock[1] (MRPS hereafter) from equity or 'quasi-equity'[2] to the liabilities section of the balance sheet –as prescribed by Statement of Financial Accounting Standards (SFAS hereafter) No. 150– has had an increasing effect on firms' required rate of return on common stock[3].

The credit-side of the balance sheet depicts the sources of firms' capital. Usually, the credit-side includes two separate categories of capital sources: liabilities and equity. However, some financial instruments have features of both liabilities and equity. These instruments are called hybrid instruments. As a result of the combined characteristics included in a hybrid instrument, these instruments do not strictly fit in one section or category of firms' capital sources: liabilities or equity. A "dichotomous classification approach" (a liabilities and equity section) on the one hand and on the other hand the issuance of hybrid instruments has led to many discussions. In addition, the Security and Exchange Commission in 1979 precludes MRPS from the equity-section while she does not require to list MRPS as liabilities. Hence, a 'quasi-equity' (also called a 'mezzanine section') on the balance sheet is introduced by US firms (Nair, et al., 1990). This section is used for hybrid instruments.

In response to the classification problems, the Financial Accounting Standards Board has considered changes to the classification regime (Levi and Segal, 2006). In this context, Statement of Financial Accounting Standards (SFAS hereafter) No. 150 is issued, which prescribes that certain hybrid instruments –MRPS included– should be reclassified to the liabilities section on the balance sheet. SFAS No. 150 had been effective on June 15, 2003 (FASB, 2003). This thesis deals with the mentioned accounting standard, specifically with MRPS' reclassification from equity or 'quasi-equity' to the liabilities section of firms' balance sheet (due to the introduction of SFAS No. 150).

Understandably, SFAS No. 150 might lead to a change in the reported debt-equity ratio of firms that are subject to this accounting standard. The debt-equity ratio is often expressed as a percentage and measures how far a firm is financed by debt rather than its own capital (McKenzie, 2007). In fact of the shift of MRPS to the liabilities section of the balance sheet, the liabilities increase and the reported debt-

[1] MRPS are defined as "any of various instruments issued in the form of shares that embody an unconditional obligation requiring the issuer to redeem the instrument by transferring its assets at a specified or determinable date (or dates) or upon an event that is certain to occur" (FASB, 2003). MRPS have various advantages: in times of financial distress firms have the possibility to postpone dividend payments, MRPS have relatively predictable dividend payments, MRPS' holders have preference over common stock in case of liquidation, and the ability to strategically use the stock voting rights (De Jong, et al., 2006). Chan and Seow (1997) supplement this with the remark that MRPS are often issued rather than bond loans to avoid an increase of the debt-equity ratio and, hence, "reduces technical default risk".

[2] The use of a quasi-equity or mezzanine section on the balance sheet was consistent with the SEC-requirements with regard to the treatment of MRPS (Chan and Seow, 1997). These requirements are set in ASR No. 268.

[3] This is the return that at least should be offered before an investment project or stock will be attractive to a rational investor (Van Aalst, et al., p. 43).

equity ratio increases too. Whether and to what extent the liabilities –and indirectly the reported debt-equity ratio– increase, depends on the classification of MRPS before the issuance of SFAS No. 150: some MRPS are classified as equity[4], some firms creates a 'mezzanine section' (also called 'quasi-equity'), and some MRPS are already classified as liabilities.

The question raised to what extent there is a relationship between the introduced accounting standard and stock trade decisions of common stockholders. A possible change of trade decisions can be characterized as an economic consequence of SFAS No. 150[5]. Specifically, it is interesting to investigate to what extent SFAS No. 150 has affected the requirements with regard to the rate of return on common stocks since this subject is not investigated yet. There are various factors that may influence the required rate of return due to SFAS No. 150. An important factor is the debt-equity ratio, of which the author of this thesis expects to be crucial within the determination of the level of the required rate of return. Normally, a higher reported debt-equity ratio leads to a higher required rate of return in fact of that "the market's perception of the riskiness of investing in the firm's stock also rises" (Schauer, et al., 2006).

N.B.: Appendix I and II summarize the main differences and similarities between common stock and preferred stock on the one hand and debt securities and preferred stock on the other hand

1.2 Focus of this thesis

As mentioned, this study focuses on the economic consequences of the issuance of a certain accounting standard: SFAS No. 150 *Accounting for Certain Financial Instruments with Characteristics of both Liabilities and Equity*. SFAS No. 150 prescribes the treatment of hybrid instruments (MRPS, forward purchase contracts, written put options, convertible obligations, et cetera). As mentioned, hybrid instruments have characteristics of both liabilities and equity. In the past, there have been many discussion what instruments (and broader, what characteristics) can be attributed to liabilities and equity. This results in the issuing of the FASB Concept Statement No. 6 (*Elements of Financial* Statements) which defines a more stringent definition of liabilities and equity.

More precisely, in this study the focus is on MRPS. This is a hybrid (financial) instrument which contains characteristics of both liabilities and equity, and therefore, MRPS is representative to research the aforementioned potential economic consequence of SFAS No. 150. According to Kimmel and Warfield (1995) MRPS "have a mandatory redemption provision (a debt characteristic) while at the same time they retain basic characteristics of equity (such as an inability to force a firm into bankruptcy for delinquency of dividend or redemption payments)".

[4] Maloney and Mulford (2003) have found that sometimes firms such features assign to their MRPS that they remain classified as equity (also after ASR No. 268: see sub paragraph 3.2.1). One can think of the condition that MRPS are convertible against common stock (according to Aoyama (2007), this is a condition that makes MRPS strictly associated with straight equity). However, in this thesis, the focus is on non-convertible MRPS. This is because of –to join with Chan and Seow (1997)– that convertible MRPS may be priced differently.

[5] Generally, economic consequences can be characterized as impacts of changing accounting standards. In paragraph 2.3, studies in the area of economic consequences will be reviewed.

MRPS represent –on average– not a large part of firms' balance sheet total. Kimmel and Warfield (1993) have found that MRPS represent 5.51 per cent of the assets during their research period (1979 to 1989). In contrast, Levi and Segal (2006) have found a decline in firms' use of MRPS from 2.41 per cent to 0.72 per cent during the period 1981 to 2004 (see also sub paragraph 3.9.1). Although MRPS reflect a small percentage of total financing, as noted above, SFAS No. 150 pertains to different hybrid instruments, which MRPS are representatives. Paragraph 3.3 gives more insight into these instruments. Hybrid instruments are –in contrast to merely MRPS– a considerable source of financing[6]. In fact of the hybrid characteristics included in MRPS, it is useful and relevant to merely focus on MRPS.

Although SFAS No. 150 might have impact on either firms' balance sheet and firms' income statement (Schauer, et al., 2006), the focus is on the balance sheet. Net income, as part of the income statement, might be affected by the shift of MRPS to the liabilities section: although distributions to MRPS holders were treated in the income statement as dividend under the pre-SFAS No. 150-requirements, under SFAS No. 150 distributions to MRPS holders are regarded as interest expenses. Besides, the change in firms' balance sheet may lead to a pessimistic portrait of firms' financial position, which might result in "disqualification from bidding of private contracts or the prevention of obtaining bank financing...and possibly result in debt covenant violation" (Schauer, et al., 2006). In fact of the use of the relations between leverage (i.e. debt-equity ratio), perceived systematic risk, and the required rate of return on common stock (see paragraph 1.4), the focus is on the change in the amount of debt relative to equity[7]. Therefore, this thesis focuses on the impact of SFAS No. 150 on the balance sheet. Income figures (such as return on assets) are therefore not extensively considered in this thesis, which causes a funnel.

Finally, this thesis focuses merely on US listed firms. Firstly, this is because SFAS No. 150 is exclusively applicable to US listed firms. Secondly, although a quite similar standard (IAS 32: see also sub paragraph 3.6.4) to SFAS No. 150 is issued in countries subject to IFRS regulation (International Financial Reporting Standards), the economic consequences of that standard cannot be investigated in the way used in this thesis. This is because preferred stock of firms in these countries remain their classification as equity

[6] Mjøs and Persson (2007) found that in the mid of 2005 the global stock outstanding related to hybrid capital was approximately $376 billion. Aoyama (2007) also founds that hybrid securities are an important part of firms' financing sources in the US. He observed a steady grow of the issuance of these securities during the 1990's. In 1995 and 1999, the issuance was $30.9 billion and $49.6 billion respectively. Also in the first decade of the twentieth century, a growth of the issuance of hybrid securities was reported: in 2005 and 2006 the issuance reached $39 billion and $71 billion respectively. Aoyama (2007) attributes the latter growth to a liberalization in Moody's "rating methodology for hybrids".

[7] Moreover, since this thesis focuses on the required rate of return on common stock, this thesis takes the investors' perspective (common stockholders). However, in accordance with Kimmel and Warfield (1995), this is justified in fact of the "pre-eminence of this set of users within the FASB's Conceptual Framework".

(e.g. UK) –even with IFRS[8]– or the number of listed firms with outstanding preferred stock is too small to take an appropriate sample (e.g. The Netherlands, Ireland, Germany)[9] (De Jong, et al., 2006).

1.3 Changes of MRPS' balance sheet classification

SFAS No. 150 had been effective on June 15, 2003 (FASB, 2003). SFAS No. 150 requires firms to classify MRPS as liabilities on the balance sheet, and MRPS dividends as interest expenses on the income statement (Schauer, et al., 2006). Previous to the issuance of SFAS No. 150, most firms classify their MRPS as 'quasi-equity', between the liabilities and equity sections of the balance sheet (Kimmel and Warfield, 1995; Schauer, et al., 2006). However, before SFAS No. 150, some firms classify these securities[10] as liabilities or as equity[11] (Maloney and Mulford, 2003). Therefore, a possible shift of MRPS to the liabilities section depends on MRPS' classification before the issuance of SFAS No. 150. Indirectly, the consequences for firms' debt-equity ratio of the new standard also depend on MRPS' classification before the issuance of SFAS No. 150.

In conclusion, the requirement to classify MRPS as liabilities might lead to an increase of the liabilities and therefore the reported debt-equity ratio might increases too (of course, as mentioned, depending on the classification before SFAS No. 150). This can –theoretically– be translated into an increasing effect on firms' required rate of return on common stocks.

1.4 Short introduction to prior research

Schauer, et al. (2006) have already investigated whether there is a change of the reported debt-equity ratio of firms that are subject to SFAS No. 150, and if so, to what extent the ratio has changed. The results of the study suggest that the introduction of SFAS No. 150 leads –on average– to an increase of firms' ratio of long term debt to equity with 43 per cent. This is a very large increase. This may be caused by skewed research results. However, the median of the (long term) debt-equity ratio also indicates a very large increase, namely 38 per cent. Therefore, the skewness in the sample is not the main reason. Actually, the large increase of the reported debt-equity ratio is understandable: according to Schauer, et al. (2006), SFAS No. 150 affects both the numerator (i.e. firms' liabilities increase) and the denominator (i.e. firms' equity or quasi-equity decreases) of the (long term) debt-equity ratio.

A similar investigation with the aforementioned study of Schauer, et al. is the study of Schneider and Wertheim (1993). They also investigate the effect of a Discussion Memorandum issued by the FASB.

[8] According to De Jong, et al. (2006), this equity-classification can be preserved in fact of that issuers "possess the discretion of determining the dividend". Discretion of determining dividends is a decisive factor to be classified as equity within IFRS-regulation.

[9] De Jong, et al. (2006) extract from the Worldscope database 434 European firms with outstanding preferred stock, divided over ten countries. The different countries are represented as follows: UK 81.6%, The Netherlands 10.4%, Ireland 3.0%, Germany 1.8%, Hungary 0.9%, Austria 0.5%, Czech Republic 0.5%, France 0.5%, Spain 0.5%, and Russia 0.5%.

[10] The term 'securities' is a general name for stock, bonds and other tradable financial assets (McKenzie, 2007, p. 78).

[11] See footnote 4.

This memorandum discusses MRPS' shift from equity or 'quasi-equity' to the liabilities section of the balance sheet. The results of the study indicate that the ratio of long-term debt to total equity is increased on average by 34.4 per cent due to the reclassification. While the ratio of total debt to equity is –on average– increased with 18.1 per cent and 4.9 per cent for firms classifying MRPS as equity or as 'quasi-equity', respectively.

Since there is a positive relation between the debt-equity ratio (i.e. leverage) and firms' perceived systematic risk[12], an increased reported debt-equity ratio might affect the perceived systematic risk. Systematic risk is often called *market risk*. Systematic risk is the "systematic sensitivity to changes in the market rate of return" and "is captured by the common stock beta" (Kimmel and Warfield, 1995).

The positive relation between leverage and systematic risk is confirmed by Hamada (1972), Bowman (1979), and Hill and Stone (1980). Hamada states that a firm with a higher debt-equity ratio should have a higher beta (i.e. proxy for firms' perceived systematic risk) than another firm in the same risk-class with a lower debt-equity ratio. Hamada underpins this statement with the use of the Capital Asset Prising Model (CAPM hereafter[13]), which measures the required rate of return on a market portfolio or a specific common stock in conjunction with its perceived systematic risk. Within CAPM, a higher beta causes a higher required rate of return.

Schauer, et al. (2006) state about the reported debt-equity ratio that "as the debt-equity ratio of a firm increases, the market's perception of the riskiness of investing in the firm's stock also rises". This is because investors (i.e. common stockholders) are subordinated to providers of liabilities.

As discussed, SFAS No. 150 might cause a higher reported debt-equity ratio and as a result – following the theoretical description and relations between leverage, perceived systematic risk and the required rate of return above– SFAS No. 150 might had an increasing effect on firms' perceived systematic risk and their required rate of return on common stock (*ceteris paribus*). However, this is in light of the

[12] Besides systematic risk, specific risk exists. According to Van Aalst, et al. (1997, p. 65), systematic risk is inevitable and specific (or non-systematic risk) is diversifiable risk. Most researchers (e.g. McKibben and Rosenberg (1973), Thompson (1976), Logue and Merville (1972)) divide systematic risk into operational risk and financial risk . Therefore, researchers host risks that result from the financial structure or capital structure under systematic risk (and not under specific risk). Hence, in this thesis, the debt-equity ratio is related to systematic risk. This is in accordance with Hamada (1972). Hamada states that additional debt, while maintaining the amount of equity on the same level, increases the risk perception to investors. This results in an increased systematic risk, captured by the β proxy. Hamada (1972) and Rubinstein (1973) decompose systematic risk in operating risk and financial risk, by using the formula: $\beta = \beta^* + \beta^* (1 - \tau) D/E$, where β is the measure for systematic risk of levered common stock, β* is the measure for operating risk of unlevered common stock, τ is the income tax rate, D/E is the ratio of the market value of debt to the market value of equity. One can conclude that $\beta^* (1 - \tau) D/E$ represents financial risk.
In this thesis, the choice to host the risk resulting from firms' financial structure under systematic risk is also made in fact of that SFAS No. 150 is applicable to *all* firms. Therefore, the additional risk, resulting from the reclassification of MRPS from the equity or quasi-equity section to the liability section on the balance sheet, cannot be diversified.
One should note that, while in this thesis the (potential) increased perceived risk due to SFAS No. 150 is host under systematic risk, the fact remains that choices regarding to the capital structure are free choices and not necessarily applicable to the entire market.

[13] Readers should note that the author of this thesis means with CAPM the Sharpe-Lintner version of this model, which is explained in paragraph 5.2.

results of the study of Kimmel and Warfield (1995), Cheng, Frischmann and Warfield (2003) and Chan and Seow (1997) too straightforward. They have found that the perception of common stockholders on the economic substance of MRPS as measured by firms' perceived systematic risk is neither equal to liabilities nor equal to equity. The economic substance indicates how common stockholders regard MRPS: as a form of equity, a form of 'quasi-equity', or as a form of liabilities. This means that MRPS' effect on firms' perceived systematic risk –expressed by the beta– is neither equal to liabilities nor to equity. The conclusion is that MRPS are neither regarded as riskiness as liabilities nor as equity.

As a result, there is a dichotomy in opinion (FASB vs. common stockholders) about MRPS' classification: FASB reclassifies MRPS as liabilities, but common stockholders do not regard MRPS as liabilities[14]. The different opinions are caused by the heterogenic nature of MRPS (MRPS cover either equity as liabilities attributes) that makes classification difficult; avoidability, residual nature and control over the firm are important attributes that determine whether MRPS are regard as equity or as liability or somewhere between them (and accordingly classified). However, these terms are subject to interpretation (see paragraph 3.4) (Kimmel and Warfield, 1993). At this very moment, the question remains whether and to what extent the market perception of MRPS' economic substance –as expressed by their effect on firms' perceived systematic risk– has changed after the issuance of SFAS No. 150.

As mentioned, behind the relation between leverage and firms' perceived systematic risk, there exists a positive relation between firms' systematic risk and their required rate of return on common stock. This is captured by the Sharp-Lintner CAPM-model which is used in this thesis. This model is further discussed in this thesis. For now, the author suffices to point out that there exists a relationship between firms' perceived systematic risk and their required rate of return on common stock. This is proved by various authors: Ammeraal and Heezen (2006), Van Aalst, et al. (1997), Campbell, et al. (2009), Fama and French (2004), and others). Fama and French (2004) summarize this relationship as: "the relation between average return and beta [firms' perceived systematic risk]…is roughly linear". This relationship is of crucial importance within this thesis. Indeed, if the market perception of firms' perceived systematic risk is adjusted due to MRPS' reclassification, it is expected that also the required rate of return on common stock suffered influence of the issuance of SFAS No. 150.

The question raised whether common stockholders have adjust their perception of MRPS' economic substance after the introduction of SFAS No. 150 or whether they see 'trough' MRPS' balance sheet classification, which is assumed by the Efficient Market Hypothesis (EMH hereafter: see paragraph 1.7). As mentioned, this perception can be expressed by the perceived systematic risk, but also by the required rate of return. Indeed, the higher the risk perception, the higher the required rate of return.

[14] This will confuse in fact of that in its Discussion Memorandum (FASB 1990) the FASB just accentuates the necessity of MRPS' classification that is in accordance with their economic substance (whether they are regard as equity or liabilities) (Kimmel and Warfield, 1993). Paragraph 3.2 deals with this Discussion Memorandum.

Unlike EMH, Bishop, et al. (2005) and Hopkins (1996) have found empirical evidence that users of financial statements "make different stock price judgments across different accounting classifications of the same MRPS securities". I.e. users of financial statements follow MRPS' balance sheet classification and do not see 'trough' the balance sheet classification. This is on strained relation with the thoughts of EMH.

With the results of the mentioned researches in mind, it is questionable whether and to what extent SFAS No. 150 affects the required rate of return on common stock. Until this moment, no research is done to the relation between the issuance of SFAS No. 150 and the required rate of return on common stock. Therefore, the theoretical relations between reported leverage, perceived systematic risk, and the required rate of return are not yet been investigated in the context of SFAS No. 150. However, this is an important issue to standard setters, firms, and investors (see paragraph 1.8). The author of this thesis tries to fill this gap in the available literature.

1.5 Research question

At this very moment, it is interesting to verify whether and to what extent the issuance of SFAS No. 150 has affected the required rate of return on common stock. Potential influences of SFAS No.150 on the mentioned rate can be attributed to a change of the decision-making behavior of common stockholders, which indicates an economic consequence.

The research question central to this thesis can be formulated as follows:

To what extent is there a relationship between the introduction of SFAS No. 150 and the level of the required rate of return on US listed common stock?

In order to find an answer to the question above, the sub questions below are formulated:

1. *What are economic consequences of accounting standards and which approaches exist within this research area?*
2. *What does SFAS No. 150 mean?*
3. *What is the scope of SFAS No. 150?*
4. *What are MRPS, and, what factors make the accounting treatment difficult and/or deliver ambiguity for financial statement users to assess MRPS' economic substance?*
5. *What empirical findings are available with regard to the relations between the debt-equity ratio, the perceived systematic risk, and the required rate of return and what research methods and models are used?*
6. *Is the debt-equity ratio affected by the introduction of SFAS No. 150?*
7. *What is the economic substance of MRPS?*
8. *Is the market perception of MRPS' economic substance guided by MRPS' classification?*
9. *Has the use of MRPS declined after the introduction of SFAS No. 150?*
10. *What hypotheses can be developed?*
11. *What research model(s) can be used to answer the research question?*
12. *What are the limitations of this study and recommendations for further research?*
13. *What is the effect of the introduction of SFAS No. 150 on firms' systematic risk?*

14. *What is the effect of the introduction of SFAS No. 150 on the required rate of return on common stocks?*
15. *What underlying analytical conclusions can be drawn?*

The research question above is broadly defined, after which the sub questions are more specified. There is made a funnel: there may be various factors within SFAS No. 150 that affect the required rate of return, however this thesis focuses on a (potential) increased debt-equity ratio because this is expected to be crucial within the determination of the required rate of return on common stock (Hamada, 1972; Hill and Stone, 1980; et cetera).

1.6 Research method and sample

In determining potential economic consequences of SFAS No. 150 different aspects can be investigated. In this study, capital market aspects will be highlighted. Capital market research focuses on the aggregated reaction of participants on the capital market (Deegan & Unerman, 2006, p. 378). More precisely, this approach tries to "determine what impact the release of information has on share[15] prices" (Deegan and Unerman, 2006, p. 377). Because the research question is focused on the aggregated reaction of common stockholders (i.e. the capital market), the Capital market research approach will be used. Different research approaches in the area of economic consequences will be discussed in paragraph 2.4.

To give an answer to the research question and the sub questions, a systematic risk model (Kimmel and Warfield, 1995) and the Sharp-Lintner CAPM-model (Fama and French, 2004) will be used. The systematic risk model uses the relation between financial instruments on firms' balance sheet and their effect on firms' perceived systematic risk. CAPM uses the relation between firms' perceived systematic risk and their required rate of return on common stock. Later on in this thesis, these models will be further discussed.

SFAS No. 150 concerns listed firms in the United States that are subordinated to FASB regulation. Therefore, the sample is selected by the criteria that firms to be included should be US listed firms, subject to FASB regulation. This is in fact of that capital market reactions can only be measured for listed firms. On the other hand, the new accounting standard only affects US listed firms (and not firms from other countries). Later on in this thesis, details about the sample selection and sample period will be discussed.

The research period is from June 15th, 1999 to June 14th, 2007. This period covers exactly two periods of four years: one period before and one period after the introduction of SFAS No. 150. A period of four years is chosen to pre-eliminate potential negative impacts of the financial crisis on stock prices.

[15] In this thesis, the UK term 'share(s)' is considered to be the equivalent of the American term 'stock'. This is consistent with Alver (2007).

1.7 Efficient Market Hypothesis versus misinterpretations

The question to what extent there is a relationship between SFAS No. 150 and the level of the required rate of return depends on the extent of efficiency of capital markets. Market efficiency is one of the most important assumptions within Capital market based research. Fama, et al. (1969) defines market efficiency in accordance with the efficient market hypothesis: the market "adjusts rapidly to fully impound information into share prices when the information is released".

As mentioned, this research is based on the Capital market research approach. Available literature shows that within Capital market research, with regard to accounting, mostly an (semi-strong) efficient market is assumed (Van Aalst, et al., 1997, p. 117; Deegan and Unerman, 2006, p. 378)[16] [17]. In consequence of this, there will be no difference expected between the effect of MRPS on firms' perceived systematic risk and their required rate of return on common stock before and after the date of effectiveness of SFAS No. 150 (June 15th, 2003). This is because of the requirement that firms should disclose the nature of its rights and obligations in the footnotes of the financial statements. Therefore, common stockholders know the characteristics and conditions of outstanding MRPS (also before the introduction of SFAS No. 150). So, common stockholders (i.e. the capital market) know what the actual nature (liabilities, equity or somewhere between them) of MRPS was (and is). SFAS No. 150 only leads to a transition in the classification of MRPS to the liabilities sections of the balance sheet. Leading to a higher reported debt-equity ratio (as mentioned: depending on the classification in the pre-SFAS No. 150-classification). However, the rights and obligations of firms with outstanding MRPS will not change due to the introduction of the accounting standard. Following EMH, there is no new information, hence, no increase or decrease of the stock prices is expected (Deegan and Unerman, 2006, p. 377).

However, the research question does not exclude that there is no impact of the introduction of SFAS No. 150 on the capital market, because it is formulated as '*To what extent is there a relationship between the introduction of SFAS No. 150 and the level of the required rate of return on US listed common stock?*'. Therefore the research question can be answered with 'there is no relationship'.

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[16] In accordance with Deegan and Unerman (2006, p. 378), the Capital market research approach in accounting assumes the semi-strong EMH. This form is "the most relevant for capital market research in accounting" since this form assumes that all *publicly available information* is impounded into stock prices. Watts and Zimmerman (1986, p. 19) indicate that the literature –on average– is consistent with the semi-strong EMH. Therefore, this thesis assumes a semi-stringent EMH.

[17] EMH is a 'joint hypothesis': before examining whether information is fully impounded in stock prices, there should be a model that defines the pricing process (Van Aalst, et al., 1997, p. 112). Therefore, probe EMH considers the examining of the joint hypothesis, which consists of informational efficiency and a pricing model. As a result, when research findings show that EMH should be rejected, then should this be done under the assumption of the correctness of the used pricing model.
In accordance to Van Aalst, et al. (1997, p. 114), one should note that the *true* pricing model underlying what common stockholders (i.e. the capital market) use, is not yet been found and would probably never be found. Therefore, one will have to realize that findings related to EMH are conditional with regard to the veracity of the underlying pricing model.

On the opposite, the EMH suggests, however, that for the confirmation of EMH there must be lack of opportunities to systematically reach abnormal returns (Van Aalst, et al., 1997, p. 108). Therefore, it is possible to reach temporarily abnormal returns. This can be caused due to incorrect processing (misinterpretation) of (financial statement) information in stock prices. This is important with regard to the subject of this thesis: MRPS' reclassification due to SFAS No. 150, might caused an increasing effect on firms' perceived systematic risk and their required rate of return in fact of a higher reported debt-equity ratio (higher perceived risk), although the characteristics of these MRPS did not change. So, there might be some 'misinterpretation'. Besides the question what the economic substance of MRPS is, a potential effect of SFAS No. 150 is not correct, in fact of that the issuance of SFAS No. 150 merely pertains to a reclassification of MRPS, not to changes of its characteristics. Therefore, firms' perceived systematic risk and their required rate of return actually should not be affected by the issuance of SFAS No. 150. However, as mentioned, common stockholders might misinterpret[18] information about MRPS disclosed in firms' financial statements.

This is in accordance with the statement of psychology theory, being cited by Hopkins (1996)[19]: "knowledgeable users of accounting information (e.g. financial analysts) likely use balance sheet classification when comprehending and processing financial information". Psychology research suggests that users of financial statements know the factors that determine firms' value (including systematic risk, and hence, operational risk and financial risk). Users will search for information sources to assess firms' value, like financial statements (annual, semi-annual, et cetera), narrative reports, reports of financial analysts, press releases, et cetera. Hopkins (1996) indicates that the structure of written text (e.g. financial statements) may have impact on users' interpretation of information. In fact of that accounting regulation prescribes the way how to classify and present financial statements, users "may rely on the location of information within the statements to make inferences about that information" (Hopkins, 1996). Therefore, users may rely on the distinction between account sections on the balance sheet (e.g. equity and liabilities). Hopkins (1996) concludes that psychological research suggests that classification of balance sheet items is used to interpret information provided by financial statements. In relation to this thesis, one can conclude that the findings of psychological research underpins the statement that a potential higher reported debt-

[18] This phenomenon can be attributed to the FASB's dichotomous reporting model (see for a review of the history of the development with regard to the treatment of MRPS sub paragraph 3.2.1). The FASB distinguishes sources of capital in either equity or liability. Therefore, a mezzanine section is not allowed. In accordance to Kimmel and Warfield (1995), the usefulness of financial statements prepared in accordance to the FASB's reporting model depends on "differences between classifications and on the similarity of the securities summarized within the classifications". Kimmel and Warfield (1995) then addressed the question to what extent classifications "will exhibit representational faithfulness with respect to the phenomena they purport to describe". Their description shows that classification is representational faithful when the individual line items within the same class exhibit the same economic substance. However, within the dichotomous model of the FASB, this is not possible in the context of hybrid instruments, in fact of that these instruments represent characteristics of both classes: equity and liabilities. This is a limitation of the FASB's reporting model and might lead to misinterpretation by common stockholders, with regard to the classification of MRPS.

[19] See also subparagraph 3.8.1.

equity ratio indeed may lead to an increasing effect on firms' perceived systematic risk and their required rate of return on common stock. This is because users of financial statements are guided by the balance sheet classification of MRPS within their risk assessment.

Moreover, according to Bernard, et al. (2007), and opposite to EMH, although stock prices quickly process new information (e.g. the reclassification of MRPS), the "initial reaction tends to be incomplete", which means that not *all* publicly available information fully is processed in the right way. This is consistent to what Krishnan and Laux (2005) have found. They investigate stockholders reaction after the issuance of hybrid instruments, and they record abnormal returns. As a result, they reject the null hypothesis of EMH. This underscores that EMH is a hypothesis that is not always applicable, or only partially.

In conclusion, the semi-strong form of EMH is assumed as consequence of the use of the Capital market research approach and the models that will be used in this thesis (Van Aalst, et al., 1997, p. 117; Deegan and Unerman, 2006, p. 378). However, due to common stockholders' misinterpretations (i.e. the capital market) of the post-SFAS No. 150-classification of MRPS on the balance sheet, there might be some effect on firms' perceived systematic risk, and hence, there might be some effect on the required rate of return on common stock. In addition, like Hopkins (1996), users of financial statements may be guided by the classification of MRPS within their interpretation of the information, and hence within their risk assessment. This may result in some effect on firms' perceived systematic risk and their required rate of return on common stock. Finally, as discussed by Bernard, et al. (2007), the "initial reaction [on MRPS' reclassification] tends to be incomplete", and therefore, despite EMH, some effect due to the issuance of SFAS No. 150 can be expected.

1.8 Relevance

1.8.1 Impact of SFAS No. 150 on the reported debt-equity ratio

This research is of interest, because the introduction of SFAS No. 150 has considerable effect on the reported debt-equity ratio of firms subject to the mentioned accounting standard. The results of Schauer, et al. (2006) and Schneider and Wertheim (1992) have shown that even the mean reported (long term) debt-equity ratio is increased by 43.0 per cent and 34.4 percent, respectively (as result of the introduction of SFAS No. 150 or the application of the content of the described Discussion Memorandum).

1.8.2 Ongoing debate

In addition, the ongoing debate about the accounting of hybrid instruments in the financial statements shows that the research question deals with a topical issue. If one consider the accounting literature and discussions, it is clear that accounting of financial instruments is a heavily debated issue. Alver (2007) notes about this that the accounting treatment of financial instruments "has been the most controversial area in the development of IASB's standards". Based on the existing literature, one can this also state about the development of FASB's standards. The discussion focuses mainly on what instruments

can be attributed to liabilities and equity and how to distinguish liabilities from equity. Levi and Segal (2006) describe in accordance to that: "the FASB and IASB are currently considering the conditions in which a hybrid security should be classified as a liability or as equity, and when the equity and debt components of hybrid securities need to be reported separately".

In 2000 the FASB has issued an Exposure Draft[20] of a proposed amendment to Statement of Financial Accounting Concept No. 6 *Elements of Financial Statements*. This Exposure Draft results in a more stringent definition of liabilities and equity (Schauer, et al., 2006).

After the promulgation of the mentioned Exposure Draft, there was still uncertainty about the treatment of certain hybrid instruments, including MRPS. This has led to a clear prescription of the treatment of MRPS in the original pronouncement of SFAS No. 150 (FASB, 2003) which had been effective on June 15, 2003: "a mandatorily redeemable financial instrument shall be classified as a liability unless the redemption is required to occur only upon the liquidation or termination of the reporting entity". However, after SFAS No. 150 there is still ambiguity about the treatment of other hybrid instruments that are not addressed in SFAS No. 150 (such as common preferred stock). The FASB notes about these instruments that these will be addressed in a later phase of the Board's redelibations of the Exposure Draft *Accounting for Financial Instruments with Characteristics of Liabilities, Equity, or Both* (FASB, 2003).

1.8.3 New in this research area

Thirdly, there are studies available that have (empirically) confirmed the theoretical relations between firms' leverage and firms' systematic risk (Hamada, 1972; Bowman, 1979; Hill and Stone, 1980). Besides the relation between firms' perceived systematic risk and their required rate of return has already been proven: Ammeraal and Heezen (2006), Van Aalst, et al. (1997), Campbell (2009), and Fama and French (2004). In addition, Kimmel and Warfield (1995), Cheng, et al. (2003), and Chan and Seow (1997) have investigated the economic substance of MRPS (whether common stockholders regard MRPS as liability or equity). Subsequently, Hopkins (1996) and Bishop, et al. (2005) have confirmed that financial analysts make different stock price judgments of common equity under different MRPS classifications. Besides that, Schauer, et al. (2006), Maloney and Mulford (2003), Schneider and Wertheim (1993), and De Jong, et al. (2006) have observed an increase of the reported debt-equity ratio of firms subject to SFAS No. 150. Finally, Levi and Segal (2006) have found a declining use of MRPS as financing instrument.

Considering the investigations already performed, the question whether MRPS´ reclassification has affected the decisions of users of financial statements, specifically common stockholders, is an open empirical question. As a result, it is interesting to combine the confirmed relations and research results discussed above and have a look to what extent there is a relationship between the introduction of SFAS No. 150 and the level of the required rate of return on common stock. This research complements previous

[20] Appendix III includes an overview of the procedure followed by the FASB before issuing an accounting standard.

research by investigating the relations between reported leverage (i.e. debt-equity ratio), perceived systematic risk, and the required rate of return on common stock in the context of the issuance of SFAS No. 150.

In conclusion, the economic consequences of the introduction of SFAS No. 150 to common stockholders have not yet been investigated. So, this research adds value to the field of research into economic consequences of accounting standards.

1.8.4 Contribution to standard setters

Since in this study there will be an evaluation of the impact of SFAS No. 150 on common stocks, the results of this study might be of interest to standard setters (i.e. the FASB) within the development of accounting standards related to the treatment of other hybrid instruments or amendments to existing standards. The results of this study can be used to optimize the financial accounting standards with regard to accounting for hybrid instruments.

Standard setters have the duty to consider carefully the (potential) economic consequences of the introduction of new and amendments to existing accounting standards in their decision-making. Beaver (1973, p. 56) writes about this that "without a knowledge of consequences…it is inconceivable that a policy-making body…will be able to select optimal financial accounting standards".

Besides the FASB, this research contributes to other standard setters. For example, the International Accounting Standards Board (IASB hereafter). The IASB has introduced international accounting standard 32 (IAS 32). This statement had been effective on January 1, 2005 (IASPlus.com). Actually, IAS 32 is similar to SFAS No. 150. Therefore, the outcomes of this research will be of interest to the IASB as an evaluation of the impact(s) or economic consequence(s) of IAS 32. In relation to the IASB standards with regard to preferred stock, Alver (2007) notes that "according to the Financial Accounting Standards Board, a new standard is necessary because current accounting literature addressing this issue is inconsistent, subject to structuring and difficult to understand and apply". This thesis –which supplies empirical data– might contribute to the IASB's evaluation of current standards and drafts of new standards.

1.8.5 Contribution to US firms

The research results might reflect an effect of MRPS' reclassification on firms' perceived systematic risk and their required rate of return on common stock as result of the issuance of SFAS No. 150. This is of interest to managers of listed firms. With a potential effect for firms' perceived systematic risk and their required rate of return on common stock, firms might explore other capital structures to minimize their costs of capital. In this context, this research contributes to US firms financing decisions (see also the research results of Levi and Segal (2006), described in sub paragraph 3.9.1).

1.8.6 Contribution within Accounting, Auditing & Control

Within the master program Accounting, Auditing & Control, this study contributes to the research field of economic consequences of changes in accounting standards. This research has added value taken into account the curriculum of the master program. Within the seminar Advanced Financial Accounting attention is given to the research field 'economic consequences'. This study focuses on economic consequences of a specific accounting standard, and therefore, this thesis has to do with study material given within the master program.

1.9 Remarks

This study focuses on the question whether and to what extent firms' perceived systematic risk and –behind that– their required rate of return on common stock are affected as result of SFAS No. 150. Therefore, specifically economic consequences (changes of decision-making behaviour) with regard to common stockholders will be investigated. This does not deny that possible other individuals or groups suffer economic consequences. An example of a study to economic consequences of SFAS No. 150 to firms' managers is the research of Levi and Segal (2006). Since the effects of SFAS No. 150 on the decision-making behaviour of common stockholders not been studied so far, it was decided to focus this study on economic consequences to common stockholders.

Finally, the focus on potential effects for firms' systematic risk and their required rate of return on common stock as result of SFAS No. 150 does not deny that there might be other economic consequences to common stockholders (e.g. tightening of debt covenants by banks or 'disqualification' from bidding on contracts by the issuer: Schauer, et al., 2006). However, to make a clear funnel and to develop a feasible research question, it was decided to focus merely on the economic consequences with regard to firms' perceived systematic risk and their required rate of return.

1.10 Structure

This thesis will continue with an overview of economic consequences and the research approaches with regard to economic consequences (chapter two). After that, chapter three includes descriptions of the reviewed articles. Subsequently, chapter four contains the hypotheses development. A description of the research design, the model selection, et cetera, will be given in chapter five. After the research design is described, the extracted research results are included in chapter six, which mainly is related to the statistical research results. Chapter seven continues with a non-statistical discussion of the research results. Finally, the summary, conclusions, limitations and recommendations for further research are given in chapter eight. The books, articles and other sources which have been used are attached in the reference list behind chapter eight. Moreover, the appendixes are inserted at the end of this thesis.

2. Economic consequences

2.1 Introduction

This chapter deals with the first sub question of this thesis: *What are economic consequences of accounting standards and which approaches exist within this research area?* As mentioned in the introduction, this study focuses on the economic consequences of the issuing of SFAS No. 150. A potential impact of the introduced accounting standard on stock trade decision of common stockholders will be investigated. A possible decision change can be characterized as an economic consequence of SFAS No. 150. This chapter describes the term economic consequences and what is thought about this phenomenon in the accounting literature. After that, a discussion will be set up about the different research approaches within the area of economic consequences. The chapter continues with a discussion about the choices with regard to the use of definitions of economic consequences, and to the use of the research approach. Finally, a conclusion is drawn. However, the chapter starts with a short introduction about the lobbying behavior of different parties within the standard-setting process.

2.2 Lobbying process

Lobbying groups often use economic consequences within the standard-setting process. According to Holthausen and Leftwich (1983), economic consequences arise when a firm's cash flows or its distributions will be affected by the reported information set. This can occur in two ways. Firstly, the behavior of (1) firms' managers or (2) other users of financial reports may be changed (Beattie, et al. 2006). Changes of managers' behavior concern managers' actions that are performed to mitigate the impact of (introduced) accounting standards on financial report users. This is also known as 'information inductance'[21] (Prakash and Rappaport, 1977). Secondly, firms' formal or informal contracts may be affected (Beattie, et al. 2006).

Although many people argue that accounting regulations and changes of the standards merely affect the way of reflecting transactions in the financial statements, there is enough evidence to state that accounting regulations have economic impact on many parties (Deegan and Unerman, 2006, p. 69). In conjunction with this, Deegan and Unerman (2006, p. 65) discuss in their book the public interest theory, and state that "the enactment of legislation is considered a balancing act between the social benefits and the social costs of the regulation".

The economic impact of accounting standards is reflected in the actual behavior of organizations (Hoogendoorn, et al., 2007, p. 39). However, the impact goes further than merely the behavior of organizations: many other parties are involved in the reporting process, such as investors (e.g. revaluation of the firm by common stockholders on the stock exchange (as discussed by Scott, 2003)), creditors (e.g. formal contracts as discussed by Holthausen and Leftwich, 1983), et cetera.

[21] According to Prakash and Rappaport (1977), information inductance can be characterized as "the process whereby the behavior of an individual is affected by the information he is required to communicate".

As a result of the (economic) impact of accounting standards on a broad range of users of financial reports, the standard setters should carefully consider the possible economic consequences on the different parties involved in the reporting process. Beaver (1973) notes about this: "without a knowledge of consequences…it is inconceivable that a policymaking body…will be able to select optimal financial accounting standards". Therefore, it is necessary that in the standard setting process *all* costs and benefits are considered, not merely those directly related to the reporting entities. With regard to the introduction of SFAS No. 150, the FASB states about its trade-off between the benefits and costs (economic consequences) of the statement the following (FASB, 2003): "Overall, in the Board's opinion, the benefits of this Statement [SFAS No. 150] in terms of improved decision usefulness, relevance, and reliability justify the costs".

The parties that encounter economic consequences of accounting standards lobby to protect particular economic interests. This is also called the 'interest group theory of regulation' (Deegan and Unerman, 2006, p. 73). Within this theory, different parties lobby to influence the standard-setting process to achieve outcomes which they prefer. Under the mentioned theory, the regulator itself is an interested group. According to Deegan and Unerman (2006, p. 73), the regulator is "a group that is motivated to embrace strategies to ensure reelection. Or to ensure the maintenance of its position of power or privilege within the community".

As described, potential economic consequences of accounting standards encourage firms' managers to lobby within the standard-setting process. Whitrred and Zimmer (1988, p. 10) have argued that changed wealth transfers due to changes in accounting standards, termed as economic consequences, "are ultimately the source of the incentive to possess financial rule making authority, or at least to influence the deliberations of rule making bodies".

The standard-setting body encourages affected individuals and/or groups to comment on draft versions of proposed accounting standards. Therefore, the standard-setting process is a very political process (often called a 'due process'[22]). Actually, accounting standards are the result of various economic and social considerations. Hines (1991) and Deegan and Underman (2006, p. 75) state in reaction to this observation that "it is arguable very questionable whether financial accounting can ever claim to be neutral or objective". So, one cannot state that financial reports are 'the truth' when they are prepared in accordance with the existing accounting standards that are determined based upon economic en social consequences.

Concluding, one can state that before an accounting standard becomes effective, a real 'due process' occurred. In this process, different affected individuals and groups are involved, such as investors, creditors, standard-setting bodies, academics, auditors, preparers of financial reports, et cetera. As

[22] According to Deegan and Unerman (2006, p. 82), the due process can be defined as "a process wherein the regulator involves those parties likely to be affected by the proposed regulation in the discussions leading to the regulation".

recommended by Beaver (1973), before developing financial accounting standards, the economic consequences of the involved parties should be taken in consideration.

2.3 Economic consequences

Economic consequences have been defined by several researchers. In general, the definition is a broad concept, which includes a broad range of individuals and groups. Consecutively, this paragraph represents the existing definitions of and thoughts about economic consequences.

Firstly, Zeff (1978) describes the rise of the subject 'economic consequences' within the accounting literature since the 1960s. Zeff states that the impact of accounting reports on decision making "may be the most challenging accounting issue of the 1970s". There was a growing influence of third parties within the standard-setting process and the enforcing of accounting standards. Standard-setting bodies and the accounting profession were more and more aware of this growing influence. In his article, Zeff (1978) gives two main developments that leads to the increasing influence of third parties in the standard-setting process: "…First, the groups that are rarely interested in the setting of accounting standards began to intervene actively and powerfully in the process. Second, these parties began to invoke arguments other than those which have traditionally been employed in accounting discussions…". These novel kind of arguments are called 'economic consequences'. Following Zeff (1978), economic consequences are "…the impact of accounting reports on the decision-making behavior of business, government, unions, investors and creditors".

In addition, Zeff (1978) discusses the major revolution in the thought of accounting, which is caused by the growing awareness of economic consequences within the standard-setting process. Until the 1960s, the standard-setting process "was either assumed to be neutral or, if not neutral, it was not held out to the public as being responsible for those effects" but "today [1978], these assumptions are being severely questioned, and the subject of social and economic consequences has become the central contemporary issue in accounting" (Zeff, 1978).

Secondly, Collett (1995) gives a description of economic consequences in relation to qualitative characteristics (such as representational faithfulness) that financial statements should satisfy. He argues that by influencing the 'nature' of accounting standards and hence financial statements which are prepared in accordance with these standards, the decisions that are based on the financial statements will be influenced. As a result, influencing the nature of accounting standards causes economic consequences. Collett (1995) underpins this with the argument that financial statements and their associated standards "contributes to the efficiency of resource allocation and to the distribution of wealth within an economy". Subsequently, Collett states that new accounting standards cause economic consequences trough the behavioral changes. He refers to the description of economic consequences by Rappaport (1977, p. 89). Rappaport distinguishes three types of economic consequences. Firstly, financial statements affect stockholders and other investors: any change of their behavior (i.e. trade decisions) may influence stock

prices, and hence, the wealth distribution within a capital market may be affected. Secondly, financial statements that are prepared in accordance with accounting standards may also influence decisions of other stakeholders, such as competitors, customers, suppliers, government, et cetera. These parties are often called 'free riders'. This means that financial statements are not primarily prepared to use by the mentioned parties, however, these parties have access to financial statements and, therefore, may be influenced by these statements. Finally, firms' managers may alter their behavior. As mentioned in paragraph 2.2, managers change behavior to mitigate the impact of (introduced) accounting standards on users of financial reports (Holthausen and Leftwich, 1983). This is also known as 'information inductance'.

Thirdly, -as discussed before- Holthausen and Letfwich (1983) formulate economic consequences as "economic consequences arise when changes in the information set reported affects a company's cash flows or its distribution". This can occur in two ways. Firstly, the behavior of users or the behavior of organizations (i.e. managers) might change. Secondly, a firm's contracts (formal and/or informal) may be affected.

Fourthly, Scott (2003) discusses economic consequences and defines economic consequences as "a concept that asserts that, despite the implications of efficient securities market theory, accounting policy choice can affect firm value".

Finally, Blake, et al. (1995) have described economic consequences. They conclude that changes in accounting standards, cause changes in the information set, disclosed by financial statements, and subsequently, this may cause changes in the behavior of the users of the financial statements. Behavioral changes might have influence on the entire economy, and besides, these changes might affect the (financial) position of reporting entities and their managers. After all, Blake, et al. (1995) conclude that "changes in accounting rules give rise to potential economic consequences". Like Holthausen and Leftwich (1983), Blake, et al. (1995) indicates that this can occur in two ways: (1) decision-making behavior will be influenced (also called 'indirect' or 'judgmental'), and (2) firms' (formal and/or informal) contracts may be affected (also called 'direct' or 'mechanistic'). This distinction was made, in fact of the different ways in which financial statements are used. On the one hand, "the readers of the accounts may take decisions on the basis of the information provided, and managers may change their behavior in response to their expectations as to users' reactions" (Blake, et al., 1995). On the other hand, contracts will be affected because many contracts are based on accounting numbers. For instance, debt contracts are often related to firms' debt-equity ratio.

Blake, et al. (1995) accentuate the role of economic consequences within firms' managers decision-making behavior. Managers will try to anticipate on the reaction of users to financial statements. Earlier in this thesis, this is called 'information inductance'. Firms' managers change their decision-making behavior (i.e. defer investments) in accordance with the perception they have "as to how users will react to accounting data, irrespective of whether users do or do not react in the predicted way" (Blake, et al., 1995).

Concluding, one can state that the different definitions and descriptions of economic consequences above are complementary to each other. They highlight the main aspects of economic consequences: impacts of changes in accounting standards on decision-making behavior of a wide range of individuals and groups, and subsequently, the impact on firms' cash flows or value and on the wealth distribution within an economy. Scott (2003) complements these characteristics of economic consequences with the statement that "despite the implications of efficient securities market theory, accounting policy choice can affect firm value".

2.4 Research approaches within the domain of Economic consequences

In empirical research on economic consequences, four different approaches were used (Beattie, et al. 2006): analyzing of archival accounting data, market-based studies, experimental studies, and surveys.

Within the archival method, firms' accounting numbers before and after a change in the accounting standards will be analyzed[23]. The impacts of the change(s) are taken in consideration. Because this is done after the introduction of a new or amendment to an existing accounting standard, this research method can be characterized as an ex post research method. Schauer, et al. (2006) have used this research method. The purpose of that study was to examine the economic consequences of the adoption of SFAS No. 150. The effect of the introduction of SFAS No. 150 on both the debt-asset ratio and the debt- equity ratio was been investigated. They compare the firms' reported ratios with the ratio "as if the standard was not required". De Jong, et al. (2006) have also used the ex post approach. The study includes an investigation to the impact of IAS 32 on the debt-equity ratio of Dutch firms. Besides ex post studies, many researchers have performed ex ante studies. This is done by the construction and comparison of pro forma financial statements prepared in accordance with proposed accounting standards and statements based on existing accounting standards (Beattie, et al., 2006). For instance, Schneider and Wertheim (1993) discuss the effects of "the FASB proposal to report redeemable preferred stock as a liability". This is done by comparing the financial statements prepared under the new FASB requirement with financial statements that are not in accordance with the mentioned requirement.

Secondly, market based studies focus on the aggregated reaction of market participants to changes in accounting standards. Deegan and Unerman (2006, p. 209) describe Capital Market Research as "research which seeks to explain and predict share price reaction to the public release of accounting information" and "Capital market research explores the role of accounting and other financial information in equity markets. This type of research involves examining statistical relations between financial

[23] Please note: in the definition of economic consequences, the author of this thesis does not include the impact of the implementation of new accounting standards or amendments to existing standards on accounting numbers *itself*. The definition is limited to the change in decision-making behavior, and therefore, investigation to the impact on accounting numbers is not considered as research on economic consequences. However, some researchers (e.g. Beattie, et al., 2006: witnessed the above research approach of the archival method) believe that the research area of economic consequences covers a broader scope, which also includes the impact of the introduction of new accounting standards or amendments to existing standards on accounting numbers itself.

information, and share prices or returns" (p. 377). Typically, market based studies are ex post studies. A difficulty within market based studies is the separation of the impact of the event being investigated from other events. Several researchers have used the Capital Market research approach. For instance, Cheng, et al. (2003) have examined the economic substance of a broad range of securities by performing an investigation to the association between securities' systematic risk and prices. In addition, Chan and Seow (1997) have studied the pricing process of MRPS. Specifically, whether MRPS are priced as equity or as liabilities. This is done by (1) investigating the debt and equity characteristics of MRPS, and (2) under which condition(s) the equity characteristic dominate the debt characteristic and vice versa.

Thirdly, experimental studies investigate the way how individuals process information. In particular, whether users of financial statements are affected by accounting information that is processed in the financial statement itself or merely disclosed in the footnotes (Beattie, et al. 2006). So far, there are no experimental studies available within the context of SFAS No. 150. However, there are enough studies available in other research areas. An example of an experimental study is the research of Beattie, et al. (2006). This study shows empirical evidence on the reform of the accounting regulation with regard to lease-accounting. In 1999, the G4+1 have issued a discussion paper that proposes a change that all leases should be recognized on the balance sheet. Before the reform, some leases were only disclosed in the footnotes to the financial statements. Another experimental study is the research of Ashton (1974). Ashton has investigated the professional judgment of auditors with regard to the strength of an internal control subsystem (payroll). He has asked auditors to give a judgment and, afterwards, the consistency of the auditors' judgments within the experimental study was investigated.

Last, survey's are performed to investigate the impacts of changes to accounting standards. Within this research method, perceptions and attitude of a broad range of affected individuals and groups are investigated. Specifically, the perception and attitude be examined to try to underpin possible changes of behavior of investors and groups as result of new standards or amendments to existing standards. This is in line with the definition of behavioral research, given by Deegan and Unerman (2006, p. 410): "Research that considers how individuals react or behave when provided with particular items of information can be classified as behavioral research". Behavioral research "has been used to investigate a variety of decision-making processes such as the valuation of market shares by individual analysts, the lending decisions of loan officers, the assessment of bankruptcy by bankers or auditors, and the assessment of risk by auditors" (Deegan and Unerman, 2006, p. 410). The investigation of Levi and Segal (2006) is an example of a survey. Levi and Segal have examined the influence of the changed classification of hybrid securities (as a result of the introduction of SFAS No. 150) on firms' financing choices. In addition, Hopkins (1996) has performed an

investigation, wherein he tries to find empirical evidence on the question whether the classification of hybrid instruments affects the stock price judgments of buy-side financial analysts[24].

Appendix IV summarizes the research approaches within the area of economic consequences.

2.5 Economic consequences and research approach within this thesis

This thesis examines to what extent there is a relationship between the introduction of SFAS No. 150 and the level of the required rate of return on common stock. The influence of SFAS No. 150 on the reported debt-equity ratio is considered to be an important factor within the explanation of the required rate of return. The potential behavioral change of common stockholders seems to be an economic consequence of SFAS No. 150. This is in line with the definitions of economic consequences used in this thesis. As mentioned before, the definitions and descriptions of economic consequences given in paragraph 2.3, are complementary. Therefore, these definitions and descriptions will all be used in this thesis, although the focus is on economic consequences regarding to common stockholders.

In addition, because this thesis focuses on the aggregated reaction of common stockholders to the introduction of SFAS No. 150, the Capital Market research approach will be used. Moreover, the other approaches are not suitable in fact of the focus on financial statements itself (within the archival method and experimental studies) and the focus on individuals (within surveys).

2.6 Conclusion

Firstly, the 'due process' of the development of new accounting standards is discussed (paragraph 2.2). Several parties lobby within this process to get an outcome that they prefer. Besides, this chapter contains an overview of the definitions and thoughts about the research area of economic consequences (paragraph 2.3). Subsequently, paragraph 2.4 gives a short explanation of the research approaches that exist within the area of economic consequences. Therefore, this chapter answers the first sub question: *What are economic consequences of accounting standards and which approaches exist within this research area?* Finally, the implications for this thesis are made in paragraph 2.5: (1) the definitions of economic consequences that will be used in this study are discussed, and (2) the research approach on which this research will be conducted is given.

[24] Buy-side financial analysts are employed by institutional investors and sell-side financial analysts are employed by security brokers and dealers (Hopkins, 1996).

3. Literature review

3.1 Introduction

In this chapter, an overview of prior research will pass in review. Firstly, SFAS No. 150's implications for financial statements will be discussed. Thereafter, the scope of this statement will be highlighted. Paragraph 3.4 deals with the difficulties of MRPS' accounting treatment. Existing relationships between leverage, perceived systematic risk, the required rate of return, and stock prices are explained and confirmed with empirical evidence in paragraph 3.5. Paragraph 3.6 discusses the impact of SFAS No. 150 on firms' debt-equity ratios. The market perception on the economic substance of MRPS will pass in review in paragraph 3.7. Paragraph 3.8 deals with the question whether financial statement users are guided by MRPS' classification within the assessment of firms' leverage, systematic risk, the required rate of return, and stock prices. Paragraph 3.9 discusses whether the use of MRPS has declined after the introduction of SFAS No. 150. Finally, paragraph 3.10 concludes with the main lessons of this literature review.

N.B.: whichever it is deemed necessary for readers' understanding, the author will address the details of the studies to discuss.

3.2 Statements of Financial Accounting Standards No. 150

In this paragraph, the development of SFAS No. 150 within the FASB's financial instruments project will be discussed. Related issues, standards and the FASB's objectives of the issuance of SFAS No. 150 will also pass in review. This paragraph answers the second sub question of this research: *What does SFAS No. 150 mean?*

3.2.1 History of SFAS No. 150

MRPS has existed at least since the 1940s. The use of MRPS has increased in the late 1970s and 1980s (Kimmel and Warfield, 1993). In their study, Kimmel and Warfield (1993) have taken a sample of 332 firms with outstanding MRPS in the research period 1945 to 1989[25]. They found evidence that MRPS is a significant part of firms' capital structure over the research period. On average, MRPS represents 5.51 per cent of the assets during the research period. Besides, the study shows differences in the use of MRPS across different industries. Utilities are the main MRPS issuers, but non-utilities also issued MRPS. Moreover, Kimmel and Warfield (1993) have perceived differences of MRPS issuances over time. They attributed this –like Houston and Houston (1990)– to changes in regulatory and tax environments, as well as an increase in merger and acquisition activities.

[25] No index of the included firms is mentioned in Kimmel and Warfield's paper (1993). The firms were selected using the Compustat database. The first MRPS issue included in the sample was in 1945. The researchers made an apart category of pre-1980 MRPS issues, since it was allowed to treat MRPS as equity before the issuance of Accounting Release Series No. 268 in 1979 (later on in this paragraph, this will be discussed).

Levi and Segal (2006) have found that MRPS as percentage of total financing has declined during their research period (1981 to 2004) from 2.41 per cent to 0.72 per cent. The researchers state that "under the new reporting regime in which MRPS are classified as a liability, these securities have become a less popular financing vehicle" (Levi and Segal, 2006)[26].

Before 1979, all preferred stock were treated as equity, regardless of their underlying characteristics (Schneider and Wertheim, 1993). Therefore, MRPS have often been issued to finance business operations, mergers and acquisitions or to "restructure existing debt arrangements" (Nair, et al., 1990). Nair, et al. (1990) observe that the issuance of this type of stock was more common, in fact of the allowance to "raise money in a form that is classified as equity". Subsequently, this form of financing improves firms' reported debt-equity ratios. In addition, Nair, et al. (1990) indicate that the issuance of MRPS avoids default of covenants that otherwise may "restrict the incurrence of additional debt".

In 1979, the SEC (the Security and Exchange Commission) has issued Accounting Series Release No. 268 (ASR. No. 268 hereafter). The SEC's opinion was that preferred stock with mandatory redemption features should be distinguished from (straight) equity. In addition, many issued preferred stock had features of cumulative dividend. This means that, in case of dividend arrearage, accruals on dividend payments arises. The dividend arrearage should ultimately be paid at redemption. "As a result [of the mandatory redemption and cumulative dividend features], some have argued that RPFD[27] is similar to debt and should receive similar reporting and accounting treatment" (Kimmel and Warfield, 1993).

In line with the mentioned argument, the SEC prohibits publicly held firms to include their MRPS in stockholders' equity. Instead of including MRPS in the equity section of the balance sheet, "MRPS was to be reported as a separate and distinct classification *after* liabilities, but *before* stockholders' equity" (Schneider and Wertheim, 1993). Therefore, while ASR No. 268 "disallows equity classification for RPFD, [it] did not require that RPFD be classified as liability" (Kimmel and Warfield, 1993).

The SEC also stated that firms with outstanding stock should present separately the amounts of the following three categories (Schneider and Wertheim, 1993): "(1) redeemable preferred stocks, (2) preferred stocks that are not redeemable or are redeemable solely at the option of the issuer, and (3) common stocks". This has led that the presentation of a general heading as stockholders' equity on the balance sheet was no longer allowed.

The SEC left the remaining problems of the classification of MRPS by the FASB (Financial Accounting Standards Board), and states about this:

> "...these rules do not attempt to deal with the conceptual question of whether such a security is a liability...the commission is cognizant of these conceptual problems in determining the appropriate accounting for and reporting of redeemable preferred stock and believes that these matters can best be addressed by the Financial Accounting Standards Board" (SEC, 1979).

[26] Levi and Segal's study (2006) will pass in review in sub paragraph 3.9.1.
[27] This term may cause confusion. However, RPFD stands for Redeemable Preferred Stock, which is the same as MRPS.

In 1986, the FASB initiated a project on financial instruments. At that very moment, most firms listed their MRPS between the liabilities section and the equity section (i.e. a 'mezzanine section' or 'quasi-equity') on the balance sheet (Nair, et al., 1990; Schauer, et al. 2006). This is in accordance with the SEC's requirements: as mentioned, while the SEC precludes MRPS from the equity-section, she does not require to list MRPS as a liability.

In 1990, the FASB issued a Discussion Memorandum. This memorandum contains "issues related to the interpretation of the definition of liabilities and equity in FASB Concepts Statement No. 6 *Elements of Financial Statements*, and whether the distinction between liabilities and equity should be changed" (FASB, 2003). In the next sub paragraph will be returned to this Concepts Statement. The project with regard to the described issues was inactive until 1996[28]. From that moment the Board's Financial Instruments Task Force caught the debate again. On October 27, 2000, the FASB issues an Exposure Draft of SFAS No. 150 *Accounting for Financial Instruments with Characteristics of Liabilities, Equity, or Both*, and an Exposure Draft of a proposed amendment to FASB Concepts Statement No. 6, *Revise the Definition of Liabilities*.

At the end of 2002, "the Board affirmed its conclusions that certain freestanding financial instruments should be classified as liabilities: mandatorily redeemable instruments…" (FASB, 2003). SFAS No. 150 had been effective on June 15, 2003.

3.2.2 FASB objectives of the issuance of SFAS No. 150

The FASB gives in SFAS No. 150 an explanation how the statement improves financial reporting and how it relates to the Conceptual Framework:

Firstly, the statement relates to the FASB Concepts Statement No. 1 *Objectives of Financial Reporting by Business Enterprises*. The latter states that "financial reporting should provide information that is useful in making business and economic decisions" (FASB, 2003). The FASB argues that, due to the introduction of SFAS No. 150, financial reports will depict more clear an entity's equity and liabilities and financial reports will thereby better assist the users of the reports "in assessing the amount, timing, and likelihood of potential future cash outflows and equity share issuances" (FASB, 2003).

Secondly, SFAS No. 150 relates to the FASB Concepts Statements No. 2 *Qualitative Characteristics of Accounting Information*. Concepts Statements No. 2 discusses characteristics that are critical with regard to the usefulness of financial reports, namely: relevance and reliability. The relevance will be enhanced by "providing more information about the entity's obligations to transfer assets or issue shares, thus, improving its predictive value to users" (FASB, 2003). On the other hand, the FASB argues that the reliability of the financial reports will be enhanced by providing an unbiased, verifiable and more representationally faithful depiction of an entity's capital structure.

[28] The FASB Board "decided to suspend work on the liabilities and equity project to devote its resources to financial instruments that were deemed to be more urgent" (FASB, 2003).

Thirdly, SFAS No. 150 relates to Concepts Statement No. 5 *Recognition and Measurement in Financial Statements of Business Enterprises* and 6 *Elements of Financial Statements*. Statements No. 5 and 6 require that "certain obligations that require a transfer of assets and that meet the definition of liabilities…be reported as liabilities" (FASB, 2003). This is consistent with the requirements of SFAS No. 150. Statement of Financial Accounting Concepts No. 6 defines equity and liabilities as follows (Schauer, et al., 2006):

> *"Equities* – the residual interest in the assets of an entity that remains after deducting its liabilities. In a business enterprise the equity is the ownership."
>
> *Liabilities* – probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events."

In short, SFAS No. 150 supports the definitions included in Statement of Financial Accounting Concepts No. 6, and therefore, the FASB has take care for more consistency between its accounting standards and its Conceptual Framework.

3.2.3 Conclusion

This paragraph answers the second sub question: *What does SFAS No. 150 mean?* SFAS No. 150 requires a shift of MRPS from the equity or 'quasi-equity' section to the liabilities section of the balance sheet. The FASB's objective for the issuance of SFAS No. 150 was to reach less ambiguity in the accounting treatment of financial instruments, and to reach more consistency between accounting standards and the FASB's Conceptual Framework. Ultimately, the FASB claims that the decision usefulness, the relevance and reliability, and consistency between definitions of equity and liabilities in the Conceptual Framework and the standards are enhanced by SFAS No. 150.

3.3 Scope of SFAS No. 150

SFAS No. 150 is applicable to certain financial instruments with characteristics of both liabilities and equity. The FASB makes a clear scope within its statement. This scope will be discussed in this paragraph, and hence, this paragraph answers the third sub question: *What is the scope of SFAS No. 150?*

3.3.1 Financial instruments

The scope of SFAS No. 150 is included in Appendix V. The FASB defines financial instruments as cash, an entity ownership interest, or a contract. Three conditions to fall within the scope are discussed below.

Firstly, the FASB notes that the requirements of the statement are merely applicable to financial instruments that are derivatives[29] in their entirety (FASB, 2003). The FASB explains this by using a few examples: "conversion features, conditional redemption features, or other features embedded in financial instruments that are not derivates in their entirety".

Secondly, the instrument implies that one entity has "a contractual obligation to deliver cash or another financial instrument to a second entity or to exchange other financial instruments on potentially unfavorable terms with the second entity" (FASB, 2003).

Thirdly, the second entity has –conversely– "a contractual right to receive cash or another financial instrument from the first entity or to exchange other financial instruments on potentially favorable terms with the first entity" (FASB, 2003).

As you may notice, the term 'financial instruments' is a broad concept, which includes various instruments. Since this thesis focuses merely on MRPS –which is a financial instrument– the broad concept of 'financial instruments' will be released. However, knowledge about the scope of SFAS No. 150 is necessary to have an idea to what instruments the introduced statement pertains, and hence, what instruments are subject to a transition to the liabilities section of the balance sheet (from the equity or 'quasi-equity' section). Furthermore, some aspects of the definition of financial instruments and the scope of SFAS No. 150 will return in this thesis.

3.3.2 Conclusion

This paragraph tries to answer the third sub question: *What is the scope of SFAS No. 150?* The discussion above indicates that various financial instruments, that are derivates in their entirety, fall within the scope. Moreover, to apply SFAS No. 150, a financial instrument should take both a right and a duty with it. Finally, it is explained why it is essential to know what the statements' scope is: with this knowledge one can imagine what impact SFAS No. 150 has on firms' financial statements. This creates the relevance of this thesis.

3.4 SFAS No. 150 – MRPS: difficulties of the accounting treatment and ambiguity of the economic substance

This thesis focuses on MRPS (see paragraph 1.2). This is a hybrid financial instrument, included in SFAS No. 150. The main aspects of MRPS will be discussed. This paragraph answers the fourth sub question central to this thesis: *What are MRPS, and, what factors make the accounting treatment difficult and/or deliver ambiguity for financial statement users to assess MRPS' economic substance?*

[29] According to McKenzie (2007, p. 76), derivatives can be characterized as "financial products whose value depends on – or is derived from – another financial product, such as a stock, a stock market index, or interest payments". McKenzie indicates that derivatives can be used to manage risks associated with securities. Specifically, they can be used "to protect against fluctuations in value".

3.4.1 Definition

The FASB defines in SFAS No. 150 MRPS as "any of various instruments issued in the form of shares that embody an unconditional obligation requiring the issuer to redeem the instrument by transferring its assets at a specified or determinable date (or dates) or upon an event that is certain to occur" (FASB, 2003).

The definition declares that there are unavoidable payments to holders of MRPS. This means that firms do not have any discretion with regard to the payments to MRPS holders. However, terms as *avoidability* and *discretion* are soft terms and are subject to interpretation (Kimmel and Warfield, 1993).

Kimmel and Warfield (1993) give a detailed description about (1) the term avoidability, (2) MRPS' residual nature, and (3) the degree of control MRPS' holders can exercise over the firm. For readers' understanding, it is necessary to rehearse this description shortly. Ultimately, the readers should understand what factors make MRPS' classification as difficult as the debate about their classification suggests.

N.B.: Appendix I and II summarize the main similarities and differences of common stock and preferred stock.

3.4.2 Avoidability

In their study, Kimmel and Warfield (1993) notice that straight debt should meet the condition that payments to debtholders are unavoidable. In contrary, the main characteristics of straight equity are the "residual claim to firm assets and control over the firm". An important term in MRPS' definition is that MRPS embody an *unconditional* obligation. The arising question is whether and to what extent firms have discretion to avoid redemption and dividend sacrifices (FASB, 1990). This issue is discussed in the FASB's Discussion Memorandum (FASB, 1990) that addresses questions about the distinction between liabilities and equity (see sub paragraphs 3.2.1 and 3.2.2).

Payments to debtholders are characterized as unavoidable in fact of that debtholders are able to "force the firm into bankruptcy if payments on either interest or principal[30] are missed" (Kimmel and Warfield, 1993). In contrary, payments to common stockholders are avoidable. Namely, dividends are – until they are granted by the Board of Directors and the General Meeting of Stockholders– not legal enforceable. Moreover, the issuer has no unconditional obligation to repay the principal to common stockholders. An exception exists when the issuer went bankrupt. In that case the issuer should return the principal.

Kimmel and Warfield (1993) refer to the study of Nair, et al. (1990). Nair, et al. addresses whether MRPS are equity or liabilities. They argue that MRPS are predominantly liabilities, based on the (unavoidability) characteristics they embody.

However, Kimmel and Warfield (1993) rightly state that this conclusion is a bit too straightforward and is subject to debate. They give two reasons. Firstly, the term *unavoidability* is a soft term that can be

[30] On the date of maturity, debtholders get back their money. This is known as the principal (McKenzie, 2007).

interpreted in different ways. Secondly, Nair, et al. (1990) have performed only one example in their study, on the basis of which they conclude that all MRPS seem to be liabilities. However, variation in MRPS' attributes may lead to opposite conclusions. Alver (2007) writes about this that there should be an assessment of the contractual agreements to determine in which way MRPS should be classified.

Considering MRPS' legal rights and obligations is necessary because these rights and obligations may cause different perceptions (of users of financial statements) on the economic substance and associated classification. For instance, in line with the FASB definition of debt, debtholders can force a firm to pay interests and the principal, or to "bear bankruptcy costs" (Kimmel and Warfield, 1993). In the study of Kimmel and Warfield (1993) is indicated that these bankruptcy costs in the finance literature are considered as a major aspect of liabilities. MRPS holders cannot force these payments and bankruptcy costs. This suggests that payments of dividend and/or the principal are avoidable and that MRPS does not exhibit the *unavoidability* characteristic of straight liabilities (for example, in cases of financial distress, firms defer payments[31]). Moreover, Kimmel and Warfield (1993) have performed an analysis of financial statement footnotes, which demonstrates that firms "have exercised the legal right to defer RPFD dividend and/or redemption payments".

In conclusion, one can state that –although the FASB states that MRPS embody an unconditional obligation– MRPS dividends and/or payments of the principal are not in all contexts unavoidable. This makes it difficult how to classify MRPS by using *avoidability* as classification criterion, and ultimately, this leads to different perceptions on MRPS' economic substance. As discussed above, Nair, et al. (1990) argues that MRPS should be classified as equity if payments are avoidable in all contexts. Since this is not the case, Nair, et al. (1990) prescribe that MRPS should be classified as liability. Moreover, finance literature argues that payments of dividend and/or the principal are avoidable, and therefore, MRPS is not equal to liabilities (Kimmel and Warfield, 1993).

3.4.3 Residual nature

One of the decisive aspects to be classified as equity is whether a security is a residual claim on firms' assets. A security is only a residual claim when economic benefits were distributed to the holder of the security after all other claims are satisfied.

MRPS are residual claims to firms' assets as compared to their liabilities: before firms distribute MRPS dividends or repay principals, firms should satisfy their liabilities. When a firm is illiquid –after satisfying liabilities– to make payments to MRPS holders, arrearages arise (if MRPS are cumulative). On the other hand, MRPS are not residual as compared to common equity. This is in fact of that, before dividend on common stock will be paid, holders of MRPS should be satisfied.

[31] Actually, MRPS holders are only able to appoint –in cases of dividend arrearages– representatives on the board of directors. Kimmel and Warfield (1993) notice that despite these board appointments firms "may still avoid making payments because all states prohibit payment of dividend or redemption payments if such outlays would threaten the solvency of the firm".

Besides, Chan and Seow (1997) gathered empirical evidence (see sub paragraph 3.7.3) that MRPS of firms with a high debt rate (low default risk) are regard as more debt-like as compared to MRPS of low rated firms (high default risk), whose MRPS is more equity-like. These findings relate to MRPS' residual nature: firms with high default risk, are more likely to be unable to repay principals and dividends on MRPS (in case of cumulative MRPS, arrearages will arise): first, liability payments should be satisfied before a firm proceeds MRPS related payments. Therefore, MRPS of low rated firms are closer to equity in fact of their residual nature as compared to liabilities. MRPS' holders of high rated firms expect that firms are able to repay the principals and pay a steady stream of dividends without arrearages, and therefore MRPS look like straight debt.

Kimmel and Warfield (1993) declare that the term *residual* also means that, after all claims have been satisfied, a holder of a security "has the right to share in all assets that remain after satisfying all other claims" (e.g. excess earnings after satisfying interest requirements on liabilities). However, in this sense, MRPS are not residual in fact of their fixed rate of return. Due to the steady stream of dividends, Alver (2007) concludes that preferred stock dividends are not associated with company performance. As a result, preferred stock seems to be real liabilities and should be classified accordingly.

With regard to the residual nature of MRPS one can conclude that (1) in times of financial distress, firms may avoid payments to holders of MRPS, and therefore, MRPS are more equity, and (2) the rate of return is limited through that a holder does not share in "excess earnings" (Kimmel and Warfield, 1993). Therefore, holders of MRPS share the downward risk, but do not share in favorable performance. The conclusion shows that it is difficult how to classify MRPS by using *residual nature* as classification criterion. Moreover, this criterion will lead to different perceptions on MRPS' economic substance of various financial statement users (e.g. common stockholders of a high-rated firm regard MRPS as more like liabilities, however, MRPS holders of this firm regard their stock as more equity-like).

3.4.4 Control

A primary characteristic of equity is the stockholders' exercise of control over the firm (Kimmel and Warfield, 1993). In general, voting rights represent the power to govern a firm. Kimmel and Warfield (1993) have found that 28 per cent of the MRPS in their sample selection (332 firms) have voting rights that were equivalent to the rights of common stockholders. 40 per cent have voting rights related to specific issues in certain circumstances (which they indicate in cases of dividend arrears or default of repayment of principals). The remaining 32 per cent do not have any voting rights. Therefore, control over a firm (expressed in voting rights) as a determination for the classification of MRPS as equity or liability is difficult in fact of significant differences across MRPS issues.

Alver (2007) has performed a comparison of definitions of preferred stock by various authors and concludes that –in general– American authors state that preferred stock have voting rights. British authors tend to indicate that voting rights are restricted.

One can conclude that classification of MRPS depending on the equity attribute *control over a firm* appears to be difficult. Moreover, the differences across MRPS issues may lead to diverse perceptions on MRPS' economic substance.

3.4.5 Conclusion

This paragraph deals with the fourth sub question and shows that the classification criteria *avoidability, residual nature, and control* are difficult to apply to MRPS, and may lead to diverse perceptions on MRPS' economic substance. This perception is important to this thesis in fact of that it determines the perception of firms' systematic risk, and hence, the required rate of return on common stock.

3.5 The relation between leverage, perceived systematic risk and the required rate of return on common stock

The following discussion includes various articles associated with the relation between leverage, perceived systematic risk and the required rate of return on common stock. As described in the introduction, this relation will be used to answer the research question formulated in this thesis. An explanation of the mentioned relation in conjunction with empirical evidence confirming it will pass in review in this paragraph. This paragraph answers the fifth sub question: *What empirical findings are available with regard to the relations between the debt-equity ratio, the perceived systematic risk, and the required rate of return and what research methods and models are used?*

3.5.1 Hamada (1972)

To answer the research question, this thesis uses the relation between the debt-equity ratio and the perceived systematic risk. In the past, Hamada (1972) and many other authors (e.g. Hill and Stone, 1980, Rubinstein, 1973) have also used this relationship. The main message of the aforementioned studies is briefly described by Hamada (1972): "...borrowing, from whatever source, while maintaining a fixed amount of equity, increases the risk to the investor", and therefore, "the covariance of the asset's rate of return with the market portfolio's rate of return [known as beta: expressed in β]...should be greater for the stock of a firm with a higher debt-equity ratio than for the stock of another firm in the same risk-class with a lower debt-equity ratio". In other words, when firms' debt-equity ratio increases, the perceived risk – beta– will increase.

Hamada (1972) delivers empirical evidence regarding to the relationship between systematic risk (i.e. market risk) and the debt-equity ratio (i.e. leverage). Therefore, his study provides a solid basis to this thesis. A discussion of the study will be performed below.

To assess the mentioned relationship, Hamada uses the CAPM-model[32]. CAPM describes the association between risk and the required rate of return. Various variables are included in CAPM: the risk free rate (Rf), the market rate of return (Rm) and the beta (β).

[32] Hamada (1972) uses the Sharpe-Lintner version of the CAPM-model.

Only Treasury bills have a risk free rate. They are the least risky investments in fact of that they are unaffected by fluctuations in the market return (they have a fixed rate of return). For additional risk, investors require a rate of return above of the risk free rate, termed the 'market risk premium'. This market risk premium can be written as:

$$(Rm - Rf) \quad (1)$$

As mentioned, the sensitivity of stock returns to changes in market returns is known as beta (ß). The risk free rate beta is 0, beta for return on the market portfolio[33] is 1. A beta between 0 and 1 means that those stock are less sensitive to market fluctuation than the market portfolio. A beta higher than 1 means higher volatility (higher risk). The required rate of return depends on the degree of risk that the investor bears: the higher the risk, the higher the required rate of return on common stock.

The relation between systematic risk and the required rate of return can be written as (CAPM equation[34]) (Hamada, 1972):

$$Ri = Rf + ß\,(Rm - Rf) \quad (2)$$

Where:

Ri = required rate of return on stock i

In his study, Hamada (1972) compares the observed rate of return of a (common) stock with the revised rate of return ("what it would have been over the same time period when the firm had no debt and preferred shares in its capital structure"). This is ultimately done to assess whether leverage affects firms' systematic risk. Therefore, Hamada (1972) attributes the difference between the observed systematic risk and the revised rate of return to leverage.

Hamada (1972) assumes the following relationship for dividend to common stockholders (from period t -1 to t):

$$(X - I)_t(1- \tau)_t - p_t + \Delta G_t = d_t + cg_t \quad (3)$$

Where:

X_t = earnings before taxes, interest and preferred dividends in period t
I_t = interest and other fixed charges in period t
τ_t = corporation income tax applicable to period t
p_t = preferred dividend in period t
ΔG_t = change in capital growth in period t
d_t = dividends to common stockholders in period t
cg_t = capital gains during period in period t

The left-hand side of equation (3) depicts the earnings to common and preferred stockholders. After deducting p_t, only earnings from currently-held assets available to common stockholders remain.

[33] Weighted average market returns (Hamada, 1972).
[34] Hamada (1972) uses the Sharpe-Lintner version of CAPM.

Hamada (1972) remarks that this figure should be adjusted with the capital growth, since he tries to explain the common stockholder's return during the holding period.

The systematic risk of a common stock ($_B\beta$) is depicted as follows (Hamada, 1972):

$$_B\beta = \text{cov}\,(R_{Bt}, R_{Mt}) / \sigma^2(R_{Mt}) \qquad (4)$$

Where:

R_{Bt} = rate of return on a common stock in period t
R_{Mt} = rate of return on a market portfolio in period t
cov = covariance between R_{Bt} and R_{Mt}
σ^2 = standard deviation

Substitution of (3) and (4) leads to:

$$_B\beta = \text{cov}\,[((X - I)_t(1- \tau)_t - p_t + \Delta G_t / S_{Bt-1}), R_{Mt}] / \sigma^2(R_{Mt}) \qquad (5)$$

Where:

S_{Bt-1} = market value of the common stock at the beginning of the period if the firm had debt and preferred stock

Thereafter, Hamada (1972) considers the same firm "if there were no debt and preferred stock in its capital structure". In this situation systematic risk is depicted as:

$$_A\beta = \text{cov}\,(R_{At}, R_{Mt}) / \sigma^2(R_{Mt}) \qquad (6)$$

$$= {}_A\beta = \text{cov}\,[(X(1- \tau)_t + \Delta G_t / S_{At-1}), R_{Mt}] / \sigma^2(R_{Mt})$$

Where:

R_{At} = rate of return on a common stock if the firm had no debt and preferred stock in period t
S_{At-1} = market value of a common stock at the beginning of the period if a firm had no debt and preferred stock in period t

S_{At-1} is unobservable in fact of that this firm actually has debt and preferred stock. Therefore, Hamada (1972) uses the MM-theory (Modigliani and Miller) to derive this market value. The used theory determines the market value of a firm if it had no debt and preferred stock as:

$$S_{At-1} = (V - \tau D)_{t-1} \qquad (7)$$

Where:

τ_{t-1} = corporation income tax at the beginning of the period
D_{t-1} = market value of debt at the beginning of the period
τD = tax subsidy for debt financing
V_{t-1} = observed market value of equity at the beginning of the period

Hamada (1972) subtracts D from V to obtain the market value of an unlevered firm.

As mentioned above, S_{At-1} is unobservable. Therefore, the Modigliani & Miller theory is used once again to obtain the rate of return on the common stock of an unlevered firm. In Hamada's study (1972) this is expressed as:

$$R_{At} = [d_t + cg_t + p_t + I_t(1 - \tau)_t] / (V - \tau D)_{t-1} \quad (8)$$

The rate of return of a levered firm (B) can be observed. The rate of return is:

$$R_{Bt} = [(X - I)_t(1 - \tau)_t - p_t + \Delta G_t] / S_{Bt-1} \quad (9)$$

Hamada (1972) remarks that, if leverage has no significant influence on systematic risk, firm A's systematic risk (unlevered) should be equal to firm B's systematic risk (levered): ${}_A\beta = {}_B\beta$.

Hamada (1972) uses CRSP and Compustat data for (8) and (9). R_{At} and R_{Bt} (from 1948 to 1967) of 304 NYSE-listed firms were derived[35]. For each firm, the regression analyses below were run:

$$R_{At} = {}_A\alpha_i + {}_A\beta_i R_{Mt} + {}_A\varepsilon_{it} \quad (10)$$
$$R_{Bt} = {}_B\alpha_i + {}_B\beta_i R_{Mt} + {}_B\varepsilon_{it} \quad (11)$$
$$Ln(1 + R_{Ait}) = {}_{AC}\alpha_i + {}_{AC}\beta_i \ln(1 + R_{Mt}) + {}_{AC}\varepsilon_{it} \quad (12)$$
$$Ln(1 + R_{Bit}) = {}_{BC}\alpha_i + {}_{BC}\beta_i \ln(1 + R_{Mt}) + {}_{BC}\varepsilon_{it} \quad (13)$$

Where:

- R_{Mt} = observed NYSE stock market return in period t
- α_i = intercept of firm i (constant)
- β_i = slope of firm i (constant)
- ε_{it} = disturbance term

Hamada uses in (12) and (13) the "continuously-compounded" rate of return versions of (10) and (11). Within the (12) and (13) formulas, adjustments (logs) were made to eliminate strong fluctuations of the rate of return over time.

The results of Hamada's investigation show: ${}_B\beta > {}_A\beta$, i.e. 0.9190 > 0.7030. This indicates that leverage influences firms' systematic risk (β), in fact of that the beta of unlevered firms (${}_A\beta$) is (significant) lower than the beta of levered firms (${}_B\beta$).

Hamada's study is of importance to this thesis, in fact of that it provides empirical evidence of the effect of leverage on systematic risk. Leverage explains 21 to 24 per cent of the value of the mean ß (systematic risk), averaged over 304 firms[36]. Hamada (1972) states that this percent of systematic risk "can be explained merely by the added financial risk taken on by the underlying firm with its use of debt and preferred stock". Ultimately, this will affect the required rate of return –recalling the relation between systematic risk and return, captured by CAPM[37]–. In other words, "corporate leverage does count considerably" (Hamada 1972).

[35] The sample selection procedure is not referred by Hamada (1972).
[36] Computed as: $1 - ({}_A\beta / {}_B\beta)$.
[37] Readers are reminded that CAPM defines the relationship between systematic risk and the required rate of return on common stock as Ri = Rf + ß (Rm – Rf), where Ri is the required rate of return on common stock of a specific firm, Rf is the risk free rate and ß (Rm – Rf) depicts the additional required return as result of the additional incurred market risk in excess to the risk free Treasury bills, called the 'market risk premium' (Hamada, 1972).

3.5.2 Hill and Stone (1980)

Hill and Stone (1980) confirmed the relation between financial structure of a firm and the systematic risk with empirical evidence. Therefore, Hill and Stone (1980) support the earlier conclusion of Hamada (1972), and hence, strengthened the basis with regard to the relations that will be used in this thesis. Hill and Stone (1980) use data of 150 firms from the beginning of 1947 until the end of 1974[38]. The research period is divided into two sub periods of both fourteen years: 1947 – 1960 and 1961 – 1974.

In conjunction with Hamada (1972), Hill and Stone (1980) use the Sharp-Lintner version of CAPM to measure the effect of firms' financial structure on their systematic risk (see equation 2). Besides, Hill and Stone (1980) also use the Modigliani & Miller Theory to derive the market value of common stock of unlevered firms, which actually is unobservable because most firms do have debt.

Hill and Stone (1980) argue that it has been common use to divide firms' overall risk into two components, namely (1) operating risk and (2) financial risk (see footnote 12). On the one hand, operating risk is associated with firms' operating activities and their results. Financial risk on the other hand is associated with "the effect on uncertainty of financial policy, especially the debt-equity mix and the fixed interest charge associated with debt" (Hill and Stone, 1980). The latter risk is "usually characterized by the extent to which debt financing magnifies operating risk" (Hill and Stone, 1980).

Hill and Stone (1980) deliver a comprehensive theoretical discussion on which variables are suitable to measure operating- and financial risk. The main equations are repeated below.

Firstly, ROA_i (return on assets of firm i) as a measure of operating earnings to assets' book value is defined. According to Bernard, et al. (2007, p. 201), "ROA tells us how much profit a company is able to generate for each euro of assets invested". Then, Hill and Stone (1980) define ROE_i (return on equity of firm i) as the earnings (available to stockholders) to the book value of common equity. Actually, ROE_i is affected by two several factors: (1) how profitable a firm "employs its assets" and (2) "how big the firm's asset base is relative to shareholders' investment" (Bernard, et al., 2007, p. 200).

Hill and Stone (1980) capture the sensitivity of ROA_i and ROE_i to the marked-wide variables of return on assets (ROA_M) and return on equity (ROE_M) by β^0 and β^R, respectively. This results in the following definitions of β^0 and β^R:

$$\beta_i^0 = d(ROA_i) / d(ROA_M) \quad (14)$$

$$\beta_i^R = d(ROE_i) / d(ROE_M) \quad (15)$$

Where:

ROA_M = SOM(N, i=1) w_i^X ROA_i (where w_i^X is the weight of the return in the index)
ROE_M = SOM(N, i=1) w_i ROE_i (where w_i is the weight of the return in the index)

[38] An index is not referred.

Firm i's operating risk and the overall equity risk are captured by β_i^0 and β_i^R. With these measures in mind, financial risk can be computed, in fact of that the following relation between return on assets, return on equity and financial leverage exists (Bernard, et al., 2007, p. 200):

$$ROE = ROA * FL \quad (16)$$

Where:

FL = financial leverage (computed by assets divided by shareholders' equity)

Hill and Stone (1980) indicate that financial leverage "refers to the use of financing other than common equity...to magnify operating results" and "this magnification is often characterized by the sensitivity of return on common equity to operating return"[39]. Firms' financial leverage can be measured by (Hill and Stone, 1980):

$$FL = d(ROE_i) / d[ROA_i (1 - T_i)] \quad (17)$$

Where:

T_i = tax rate of firm i

Ultimately, one is able to measure financial risk. Hill and Stone (1980) declare the risk composition of firms' overall risk as follows:

$$\beta_i^R = \beta_i^0 * FL_i / [SOM(N, k=1)\ w_k\ \beta_k^0\ FL_k] \quad (18)$$

Where:

k = moment in time

w_k = weight in the index on a specific moment in time

Hill and Stone's (1980) sample covers 28 years from 1947 to 1974, divided into two periods (twice fourteen years). The sample selection criteria were that the fiscal year-end of firms included should be December 31, and all the necessary data should be available for all firms included (at least one period of fourteen years). 240 and 324 firms were included in the first period (1947 to 1960) and the second period (1961 to 1974), respectively. 150 firms meet the criteria during the entire research period (1947 to 1974). Hill and Stone (1980) use data from the Compustat database and additional information from a financial paper, provided by Solomon Brothers.

The empirical results of Hill and Stone (1980) show that financial leverage (in the tested formulas expressed as the debt-equity ratio: f / (1 – f), where f is the fraction of financial sources that is not common equity) is a significant determinant of firms' systematic risk in both periods of the research (with a significance level of 1 per cent)[40].

[39] Leverage affects ROE positive where the cost of debt (ratio of finance charges after tax) is smaller than ROA, and vice versa (Giner and Reverte, 2001)

[40] Hill and Stone (1980) test empirically the regression: $\beta^M = a_0 + a_1[\beta^0 / (1\text{-}f)] + a_2[f/(1\text{-}f)] + a_3[f/(1\text{-}f)]^2$. If one exclude the last part of the regression tested ($a_3[f/(1\text{-}f)]^2$) in the final research model, the results indicate that leverage (i.e. the debt-equity ratio) is a significant determinant within the assessment of the market beta (i.e. systematic risk, β^M). The

The study of Hill and Stone (1980) gives empirical evidence that "changes in financial structure are significant determinants of period to period changes in the market beta's". This study is important to this thesis, because it gives empirical evidence of the positive relation between leverage and systematic risk.

3.5.3 Bowman (1979)

Bowman (1979) underpins the research results of Hamada (1972) with a theoretical study to the relation between systematic risk and financial accounting variables. Bowman (1979) has also used CAPM. Similar variables to Hamada (1972) are used, albeit in other symbols. Bowman (1979) also proves a positive relation between systematic risk and firms' leverage. Therefore, he confirms the empirical studies of Hamada (1972) and Hill and Stone (1980) with theoretical evidence, and hence, the author's choice to use the positive relation between leverage and systematic risk in this thesis is justifiable.

3.5.4 Ammeraal and Heezen (2006)

Perceived systematic risk is measured by using stock prices. Regressions are performed to measure the variability of stock returns as compared to market returns. Finally, one is able to retrieve firms' perceived systematic risk. The arising question is how perceived systematic risk is related to stock prices and the required rate of return on common stock. Ammeraal and Heezen (2006) shortly declare the dividend-discounted model[41], which includes this relation. In this thesis, this model will be used, and therefore, the explanation of Ammeraal and Heezen (2006) is important.

Ammeraal and Heezen (2006, p. 61) state that –within the dividend-discounted model– a stock's value equals the discounted value of future dividends (i.e. future returns). The value of a growth stock can be measured by $V_0 = D_1 / (i - g)$, where V_0 depicts the value of a stock on moment 0, D_1 denotes dividends received on moment 1, i is the required rate of return and g is the growth rate. The required rate of return is related to the level of perceived systematic risk. This is further explained below.

3.5.5 Van Aalst, et al. (1996)

Van Aalst, et al. (1996, p. 43) give the following explanation on the expected rate of return and the required rate of return, in relation to the present value of an investment project (one can also read: a stock).

The expected return, $E(_r)$, on a specific stock should be:

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author refers to the article (Hill and Stone, 1980) for the height of the determinant within the different compositions of the regression model, mentioned in this footnote.

[41] In this thesis, the dividend-discounted model is used. According to Bernard, et al. (2007, p. 295) forms this models "the basis for most of the popular theoretical approaches for equity valuation". The by the authors referred approaches are the discounted abnormal earnings, the discounted abnormal earnings growth, and the discounted cash flows model of value. Although only the dividend-discounted model will be used, this is not a limitation to this thesis, in fact of that all the mentioned methods are "all derived from the same underlying model" and therefore "no one version can be considered superior to the others" (Bernard, et al., 2007, p. 309). The fact remains that there are differences in the models: differences in focus, the amount and structure of analysis required for valuation, and in implications for estimating terminal values (the expected earnings, growth, cash flows, or dividends beyond the forecast horizon).

$$E(_r) = [E(P_1) - P_0] / P_0 \quad (19)$$

Where:

$E(P_1)$ = expected stock price on moment 1 (i.e. end of period 0)

P_0 = stock price on moment 0.

Following CAPM, the expected return, $E(_r)$, can be rewritten as (in capital market equilibrium) [42]:

$$E(_r) = r_f + \beta[E(r_m) - r_f] \quad (20)$$

Where:

r_f = risk free rate

$\beta[E(r_m) - r_f]$ = market risk premium

$E(r_m)$ = expected market return

Beside expected return, required return exists. This is the return that at least should be offered before an investment project or stock will be attractive to a rational investor (Van Aalst, et al., p. 43). More specific, the required rate of return should be equal to the 'opportunity cost of capital' associated with the risk level of an investment project or stock[43]. This is because rational investors will require at least an expected rate that equals the rate of another investment project or stock that is fully comparable. In case of discount the expected value of investment A with the opportunity cost (i.e. the required rate of return), $E(r_A^*)$, A's present value, PV(A), will be:

$$PV(A) = E(I_{A,1}) / [1 + E(r_A^*)] \quad (21)$$

Where:

$E(I_{A,1})$ = expected cash flow on moment 1 (i.e. dividend and/or principal receipts)

The required rate of return is also called the risk adjusted discount rate (Van Aalst, et al., 1996, p. 44). This is the rate that is relevant within the determination of the value of future cash flows from an investment project or stock. In fact of that common stock is considered as permanent equity, the value of stock can be rewritten as (substituting equation 21)[44]:

$$P_0 = [div / (1 + r)] + [div(1 + g) / (1+ r)^2] + [div(1 + g)^2 / (1 + r)^3] + \ldots \quad (22)$$

Where:

P_0 = stock price on moment 0

[42] In this model, the expected return, $E(r_A)$, is the same as required rate of return (ex ante) in fact of that the expected return is expected to be earned on other securities with a systematic risk equal to the risk of this investment ($I_{A,0}$), and hence, this is the opportunity cost of this investment: the return that at least should be earned as compared to a fully comparable security with the same risk characteristics (see definition of opportunity cost in footnote 43).

[43] Opportunity cost is the return on investing resources in other ways (e.g. other stock, investment project, et cetera) (McKenzie, 2007). One might state: opportunity cost is the return on alternative use of resources.

[44] This is the value of a stock as shown by the dividend-discounted model. The value of a firm with a constant dividend growth rate, g, can be rewritten as: equity value = $DIV_1 / (r_e - g)$, where DIV_1 depicts the dividend receipt on moment 1 (end of period 0), and r_e is the required rate of return (Bernard, et al., 2007, p. 295).

div = dividend that will be received
r = (systematic) risk adjusted discount rate (i.e. required rate of return)
g = dividend growth rate

As Van Aalst, et al. (1996, p. 66) describe, in capital market equilibrium the equilibrium price of a specific stock on moment 0, P_0, should be:

$$P_0 = E(P_1) / [1+ r_f + \beta(E(r_m) - r_f)] \quad (23)$$

One can regard the denominator of the latter formula as the discount rate, which actually discounts the expected stock price on moment 1 with a systematic risk-adjusted discount rate (Van Aalst, et al., 1996, p. 67).

The equation above (23) is important to this thesis, in fact of that its variables are empirically measurable. Within this thesis, the required rate of return is the centre of attention (besides leverage and systematic risk variables). Now the relation between the required rate of return and stock prices has been theoretically explained, empirical research confirming the theory, derived from Campbell, et al. (2009), is included below.

3.5.6 Campbell (2009)

Campbell (2009) proves the mentioned relation by using the Sharp-Lintner version of CAPM. He explores the economic origins of common stock for value and growth stocks. Campbell (2009) notes that "stocks will tend to rise together when the market discount rate [required rate of return] declines, and fall together when the market discount rate increases". This statement is been argued with previous research (e.g. Cornell, 1999; Dechow, et al., 2004; Lettau and Wachter, 2007).

The methodology of the article of Campbell (2009) is not discussed thoroughly, because Campbell's research (2009) is completely different compared to this thesis. However, confirmation of the relation between the required rate of return and stock prices is important. Therefore, Campbell's article (2009) is included in this thesis.

3.5.7 Fama and French (2004)

Moreover, Fama and French (2004) have performed an analysis of the positive relation between beta and return, using stock prices[45]. They estimate a preranking and postranking beta for stock, listed on the NYSE (1928-2003), AMEX (1963-2003) and NASDAQ (1972-2003). The data are derived from the CRPS database. 912 stock are included in the sample. Then, Fama and French (2004) formed value-weighted portfolios (based on the preranking beta: stock with high beta's are pooled together and stock with low beta's are pooled together) and compute their (expected) returns (ex ante). The expected returns were compared with the returns based on postranking beta's (i.e. required rate of return). This is done by a

[45] The evidence of Fama and French (2004) is 'updated evidence' from prior investigations.

regression. The results of this regression show that "the relation between average return and beta...is roughly linear" (Fama and French, 2004). Therefore, based on this result, it is justified to use (in this thesis) the relation between systematic risk and the required rate of return.

3.5.8 Conclusion

The articles included in this paragraph answer the fifth sub question: *What empirical findings are available with regard to the relations between the debt-equity ratio, the perceived systematic risk, and the required rate of return and what research methods and models are used?*

Hamada (1972) and Hill and Stone (1980) confirm empirically the relation between leverage and systematic risk. On the other hand, Bowman (1979) theoretically proves this relation. The main message is that leverage is a significant determinant for firms' perceived systematic risk.

After that, the relation between systematic risk, stock prices, and the required rate of return on common stock is explained: Ammeraal and Heezen (2006), Van Aalst, et al. (1997). Subsequently, Campbell (2009) proves the relation between stock prices and the required rate of return on common stock. Finally, Fama and French (2004) confirm empirically the ("roughly linear") relation between systematic risk (beta) and the required rate of return. Therefore, based on empirical evidence, it is justified to use (in this thesis) the relations, mentioned in the sub question dealt with in this paragraph.

3.6 The influence of SFAS No. 150 on the debt-equity ratio

In fact of the aforementioned relation between leverage (i.e. the debt-equity ratio) and the required rate of return on common stock[46], it is important to assess whether and to what extent the debt-equity ratio is affected by the introduction of SFAS No. 150. This paragraph deals with the impact of SFAS No. 150, and therefore, it treats the sixth sub question: *Is the debt-equity ratio affected by the introduction of SFAS No. 150?*

3.6.1 Schauer, et al. (2006)

SFAS No. 150 requires to classify MRPS as liabilities. This might cause an increased debt-equity ratio. As mentioned, this depends on the classification of MRPS before the introduction of SFAS No. 150: most firms classify MRPS as 'quasi-equity' (Kimmel and Warfield, 1995) and other firms classify it as equity or liabilities (Maloney and Mulford, 2003). Firms classifying MRPS as 'quasi-equity' or as (straight) equity are subject to an increase of the debt-equity ratio (*ceteris paribus*). Since it is known that the debt-equity ratio is a significant determinant of the required rate of return, SFAS No. 150 will have influence on the level of the required rate of return (also: *ceteris paribus*).

Schauer, et al. (2006) have examined the economic consequences of SFAS No. 150 on 42 public firms included in the Russell 3000 Index. They perform a comparison of reported ratios with ratios

[46] Via firms' perceived systematic risk (beta): the relation is leverage – perceived systematic risk – required rate of return. Firms' perceived systematic risk is mostly measured by using stock prices (Campbell, 2007).

recalculated 'as if SFAS No. 150 not is required'. First, the difference between the reported mean (long term) debt-asset ratio (0.7461) and the ratio 'as if SFAS No. 150 not is required' (0.7115) amounts to 5 per cent. Besides, the research outcomes show that the reported ratio (6,9065) differs with 43 per cent from the 'as if SFAS No. 150 not is required'-ratio (4,8296).

The study of Schauer, et al. (2006) shows an increased (long term) debt-equity ratio as result of the introduction of SFAS No. 150, and hence, delivers empirical material for answering the sub question dealt within this paragraph. This is important to know, in fact of that a higher ratio causes a higher systematic risk (Hamada, 1972; Hill and Stone, 1980; Bowman, 1979), and in turn, a higher systematic risk causes an increase of the level of the required rate of return on common stock (Fama and French, 2004).

3.6.2 Maloney and Mulford (2003)

Besides, Maloney and Mulford (2003) have performed an investigation to the impact of SFAS No. 150 on financial statements. They find that firms subject to the standard (with outstanding MRPS) show an increased debt-equity ratio. Therefore, this investigation delivers empirical evidence to answer the sub question central to this paragraph.

Eighteen firms were included in the sample[47]. Fourteen firms classify MRPS as 'quasi-equity' (a). Two of them explain in the footnotes that "a different amount than the amount shown on the balance sheet will be reclassified" (Maloney and Mulford, 2003) (b). Characteristics of MRPS of the latter two firms will likely be changed. Moreover, one firm has been including MRPS in the equity section, and reclassifies MRPS as liabilities (c). Besides, two firms included in the sample classify their MRPS already as liabilities (d). Finally, one firm continues to classify MRPS as equity, in fact of that it claims that its MRPS is conditional and therefore not in the scope of SFAS No. 150 (e).

The research results show an increase of the ratio of total debt to equity of all firms included in the sample, excepting firms d and e. The increase amounts on average to 6 per cent, 2 per cent, and 6 per cent for firms a, b, and c, respectively.

Moreover, Maloney and Mulford (2003) indicate that some firms will suffer defaults of debt covenants and/or large increases of interest expenses in the income statement due to SFAS No. 150 (previously these expenses were dividend payments, which were excluded from the profit determination). Besides, there will be cash flow implications. In fact of the 'shift' from dividend payments to interest expenses, they should be classified as cash flow from operations (as required by SFAS No. 95) instead of cash flow from financing activities[48]. Therefore, a decrease in cash from operations will be expected (Maloney and Mulford, 2003).

[47] No index is referred by the authors.

[48] According to Bernard, et al. (2007, p. 218), "cash flow from operations is the cash generated by the firm from the sale of goods and services after paying for the cost of inputs and operations", and cash flow from financing activities "shows the cash raised from (or paid to) the firm's shareholders and debt holders". Excess cash flow from operations,

3.6.3 Schneider and Wertheim (1993)

Schneider and Wertheim (1993) have researched what impact MRPS' reclassification does have on financial ratios. Therefore, their article is useful in answering the sub question central to this paragraph.

Firstly, Schneider and Wertheim (1993) give an example of a firm that previously reports its MRPS as 'quasi-equity'[49]. The financial statements were recomputed under three alternative assumptions: (1) MRPS classified as equity, (2) MRPS classified as 'quasi-equity', and (3) MRPS classified as liabilities. The results show an increase of the total debt to equity of 45.45 (11.6) per cent when classifying MRPS as liabilities instead of equity ('quasi-equity'). The long term debt to equity ratio increases with 63.87 (25.69) per cent.

Then, the average implications of a change of the treatment of MRPS are approximated by analyzing 105 firms[50]. Firms were included in the sample by skimming disclosures in the notes (with use of the Disclosure database), under condition that they have outstanding MRPS. Redemption values and relevant dividend data were retrieved from various sources: the Disclosure database, Compustat, Moody's Financial Manual, Moody's Industrial Manual, and Moody's OTC, Transportation and Utility Manuals. Finally, various financial ratios were computed for each firm, compiled under the three mentioned alternative assumptions. The results show an increase of total debt (long term debt) to equity of 18.1 (34.3) per cent when MRPS shift from equity to liabilities. When MRPS are classified as liabilities instead of 'quasi-equity', the increase of total debt (long term debt) to equity is 4.9 (11.5) per cent.

Finally, Schneider and Wertheim (1993) discuss that the FASB requires that MRPS should be treated in accordance with "the underlying classification model" (i.e. as equity, as 'quasi-equity' or as liabilities). This causes that dividends will turn into interest expenses, if MRPS are classified as liabilities (as required by SFAS No. 150) (Schneider and Wertheim, 1993).

3.6.4 De Jong, et al. (2006)

The study of De Jong, et al. (2006) focuses on influences of the introduction of International Accounting Standard 32 (IAS 32 hereafter) on Dutch firms' debt-equity ratios and on reactions of firms' management. IAS 32 is a quite similar standard to SFAS No. 150 and requires that preferred stock should be classified as liabilities. Therefore, this article is useful to answer the sub question central to this paragraph.

The sample includes 34 Dutch firms with preferred stock outstanding (at January 1, 2004) and listed on the Euronext Amsterdam exchange (AEX)[51]. Information was obtained from (1) press releases, (2) news

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after making investment in working capital, "allows the firm to pursue long-term growth opportunities" (Bernard, et al., 2007, p. 221). However, after SFAS No. 150 lesser cash from operations is expected.

[49] The amounts were derived from the financial statements of an actual NYSE-listed firm: McDermott, Inc., statements of March 31, 1991.

[50] No index is referred by the authors.

[51] Five financial institutions were excluded in the part of the research related to debt-equity ratios (in fact of that they have risk-based capital ratios).

in the Dutch financial daily, (3) annual reports, (4) interim reports, (5) associated articles from firms' websites, and (6) correspondence with spokespersons.

De Jong, et al. (2006) compare financial ratios prepared under Dutch GAAP with the same ratios prepared under IFRS. The results show that firms' debt-equity ratios increase on average with 35 per cent under IFRS, specifically IAS 32 (De Jong, et al., 2006)[52][53]. Furthermore, it is found that net earnings decrease on average with 11 per cent due to IAS 32.

3.6.5 Conclusion

Articles included in this paragraph answer the sixth sub question of this thesis: *Is the debt-equity ratio affected by the introduction of SFAS No. 150?* The empirical results show that the debt-equity ratio is significant higher after the introduction of SFAS No. 150 (Schauer, et al., 2006; Maloney and Mulford, 2003; Schneider and Wertheim, 1993). Besides, other figures are affected: firms' cash flows from operations, firms' cash flows from financing activities, and the income statement. Finally, De Jong, et al. (2006) show a 35 per cent increase of debt-equity ratios of Dutch firms after the issuance of IAS 32, which is a similar standard to SFAS No. 150.

3.7 The market perception of MRPS' economic substance

As discussed, SFAS No. 150 causes a higher reported debt-equity ratio, and as a result –following the theoretical description and relations between leverage, firms' perceived systematic risk and the required rate of return on common stock– SFAS No. 150 might had an effect on firms' perceived systematic risk and their required rate of return on common stock (*ceteris paribus*). This depends on how MRPS are regarded by common stockholders (i.e. MRPS' economic substance: MRPS are regarded as equity, liabilities, or somewhere between them) before and after the introduction of SFAS No. 150. This paragraph deals with some articles that measure MRPS' economic substance, and therefore answers the seventh sub question: *What is the economic substance of MRPS?*

3.7.1 Kimmel and Warfield (1995)

Kimmel and Warfield (1995) show in their article empirical evidence on the economic substance of MRPS. They use firms' leverage (besides other factors) as a proxy for firms' systematic risk, and firms' systematic risk as a proxy for the economic substance of MRPS. Overall risk, β_0, is captured by the formula below:

$$\beta_0 = (D/V)\,\beta_d + (E/V)\,\beta_s \qquad (24)$$

[52] Debt-equity ratios under Dutch GAAP are determined by total debt divided by equity. Debt-equity ratios under IFRS are similar to the ratios under Dutch GAAP, but adjusted with the book value of outstanding preferred stock: this value is adjusted accordingly to the classification (De Jong, et al., 2006).

[53] Firms' net earnings under IFRS are calculated by net earnings under Dutch GAAP minus dividends paid on preferred stock (De Jong, et al., 2006).

Where:

β_d = beta for debt
β_s = beta for common stock
D = market value of firm's debt
E = market value of firm's equity
V = total firm's market value

The betas measure the sensitivity to changes in the market rates and are necessary to determine the risks associated with a firm's stock or debt.

Consecutively, like Hamada (1972) and Bowman (1979), Kimmel and Warfield (1995) decompose systematic risk in operating risk and financial risk[54]:

$$\beta_s = \beta_0 + D/E(\beta_0 - \beta_d) \quad (25)$$

In fact of that $\beta_0 > \beta_d$, Kimmel and Warfield (1995) indicate that β_s is positively related with leverage.

To consider the relation of MRPS with the level of firms' systematic risk, the following equation is formulated by Kimmel and Warfield (1995):

$$\beta_s = \beta_0 + D/E(\beta_0 - \beta_d) + R/E(\beta_0 - \beta_r) \quad (26)$$

Where:

R = value of redeemable preferred stock
β_r = beta for redeemable preferred stock

Kimmel and Warfield (1995) indicate that, if MRPS' riskiness equals to the riskiness of debt, then $\beta_r = \beta_d$, and $(\beta_0 - \beta_r) > 0$. Conversely, if MRPS is viewed as riskiness as equity, then $(\beta_0 - \beta_r)$ will be < 0.

Converting equation 26 into an empirical measurable equation of a firm's systematic risk, β_s, leads to the following equation:

$$\beta_s = d_0 + d_1 OP + d_2(OP(D/MVE)) + d_3(OP(RPFD/MVE)) \quad (27)$$

Where:

d_0 = intercept
d_{1-3} = determinants for the regression slope
OP = measure of operating risk, β_0
D = book value of debt
MVE = market value of common stock plus book value of perpetual preferred stock
RPFD = book value redeemable preferred stock

If MRPS is viewed as riskiness as debt, their coefficients should be equal: $d_2 = d_3 > 0$. Conversely, if MRPS' coefficient, d_3, is insignificant, common stockholders (i.e. the capital markets) regard MRPS as having both equity and liabilities features. Liabilities features will have an increasing effect on the perceived financial risk, while equity features will decrease perceived financial risk. Kimmel and Warfield (1995) have

[54] Credit risk, exchange rate risk, and market risk are examples of operating risk (Moosa, 2007). Financial risk is already explained within the discussion of the article of Hill and Stone (1980), see sub paragraph 3.5.2.

added conversion and voting rights to the regression above, to control for these equity features within additional tests.

The sample includes 239 firms with outstanding MRPS during 1979-1989[55]. Data is obtained from the Compustat database. Systematic risk (β_s) was measured by using market model regressions of market returns (on a market index) and firm returns. Operating risk (OP or β_0) was estimated by using an 'accounting beta'. This beta was estimated "from a regression of firm earnings yield (income before interest and taxes divided by assets) on market earnings yields" [56] (Kimmel and Warfield, 1995). Data with regard to capital structure variables are derived from the Compustat database[57]. Debt (D) is defined as total liabilities (without MRPS) at fiscal year-end divided by the market value of common stock and perpetual preferred stock. The tax shield applicable is deducted from the book value of debt. The tax rate was estimated for each firm and for each year on the base of the ratio of income tax expense divided by pretax income. MRPS (denoted as RPFD) was computed by total MRPS divided by the market values of both common stock and perpetual preferred stock (measured at the end of the fiscal year)[58]. Voting rights (VOTE) were measured as the percentage of MRPS with the same voting rights as common stock. Finally, conversion rights (CONV) were measured as the percentage of MRPS with rights to convert MRPS to common stock.

The main descriptive statistics will be rehearsed again. The sample mean beta (β_s) amounts to 0.82. This low average beta is caused by the large proportion of utility firms included in the sample. Kimmel and Warfield (1995) note that regulation within utility firms causes lower levels of systematic risk, while these firms were the main MRPS issuers during a long period[59]. However, in the years before the sample is taken, also non-utilities have issued MRPS. MRPS represent on average 120 per cent of the issuing firms' market values of equity. The statistics show that –on average– utility firms' portion of MRPS compared to the market values of equity is (significant) smaller than non-utility firms. Almost a quarter of MRPS included in the sample has voting rights (24.3 per cent), and 16.3 per cent has conversion rights. Non-utilities are more represented concerning MRPS with inclusion of voting (27.2 per cent) and conversion rights (30.6 per cent), compared to utility firms (21.2 per cent and 1.7 per cent, respectively). Finally, the descriptive statistics show correlations (a predicted positive association) between systematic risk (β_s) and operating risk (β_0) (0.361), and between systematic risk (β_s) and leverage (OP•D) (0.232). The correlations were all significant with a confidence level of 99 per cent.

[55] An index is not referred by the authors.
[56] Kimmel and Warfield (1995) declare that they use the natural log of operating risk (OP or β_0) to "mitigate the potential impact of the skewed nature of the distribution for this variable".
[57] With regard to the capital structure variables, Kimmel and Warfield (1995) also denote that logged values were used to mitigate the influence of extreme values in the sample on estimates regression variables.
[58] However, Kimmel and Warfield (1995) state that they use book values of debt and preferred stock in fact of the unavailability of their market values.
[59] For a discussion about the differences of the MRPS' economic substance (i.e. whether MRPS are regard as liabilities or equity) between utilities and non-utilities, the author refers to the discussion of the article of Chan and Seow (1997), which is included in subparagraph 3.7.3.

To empirically test the effect of operating risk (OP), leverage (OP•D), and MRPS (OP•RPFD) on measured systematic risk, β_s, the following (general) model is used (Kimmel and Warfield, 1995):

$$\beta_s = a_0 + \sum SIC_{DUM} + \sum YEAR_{DUM} + a_1 OP + a_2(OP \bullet D) + a_3(OP \bullet RPFD) + \varepsilon \quad (28)$$

Where:

a_0 = intercept
$a_{1\text{-}3}$ = slope coefficients
SIC_{DUM} = dummy for industry membership
$YEAR_{DUM}$ = dummy for each year in the research period

The results of Kimmel and Warfield (1995) show significant and positive coefficients in models that include operating risk (OP) and leverage (OP•D) as explaining variables for systematic risk (β_s): both with a significance of $p<0.001$ and a value of 0.98 and 0.05, respectively. MRPS' effect on systematic risk (OP•RPFD) is also significant, but negative (the value is -0.06 with a significance of $p<0.042$). This means that the perception of the riskiness of MRPS is not similar to that of debt (which is significant positive) but it is regard as equity. The general model also controls for industry (based on one-digit SIC codes) and year. The authors denote that the industry dummy was included to control for potential differences in sample firms' operating characteristics, and hence there systematic risk (e.g. utilities are expected to have lower systematic risk in fact of their "regulated status" (Kimmel and Warfield, 1995). Besides, a year dummy was added to control for fluctuations of systematic risk over time. The leverage and operating risk coefficients remain significant and positive after controlling for industry and year, but the effect of MRPS is negative and insignificant (first it was significant) (the value is -0.03 with a significance of $p<0.217$: this means that MRPS is regard as 'quasi-equity'). Therefore, MRPS is not regard as riskiness as debt. The model depicted in equation 28 has an explanatory value (r^2) of 40.0 per cent.

As mentioned before, the general model is extended with variables for voting and conversion rights in order to control for these equity attributes (Kimmel and Warfield, 1995)[60]:

$$\beta_s = a_0 + \sum SIC_{DUM} + \sum YEAR_{DUM} + a_1 OP + a_2(OP \bullet D) + a_3(OP \bullet RPFD) + a_4(OP \bullet RPFD \bullet Attribute) + \varepsilon \quad (29)$$

The coefficient 'attribute' is tested by adding voting (VOTE), conversion (CONV) rights, or with 'no equity features'. The regression tests show that voting and conversion rights are negative and significant. This means that MRPS with voting and conversion rights are more equity-like securities. Kimmel and Warfield (1995) denote that the attributes comprised in MRPS are important to explain their market perception. The version of the model above (depicted in equation 29) that includes 'no equity features' as attributes within coefficient a_4 is most debt-like and has the largest explanatory power, compared to MRPS with voting and/or conversion rights.

[60] The results of the regressions were controlled for correlations between the included variables.

Finally, Kimmel and Warfield (1995) have found evidence on differences between the market perception of MRPS across utilities and non-utilities. The research results reported above are also applicable to utilities: there is an "inverse relationship" between MRPS and the beta for systematic risk (β_s) (i.e. MRPS is perceived as equity). However, MRPS with voting and conversion rights (equity features) are neither regard as equity nor as liabilities. Therefore, the mitigating effect of voting and conversion rights on MRPS' perceived systematic risk is restricted to non-utilities. Kimmel and Warfield (1995) make clear that "this finding is not unexpected since utility issues have lower incidence of equity features".

In conclusion, MRPS do –on average– not affect systematic risk similar to liabilities, but somewhere between equity and liabilities. Voting and conversion rights, cause that MRPS' effect on systematic risk is similar to equity. However, the effect of voting and conversion rights is restricted to non-utility firms in the sample. Following Kimmel and Warfield (1995), financial statement information is useful if items within one class of the balance sheet (e.g. debt) have "similar economic substance". In fact of their heterogeneous characteristics, the dichotomous classification model is less useful with regard to reporting about hybrid instruments, specifically MRPS. Further, the authors indicate that it will be difficult to develop a useful classification model that "reflects the economic substance of these securities" (Kimmel and Warfield, 1995)[61].

The results of Kimmel and Warfield (1995) are useful to this thesis. It delivers empirical material to answer the seventh sub question: *What is the economic substance of MRPS?* In general, MRPS are neither regard as equity nor as liabilities. The equity attributes *conversion rights* and *voting rights* influence the economic substance. There is some variation between the results of the utility sub sample and the non-utilities sub sample. As will be discussed in chapter 5, the research methods of Kimmel and Warfield (1995) will be used in this thesis, and therefore, this study is the centre of attention for this thesis.

3.7.2 Cheng, et al. (2003)

Cheng, et al. (2003) have performed a quite similar investigation to Kimmel and Warfield (1995), discussed above. However, the main differences are that the first article (Cheng, et al., 2003) involves a broad range of securities, and includes –besides the systematic risk analysis, as discussed and used by Kimmel and Warfield (1995)– an analysis that uses the relationship between firms' claims and their equity prices[62]. The latter analysis is called valuation analysis. Both analyses are deemed to be complementary to each other. Simply, Cheng, et al. (2003) state that if common stockholders regard MRPS (or MRPS attributes) as liabilities, then the relation of MRPS with systematic risk and prices, should equals the relation between liabilities and their systematic risk and prices. The results show that MRPS is neither

[61] This is because hybrid instruments are difficult to classify and summarize within one category, whatever classification model. Therefore, "the quasi-equity approach has similar limitations to those of the dichotomous model, only a lesser degree: use of the quasi-equity approach may still summarize securities with quite different economic substance within the same classification" (Kimmel and Warfield, 1995).
[62] The reason is explained later on.

regard as equity nor as liabilities, and hence, a classification as 'quasi-equity' reflects MRPS' economic substance (as reflected in MRPS' association with systematic risk and prices).

Firstly, Cheng, et al. (2003) give some background and motivation to their research. Important aspects in the discussion are that only if "the securities summarized within a particular classification have similar economic substance" the information provided by the balance sheet will be useful (Cheng, et al., 2003). However, it is difficult to develop a classification model, wherein classes on the balance sheet fully coincide the economic substance of items summarized within the classes. Besides, the authors denote that the economic substance of MRPS might be affected by context-specific factors, such as firm size, industry membership, and the health of the financial position. Finally, the discussion is closed by the statement that the dichotomous classification model probably leads to misclassification of MRPS, compared to the MRPS' economic substance. This is what is argued by Hopkins (1996): he confirms that the classification of MRPS influences the pricing process of MRPS by buy-side analysts, and hence, if (e.g.) MRPS are classified as liabilities, but the economic substance is equal to equity, then analysts might misprice MRPS.

As mentioned, Cheng, et al. (2003) use a systematic risk and valuation analysis. The systematic risk analysis is already explained within the treatment of the article of Kimmel and Warfield (1995) above. Therefore, this analysis will not be repeated. However, the valuation analysis is not discussed earlier. This analysis uses the relation between firms' claims and prices. This relation can be written as (Cheng, et al., 2003):

$$\text{Price} = f\,(\text{Assets, Debt, Other Claims}) \qquad (30)$$

Price is the market value of common stock at a specific moment. Price is the residual of net assets minus total assets (deducted with all other financial claims) (Cheng, et al., 2003). Other claims are minority interests, preferred stock, and trust preferred stock and MRPS.

2.617 firms listed on NYSE and AMEX were included in the sample, and the analyses comprise data during the 1993-1997 period. In the valuation analysis, 6.727 firm-year observations were used. The systematic risk analysis includes 1.770 firm-year observations. Data is obtained from Compustat and CRPS databases.

Systematic risk is measured by a regression of weekly returns on common stock and the return on the NYSE/AMEX index (using a one-factor market model). Operating risk is approximated by the 'accounting beta': this beta is derived from a regression of firms' accounting returns (EBIT divided by total assets at the beginning of the period) and the returns of S&P 500 firms. Capital structure variables were derived from Compustat (the same variables are derived in the same way as Kimmel and Warfield (1995), mentioned above) as well as the tax rate, ROA (return on assets), common stock outstanding, and the market value of

stock. The confidence level was 99 per cent. Besides, the research results were controlled for firm size, performance, and bond rating[63].

The descriptive statistics indicate that the mean weekly beta of the sample firms is 0.996. This means that the sample is representative for the systematic risk of the entire market (which amounts to 1). Systematic risk is controlled for firm size: large firms have a beta of 0.934 and small firms 1.084. On average, MRPS comprise 1.2 per cent of the market value of common stock.

The first analysis performed (systematic risk analysis), can be captured by the following equation (Cheng, et al., 2003):

$$Beta_{i,t} = \alpha_1 OP_i + \alpha 2 OP_i \frac{(1-\tau i,t) Debti,t}{MVi,t} + \alpha_3 OP_i \frac{MIi,t}{MVi,t} + \alpha_4 OP_i \frac{(1-\tau i,t) TPSi,t}{MVi,t} + \alpha_5 OP_i \frac{RPFDi,t}{MVi,t} + \alpha_6 OP_i \frac{PFDi,t}{MVi,t} + v_{i,t} \quad (31)$$

Where:

$Beta_{i,t}$	= firm i's systematic risk at moment t (regressed by weekly firm beta and NYSE/AMEX beta)
α	= regression coefficients
OP_i	= firm i's operating risk measure
$\tau_{i,t}$	= applicable tax rate (tax expense divided by EBT) of firm i during period t
$Debt_{i,t}$	= firm i's total liabilities deducted by minority interests
$MV_{i,t}$	= market value of common equity of firm i on moment t
$MI_{i,t}$	= minority interests of firm i on moment t
$TPS_{i,t}$	= firm i's trust preferred stock on moment t
$RPFD_{i,t}$	= firm i's redeemable preferred stock on moment t
$PFD_{i,t}$	= firm i's total amount of preferred stock on moment t, excluding redeemable preferred stock
$v_{i,t}$	= regression error term of firm i on moment t

The results of the systematic risk analysis show –on average– a positive but insignificant regression coefficient of MRPS[64]. This means that the effect of MRPS on firms' systematic risk is neither equal to equity nor to liabilities. This is in accordance with the results of Kimmel and Warfield (1995). Besides, Cheng, et al. (2003) have found that MRPS cause an increase of systematic risk within large firms (i.e. MRPS issued by large firms are regard as more debt-like) and cause a decrease of systematic risk within small firms (and therefore, are more equity-like). However, one should note that these coefficients are insignificant, and hence, neither viewed as equity nor as liabilities.

The second analysis performed (valuation analysis), can be captured by the following equation (Cheng, et al., 2003):

[63] In this thesis, only the control variable for firm size is discussed. The other two control variables were used by Cheng, et al. (2003) in a discussion about convertible preferred stock, which falls out of the scope of this thesis.

[64] Cheng, et al. (2003) have compounded an additional sub sample for the analyses. The sub sample contains only firms that did not issue debt-securities in addition to non-debt securities. This is dictated by earlier research (Frischmann and Warfield, 1999) that indicates that "preferred stock and other hybrids can be issued as substitutes for either debt or equity depending on economic incentives faced by the firm" (Cheng, et al., 2003). The authors argue that the results of this sub sample provides "less ambiguous evidence on the economic substance of these securities [hybrid securities concerned in the study: trust preferred stock, common preferred stock, MRPS, et cetera]". In general, the results of this sub-sample are similar to the results discussed below.

$$MV_{i,t} = \alpha_1 AT_{i,t} + \alpha_2 Debt_{i,t} + \alpha_3 MI_{i,t} + \alpha_4 TPS_{i,t} + \alpha_5 RPFD_{i,t} + \alpha_6 PFD_{i,t} + \alpha_7 NI_{i,t} + (\alpha_8 NI * Pos_{i,t}) * \alpha_9\left(\frac{1}{NAi,t}\right) + v_{i,t} \quad (32)$$

Where:

$MV_{i,t}$	= market value of common equity of firm i at moment t
$\alpha_{1\text{-}9}$	= regression coefficients
$AT_{i,t}$	= firm i's total assets at moment t
$Debt_{i,t}$	= firm i's total liabilities deducted by minority interests at moment t
$MI_{i,t}$	= firm i's minority interests on moment t
$TPS_{i,t}$	= firm i's trust preferred stock on moment t
$RPFD_{i,t}$	= firm i's redeemable preferred stock on moment t
$PFD_{i,t}$	= firm i's total amount of preferred stock at moment t, excluding redeemable preferred stock
$NI_{i,t}$	= firms i's net income during period t
$NA_{i,t}$	= book value of firm i's net assets on moment t
$Pos_{i,t}$	= dummy variable, takes the value one if firm i's net income is positive during year t
$v_{i,t}$	= regression error term of firm i on moment t

The reason why Cheng, et al. (2003) use the valuation analysis lies in the fact that the systematic risk analysis contains two limitations: the proxy for risk (beta) may not be sufficient to completely assess the risk, and the amount of data needed, will reduce the sample, and hence, the generalizability of the results. In turn, the valuation analysis might be affected by potential measurement errors of accounting variables, conservative accounting, omitted variables, and so on.

The results of the valuation analysis confirm –in general– the results of the systematic risk analysis. However, there are some important differences. For small firms, the MRPS regression coefficient is negative and significant (with a 5 per cent significance level), which means that –on average– MRPS is viewed as more equity-like. For large firms, the MRPS-coefficient is positive and significant, which means that MRPS of large firms is viewed as more like liabilities. Therefore, the results are contradictory when the coefficients are controlled for firm size[65].

In fact of that MRPS is neither viewed as equity nor as liabilities, classification as 'quasi-equity' best reflects the economic substance. However, since SFAS No. 150 and the dichotomous framework, this is no longer optional. As a result, Cheng, et al. (2003) argue in their article that disclosure is "arguably the most effective means of communicating the features relevant to the economic substance of these securities": i.e. with regard to MRPS, the existing dichotomous classification model is less meaningful, and therefore, it will be useful to provide disclosures to users of financial statements about the main features and attributes that MRPS contain.

Like Kimmel and Warfield (1995), the results of Cheng, et al. (2003) are useful to this thesis in fact of that it deliver empirical evidence to answer the seventh sub question: *What is the economic substance of*

[65] The authors give an explanation to this variation: "smaller firms generally have lower accounting return and higher default risk", and therefore "debt holders of small firms are more likely to exercise their option to take over the firm than the debt holders of large firms, so debt and preferred instruments are more equity-like for small firms" (Cheng, et al., 2003).

MRPS? MRPS are neither regard as equity nor as liabilities. Besides, if controlled for firm size, (within the valuation analysis) there is little variation in the market perception of the economic substance of MRPS: for small firms, MRPS is more equity-like, and for large firms, MRPS is more like liabilities. The systematic risk analysis and the valuation analysis show quite similar results, with exception of the control variable size.

3.7.3 Chan and Seow (1997)

Chan and Seow (1997) declare in their paper that they have the objective to investigate the debt and equity characteristics of MRPS. Therefore, they investigate the market perception of MRPS (the economic substance). In addition, they would like to examine in which circumstances MRPS is more like debt or equity. Chan and Seow (1997) use the Emanuel (1983) pricing model.

The Emanuel (1983) pricing model decomposes MRPS return into both equity (or stock) return and debt (or bond) return. The model is depicted as follows (Chan and Seow, 1997):

$$P = {}_{y1}D + {}_{y2}E \qquad (33)$$

Where:

P	= MRPS return
D	= return on debt
E	= return on equity
y1, y2	= relative weights (i.e. firms' debt-equity ratio)

The model means: if y1 = 0, then MRPS is more equity-like, if y2 = 0, MRPS is more liabilities-like. The model above is (empirically) tested by the following regression (Chan and Seow, 1997):

$$P_t = b_0 + b_1D_t + b_2E_t + \varepsilon_t \qquad (34)$$

Where:

P_t	= return on MRPS issued in month t
D_t	= return on a "matched bond issued by MRPS issuer in month t"
E_t	= common stock return of MRPS issuer in month t
b_0	= intercept
$b_{1,2}$	= slope coefficients
ε_t	= error term

The regression above was performed for each MRPS issue included in the sample and 35 monthly returns data were used. Each MRPS issue has its own slope coefficients, and intercept. The returns on equity and debt is used "to surrogate for debt and equity components" of MRPS (Chan and Seow, 1997).

First, it was tested whether the slope coefficients were significant from zero, and therefore, whether MRPS return contains a significant component of equity and/or liabilities (hypotheses 1 and 2). Thereafter, a t-test was performed to assess whether MRPS has a stronger equity or liabilities component (comparison of the slope coefficients, hypothesis 3). Chan and Seow (1997) expect a correlation between the liabilities and equity component within the regression above, and therefore, they compare the marginal contribution (depicted as r^2) of each component (hypothesis 4). The hypotheses are in succession (Chan and Seow, 1997):

H_{01}: $b_1 = 0$

H_{02}: $b_2 = 0$

H_{03}: Standardized b_1 = Standardized b_2

H_{04}: Partial r^2_{bond} = Partial $r^2_{common\ stock}$

Hypotheses 3 and 4 are applied to two subsamples: a high-rated group (low default risk, a healthy financial position) and a low-rated group (high default risk, an unhealthy financial position). These subsamples are composed to investigate whether MRPS is more like liabilities for firms with a good financial position and excellent growth opportunities, and whether MRPS is more equity-like for firms with an unhealthy financial position and therefore high default risk. The subsamples are composed to reach one of the two research objectives: to assess under what conditions is MRPS more equity-like or liabilities-like.

The sample consists of 113 MRPS issues, whereof 72 from utility and 41 from non-utility firms. Firms should be listed on the NYSE or the AMEX. Firms' MRPS issues should be redeemable for cash only and must have a fixed redemption schedule. In addition, MRPS issuers should also have "concurrent outstanding bonds" (Chan and Seow, 1997). Finally, MRPS issues should have at least security data of thirty months.

Contractual terms of MRPS issues were derived from Moody's manuals. The contractual terms show that MRPS mostly do not have voting rights, or low rights. All MRPS issues are cumulative. If there are dividend arrearages (more than four to six consecutive quarters), preferred stockholders of non-utilities are able to elect additional directors to the board, by voting as a block. Within utility firms, "a majority of the board of directors can be elected by the preferred shareholders if dividends are in arrears" (Chan and Seow, 1997). For non-utility issues, the redemption requirements amount to 5 per cent per year of the original amount. For utility issues this amounts 2.5 to 4.0 per cent.

Month-end prices of MRPS, bonds and common stock were obtained from S&P's Daily Stock Price Record or the Dow Jones News/Retrieval Service. Quarterly MRPS dividends were obtained from Moody's Bond Record. Monthly bond prices come also from Moody's Bond Record. The bid price is used for non-trading bonds. If the bid price was not available, the ask price is used. Matched bonds were selected, based on two criteria: bonds with the highest trading frequency and the bond with the "longest time-to-maturity', if there are more than one bond with the same frequency (Chan and Seow, 1997). Bond returns are computed as the percentage of the difference between the bond price on moment t-1 and moment t. Common stock data is derived from the CRPS database.

The descriptive statistics show higher mean net sales, total assets, and market value of equity for non-utility MRPS issuers. However, the mean book value of equity is lower for non-utilities. The debt-equity ratio (which is central to this thesis) amounts to 5.33 for non-utility and 1.95 for utility MRPS issuers. However, if financial institutions were excluded from the non-utility sample, the debt-equity ratio will

decrease to 2.25. Finally, non-utility firms have a higher mean market-to-book value of equity: 0.9301 compared to 0.7914 for utilities. The authors argue that this higher value implies that utility firms do have lower opportunities to growth than non-utility firms.

The regression results (see regression in equation 34) show an average adjusted r^2 of 0.2277 and 0.2254 for non-utility and utility firms respectively, which are statistically significant. This means that the regression model declares 22.77 (22.54) per cent of the dispersion of MRPS returns (P_i). Both slope coefficients (b_1 and b_2) were statistically different from zero, and are therefore meaningful within the prediction of MRPS returns (i.e. MRPS have both equity and liabilities characteristics). The t-test shows that b_1 (the debt component within the regression) statistically dominates b_2 (the equity component). In addition, the mean partial r^2 of matched bonds compared to the mean partial r^2 of common stock are statistically different. The correlation test of b_1 an b_2 shows a negative correlation: the equity component increases when the liabilities component decreases, and vice versa. The results were controlled for heteroskedasticity[66] and autocorrelation[67].

A comparison between non-utility MRPS issuers and utility MRPS issuers shows that the equity component dominates the liabilities component for non-utilities and vice versa for utilities. This is in accordance with the (general) thought that non-utilities have larger opportunities to growth than utilities[68] (Chan and Seow, 1997).

In addition, a comparison between high- (low default risk) and low-rated (high default risk) firms is performed. Firms with a rating of BAA or above were grouped as high-rated. The results show that for high-rated firms within the non-utility subsample MRPS returns are more like liabilities. For low-rated non-utility issuers, MRPS returns are more equity-like. For the utility subsample the same holds. Chan and Seow (1997) note that "as a MRPS issuer approaches default, the value of the MRPS becomes more correlated with common stock prices".

[66] Heteroskedasticity means that the standard deviation of the error term, ε_t, has no standard value for each value of the dependent value in the regression, P_t (see equation 34) (Kennisbankstatistiek.net, 2010).

[67] Autocorrelation "measures the strength of the linear relationship between successive values of the same variable" (Alwan, et al., 2007, p. 762).

[68] Furthermore, Linn and Pinegar (1988) argue for other explanations for the fact that MRPS are more liabilities-like within utilities. They investigate the relationship between industry, the type of preferred stock issued, and the effects on common and preferred stockholders. It is confirmed that preferred stock (including MRPS) of utilities is regard as more liabilities-like. This is because of that utilities mingle in a regulatory environment, in which they should reveal much more information about preferred stock (including MRPS), and hence, Linn and Pinegar (1988) find that MRPS issues of utilities typically are anticipated in stock prices of outstanding stock. In fact of that non-utilities reveal much more new information in case of MRPS issues (on the moment just before the issuance), a significant stock price reaction is expected. In addition, utilities "resort to the market frequently and are closely scrutinized by regulatory bodies", which implies that it is more likely that information about MRPS is earlier available, and hence, MRPS issuances are anticipated (Linn and Pinegar, 1988). Moreover, generally, preferred stock of utilities have higher rates (lower default risk) compared to stock of non-utilities. This is consistent with the fact that more information about the value of utilities is available (due to the regulatory environment), and that "utility issues are less sensitive to firm value changes and probably less likely to be mispriced" (Linn and Pinegar, 1988). One can conclude that MRPS of utilities are less risky than non-utilities MRPS, in fact of that there is no or less information asymmetry. Therefore, preferred stockholders regard utility-MRPS as more liabilities-like.

In conclusion, Chan and Seow (1997) deliver empirical evidence on the economic substance of MRPS. The utilities and non-utilities sub samples show opposite results: for utilities, MRPS are more equity-like, and for non-utilities, MRPS are more debt-like. If controlled for default risk, the results show that MRPS of high-rated firms are more liabilities-like as compared to MRPS of low-rated firms. With these results in mind, one is able to answer the seventh sub question: *What is the economic substance of MRPS?*

3.7.4 Conclusion

This paragraph deals with the seventh sub question: *What is the economic substance of MRPS?* The articles included in this paragraph deliver empirical material to answer this question. In general, the results show that MRPS is neither regard as equity nor as liabilities. However, when controlled for industry membership (utility or non-utility) the results show some variation. Also when controlled for firm size (only in valuation analysis) and default risk, the results exhibit some degree of variation.

3.8 The influence of MRPS' classification on the market perception of MRPS' economic substance

This paragraph tries to find an answer on the eighth sub question: *Is the market perception of MRPS' economic substance guided by MRPS' classification?* Different classifications may lead to diverse judgments by various parties: stockholders, business valuation analysts, creditors, et cetera.

3.8.1 Hopkins (1996)

Hopkins (1996) investigates whether the classification of hybrid instruments influences stock price judgments of financial analysts (buy-side). The author argues that prior psychological research have shown that individuals judge decision-relevant information by 'activating prior knowledge'. Therefore, if balance sheet classification is used to interpret information, then the classification of MRPS as equity, as 'quasi-equity' or as liabilities should affect the common stock price judgment (Hopkins, 1996)[69].

Buy-side financial analysts are questioned to estimate common stock prices of a firm with MRPS classified into three different categories: equity, 'quasi-equity', and liabilities (individual analysts are included in one of the three subsamples). The price prediction task should be accompanied by a written explanation of the prediction. Also a "postexperiment questionnaire" is taken.

Hopkins (1996) assumes a decline of stock prices when firms issue additional equity, and no decline in the common stock market value by issuing straight debt (e.g. bank loans). Therefore, he develops the hypothesis: "financial analysts will predict a lower price for a company's outstanding common stock when the company offers MRPS classified as owners' equity as compared to when the company offer MRPS classified as a liability" (Hopkins, 1996). When MRPS is classified as 'quasi-equity', the stock price judgment will be somewhere between the judgments of MRPS as liabilities and equity.

[69] According to Hopkins (1996), "knowledgeable users of accounting information (e.g. financial analysts) likely use balance sheet classification when comprehending and processing financial statement information".

38 buy-side analysts participated in the study, of which 72 per cent were Chartered Financial Analyst (CFA). The participants were "recruited" from the Association for Investment Management and Research Membership Directory (AIMR) of 1995 (Hopkins, 1996). The data of the hypothetical company were based on an actual AMEX-listed firm (the firm was selected by searching in the Compustat database for firms with MRPS).

The results show that there is a significant difference (t-test) between judged stock prices of MRPS classified as equity and as liabilities (the judged stock price if MRPS is classified as equity is lower). This means that the mentioned hypothesis cannot be rejected[70]. Analysts in the MRPS-mezzanine subsample do not judge the stock price exactly between that of the MRPS-equity and the MRPS-liabilities subsample. The results present that, within the process of stock price predictions, analysts in the MRPS-mezzanine subsample are more guided by MRPS' attributes, while analysts in the MRPS-equity or MRPS-liabilities subsample are more guided by MRPS' classification (Hopkins, 1996).

The postexperiment questionnaire indicates that analysts use MRPS' classification to interpret whether MRPS are equity or liabilities. This is done by asking to calculate the debt-equity ratio: analysts in the MRPS-equity subsample[71] mostly include MRPS in equity part of the debt-equity ratio and analysts in the MRPS-liabilities subsample mostly includes MRPS in the liabilities part of the debt-equity ratio. In addition, the researcher asked the analysts to scale the MRPS somewhere on an 11-point scale "anchored by the endpoints traditional non-convertible bond (0) and traditional common stock (10)". The results show that analysts in the MRPS-liabilities subsample regard MRPS as more liabilities-like and analysts in the MRPS-equity subsample regard MRPS as more equity-like.

Hopkins' article (1996) is useful to this thesis, in fact of that it shows that a reaction of common stockholders on the required rate of return to MRPS' reclassification by SFAS No. 150 will be plausible (despite the Efficient Market Hypotheses). This paper is therefore relevant and useful, otherwise (without an expected reaction), this thesis has less adding value, since the research question reads like: *To what extent is there a relationship between the introduction of SFAS No. 150 and the level of the required rate of return on US listed common stock?*

3.8.2 Bishop, et al. (2005)

In their paper, Bishop, et al. (2005) examine the value relevance of the classification of financial instruments to investors. The authors researched the New Zealand accounting environment. During their research period, firms classify financial their instruments as equity, liabilities or as 'quasi-equity'[72].

[70] Also, when controlled for the level of analysts' debt-equity knowledge, the results are the same (moreover, the difference between low and high debt-equity knowledge analysts is more significant) (Hopkins, 1996).
[71] The analysts in this subsample got financial statements in which MRPS were classified as equity.
[72] This was possible in fact of that the choice to prepare financial statements in accordance to New Zealand GAAP or IFRS was voluntary. Within the reporting regimes, different classifications were permitted. However, since 2007, New Zealand has adopted IFRS entirely, and hence, preparing financial statements following IFRS is mandatory.

However, as mentioned, in 2003, IAS 32 is introduced, which requires to classify hybrid instruments as liabilities.

In Appendix VI, the empirical model tested is attached. The model implies that if the slope coefficients are significant, they are relevant, and "the information is incremental to that which is available from BVE [equity's book value]" (Bishop, et al., 2005). Firms listed on the New Zealand Stock Exchange and 58 convertible issues[73] are included in the sample (46 firms and 160 firm years[74]).

With regard to the regression, both CLASSD and CLASSO (convertibles classified as debt and as 'quasi-equity', respectively) are negative and significant (at a 5 per cent significance level), which means that convertibles classified as liabilities or as 'quasi-equity' are regard as liabilities. CLASSE (convertibles classified as equity) is strongly positive and significant (at .000), which means that investors regard convertibles classified as equity as "being a form of equity" (Bishop, et al., 2005). The model explains 80.7 per cent of market value variation (r^2 amounts to .807). In conclusion, there is a significant association between market value and the classification of convertibles. Bishop, et al. (2005) declare that the results suggest that "investors may be influenced by the manner in which information [is] presented to them in the financial statements".

The conclusion drafted by Bishop, et al. (2005) is relevant to this thesis, in fact of that it shows that after SFAS No. 150 (reclassification of MRPS), a change of the market perception of MRPS' economic substance might be expected. This thesis tries to measure the effect of the introduction of SFAS No. 150 on the required rate of return on common stock: based on the results of Bishop, et al. (2005), this figure might be affected.

3.8.3 Conclusion

The articles included in this paragraph deliver empirical evidence to answer the eighth sub question: *Is the market perception of MRPS' economic substance guided by MRPS' classification?* Based on the results, the market perception of MRPS' economic substance seems to be guided by their classification. Therefore, the required rate of return on common stock potentially exhibit adjustments due to SFAS No. 150. This is related to the research question: *To what extent is there a relationship between the introduction of SFAS No. 150 and the level of the required rate of return on US listed common stock?*

3.9 The influence of SFAS No. 150 on the use of MRPS as financing instrument

After all, it is interesting to investigate whether, after SFAS No. 150, MRPS are still preferably as financing instrument as compared to pre-SFAS No. 150. This paragraph tries to answer the ninth sub question: *Has the use of MRPS declined after the introduction of SFAS No. 150?*

[73] The authors use the term 'convertible instruments', but they include redeemable hybrid instruments in their investigation (e.g. MRPS).
[74] The sample selection criterion is that firms should issue at least one convertible instrument during the research period 1988 to 2002.

3.9.1 Levi and Segal (2006)

In their paper, Levi and Segal (2006) try to find an answer to the question whether firms' financing choices alter across different reporting regimes. They focus on managers' reporting incentives to issue MRPS rather than straight debt. Levi and Segal (2006) make clear that prior to SFAS No. 150, managers used MRPS "to facilitate, among other things, classification of the new financing as a non-liability". It is found that after SFAS No. 150 reporting incentives to issue MRPS rather than straight debt do not exist anymore. This is in fact of that, under SFAS No. 150, it is no longer permitted to classify MRPS as equity or 'quasi-equity'. The results hold after controlling for different tax incentives and other factors driving firms' choice for issuing MRPS or debt (interest rates, market conditions, size, industry, et cetera).

208 firms are included in the sample. Data are derived from the Compustat database. The research period covers 1981 to 2004 and is divided in a pre-SFAS No. 150 period (1981-2002) and a post-SFAS No. 150 period (2003 and 2004). The sample firms were listed on either the NYSE, as the AMEX, as the NASDAQ, with exclusion of ADRs[75] and banks.

The results[76] show that firms with high debt-equity ratios before the introduction of SFAS No. 150 are inclined to issue MRPS rather than debt, and vice versa. After the introduction of SFAS No. 150, this was no longer the case: both firms with high as firms with low debt-equity ratios issue MRPS.

Levi and Segal (2006) suggest that the FASB tries "to identify regimes that will mitigate the role of reporting incentives in firms' financing decisions" and, with regard to MRPS, SFAS No. 150 "will sever the link between reporting incentives and the decision to issue the securities". The results of Levi and Segal (2006) show that the FASB's attempt to mitigate reporting incentives in firms' financing decisions is successful.

Although the results of Levi and Segal (2006) indicate that the use of MRPS has declined after SFAS No. 150, MRPS remain to be interesting to investigate. As earlier mentioned, MRPS is a representative of other hybrid instruments included in SFAS No. 150.

3.9.2 Conclusion

Levi and Segal (2006) found that the use of MRPS has declined after SFAS No. 150. This is because managers' reporting incentives to issue MRPS do not longer exist due to the introduction of SFAS No. 150. These results answer the ninth sub question of this thesis: *Has the use of MRPS declined after the introduction of SFAS No. 150?* Since the results of Levi and Segal (2006) are known, this thesis remains interesting in fact of that MRPS are representative for other hybrid instruments included in SFAS No. 150.

[75] ADRs are introduced to the financial market in 1927. An American Depository Receipt can be defined as a stock that trades in the United States, but represents stock of a foreign firm (SEC.gov, 2010).
[76] The research model is included in Appendix VII.

3.10 Conclusion

In short, this chapter reveals that SFAS No. 150 means that MRPS should be classified as liabilities. In many cases, this requires a shift of MRPS from equity or 'quasi-equity' to the liabilities section on the balance sheet. SFAS No. 150 has a broad scope, which includes various financial instruments (including MRPS). The features *avoidability, residual nature,* and, *control over the firm*, cause different perceptions on how to treat and to regard MRPS: as equity, 'quasi-equity', or as liabilities. The relations between leverage, firms' perceived systematic risk, their required rate of return on common stock, and stock prices have been empirically confirmed. It is found that SFAS No. 150 has led to an increase of the debt-equity ratio. Following the aforementioned relationship, it is thought that SFAS No. 150 has had an increasing effect on firms' perceived systematic risk, and their required rate of return on common stock (*ceteris paribus*). However, this depends on the market perception of MRPS' economic substance. Research results show that, before the issuance of SFAS No. 150, MRPS are neither regard as equity nor as liabilities (but as 'quasi-equity'). Moreover, the results show that the market perception of MRPS' economic substance is guided by MRPS' classification. Finally, it is showed that the use of MRPS has declined after SFAS No. 150.

This thesis uses the relationships between leverage, firms' perceived systematic risk, and the required rate of return on common stock (as described and confirmed in the afore discussed papers) in the context of the issuance of SFAS No. 150. The research question reads as *To what extent is there a relationship between the introduction of SFAS No. 150 and the level of the required rate of return on US listed common stock?* Since the market perception of MRPS is guided by their classification, it is expected that SFAS No. 150 has led to a higher required rate of return. Particularly, Kimmel and Warfield's article (1995) is the centre of attention in the rest of this thesis, in fact of that it uses quite similar methods to measure MRPS' effect on systematic risk (chapter five elaborates the research methods).

4. Hypotheses development

In this chapter, the tenth sub question will be answered: *What hypotheses can be developed?* Based on the discussed theory in the literature review (the third chapter), the hypotheses belonging to this thesis will be introduced.

4.1 Hypothesis I

Kimmel and Warfield (1995), Cheng, et al., (2003) and Chan and Seow (1997) show that, before SFAS No. 150, MRPS neither are regard as equity nor as liabilities by common stockholders. As mentioned, SFAS No. 150 requires a reclassification of MRPS from equity or 'quasi-equity' to the liabilities section of firms' balance sheet[77]. This means an increase of leverage.

The literature review has already show empirical evidence that higher leverage causes higher perceived systematic risk (Hamada, 1972; Hill and Stone, 1980; Bowman, 1979). In fact of MRPS' shift to the liabilities section of firms' balance sheet, it could be expected that firms are subjected to higher levels of perceived systematic risk after SFAS No. 150, *ceteris paribus*. However, the arising question is whether and to what extent financial statement users are guided by MRPS' balance sheet classification to assess MRPS' riskiness. Hopkins (1996) and Bishop, et al. (2005) confirm that financial statement users are guided by the balance sheet classification, and therefore, one could expect that they adjust their perception of MRPS' riskiness accordingly with MRPS' reclassification (despite EMH[78]). In conclusion, one could expect an increasing effect of MRPS' reclassification on firms' perceived systematic risk, *ceteris paribus*. This leads to the following null- and alternative hypotheses[79]:

H I:	H_0 : MRPS' reclassification had no or a decreasing effect on firms' perceived systematic risk
	H_a : MRPS' reclassification had an increasing effect on firms' perceived systematic risk

4.2 Hypothesis II

In the literature, one has confirmed that firms' perceived systematic risk is positively related to the required rate of return on common stock (Fama and French, 2004). First, this relation was captured by CAPM. The first version of CAPM was introduced by Sharp and Lintner in 1964-65. They found that firms' perceived systematic risk is positive linearly related to the required rate of return (Pettengill, et al., 1995). Therefore, since an increase of firms' perceived systematic risk is expected after MRPS' reclassification (SFAS No. 150), also an increasing effect of SFAS No. 150 on firms' required rate of return on common stock is expected, *ceteris paribus*. This is tested by the following hypotheses:

[77] As mentioned in sub paragraph 3.2.1, depending on MRPS' classification before the issuance of SFAS No. 150.
[78] See paragraph 1.7.
[79] According to Babbie (2007, p. 48), a null hypothesis is a hypothesis that "suggests there is no relationship among the variables under study".

H II:	H_0 : MRPS' reclassification had no or a decreasing effect on firms' required rate of return on common stock H_a : MRPS' reclassification had an increasing effect on firms' required rate of return on common stock

The first hypothesis will be tested by using the regression model of Kimmel and Warfield (1995), as discussed in the literature review. The second hypothesis is tested by using CAPM. Both models will be discussed in the next chapter, which deals about the research design of this thesis.

4.3 Conclusion

In conclusion, this thesis includes empirical research about the effect of MRPS' reclassification on firms' perceived systematic risk (hypothesis I) and their required rate of return (hypothesis II). Following the literature discussed in the literature review of this thesis, it could be expected that null hypothesis I will be rejected and an increasing effect on firms' systematic risk will be found. Is this the case, then it is theoretically plausible to expect also an increase effect on firms' required rate of return, *ceteris paribus* (i.e. reject null hypothesis II). If, based on the research results, null hypothesis I should be accepted, then, it is expected that the contradictory results as compared to above will be found: i.e. if null hypothesis I should be accepted then it is theoretically plausible that also null hypothesis II should be accepted, *ceteris paribus*.

5. Research design

5.1 Introduction

This chapter will elaborate on the research design of the empirical research in this thesis. Therefore, this chapter answers the eleventh sub question: *What research model(s) can be used to answer the research question?* At first, models that will be used to test hypothesis I will be discussed. Also the way to measure each variable included in the model will be discussed. After that, the (empirical testable) variables belonging to the hypotheses shown in chapter four will be included. Paragraph two discusses the aforementioned issues in relation to hypothesis II. Thirdly, the underlying thought of the relation between risk and return will pass in review. Fourthly, the sample selection will be discussed. Finally, the limitations of the used models in this thesis will be discussed.

5.2 Testing hypothesis I

In this paragraph, the selection of the model to test hypothesis I, as depicted in the fourth chapter, will be discussed. After that, the way to measure the variables included in the model will pass in review. Finally, hypothesis I from chapter four will be depicted in a testable form (the variables to test are denoted). Null hypothesis I was described as: MRPS' reclassification had no or a decreasing effect on firms' perceived systematic risk. The alternative hypothesis is: MRPS' reclassification had an increasing effect on firms' perceived systematic risk.

5.2.1 Model selection

As already mentioned, the first hypothesis will be tested by using the empirical regression model of Kimmel and Warfield (1995), as described in sub paragraph 3.7.1 (equation 28). The model of Kimmel and Warfield (1995) is based on a systematic risk analysis, which uses the relation between leverage and perceived systematic risk to measure the economic substance of (hybrid) instruments (i.e. how hybrid instruments are regarded: as liabilities or as equity or somewhere between them). This relation is widely used in the existing literature (e.g. Hamada, 1972; Hill and Stone 1980; Bowman, 1979; Cheng, et al., 2003, et cetera).

An additional test, the valuation analysis as used by Cheng, et al. (2003) (see sub paragraph 3.7.2), will not be performed. The literature review has already discussed the pros and cons of valuation analysis as compared to systematic risk analysis: the main deficiency of systematic risk analysis is that the proxy for risk (beta) may not be sufficient to completely assess the risk. However, valuation analysis also has various disadvantages: the valuation analysis might be affected by conservative accounting, potential measurement errors of accounting variables, omitted variables, earnings management, and so on (Cheng, et al., 2003). Balancing the pros and cons of valuation analysis, it was decided to use (merely) systematic risk analysis. However, the cons of systematic risk analysis will not be denied. An important factor in the decision making process is that this thesis mainly uses the study of Kimmel and Warfield (1995). They use

merely systematic risk analysis. To maximize the comparability of the research (results) of this thesis with Kimmel and Warfield's study (1995), the methods of the latter study will be followed. Moreover, a short review of the literature shows that it is common practice to use systematic risk analysis.

A second alternative research model is the Emanuel pricing model (1983), as used by Chan and Seow (1997) (see sub paragraph 3.7.3). This model divides MRPS' value into an equity and debt component. To 'surrogate' for the equity component, common stock values are used, and to 'surrogate' for the debt component, 'matched bonds' are used. However, it is not fully clear what 'matched bonds' are, and therefore, the selection of 'matched bonds' will be subjective. It is desirable to avoid subjectivity, and hence, the pricing model will not be used.

The empirical regression model of Kimmel and Warfield (1995) is depicted as follows:

$$\beta_s = a_0 + \sum SIC_{DUM} + \sum YEAR_{DUM} + a_1OP + a_2(OP \bullet D) + a_3(OP \bullet MRPS) + \varepsilon$$

Where:

β_s	= systematic risk
a_0	= intercept
a_{1-3}	= slope coefficients
SIC_{DUM}	= dummy for industry membership
$YEAR_{DUM}$	= dummy for each year in the research period
OP	= measure of operating risk, β_0
D	= book value of debt divided by MVE
MRPS	= book value mandatorily redeemable preferred stock divided by MVE
MVE	= market value of common stock plus book value of perpetual preferred stock
ε	= error term

According to Kimmel and Warfield (1995), if MRPS' coefficient, a_3, is positive (and significant), MRPS have increasing impact on firms' perceived systematic risk, which means that they are regarded as liabilities (liabilities enhance the market perception of firms' riskiness (Hamada, 1972; Hill and Stone, 1980; Bowman, 1979)). In contrary, a negative (and significant) coefficient means that MRPS are regarded as equity, reducing firms' perceived systematic risk. An insignificant coefficient means that MRPS are regarded somewhere between liabilities and equity, as 'quasi-equity'. How MRPS are regarded (as equity, as 'quasi-equity', or as liabilities) is called MRPS' economic substance.

5.2.2 Variable measurement

Measuring systematic risk (β_s)

Firms' betas will be calculated by using single regressions (Alwan, et al., 2007, p. 576-578). According to Hill and Stone (1980), beta is the systematic sensitivity of firms' returns to market returns, and can be expressed as follows:

$$\beta_s = Cov(r_i, r_M) / Var(r_M)$$

Where:

$Cov(r_i, r_M)$	= covariance of returns on stock i and market returns
$r_{M,t}$	= market returns during period t

$r_{i,t}$ = returns on stock i during period t
$Var(r_M)$ = variance of market returns

This equation can be rewritten as (Van Aalst, et al., 1996, p. 62):

$$\beta_s = Cov(r_i, r_M) / \sigma^2(r_M)$$

Where:

$\sigma^2(r_M)$ = squared standard deviation of market returns (similar to $Var(r_M)$)

According to Van Aalst, et al. (1996, p. 62), covariance is the degree of coherence between two securities: one can think of returns on stock i and market returns. This can be expressed as the correlation coefficient, ($r_{M,i}$) (Van Aalst, et al., 1996, p. 208):

$$\rho(r_{M,i}) = \frac{1}{\sigma(r_M)} * \frac{1}{\sigma(r_i)} * \frac{1}{n-1} * \sum(r_{M,t} - r_{M,average}) * \sum(r_{i,t} - r_{i,average})$$

Where:

$\sigma(r_M)$ = standard deviation of market returns
$\sigma(r_i)$ = standard deviation of stock returns
n = number of sample years
$r_{M,average}$ = average market returns
$r_{i,average}$ = average returns on stock i

Finally, Van Aalst, et al. (1997, p. 62) summarize the relation between beta, covariance, standard deviation and correlation coefficient as follows:

$$\beta_s = \frac{Cov(r_M, r_i)}{\sigma^2(r_M)} = \frac{\sigma_M \sigma_i \rho(r_M, r_i)}{\sigma^2(r_M)} = \frac{\sigma(r_i)}{\sigma(r_M)} \rho(r_M, r_i)$$

The equation above measuring firms' perceived systematic risk will be used in this thesis. For each sample year, the beta will be computed. Now, it has to be explained how the returns and their standard deviations will be computed.

Daily market returns will be derived from Compustat. Actually, the average market returns, $r_{M,average}$, and its standard deviation, $\sigma(r_M)$, will be computed as (Alwan, et al., 2007, p. 31, 41):

$$r_{M,average} = (r_{M,1} + r_{M,2} + r_{M,3} + \dots r_{M,n}) / n$$

$$\sigma(r_M) = \sqrt{\frac{1}{n-1} \sum(r_{M,t} - r_{M,average})^2}$$

Returns on firm i's stock can be computed as (Van Aalst, et al., 1996, p. 43):

$$r_{i,1} = (P_1 - P_0) / P_0$$

Where:

$r_{i,1}$ = return on stock i during period 1
P_1 = stock price on moment 1 (i.e. end of period 0), inclusive of distributions
P_0 = stock price on moment 0

For the sample firms, the daily stock returns will also be derived from Compustat[80]. The average stock returns, $r_{i,average}$, and its standard deviation, $\sigma(r_i)$, will be computed as (Alwan, et al., 2007, p. 31, 41):

$$r_{i,average} = (r_{i,1} + r_{i,2} + r_{i,3} + \dots r_{i,n}) / n$$

$$\sigma(r_i) = \sqrt{\frac{1}{n-1} \sum (r_{i,t} - r_{i,average})^2}$$

Measuring operating risk (OP)

Kimmel and Warfield (1995) estimate operating risk (OP or β_0) by using an 'accounting beta'. This beta is estimated "from a regression of firm earnings yield (income before interest and taxes divided by assets) on market earnings yields"[81] (Kimmel and Warfield, 1995). Therefore, in this thesis, firms' operating risk (OP) will be obtained by using the following equation (Van Aalst, et al., 1996, p. 62):

$$OP = \frac{Cov(AE_M, AE_i)}{\sigma^2(AE_M)} = \frac{\sigma_M \sigma_i \rho(AE_M, AE_i)}{\sigma^2(AE_M)} = \frac{\sigma(AE_i)}{\sigma(AE_M)} \rho(AE_M, AE_i)$$

Where:

Cov	= covariance between market accounting earnings and firm i's accounting earnings
AE_M	= market yearly accounting earnings (value weighted average of accounting earnings)
AE_i	= firm i's yearly accounting earnings (income before interest and taxes divided by beginning-of-period total assets)
$\sigma^2(AE_M)$	= standard deviation of market accounting earnings
$\sigma^2(AE_i)$	= standard deviation of firm i's accounting earnings
$(r_{M,i})$	= correlation coefficient of market accounting earnings and firm i's accounting earnings

Firms' earnings yields and market earnings yields will be derived from Compustat. In accordance to Kimmel and Warfield (1995), the yearly earnings yields will be used. Only firms will be included in the sample, whereof at least ten years of accounting earnings are available[82]. This is in accordance with Kimmel and Warfield (1995) and is used to avoid potential bias in the measurement of the operating risk proxy. If more than ten years of accounting earnings are available, the operating risk proxy will be estimated based on the last ten years.

Measuring capital structure variables (D, MRPS)

Debt will be measured by the book value of total debt at fiscal year-ends (derived from Compustat) divided by the market value of common stock (closing stock prices, derived from Compustat) plus the book

[80] Firm years with less than 20 daily returns will be deselected from the sample. This is to provide a reliable estimation of firms' returns and their beta.

[81] Kimmel and Warfield (1995) explain that they use the natural log of operating risk (OP or β_0) to "mitigate the potential impact of the skewed nature of the distribution for this variable", however, this does not result in great differences compared to the regression results without logs.

[82] In fact of that the research period chosen in this thesis is only eight years, for measuring accounting earnings proxy, the period will be extended (1987-2007), which is in accordance with Kimmel and Warfield (1995).

value of perpetual preferred stock (derived from Compustat) at fiscal year-ends[83]. MRPS will be excluded from the value of debt, which is in accordance with Kimmel and Warfield (1995). Since firms receive a tax shield for using debt, this tax shield will be excluded from the value of debt[84].

MRPS will be measured as the book value of MRPS (derived from Compustat) divided by the market value of common equity (closing stock prices, derived from Compustat) plus the book value of perpetual preferred stock (derived from Compustat), all at fiscal year-end (Kimmel and Warfield, 1995)[85].

Measuring regression coefficients (SIC_{DUM} and $YEAR_{DUM}$)

To control for industry differences, the regression includes a dummy variable for industry. This is because there may be variation in operating characteristics across industries, and hence, in operating risk, which influences firms' systematic risk (Cheng, et al., 2003; Kimmel and Warfield, 1995; et cetera). The descriptive statistics present the different industries included in the sample. All firms have a SIC-code in Compustat. The first digit of this code is used to fill in for the industry dummy variable. The year dummy contains the year(s) the firms will be included in the research period (1999-2007). The latter dummy is to control for year-to-year differences (Cheng, et al., 2003; Kimmel and Warfield, 1995).

Measuring regression coefficients (a_{0-3} and ε)

The regression coefficients will be (automatically) measured by using the statistical software of SPSS. All the variables described above will be inserted in SPSS, and then, a multiple regression will be processed in SPSS. The multiple regression will be processed for each fiscal-year.

5.2.3 Statistical tests and empirical hypotheses

Firstly, the suitability of the regression model that will be used in this thesis for testing hypothesis I should be proved. It will be considered whether the model is suitable to explain the sample firms' perceived systematic risk (β_s). Then, it will be determined whether the slope coefficient with regard to MRPS is significant to explain the sample firms' perceived systematic risk. Finally, the null hypothesis and the alternative hypothesis depicted under I in chapter 4 will be tested by comparing the regression coefficient a_3 before and after the issuance of SFAS No.150 (Alwan, et al., 2007, p. 434). The key steps of the test procedures are included in Appendix VIII.

The empirical testable hypotheses are:

[83] According to Kimmel and Warfield (1995), the book values of debt and preferred stock will be used, in fact of the "unavailability of market value data", and in fact of that perpetual preferred stock is included in the denominator, it is assumed that this stock have the same riskiness as common stock.

[84] This will be done by multiplying the value of debt with 1-tax rate. The applicable tax rate is for each fiscal year determined by dividing income tax expenses by pretax income (like Kimmel and Warfield, 1995).

[85] Kimmel and Warfield (1995) declare that they use the natural log to "mitigate the potential effects of extreme values on regression estimates", however, this does not result in great differences compared to the regression results without logs.

A: Testing whether the model is suitable:

$H_0 : a_0 = a_1 = a_2 = a_3 = 0$ (model has no explanatory value)

H_a : at least one slope coefficient ≠ 0

B: Testing the significance of the regression coefficient a_3:

Hypotheses:

$H_0 : a_3 = 0$ (coefficient has no explanatory value)

$H_a : a_3 \neq 0$

C: Testing the effect of MRPS' reclassification on firms' systematic risk:

Hypotheses:

H_0 : $_{post}a_3$ minus $_{pre}a_3$ = ≤ 0 (MRPS' reclassification had no or decreasing effect on firms' perceived systematic risk)

H_a : $_{post}a_3$ minus $_{pre}a_3$ = > 0

Where:

$_{post}a_3$ = slope coefficient after the introduction of SFAS No. 150
$_{pre}a_3$ = slope coefficient before the introduction of SFAS No. 150

5.3 Testing hypothesis II

In this paragraph, the selection of the model to test hypothesis II, as depicted in the fourth chapter, will be discussed. After that, the way to measure the variables included in the model will pass in review. Finally, hypothesis II from chapter four will be depicted in a testable form (the variables to test are denoted). Null hypothesis II was described as follows: MRPS' reclassification had no or a decreasing effect on firms' required rate of return on common stock. The alternative hypothesis is: MRPS' reclassification had an increasing effect on firms' required rate of return on common stock.

5.3.1 Model selection

The empirical model that will be used, is CAPM. The first version of CAPM was introduced by Sharp and Lintner in 1964-65. They found that firms' perceived systematic risk is positive linearly related to the required rate of return (Pettengill, et al., 1995).

During the existence of CAPM, many expansions on the Sharp-Lintner CAPM version (1964-65) and other pricing models were developed (such as the Three Factor Model (Fama and French, 2004), the Arbitrage Pricing Theory (Ross, 1976), et cetera). Similar to CAPM, all these models have also empirical failings and problematic assumptions. The variables added to the Sharp-Lintner CAPM version were proved to be time bounded, which means that they do not always have explanatory value (Feiger and Shojai, 2010). Examples of such variables are size, book-to-market ratios, debt-equity ratios, et cetera (Fama and

French, 2004). In their opinion and according to the majority of the literature, Feiger and Shojai (2010) think that the Sharp-Lintner CAPM "is the most brilliant model". Feiger and Shojai (2010) indicate that "all current pricing models fail both as empirically useful tools and in terms of their underlying logic relative to observed asset-price behavior". In paragraph 5.6, limitations of CAPM will be further discussed. In conclusion, available literature convinced that the Sharpe-Lintner CAPM is the best model to explain firms' perceived systematic risk and returns. Hence, the latter model will be used in this thesis.

The CAPM regression is captured by the following equation (Fama and French, 2004):

$$r_i = b_0 r_f + b_1 [ß_s (r_M - r_f)] + \varepsilon$$

Where:

r_i	= firm i's required rate of return on common stock
b_0	= regression intercept
b_1	= regression slope coefficient
r_f	= risk free rate (rate of return on risk free Treasury bills)
β_s	= measure of the volatility of firm i's stock returns as compared to market returns
r_M	= market return
ε	= error term

CAPM declares that investors require a "risk premium" for excess risks above risk free investments (Fama and Fench, 2004). Therefore, according to Fama and French (2004), "the expected return on any asset i [or stock] is the risk-free interest rate, r_f, plus a risk premium, which is the asset's market beta, β_s, times the premium per unit of beta risk, r_M-r_f".

The CAPM model above is related to Kimmel and Warfield's regression model (1995) used for testing hypothesis I, because both models use the same variable for firms' systematic risk, β_s.

5.3.2 Variable measurement

Measuring required rate of return on common stock (r_i)

Returns on firm i's stock can be computed as (Van Aalst, et al., 1996, p. 43):

$$r_{i,1} = (P_1 - P_0) / P_0$$

Where:

$r_{i,1}$	= return on stock i during period 1
P_1	= stock price on moment 1 (i.e. end of period 0), cum dividend
P_0	= stock price on moment 0

The required rate of return will be derived from Compustat. Similar to the returns needed for estimating firms' beta, daily returns will be used[86].

Measuring risk free rate (r_f)

[86] Firm years with less than 20 daily returns will be deselected from the sample. This is to provide a reliable estimation of firms' returns.

In this thesis, the risk free rate, r_f, will be derived from Compustat; this is the monthly rate on Treasury bills in the United States of America. The risk free rate will be derived from the Fama and French database.

Measuring systematic risk (β_s)

How to calculate β_s is already explained in sub paragraph 5.1.2.

Measuring market return (r_M)

How to calculate r_M is already explained in sub paragraph 5.1.2.

Measuring regression coefficients ($b_{0\text{-}1}$ and ε)

The regression coefficients will be (automatically) measured by using the statistical software of SPSS. All the variables described above will be inserted in SPSS, and then, a single regression will be processed in SPSS. The single regression will be processed for each fiscal-year.

5.3.3 Statistical tests and empirical hypotheses

Firstly, the suitability of the regression model that will be used in this thesis for testing hypothesis II should be proved. It will be considered whether the model is suitable to explain the sample firms' required rate of return on common stock (r_i). Then, it will be determined whether the slope coefficient for beta is significant to explain the sample firms' required rate of return on common stock. Finally, the null hypothesis and the alternative hypothesis depicted under II in chapter 4 will be tested by comparing the regression coefficient a_3 before and after the issuance of SFAS No.150 (Alwan, et al., 2007, p. 434). The key steps of the test procedures are included in Appendix VIII.

The empirical testable hypotheses are:

A: Testing whether the model is suitable:

$H_0 : b_0 = b_1 = 0$ (model has no explanatory value)

H_a : at least one slope coefficient $\neq 0$

B: Testing the significance of the regression coefficient a_1:

Hypotheses:

$H_0 : b_1 = 0$ (coefficient has no explanatory value)

$H_a : b_1 \neq 0$

C: Testing the effect of MRPS' reclassification on firms' required rate of return on common stock:

Hypotheses:

H_0 : $_{post}r_i$ minus $_{pre}r_i$ = ≤ 0 (MRPS' reclassification had no or decreasing effect on firms' required rate of return on common stock)

H_a : $_{post}r_i$ minus $_{pre}r_i$ = > 0

Where:

$_{pre}r_i$ = required rate of return on common stock before the issuance of SFAS No. 150
$_{post}r_i$ = required rate of return on common stock after the issuance of SFAS No. 150

5.4 The underlying thought

Both models discussed in this chapter assume a positive relation between firms' perceived systematic risk (beta) and their required rate of return on common stock. The underlying thought of the positive relation between both figures is actually based on the market model of Markowitz. Markowitz's model explains the relation between the expected returns on investment and their standard deviation (Fama and French, 2004). Investors select investments that deliver the highest return as compared to the volatility of the expected returns (risk). Therefore, it is assumed that investors are *risk averse*, which means that they require more return if risk increases (Fama and French, 2004). This is in accordance with what CAPM declares: investors require a "risk premium" for excess risks above risk free investments (Fama and Fench, 2004). Therefore, according to Fama and French (2004), "the expected return on any asset i [or stock] is the risk-free interest rate, r_f, plus a risk premium, which is the asset's market beta, β_s, times the premium per unit of beta risk, r_M-r_f".

5.5 Sample

The sample will be drawn from US public firms with outstanding MRPS in the period June 15, 1999 to June 14, 2007, identified by Compustat[87] [88]. The sample period will be divided into two sub periods: one period before the issuance of SFAS No. 150, June 15, 1999 to June 14, 2003, and one period after SFAS No. 150, June 15, 2003 to June 14, 2007. As mentioned in the introduction of this thesis, a sub sample period of four years is chosen to eliminate potential effects of the financial crisis (commencing in 2008 until today) on the research results. Naturally, only firms of which the data needed is available will be included in the sample.

In accordance to Kimmel and Warfield (1995), the sample selection will be limited to firms with a December 31 fiscal-year end, and without changes in fiscal year-ends. This is because some figures (e.g. accounting beta as a proxy for operating risk) will be simultaneously computed with the December 31 fiscal-year end.

[87] No specific index will be chosen, but the starting point will be Compustat: to include as much as possible firms in the sample, no index criterions are stated. The choice to use merely one database is pragmatic: no adjustments need to be made due to congruence of the definitions of the variables needed.

[88] At least 15 firms should be included in the sample to be able to make statistically justified inferences (Alwan, et al., 2007, p. 437). However, according to Alwan, et al. (2007, p. 437), "in the presence of outliers or strong skewness" this sample size is not sufficient. It would be better to have at least 40 firms in the sample: then the tests are large enough to use, "even for clearly skewed distributions" (Alwan, et al., 2007, p. 438).

Like Kimmel and Warfield (1995), to improve the reliability of the research results, firm years with less than twenty daily stock returns will be excluded, as well as firms with less than ten years of accounting earnings available in Compustat.

As mentioned, sample firms will be divided into industries, classified by SIC-codes. This is to control for industry differences that might have impact on the analyses of the sample results[89]. At the same time, the sample firms will be divided into the categories 'MRPS-equity', 'MRPS-quasi-equity', and 'MRPS-liabilities' to control for the effect of MRPS' classification before the issuance of SFAS No. 150. Therefore, firms with MRPS classified as equity before SFAS No. 150, will be categorized within the subsample 'MRPS-equity', and so on. The 'MRPS-liabilities' category is a control group: firms included in this category have not reclassified their MRPS after the issuance of SFAS No. 150, so within this 'sub sample' no effect after SFAS No. 150 is expected. The results of this control group will be compared with the other two sub samples (MRPS-equity and MRPS-quasi-equity), to investigate the influence of MRPS' pre-SFAS No. 150 classification on firms' perceived systematic risk.

5.6 Limitations and recommendations

This paragraph will discuss limitations of the systematic risk analysis (the regression model of Kimmel and Warfield, 1995), CAPM, and a general limitation of the research design. After that, recommendations for further research will be given. Therefore, this paragraph answers the twelfth sub question: *What are the limitations of this study and recommendations for further research?*

5.6.1 Systematic risk analysis

Cheng, et al. (2003) give two limitations of systematic risk analysis: the proxy for risk (beta) may not be sufficient to completely assess the risk, and the amount of data needed, will reduce the sample, and hence, the generalizability of the results. Cheng, et al. (2003) therefore use another analysis, namely valuation analysis. In fact of that valuation analysis also has disadvantages, it will not deliver much more improvement (the author refers to sub paragraph 3.7.2 for a discussion of this analysis). It was decided to use (merely) systematic risk analysis to maximize the comparability of this thesis to the study of Kimmel and Warfield (1995), which is the focus of this thesis. However, the cons of systematic risk analysis will not be denied. Moreover, a short review of the literature shows that it is common practice to use systematic risk analysis.

Further, the underlying thought of systematic risk analysis (a positive relation between beta and the required rate of return on common stock), as mentioned in paragraph 5.4, also have various limitations. However, in fact of that CAPM is based on the same underlying thought, this limitations will be discussed in the next sub paragraph.

[89] This control is explained in paragraph 3.7.

Thirdly, in this thesis, one will not account for low trading frequencies/volumes of stock, which influences the daily stock returns. Within CRPS, it is not possible to derive data about trading frequencies, and hence, this will not be done.

Fourthly, it is decided to use the methods of Kimmel and Warfield (1995). However, the analysis of chapter seven describes that firms' financial healthiness might have impact on the regression results. Since not is controlled for firms' financial healthiness, whether and to what extent this has effect on the regression results remains an open empirical question, and is recommended to further investigate in future research.

Finally, the empirical research does not control for whether the systematic risk has changed market wide on the date of the issuance of SFAS No. 150, June 15th, 2003, due to other factors than the aforementioned statement issuance. This can also be applied on potential market wide changes of firms' required rate of return on common stock (which is measured by CAPM).

5.6.2 CAPM

According to Fama and French (2004), there are several (empirical) limitations to the CAPM-model, which will be used in this thesis. However, it is "the centerpiece of MBA investment courses. Indeed, it is often the only asset pricing model taught in these courses", and "CAPM is nevertheless a theoretical tour de force" (Fama and French, 2004).

As mentioned earlier, during the existence of CAPM, several asset pricing models have been developed, but –similar to CAPM– all these models have empirical failings and problematic assumptions. In their opinion and according to the majority of the literature, Feiger and Shojai (2010) think that the Sharp-Lintner CAPM version is the best asset pricing model, although it is not always a good tool to use in practice. Feiger and Shojai (2010) indicate that "all current pricing models fail both as empirically useful tools and in terms of their underlying logic relative to observed asset-price behavior". This is firmly expressed, but the authors try to indicate a gap between theoretical models and the reality. Below, the author of this thesis declares important CAPM limitations and –if possible– how will dealt with these empirical implications.

Firstly, it is thought that CAPM is not well-specified for predicting returns in economic prosperity and adversity: CAPM (a rational, theoretical model) may predict other expected returns than actually will be earned. Investors are likely to overreact in predominant bad or good times (Fama and French, 2004). This overreaction can be characterized as irrational behavior[90]. However, it is not clear whether CAPM fails or whether investors behave irrational. Fama and French (2004) states about this that in truth, "one can't tell whether it is the result of irrational pricing or a misspecified asset pricing model".

[90] Krishnan and Laux (2005) consider over- and underreactions as market inefficiencies, see also paragraph 1.7.

Secondly, although beta (risk) and returns are important within investment decisions, investors may also deliberate other factors, such as labor income, future investment opportunities, et cetera, which are not included in CAPM (Fama and French, 2004). Fama and French (2004) reasoning further by claiming that "return variance misses important dimensions of risk". Therefore, beta is not a complete measure of firms' systematic risk, and hence, CAPM is incomplete to explain differences in returns by beta[91]. An example delivers Botosan's study (1997), which shows empirical evidence that –besides computed firms' betas– the level of disclosure "explains variation in cost of equity capital" (i.e. explains variation in return on equity). Botosan (1997) argues that "as a result, the CAPM approach provides no role for disclosure level, unless one assumes cross-sectional variation in disclosure level induces variation in beta, a notion that has no theoretical support".

Moreover, CAPM concerns the association between firms' perceived systematic risk and their required rate of return on common stock: when stockholders earn relatively low returns on specific stock, they would like to buy other stock that have a similar risk level but higher returns (this phenomenon is often called the efficient allocation of equity). However, in accordance to Van Aalst, et al. (1996, p. 18), this evaluation of risk and return, is a merely financial-economic consideration. Many other considerations should be taken into account when one evaluates practical cases (such as political and social considerations) and/or investment decisions. A pure financial judgment applies within the financial context, but is therefore not applicable in all contexts (or all practical cases). Moreover, the concerns about the association between risk and return can be extended. It is not ruled out that the capital market does not use the financial statements (financial-economic consideration) to assess the risks belonging to any firm. This study assumes that the capital market uses the financial statements to assess firms' perceived systematic risk and their required rate of return, however, it is conceivable that the capital market uses the financial statements only partly, or perhaps, not at all. In addition, this study assumes that the capital market uses both firms' financial statements and the belonging notes. However, it is not very clear to what extent the capital market uses the notes added to the statements (this is a 'value relevance question'). In fact of that this question is out of the scope of this study, this assumption is posit and not further investigated for its accuracy.

Thirdly, to determine stock beta, the volatility of stock returns as compared to the market returns should be measured. However, it is not very clear what is meant by 'the market' within CAPM (Fama and French, 2004). In this thesis, it is assumed that the market is limited to US stock markets. However, this is a very narrow view of 'the market': also other US-indexes can be included. Moreover, it is also legitimate to

[91] Cheng, et al. (2003) state the same: "the risk measure (market beta) used in systematic risk analysis may not be a sufficient measure for risk". Therefore, they use a valuation analysis as complement to the systematic risk analysis. However, the valuation analysis is not beatific "because of potential measurement errors in accounting variables, omitted variables, and conservative accounting" (Cheng, et al., 2003). Balancing the pros and cons of systematic risk and valuation analysis, it was decided to merely use the systematic risk analysis in this thesis.

include bonds, other financial assets, and as argued by Fama and French (2004), "consumer durables, real estate and human capital".

Fourthly, in fact of differences of sample firms' characteristics, it might be possible that the results are distorted. Fama and French (2004) have scrutinized the literature about empirical implications of CAPM. They found that researchers have added several variables to CAPM in order to control for influences of firm characteristics on sample results (as result of heteroskedasticity and autocorrelation). These are industry effects, period influences[92], high/low beta firms, high/low debt-equity ratio firms, high/low book-to-market ratio firms[93]. Over time, it is shown that the added variables, have little or no additional explanatory value for expected returns (that are computed by CAPM) (Fama and French, 2004).

This thesis uses industry segmentation. As a result, much of the problems, mentioned in the sub section above, were mitigated or solved.

Finally, many assumptions are made for using CAPM (see Appendix X). These assumptions make CAPM a theoretically model that is difficult to apply in practice. Fama and French (2004) mainly criticize the assumption underlying to market efficiency[94] (one can borrow and lend unrestricted against the risk free rate, short selling is unrestricted, and complete agreement between investors: homogeneous expectations). However, Fama and French (2004) subsequently state that "all interesting models involve unrealistic simplifications, which is why they must be tested against data". After all, they write that the Sharpe-Lintner CAPM "is nevertheless a theoretical tour de force", and "we continue to teach the CAPM as an introduction to the fundamental concepts of portfolio theory and asset pricing" (Fama and French, 2004).

5.6.3 General limitation research design

The issuance of the Exposure Draft of SFAS No. 150 and the announcement of the statement itself could have an immediate effect on the required rate of return on common stock (assuming a semi-strong efficient capital market)[95]. However, this will not be measured in this thesis. An event study focusing on the issuance date of the Exposure Draft and on the announcement date of the issuance of SFAS No. 150 could be an idea for future investigation.

[92] Period influences are associated with autocorrelation between successive values (the value of (e.g.) β_t is dependent of the value of β_{t-1}).
[93] Extreme values (high or low ratios) influences residual values within the CAPM regression: e.g. this results for stock with high beta values in too high predicted returns within CAPM, and for stock with low beta values in too low predicted returns within CAPM (Fama and French, 2004).
[94] This means that within CAPM the efficient stock or portfolios should be on the minimum variance frontier and that differences in expected returns fully can be explained by differences in betas: other variables have no explanatory value (Fama and French, 2004).
[95] The issuance date was October 27, 2000 and the announcement date was at the end of 2002 (FASB, 2003).

5.6.4 Recommendations for further research

(1) Further research should assess to what extent firms' perceived systematic risk is captured by the beta proxy that is used in this thesis. (2) Besides, comparable research should find a tool to control for stock with low trading frequencies/volumes. (3) Including a control group in the sample will be valuable to control for other fluctuations (i.e. market wide changes) of firms' perceived systematic risk and their required rate of return on common stock on the issuance date of SFAS No. 150. (4) It might be interesting to further investigate the effect of firms' financial healthiness on the regression results, since this might affect the results. (5) Moreover, the proxy for firms' perceived systematic risk should be further scrutinized on whether it is a complete measure for firms' perceived systematic risk: possibly other factors does count. (6) Since CAPM captures a narrow view of the assessment of the required rate of return, it is recommended to broaden the focus of the study from a purely financial-economic trade-off between risk and required return to a 'more-dimensional' study that includes both financial and non-financial aspects. (7) Further, it is recommendable to use a model for testing the second hypothesis that is capable for indicating whether common stockholders regard MRPS as equity, as 'quasi-equity', or as liabilities. (8) Moreover, an event-study is recommended for further research. Then, it is possible to control for stockholder reactions on the issuance date of the Exposure Draft of SFAS No. 150 and the announcement of the statement itself. (9) Finally, the role of the use of firms' financial statements and their notes should be more thoroughly investigated, since this might have effect on the capital market perception of MRPS' economic substance. Some discussion is presented in sub paragraph 7.2.2.5.

5.7 Conclusion

This chapter answers the eleventh and twelfth sub question: *What research model(s) can be used to answer the research question?* and *What are the limitations of this study and recommendations for further research?* Firstly, the empirical models that will be used in this thesis to test each hypothesis are discussed. Also the way to measure the variables needed is discussed. Moreover, the empirical testable hypothesis are drawn. After that, paragraph three explains the underlying thoughts of systematic risk analysis and CAPM. Fourthly, the sample selection has passed in review. Fifthly, the limitations of systematic risk analysis, CAPM and general limitations are discussed. Finally, recommendations for further research are given. With this research design, one is able to answer the research question belonging to this thesis. Now, the next chapter proceeds with the data collection.

6. Statistical results

6.1 Introduction

This chapter deals with the retrieved empirical data belonging to the performed regression tests that are discussed in the last chapter. Hence the thirteenth and the fourteenth sub question will be answered in this chapter: *What is the effect of the introduction of SFAS No. 150 on firms' systematic risk?* and *What is the effect of the introduction of SFAS No. 150 on the required rate of return on common stocks?* Firstly, the results for hypothesis I will be discussed. The discussion will be divided into three parts: the statistical results for the total sample, the results for the pre-SFAS No. 150 sample (data before June 15th, 2003), and the results for the post-SFAS No. 150 sample (data after June 15th, 2003). This will also be done for the discussion with regard to hypothesis II. The statistical tests presented in sub paragraph 5.1.3 and 5.2.3 will not be discussed in exact order as in the mentioned sub paragraphs, but will be dealt with 'between the lines' (the conclusion of this chapter discusses the statistical tests as presented in the mentioned sub paragraphs). Ultimately, this chapter closes with a conclusion.

6.2 Evaluating statistical results hypothesis I

This paragraph is organized as follows: firstly the regression model will be depicted (1). Then, the descriptive statistics (2) will pass in review. Thereafter, the data will be investigated on whether there are outliers (3), on normality (4), heteroskedasticity (5), autocorrelation (6), multicollinearity (7), and the suitability of the regression model in this study (8). The mentioned items will in succession be discussed for the total sample, the pre-SFAS No. 150 sub sample, and the post-SFAS No. 150 sub sample. The total sample is included in this discussion for evaluating the 'quality' of the sample.

6.2.1 Regression model I

Regression model I is already depicted in chapter five, but will be depicted again for readers' understanding. The first regression model is the regression model as used by Kimmel and Warfield (1995). This model is depicted as follows:

$$\beta_s = a_0 + \sum SIC_{DUM} + \sum YEAR_{DUM} + a_1 OP + a_2(OP \bullet D) + a_3(OP \bullet MRPS) + \varepsilon$$

Where:

β_s	= systematic risk
a_0	= intercept
$a_{1\text{-}3}$	= slope coefficients
SIC_{DUM}	= dummy for industry membership
$YEAR_{DUM}$	= dummy for each year in the research period
OP	= measure of operating risk, β_0
D	= book value of debt divided by MVE
MRPS	= book value mandatorily redeemable preferred stock divided by MVE
MVE	= market value of common stock plus book value of perpetual preferred stock
ε	= error term

6.2.2 Total sample

6.2.2.1 Descriptive statistics

The sample is drawn from firms with outstanding MRPS sometime during June 15th, 1999 until June 15th, 2007. The data are retrieved from the Compustat Global database. The table below shows the amount of sample firms. This study starts with 937 sample firms. Ultimately, 215 firms remain.

Firms used in tests										
	Total	**SIC**								
		1	2	3	4	5	6	7	8	9
Firms with MRPS outstanding in 1999-2007 and December fiscal year ends	**937**	38	165	195	167	47	113	154	48	10
Insufficient data for estimating accounting betas	**-626**	-19	-119	-154	-78	-25	-84	-118	-25	-4
Insufficient data for estimating systematic risk	**-74**	-3	-11	-8	-20	-11	-8	-8	-4	-1
Insufficient capital structure data for regressing for systematic risk	**-22**	-2	-2	0	-13	0	0	-1	0	-4
Amount	**215**	**14**	**33**	**33**	**56**	**11**	**21**	**27**	**19**	**1**

Table 6.1 *Sample decomposition*

In general, firms excluded from the sample because of insufficient data to estimate accounting betas, do have lesser than ten years of EBIT available in Compustat. Therefore, for these firms it was not possible to estimate an operating risk beta. Firms that are excluded because they have not sufficient data for estimating systematic risk, do not have enough stock prices and/or returns available in Compustat to reliably estimate firms' systematic risk. For firms with insufficient capital structure data, the book value of debt and/or common preferred stock, and the market value of equity was not available. However, these variables are necessary when using the regression model of Kimmel and Warfield (1995).

All sample firms classify their MRPS as equity or as 'quasi-equity'. Hence, no MRPS-liabilities sub sample is scrutinized in this study. In first instance, it was thought to design three sub samples for firms with MRPS classified as equity, as 'quasi-equity', and as liabilities, respectively. This was mainly designed in order to assess whether the beta of the liabilities sub sample would have not changed by SFAS No. 150. This was thought because SFAS No. 150 has not prescribed a shift for these firms in fact of that these firms already classified their MRPS as liabilities. Now, the sample firms are combined in one sample. Indeed: both firms classifying MRPS as equity and firms classifying MRPS as 'quasi-equity' should reclassify their MRPS, and hence, are expected to suffer an increase of their beta. So, it is justified to aggregate the MRPS-equity and MRPS-'quasi-equity' sub sample in one sample. Therefore, only one sample is discussed in the following analyses.

The descriptive statistics are showed by the following SPSS-output.

Descriptive statistics	
	Mean
Beta	0,776034
OP	0,940053
Debt	4,230783
MRPS	0,162411

Table 6.2 *Descriptive statistics*

Where:

Beta = firms' systematic risk
OP = measure of operating risk, β_0
D = book value of debt divided by MVE
MRPS = book value mandatorily redeemable preferred stock divided by MVE
MVE = market value of common stock plus book value of perpetual preferred stock

The table above shows averages of variables used in this study. Firstly, beta shows an average of 0.776034 (a minimum of -2.19 and a maximum of 3.02), which means that on average the sample firms' returns move in the same direction as the market returns, albeit less severe. Kimmel and Warfield (1995) have found an average value of 0.82. Therefore, the results with regard to this variable are quite similar (disregarding potential effects on the results due to dissimilar research periods, sample selection, et cetera).

Operating risk amounts on average to 0.940053, which means that, like beta, the sample firms' operating results move in the same direction as the market operating results. In addition, the fluctuations of the sample firms' operating results take the same value as compared to the fluctuations of the market operating results since sample firms' operating risk approximately equals the market's operating risk (this variable amounts to 1). The average operating risk with regard to the sample firms included in Kimmel and Warfield's study (1995) amounts to 2.15. Hence, there exists a difference of 1.21. This difference can be declared by the effects of differences in the research periods, the sample selections, et cetera (see sub paragraph 7.2.2.3). Moreover, Kimmel and Warfield (1995) use natural logs and add a constant for negative values of operating risk (OP) to mitigate the effect of potential skewed data, which potentially declares the difference between this study and the investigation of Kimmel and Warfield (1995). Since it was not possible to add a constant for negative values, natural logs were not used in this study.

As earlier mentioned, Debt is computed as firms' book value of debt divided by firms' market value of equity plus the book value of (common) preferred stock. Now, the sample firms' debt variable takes on average the value 4.230783. Therefore, the sample firms finance their business activities with four times debt as compared to their market values of equity plus their (common) preferred stock book values. Kimmel and Warfield (1995) have found a value of 5.12. This means that the firms included in their sample, on average, finance their business activities with debt five times as compared to the market values of

equity plus the book value of (common) preferred stock. These values are quite high. Perhaps the market values of equity are relatively low in Kimmel and Warfields sample period, and hence the denominator within the formula of the debt-equity ratio is low, which results in a high debt-equity ratio. However, this is not researched in fact of that this out of the scope of this study.

MRPS is computed as firms' book value of MRPS divided by firms' market value of equity plus the book value of (common) preferred stock. The value in the table means that the sample firms, on average, finance their business activities with 16.2411 per cent MRPS. At the first glance this percentage seems quite high, since Levi and Segal (2006) have observed an average of 1.2 per cent during the period 1999 to 2004 (they defined this ratio as 'MRPS as % of total financing'). However, contrary to this study, Levi and Segal (2006) have included *all* firms listed on the NYSE, AMEX and NASDAQ (with exclusion of ADR's and banks). This study includes merely firms that have listed MRPS, and hence, the difference is explainable. Moreover, the quite high percentage of firms MRPS value as compared to firms' market value of equity and firms' book value of (common) preferred stock is not very surprising since the sample firms have a high debt-equity ratio. Levi and Segal (2006) have found that the issuance of MRPS is a reporting incentive for firms with high debt-equity ratios, since MRPS are liabilities-like financing instruments while they were permitted to be classified as equity or as 'quasi-equity' (before SFAS No. 150).

The SPSS-output of the regression coefficients are included in the table below.

Coefficients[a]

Model		Unstandardized Coefficients		
		B	Std. Error	Sig.
1	(Constant)	,838	,232	,000
	OP	,004	,001	,000
	OPDebt	,000	,000	,054
	OPMRPS	-,003	,002	,012
	Year1	-,563	,064	,000
	Year2	-,313	,064	,000
	Year3	-,279	,064	,000
	Year4	-,332	,064	,000
	Year5	-,245	,064	,000
	Year6	-,023	,064	,717
	Year7	-,051	,064	,428
	Year8	-,010	,064	,878
	SIC1	,258	,234	,269
	SIC2	,111	,230	,629
	SIC3	,275	,230	,233
	SIC4	,107	,229	,641
	SIC5	,136	,237	,564
	SIC6	-,105	,232	,649
	SIC7	,292	,231	,205

SIC8	,007	,233	,976

a. Dependent Variable: Beta

Table 6.3 *SPSS-output regression coefficients total sample*

Where:

OP	= measure of operating risk, β_0
OPDebt	= the interaction between OP and Debt
OPMRPS	= the interaction between OP and MRPS
Debt	= book value of debt divided by MVE
MRPS	= book value mandatorily redeemable preferred stock divided by MVE
MVE	= market value of common stock plus book value of perpetual preferred stock
$Year_{1-8}$	= year dummy variables
SIC_{1-8}	= industry dummy variables
B	= slope coefficient

The remainder of this paragraph is structured as follows: Firstly, the regression model of Kimmel and Warfield (1995) is evaluated on whether it is suitable to test hypothesis I. This is done by using an ANOVA F-test within SPSS (version 18.0). However, before testing the empirical model, various conditions about the data should be met. Field (2009, p. 214-229) mentions some conditions to build an accurate regression model. Two salient questions are posed by Field (2009, p. 214): Does the model fit the data well, or is the model influenced by outliers (some extreme values)?; Are the results of the model generalizable?

6.2.2.2 Outliers

The data should be tested on whether there are outliers. According to Field (2009, p. 215), outliers might bias the regression coefficients of the regression model. So, the effect of the explaining (independent) variables of the regression model of Kimmel and Warfield (1995) might be biased by outliers. Outliers can be discerned by plotting the residuals of the regression model, noting that a large residual might be an outlier (Field, 2009, p. 215) (a residual is the difference between the observed and the expected value). The sample size of this thesis is large enough to minimize the impact of some individual outliers on the scatters of the regression coefficients. The plot of the residuals shows that there are no outliers.

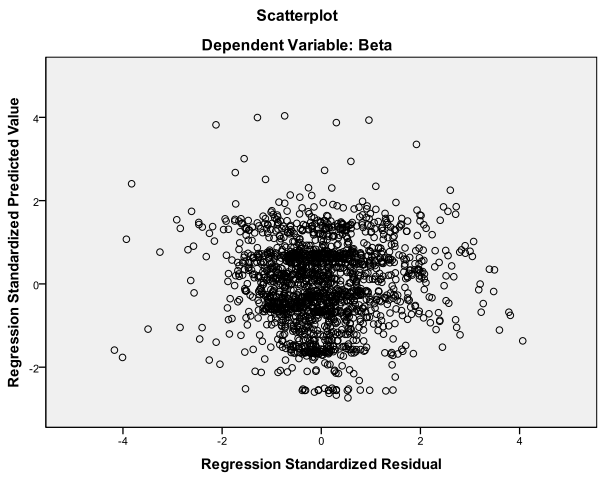

Figure 6.1 *Plot of dispersion of the regression residuals*

Moreover, the Cook's Distance test is performed to evaluate the impact of individual cases. Field (2009, p. 219) prescribes that Cook's Distance should have a maximum of one. Otherwise, the scattered regression coefficients might be biased. The Cook's Distance test shows a maximum of 0.134 for the total sample regression, and hence, one could expect that individual cases have no influence on the regression coefficients.

6.2.2.3 Normality

Firstly, it should be assessed whether or not the residuals of the regression model are normally distributed and take a mean of zero. This means that the observed value of beta (i.e. systematic risk) on average equals the (by the model) predicted value of beta (Field, 2009, p. 221). So, the regression model should be a well defined model that accurately predicts beta. If this is the case, the model is suitable for estimating systematic risk by using the mentioned regression model. In SPSS, the P-P plot gives a view of the distribution of the regression residuals. According to Field (2009, p. 221), to be normally distributed, the residuals should lie near by the diagonal line. The plot shows that this is the case.

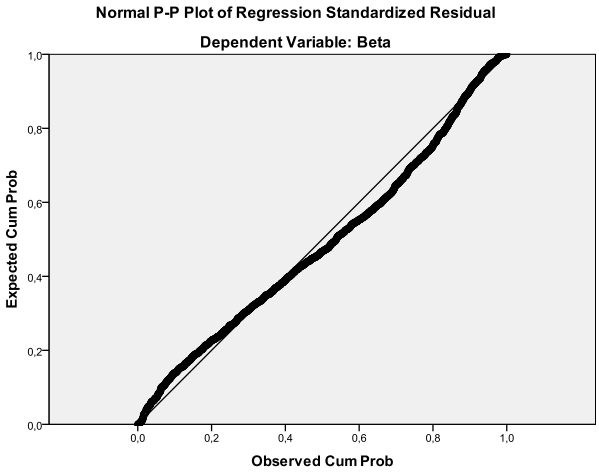

Figure 6.2 *Plot of the normality of the regression residuals*

6.2.2.4 Heteroskedasticity

Secondly, the data should be evaluated on the existence of heteroskedasticity. Heteroskedasticity means that the regression residuals does not take the same size on each level of the independent variables (Kennisbankstatistiek.net 2010). Unfortunately, heteroskedasticity might bias the regression slope coefficients (Pryce, 2002). With SPSS one is able to perform a visual test on heteroskedasticity. This will be done by using a scatterplot again. The X-axis shows ZPRED and the Y-axis shows ZRESID, which means, Z-predicted and Z-residual. The plot is already included in this chapter (figure 6.1). There is evidence for heteroskedasticity if the residual plot "fans out", however, this is not the case with regard to the data of hypothesis I (Pryce, 2002). At short, there is no evidence for heteroskedasticity.

6.2.2.5 Autocorrelation

Thirdly, the data is scrutinized on whether they include autocorrelation. This means that residuals of consecutive (observed) values are not fully independent of each other. To determine autocorrelation within the sample, one can use the Durbin-Watson statistic within SPSS (Alwan, et al., 2007, p. 764 and Field, 2009, p. 220). The value of this test will be shown in a SPSS printout. The Durbin-Watson statistic varies between zero and four (Field, 2009, 220). A statistic above two means a negative correlation between consecutive residuals. Values below two means the opposite. The SPSS-output shows a value of 1.065, which means a positive correlation between adjacent residuals. Field (2009, p. 220) notes that Durbin-Watson values of less than one or higher than three require further investigation. However, the statistic within the sample for hypothesis I is higher than one, and hence, the autocorrelation is not questionable for biasing the research results of this thesis.

6.2.2.6 Multicollinearity

Finally, the data should be checked on multicollinearity. According to Field (2009, p. 225), multicollinearity exists if the independent variables within the regression model are strongly correlated to

each other. The 'risk' of multicollinearity is that one independent variable already contains information included in another independent variable of the regression model. Firstly, the Spearman correlation matrix output of SPSS –which shows the correlations of the independent variables with each other and with the dependent variable– will be discussed.

Correlations

		Beta	OP	OPDebt	OPMRPS
Beta	Correlation Coefficient	1,000	,073**	,050*	-,020
	Sig. (2-tailed)	.	,002	,034	,413
OP	Correlation Coefficient	,073**	1,000	,890**	,493**
	Sig. (2-tailed)	,002	.	,000	,000
OPDebt	Correlation Coefficient	,050*	,890**	1,000	,537**
	Sig. (2-tailed)	,034	,000	.	,000
OPMRPS	Correlation Coefficient	-,020	,493**	,537**	1,000
	Sig. (2-tailed)	,413	,000	,000	.

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 6.4 *SPSS-output correlations*

Where:

Beta	= firms' systematic risk
OP	= measure of operating risk, β_0
OPDebt	= the interaction between OP and Debt
OPMRPS	= the interaction between OP and MRPS
Debt	= book value of debt divided by MVE
MRPS	= book value mandatorily redeemable preferred stock divided by MVE
MVE	= market value of common stock plus book value of perpetual preferred stock

The output shows significant correlations for all variables, with exception of the interaction OPMRPS (operating risk proxy * MRPS), which shows an insignificant interaction with the dependent variable, beta (i.e. firms' systematic risk). Purely statistical, one could state that OPMRPS does not contribute in explaining the variation of beta due to the insignificant correlation. However, this is too straightforward, in fact of that the table above merely shows the correlation of the individual independent coefficients with the dependent variable: the joint correlation of the independent variables with the dependent variable is not included yet. In this context one can refer to table 6.3, which indicates that the interaction OPMRPS certainly has explanatory value. The correlation matrix indicates multicollinearity between operating risk (OP) and its interaction with the book value of debt (OPDebt). This correlation amounts to 0.890 and is significant. For the other variables no multicollinearity is expected, in fact of the modest correlations (with a maximum of 0.537).

To definitively assess whether multicollinearity exists, two indicators can be used, tolerance and Variance Inflator Factor (VIF) (Field, 2009, p. 241). Field (2009, p. 242) mentions the criteria with regard to tolerance and VIF: (1) tolerance scores below 0.2 provide potential disfigurations of the regression results,

(2) tolerance scores below 0.1 certainly provide problems, (3) on average, VIF should be lesser than three, otherwise the regression results might be biased, (4) the highest VIF should not be higher than ten. SPSS delivers the following outputs with regard to tolerance and VIF scores.

Coefficients[a]

Model			Collinearity Statistics	
		Sig.	Tolerance	VIF
1	(Constant)	,000		
	OP	,000	,936	1,068
	OPDebt	,094	,916	1,092
	OPMRPS	,012	,954	1,048
	Year1	,000	,535	1,868
	Year2	,000	,536	1,865
	Year3	,000	,537	1,863
	Year4	,000	,539	1,855
	Year5	,000	,541	1,850
	Year6	,717	,546	1,832
	Year7	,428	,545	1,835
	Year8	,878	,547	1,827
	SIC1	,269	,063	15,871
	SIC2	,629	,034	29,660
	SIC3	,233	,033	30,390
	SIC4	,641	,021	46,905
	SIC5	,564	,089	11,235
	SIC6	,649	,045	22,298
	SIC7	,205	,036	27,859
	SIC8	,976	,051	19,659

a. Dependent Variable: Beta

Table 6.5 *SPSS-output tolerance and VIF-scores*

Where:

OP	= measure of operating risk, β_0
OPDebt	= the interaction between OP and Debt
OPMRPS	= the interaction between OP and MRPS
Debt	= book value of debt divided by MVE
MRPS	= book value mandatorily redeemable preferred stock divided by MVE
MVE	= market value of common stock plus book value of perpetual preferred stock
$Year_{1\text{-}8}$	= dummy variables for year
$SIC_{1\text{-}8}$	= dummy variables for industry
VIF	= variance inflator factor

The table above shows low tolerance and high VIF scores for the dummy variables SIC. This implicate that these variables include very high mutual relationships: the variables include information of each other and/or they contain the same information about the dependent variable, beta. In conclusion,

the dummy variables with regard to SIC are multicorrelated. The other variables are not multicorrelated. Perhaps, it would be better to exclude the dummy variables as a block from the regression model. This is evaluated by comparing the general model with a restricted model, without the SIC dummy variables, which results in the following ANOVA table, indicating whether the null hypothesis should be accepted; the null hypothesis states that the restricted model is valid (i.e. it is justified to omit the SIC-dummy variables from the general model).

ANOVA

Variation	df	SS	MS	F	br≥ *
H0	8	25,793	3,224125	8,382962	3,85
Error	1732	666,135	0,384605		
Total	1740	691,928			

*with df 1, 1732

Table 6.6 *SPSS-output ANOVA F-test*

Where:

H0	= null hypothesis
df	= degrees of freedom
SS	= sum of squares
MS	= mean squares
F	= F-test value
br	= right boarder for test value significance

In fact of that F > br, the null hypothesis should not be accepted: the SIC-dummy variables have significant explaining value within the regression model and cannot be omitted.

6.2.2.7 Suitability of regression model I

Ultimately, it is important to evaluate the entire regression model on whether it accurately explains the dependent variable, beta (i.e. firms' perceived systematic risk). SPSS shows the significance of the regression model by using an ANOVA table. Moreover, the table 'Model summary' shows a R-value. This value indicates the explaining value of the regression model. Three R-values are given in the table, which mean in succession: R shows "the values of the multiple correlation coefficient between the predictors [the independent variables] and the outcome [the dependent variable]", R^2 shows "how much of the variability in the outcome is accounted for by the predictors", and the adjusted R^2 shows how well the model fits the data and is able to generalize the results to the population (Field, 2009, p. 235).

Model Summary[a,b,c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,358[a]	,128	,119	,620164980	1,065

a. Predictors: (Constant), SIC8, Year7, OPMRPS, SIC5, OPDebt, SIC1, Year8, SIC6, Year6, OP, Year4, SIC7, Year1, SIC2, Year5, SIC3, Year3, Year2, SIC4

b. Dependent Variable: Beta

c. Significance is p ,000

Table 6.7 *SPSS-output explanatory value regression model*

As shown, the variability of beta (i.e. firms' perceived systematic risk) is explained for 12.8 per cent by the regression model of Kimmel and Warfield (1995), as included in chapter five. Adjusted for the number of independent variables in the model, the regression model (i.e. the independent variables) declares 11.9 per cent of firms' perceived systematic risk.

SPSS shows an significance of p .000, and hence, the regression model have significant explaining value. Therefore, the conclusion is that the regression model of Kimmel and Warfield (1995) is useful within this sample.

6.2.2.8 Conclusion

The statistical results show that there are no outliers to note in the total sample. The regression residuals are normally distributed, no heteroskedasticity, and also no autocorrelation exists. There is some multicollinearity for the SIC dummy variables. However, it has been tested that these variables cannot be omitted, since they have explanatory value. The regression model is significant, and therefore suitable to use in this study. Now one knows these observations, one is able to analyze the statistical results in a non-numerical way. However, firstly the statistical results of the two sub samples (pre-SFAS No. 150 and post-SFAS No. 150) will be discussed.

6.2.3 Sample pre-SFAS No. 150

The test procedures as described above –when discussing the total sample– will be rehearsed for this sub sample (pre-SFAS No. 150: before June 15th, 2003). The detailed discussions about the test procedures and their belonging thoughts will not be re-examined, but –instead of that– merely the SPSS-outputs will be discussed. For the detailed discussions, the author refers to sub paragraph 6.2.2.

6.2.3.1 Descriptive statistics

The SPS-output of the regression coefficients are included in the table below.

Coefficients[a]

Model		Unstandardized Coefficients		
		B	Std. Error	Sig.
1	(Constant)	-,021	,346	,951
	OP	,006	,001	,000
	OPDebt	,000	,000	,049
	OPMRPS	-,005	,002	,016

Year2	,243	,061	,000
Year3	,282	,061	,000
Year4	,229	,061	,000
SIC1	,307	,354	,386
SIC2	,292	,349	,403
SIC3	,669	,350	,056
SIC4	,372	,347	,283
SIC5	,542	,354	,127
SIC6	,191	,351	,586
SIC7	,732	,349	,037
SIC8	,346	,357	,333

a. Dependent Variable: Beta

Table 6.8 *SPSS-output regression coefficients*

Where:

OP	= measure of operating risk, β_0
OPDebt	= the interaction between OP and Debt
OPMRPS	= the interaction between OP and MRPS
Debt	= book value of debt divided by MVE
MRPS	= book value mandatorily redeemable preferred stock divided by MVE
MVE	= market value of common stock plus book value of perpetual preferred stock
$Year_{1-8}$	= dummy variables for year
SIC_{1-8}	= dummy variables for industry
B	= SPSS-output for beta (slope coefficient)

6.2.3.2 Outliers

Firstly, the data is screened on potential outliers. This is done by plotting the regression residuals. As mentioned earlier, the sample size is large enough to mitigate large impacts of individual cases. However, it is still interesting to see the graph. There are no outliers to note (case 1049 –in the right corner of the plot– is an unselected case and is therefore not interesting for this sub sample). As can be deduced from the Cook's distance (this value amounts to 0.115), individual cases of this sub sample will not affect the regression results significantly (Field 2009, p. 219).

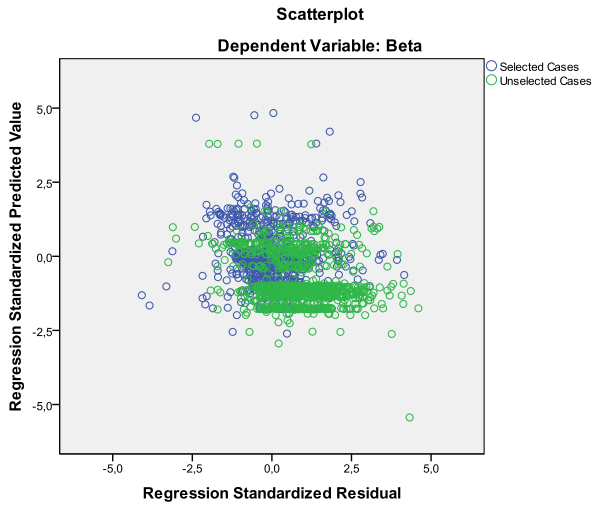

Figure 6.3 *Plot of dispersion of the regression residuals*

6.2.3.3 Normality

The normality of the regression residuals of the sub sample pre-SFAS No. 150 is visibly tested by the P-P plot below. In fact of that the regression residuals lie near the straight line (which depicts the normal distribution), one may assume that the regression residuals are normally distributed.

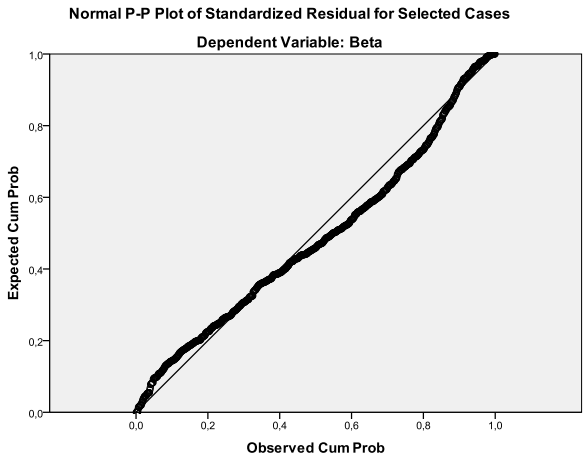

Figure 6.4 *Plot of the normality of the regression residuals*

6.2.3.4 Heteroskedasticity

After testing the normality of the regression residuals, the residuals are tested on whether or not heteroskedasticity exists. One can conclude that no heteroskedasticity exists. This conclusion is based on the fact that the scatterplot (see figure 6.3) shows that the residuals do not “fans out”, which indicates no heteroskedasticity.

6.2.3.5 Autocorrelation

After assessing no heteroskedasticity, the data are tested on potential autocorrelation. The SPSS-output shows a Durbin-Watson value of 1.211, which means a positive correlation between adjacent residuals. According to Field (2009, p. 220) this Durbin-Watson value does not require further investigation.

6.2.3.6 Multicollinearity

Fourthly, the regression data are scrutinized on whether there is multicollinearity. This is done by (a) requesting SPSS to put a correlation matrix of the correlations between the dependent and the independent variables (see table 6.4), and (b) requesting the tolerance and VIF values. The SPSS-outputs are included below.

Coefficients[a]

Model			Collinearity Statistics	
		Sig.	Tolerance	VIF
1	(Constant)	,951		
	OP	,000	,891	1,122
	OPDebt	,493	,695	1,440
	OPMRPS	,016	,906	1,104
	Year2	,000	,665	1,503
	Year3	,000	,667	1,499
	Year4	,000	,668	1,497
	SIC1	,386	,061	16,315
	SIC2	,403	,030	33,352
	SIC3	,056	,028	35,161
	SIC4	,283	,020	51,225
	SIC5	,127	,083	12,091
	SIC6	,586	,041	24,212
	SIC7	,037	,033	30,124
	SIC8	,333	,047	21,346

a. Dependent Variable: Beta

Table 6.9 *SPSS-output tolerance and VIF-scores*

Where:

OP	= measure of operating risk, β_0
OPDebt	= the interaction between OP and Debt
OPMRPS	= the interaction between OP and MRPS
Debt	= book value of debt divided by MVE
MRPS	= book value mandatorily redeemable preferred stock divided by MVE
MVE	= market value of common stock plus book value of perpetual preferred stock
$Year_{1-8}$	= dummy variables for year
SIC_{1-8}	= dummy variables for industry
VIF	= variance inflator factor

The correlation matrix shows a (restricted) significant correlation between operating risk (OP) and the interaction of operating risk and debt (OPDebt) with the dependent variable, beta. One could state that

OP and OPDebt declare some level of firms' perceived systematic risk, beta. The levels of the correlation suggest no multicollinearity, and in accordance with Kimmel and Warfield (1995), they are "not likely to be a concern for the regression results". Like the results of the total sample, the correlation of the interaction of operating risk and MRPS (OPMRPS) with beta is not significant. This is not a reason to exclude this variable out of the regression, in fact of that the joint effect of the independent variables on the dependent variable is important (on not merely the individual effect). Further, the independent variables exhibit quite high (significant) correlations. The correlation between OP and OPDebt (0.890) will be interesting to further investigate for potential multicorrelation, in fact of the (very) high correlation.

The second table shows the tolerance and VIF scores, which enables to investigate the existence of potential multicollinearity, by comparing the scores with concrete tolerance and VIF values, as already discussed in sub paragraph 6.2.2.6. This table shows that no multicollinearity exists between OP and OPDebt. Further, it shows multicollinearity for the dummy variables SIC (indicated by the low tolerance and high VIF scores). According to Field (2009, p. 225), the scores of the dummy variable SIC show that one variable already contains information included in another variable of the regression model. Whether or not the dummy variables contain some 'new information' (not already included in another variable) will be tested by comparing the general model (including all variables) with the restricted model (excluding the SIC-dummy variables). This comparison delivers the following ANOVA table, indicating whether the null hypothesis should be accepted; the null hypothesis states that the restricted model is valid (i.e. it is justified to omit the SIC-dummy variables from the general model).

ANOVA

Variation	df	SS	MS	F	br≥ *
H0	8	26,135	3,266875	8,910052	1,95
Error	784	287,454	0,366651		
Total	792	313,589			

*with df 8, 784

Table 6.10 *SPSS-output ANOVA F-test*

Where:

H0	= null hypothesis
df	= degrees of freedom
SS	= sum of squares
MS	= mean squares
F	= F-test value
br	= right boarder for test value significance

In fact of that F > br, the null hypothesis should not be accepted: the SIC-dummy variables have significant explaining value within the regression model and cannot be omitted.

6.2.3.7 Suitability of regression model I

Finally, the explaining value of the model is showed by SPSS.

Model Summary[a,b,c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,383[a]	,146	,131	,605517033	1,211

a. Predictors: (Constant), SIC8, OPMRPS, SIC5, OPDebt, SIC1, SIC6, OP, Year4, SIC7, Year1, SIC2, SIC3, Year3, Year2, SIC4

b. Dependent Variable: Beta

c. Significance is p ,000

Table 6.11 *SPSS-output explanatory value regression model*

As shown, the variability of beta (i.e. firms' perceived systematic risk) is explained for 14.6 per cent by the regression model of Kimmel and Warfield (1995) as included in chapter five (Field, 2009, p. 235). Adjusted for the number of independent variables in the model, the regression model (i.e. the independent variables) declares 13.1 per cent of firms' perceived systematic risk.

SPSS shows an significance of p<.000, and hence, the regression model have significant explaining value. Therefore, the conclusion is that the regression model of Kimmel and Warfield (1995) is useful within this sub sample.

6.2.3.8 Conclusion

In conclusion, the data with regard to this sub sample (pre-SFAS No. 150: data before June 15th, 2003) show no outliers. Therefore, the regression results are not biased by extreme values. The regression residuals are normal distributed. No heteroskedasticity and no autocorrelation exists. With regard to the SIC dummy variables, some multicollinearity was observed. However, it has been shown that these variables cannot be omitted since they have explanatory value. The model is significant and therefore suitable to use in this sub sample. Since the above can be concluded, we are able to proceed with an analysis of the regression results. Indeed, no statistical barriers exist. But first, the post-SFAS No. 150 sub sample will be discussed.

6.2.4 Sample post-SFAS No. 150

Like the last sub paragraph, this sub paragraph discusses merely the SPSS-outputs, and not the underlying thoughts and procedures of the tests performed. Firstly, the data will be investigated on outliers, and after that, the generalizibility of the regression results will pass in review.

6.2.4.1 Descriptive statistics

The SPS-output of the regression coefficients are included in the table below.

Coefficients[a]

Model		Unstandardized Coefficients		
		B	Std. Error	Sig.
1	(Constant)	,952	,321	,003
	OP	,003	,001	,017
	OPDebt	,000	,000	,046
	OPMRPS	-,001	,009	,879
	Year5	-,244	,064	,000
	Year6	-,021	,064	,748
	Year7	-,052	,064	,420
	Year8	-,011	,064	,870
	SIC1	,326	,325	,317
	SIC2	,099	,322	,759
	SIC3	,070	,322	,829
	SIC4	,018	,320	,955
	SIC5	-,081	,330	,807
	SIC6	-,218	,323	,499
	SIC7	,063	,322	,845
	SIC8	-,133	,324	,682

a. Dependent Variable: Beta

Table 6.12 *SPSS-output regression coefficients*

Where:

OP	= measure of operating risk, β_0
OPDebt	= the interaction between OP and Debt
OPMRPS	= the interaction between OP and MRPS
Debt	= book value of debt divided by MVE
MRPS	= book value mandatorily redeemable preferred stock divided by MVE
MVE	= market value of common stock plus book value of perpetual preferred stock
$Year_{1\text{-}8}$	= dummy variables for year
$SIC_{1\text{-}8}$	= dummy variables for industry
B	= SPSS-output for beta (slope coefficient)

6.2.4.2 Outliers

The regression results are screened on potential outliers. Although the sample size is large enough to mitigate large impacts of individual cases, it is always advisable to plot the residuals and test them visual. The plot exhibit one outlier (case 1049 –in the right corner of the plot– can be labeled as outlier, however, as can be deduced from the Cook's distance (this value amounts to 0.154), this case will not affect the regression results significantly (Field 2009, p. 219)).

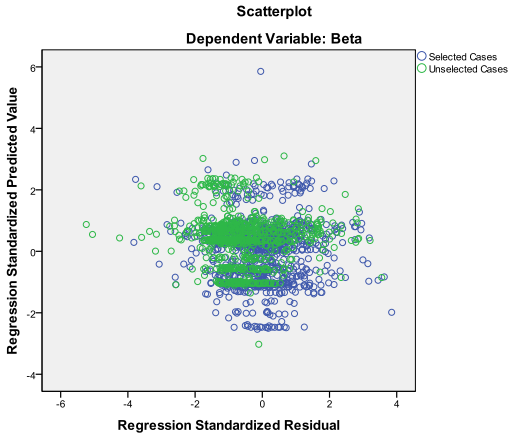

Figure 6.5 *Plot of dispersion of the regression residuals*

6.2.4.3 Normality

The P-P plot below shows that the regression residuals are normally distributed. This can be stated in fact of that the residuals lie approximately on the straight line, which implies a normal distribution.

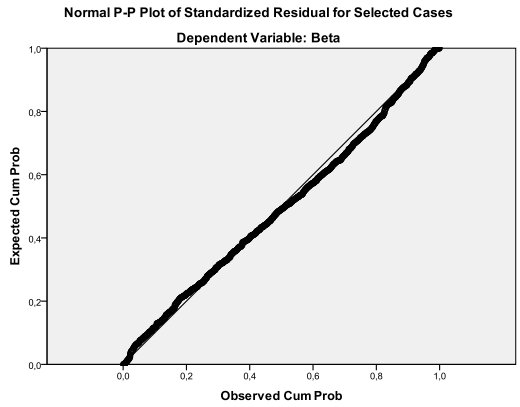

Figure 6.6 *Plot of the normality of the regression residuals*

6.2.4.4 Heteroskedasticity

After testing the normality of the regression residuals, the residuals are tested on whether or not heteroskedasticity exists. One can conclude that no heteroskedasticity exists. This conclusion is based on the fact that the scatterplot (see figure 6.5) shows that the residuals do not “fans out”, which indicates no heteroskedasticity.

6.2.4.5 Autocorrelation

Now it has been assessed that no heteroskedasticity exists, the data are tested on potential autocorrelation. This is done by requesting SPSS to put the Durbin-Watson score. The SPSS-output shows a value of 1.198, which means a positive correlation between adjacent residuals. According to Field (2009, p. 220) this Durbin-Watson value does not require further investigation.

6.2.4.6 Multicollinearity

Fourthly, the data are screened on potential multicollinearity. This is done by (a) requesting SPSS to put a correlation matrix of the correlations between the dependent and the independent variables (see table 6.4), and (b) requesting the tolerance and VIF (Variance Inflator Factor) values. The SPSS-outputs are included below.

Coefficients[a,b]

Model			Collinearity Statistics	
		Sig.	Tolerance	VIF
1	(Constant)	,003		
	OP	,017	,942	1,061
	OPDebt	,056	,949	1,053
	OPMRPS	,879	,949	1,054
	Year5	,000	,603	1,659
	Year6	,748	,608	1,645
	Year7	,420	,608	1,645
	Year8	,870	,608	1,645
	SIC1	,317	,057	17,613
	SIC2	,759	,033	30,747
	SIC3	,829	,032	30,817
	SIC4	,955	,020	49,933
	SIC5	,807	,084	11,873
	SIC6	,499	,042	23,837
	SIC7	,845	,034	29,846
	SIC8	,682	,047	21,311

a. Dependent Variable: Beta

Table 6.13 *SPSS-output tolerance and VIF-scores*

Where:

OP	= measure of operating risk, β_0
OPDebt	= the interaction between OP and Debt
OPMRPS	= the interaction between OP and MRPS
Debt	= book value of debt divided by MVE
MRPS	= book value mandatorily redeemable preferred stock divided by MVE
MVE	= market value of common stock plus book value of perpetual preferred stock
$Year_{1-8}$	= dummy variables for year
SIC_{1-8}	= dummy variables for industry
VIF	= variance inflator factor

The correlation matrix shows a (restricted) significant correlation between operating risk (OP) and the interaction of operating risk and debt (OPDebt) with the dependent variable, beta. One could state that OP and OPDebt declare some level of firms' systematic risk, beta. The levels of the correlation suggest no multicollinearity, and in accordance with Kimmel and Warfield (1995), they are "not likely to be a concern for the regression results". Like the results of the total sample, the correlation of the interaction of

operating risk and MRPS (OPMRPS) with beta is not significant. This is not a reason to exclude this variable out of the regression, in fact of that the joint effect of the independent variables on the dependent variable is important (on not merely the individual effect). Further, the independent variables exhibit quite high (significant) correlations. The correlation between OP and OPDebt (0.890) will be interesting to further investigate for potential multicorrelation, in fact of the (very) high correlation.

The second table shows the tolerance and VIF scores, which enables to investigate the existence of potential multicollinearity, by comparing the scores with concrete tolerance and VIF values, as already discussed in sub paragraph 6.2.2.6. This table shows that no multicollinearity exists between OP and OPDebt. Further, it shows multicollinearity for the SIC-dummy variables (indicated by the low tolerance and high VIF scores). Therefore, one could state that the tolerance and VIF-scores show that one variable already contains information included in another variable of the regression model (Field, 2009, p. 225). Whether or not the dummy variables contain some 'new information' (not already included in another variable) will be tested by comparing the general model (including all variables) with the restricted model (excluding the SIC-dummy variables). This comparison delivers the following ANOVA table, indicating whether the null hypothesis should be accepted; the null hypothesis states that the restricted model is valid (i.e. it is justified to omit the SIC-dummy variables from the general model).

ANOVA

Variation	df	SS	MS	F	br≥ *
H0	8	15,805	1,975625	5,135038	1,95
Error	937	360,496	0,384734		
Total	945	376,301			

*with df 8, 937

Table 6.14 *SPSS-output ANOVA F-test*

Where:

H0	= null hypothesis
df	= degrees of freedom
SS	= sum of squares
MS	= mean squares
F	= F-test value
br	= right boarder for test value significance

In fact of that F > br, the null hypothesis should not be accepted: the SIC-dummy variables have significant explaining value within the regression model and cannot be omitted.

6.2.4.7 Suitability of regression model I

Finally, the explaining value of the model is showed by SPSS.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,267[a]	,071	,056	,620269448	1,198

a. Predictors: (Constant), SIC8, OPMRPS, SIC5, OPDebt, SIC1, SIC6, OP, Year5, SIC7, Year6, SIC2, SIC3, Year7, Year8, SIC4, Year9

b. Dependent Variable: Beta

Table 6.15 *SPSS-output explanatory value regression model*

As shown, the variability of beta (i.e. firms' perceived systematic risk) is explained for 7.1 per cent by the regression model of Kimmel and Warfield (1995) as included in chapter five (Field, 2009, p. 235). Adjusted for the number of independent variables in the model, the regression model (i.e. the independent variables) declares 5.6 per cent of firms' perceived systematic risk.

SPSS shows an significance of p<.000, and hence, the regression model have significant explaining value. Therefore, the conclusion is that the regression model of Kimmel and Warfield (1995) is useful within this sub sample.

6.2.4.8 Conclusion

After the statistical procedures for the post-SFAS No. 150 sub sample (data after June 15th, 2003), one can conclude that there are no outliers. The regression residuals for this sub sample are normal distributed. No heteroskedasticity and no autocorrelation exists. Besides, with regard to the SIC dummy variables, there is observed some multicollinearity. However, it has been shown that these variables cannot be omitted from the regression model since they have explanatory value. The model is significant and therefore suitable to use for this sub sample. At this very moment, the three parts of paragraph 6.2 – statistical discussion of the total sample, of the pre-SFAS No. 150 sub sample, and statistical discussion of the post-SFAS No. 150 sub sample– have been completed. Hence, the discussion of the statistical results of the first regression model has been completed. At this very moment the hypothesis tested in this sub paragraph can be statistically answered. Null hypothesis I states "MRPS' reclassification had no or a decreasing effect on firms' perceived systematic risk". Based on the statistical results in the preceding paragraphs, the null hypothesis should be rejected in fact of that the values of regression coefficient a_3 (the interaction between operating risk and MRPS) is increased from -0.005 (significant) to -0.001 (insignificant) for the pre-SFAS No. 150 sub sample and the post-SFAS No. 150 sub sample, respectively. Hence, the alternative hypothesis should be accepted: "MRPS' reclassification had an increasing effect on firms' perceived systematic risk". An analysis on the results will be performed in chapter seven.

6.3 Evaluating regression model II

This paragraph is organized as follows: firstly the regression model will be depicted (1). Then, the descriptive statistics (2) will pass in review. Thereafter, the data will be investigated on whether there are outliers (3), on normality (4), heteroskedasticity (5), autocorrelation (6), multicollinearity (7), and the suitability of the regression model in this study (8). The mentioned items will in succession be discussed for the total sample, the pre-SFAS No. 150 sub sample, and the post-SFAS No. 150 sub sample. The total sample is included in this discussion for evaluating the 'quality' of the sample.

6.3.1 Regression model II

The regression model (II) has been already depicted in chapter five, but will be depicted again for readers' understanding. The second regression model is the regression model as explained by Sharpe and Lintner (1964-65). This (CAPM) regression model is captured by the following equation (Fama and French, 2004):

$$r_i = b_0 r_f + b_1 [ß_s (r_M - r_f)] + \varepsilon$$

Where:

r_i	= firm i's required rate of return on common stock
b_0	= regression intercept
b_1	= regression slope coefficient
r_f	= risk free rate (rate of return on risk free Treasury bills)
β_s	= measure of the volatility of firm i's stock returns as compared to market returns
r_M	= market return
ε	= error term

6.3.2 Total sample

The sample is drawn from the same firms as the firms included in the systematic risk analysis of the preceding paragraph. Therefore, the author refers to the table included in sub paragraph 6.2.2.1 for consulting how many firms are included and how these firms are dispersed over the SIC-categories.

As mentioned, since there are no firms included in the sample that classify their MRPS as liabilities, merely one sample is taken for the MRPS-equity and MRPS-'quasi-equity' sub categories. Indeed, both categories (MRPS-equity and MRPS-'quasi-equity') should reclassify their MRPS, and hence, are expected to suffer an increasing effect on the required rate of return on common stock. Therefore, all sample firms are combined in one sample.

6.3.2.1 Descriptive statistics

The descriptive statistics are showed by the following SPSS-output.

Descriptive statistic			
	Minimum	Maximum	Mean
Ri	-,027010	,048354	,00096633
Premium	-,037433	,029599	-,00252775
Interaction	-,105454	,133966	-,00170529

Table 6.16 *Descriptive statistics*

Where:

r_i	= firms' required rate of return
Premium	= r_M minus r_f
r_M	= market rate of return
r_f	= risk free rate of return (return on Treasury bills)
Interaction	= firms' systematic risk (beta) times (r_M-r_f)

The table above shows averages of variables used in this study (focusing on the second regression model). Firstly, the required rate of return shows a maximum of 4.8 per cent during a year. In chapter five, it is explained that this is the period holding return, which contains capital gains (ex-dividend) on the one hand and paid dividends on the other hand. One has to endure a maximum year loss of 2.7 per cent during the research period.

The risk premium amounts at maximum to 3 per cent and at minimum to minus 3.7 per cent. The data with regard to the risk free rates come from Fama and French's database. Besides, the market rates of return come from Compustat. It is observable that –on average– the market is less profitable as compared to Treasury bills. This is surprising since the CAPM-model expects a premium of returns for excessive risk above the risk free Treasury bills (Fama and French, 2004). Since the data come from reliable databases (Fama and French's database and Compustat), the reliability of the data is not questioned, and hence, the gathered data will be used for interpreting the effects of SFAS No. 150 on firms' required rate of return.

Since the risk premium is on average negative and average beta is positive (see sub paragraph 6.2.2.1), a negative mean of the interaction between risk premium and beta is not surprising. The risk premium times firms' beta varies from minus 10.5 per cent (loss) to 13.4 per cent positive (gain).

The SPSS-output of the regression coefficients are included in the table below.

Coefficients[a]				
Model		Unstandardized Coefficients		
		B	Std. Error	Sig.
1	(Constant)	,074	,001	,024
	Interaction	,211	,007	,013
	Year1	,000	,000	,255
	Year2	,000	,000	,173
	Year3	,001	,000	,032
	Year4	-,001	,000	,056
	Year5	,001	,000	,005

Year6	,000	,000	,326
Year7	,000	,000	,257
Year8	-,001	,000	,076
SIC1	,003	,001	,018
SIC2	,003	,001	,024
SIC3	,002	,001	,045
SIC4	,002	,001	,099
SIC5	,002	,001	,077
SIC6	,002	,001	,076
SIC7	,003	,001	,016
SIC8	,003	,001	,039

a. Dependent Variable: Ri

Table 6.17 *SPSS-output regression coefficients*

Where:

Interaction	= firms' systematic risk (beta) times (r_M-r_f)
r_M	= market return
r_f	= risk free return (return on Treasury bills)
$Year_{1-8}$	= year dummy variables
SIC_{1-8}	= SIC dummy variables
r_i	= firms' required rate of return on common stock

The remaining of this paragraph is structured as follows: Firstly, the (CAPM) regression model is evaluated on whether it is suitable to test hypothesis II. This is done by using an ANOVA F-test within SPSS (version 18.0). However, as already mentioned in paragraph 6.2, various conditions about the data should be met before proceeding with testing the empirical model. As a result of this, the two conditions of Field (2009, p. 214-229) –as discussed above– will also be tested for the second regression model. Firstly, the model will be scrutinized on potential outliers. Secondly, the generalizability of the regression results will be checked.

6.3.2.2 Outliers

Firstly, the data is tested on whether there are outliers. This is because outliers might have influence on the research results (Field, 2009, p. 215). Outliers can be discerned by a residual plot and by the Cook-test. The Cook value should be at maximum one, otherwise individual cases might influence the regression results (Field, 2009, p. 219). However, the Cook value for the total sample amounts at maximum to 0.118, which means that no individual case will influence the regression results. The plot below shows one concrete outlier (case 327, on the right side of the plot). This outlier has, however, as indicated by Cook's distance value, no significant influence on the regression results.

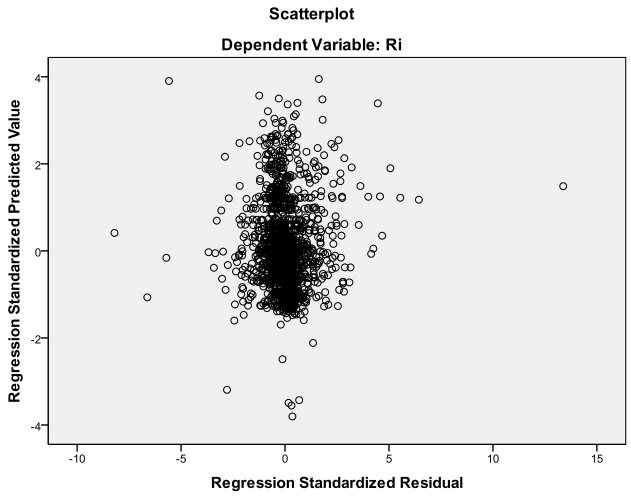

Figure 6.7 *Plot of dispersion of the regression residuals*

6.3.2.3 Normality

Following the test procedures of the regression tests of paragraph 6.2, firstly, the regression residuals will be tested on whether they are normally distributed. Actually, the data will be tested on whether the observed dependent variable (the required rate of return on common stock) approximately equals the predicted dependent variable (Field, 2009, p. 221). Therefore, one evaluates whether the model accurately predicts firms' required rate of return on common stock. This will be done by using a P-P plot, which is outputted by SPSS.

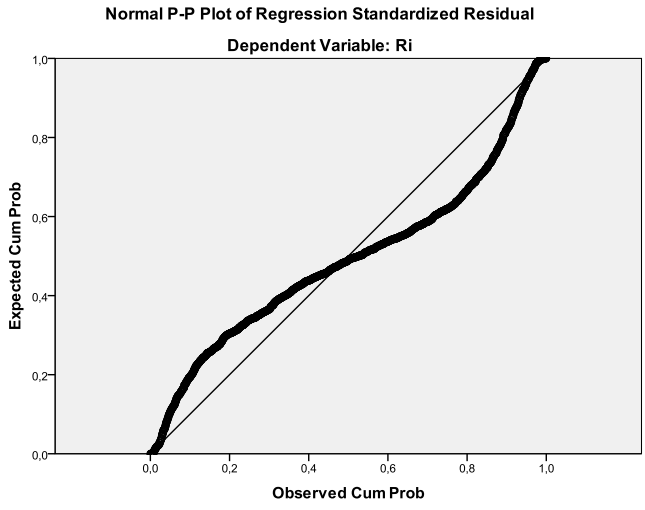

Figure 6.8 *Plot of the normality of the regression residuals*

Since the observed required rates of return lies near the diagonal line of the expected rates, the residuals are approximately normally distributed.

6.3.2.4 Heteroskedasticity

At this very moment, the data will be tested on whether they consist heteroskedasticity. Like existence of outliers, existence of heteroskedasticity might have influence on the regression results (Pryce, 2002). With help of a plot of the dispersion of the regression residuals potential heteroskedasticity will be discerned. The plot is already depicted in sub paragraph 6.3.2.2. Since the plot does not "fans out" and does not show any pattern of heteroskedasticity, heteroskedasticity is not expected to be present within the regression data.

6.3.2.5 Autocorrelation

After testing heteroskedasticity, one should review the data on potential autocorrelation, which means that values of adjacent cases potentially can be dependent of each other (Alwan, et al., 2007, p. 764 and Field, 2009, p. 220). Whether or not autocorrelation exists is tested by the Durbin-Watson test. As mentioned in sub paragraph 6.2.2.5, the Durbin-Watson value falls somewhere between zero and four. A value lesser than two means a positive correlation between adjacent residuals, and values above two vice versa. Values lesser than one or higher than three require further investigation. In fact of that the Durbin-Watson value belonging to this sample and regression model amounts to 1.914, further considerations are not necessary: lightly positive correlation exists between adjacent residuals.

6.3.2.6 Multicollinearity

Besides, one should verify whether no multicollinearity exists between the independent variables of the regression model. As already mentioned, the 'risk' of multicollinearity means that one independent variable already contains information included in another independent variable of the regression model (Field, 2009, p. 225). Two tests are performed to test the regression results and their underlying independent variables on the existence of multicollinearity, namely a Spearman correlation table and tolerance and/or VIF values are printed out by SPSS.

Correlations

		Ri	Interaction
Ri	Correlation Coefficient	1,000	,194**
	Sig. (2-tailed)	.	,000
Interaction	Correlation Coefficient	,194**	1,000
	Sig. (2-tailed)	,000	.

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6.18 *SPSS-output correlations*

Where:

r_i = firms' required rate of return on common stock
interaction = firms' systematic risk (beta) times (r_M-r_f)

r_M = market return
r_f = risk free return (return on Treasury bills)

The table above shows a significant correlation between the dependent (required rate of return on common stock) and the independent variable (the interaction between beta and the market risk premium). Since only one independent variable is included in this table, multicollinearity cannot be discerned. Therefore, for the assessment of multicollinearity, the author will rely on the tolerance and VIF (Variance Inflator Factor) scores to assess whether the independent variables are multicorrelated.

The table with the tolerance and VIF-scores for each independent variable is included below.

Coefficients[a]

Model			Collinearity Statistics	
		Sig.	Tolerance	VIF
1	(Constant)	,024		
	Interaction	,013	,428	2,335
	Year1	,255	,542	1,845
	Year2	,173	,547	1,827
	Year3	,032	,461	2,167
	Year4	,056	,543	1,843
	Year5	,005	,421	2,375
	Year6	,326	,559	1,788
	Year7	,257	,549	1,822
	Year8	,076	,506	1,978
	SIC1	,018	,065	15,352
	SIC2	,024	,036	27,684
	SIC3	,045	,035	28,412
	SIC4	,099	,023	44,135
	SIC5	,077	,094	10,629
	SIC6	,076	,048	20,907
	SIC7	,016	,039	25,446
	SIC8	,039	,056	17,779

a. Dependent Variable: Ri

Table 6.19 *SPSS-output tolerance and VIF-scores*

Where:
Interaction = firms' systematic risk (beta) times (r_M-r_f)
r_i = firms' required rate of return on common stock
r_M = market rate of return
r_f = risk free rate of return (return on Treasury bills)
$Year_{1\text{-}8}$ = year dummy variables
$SIC_{1\text{-}8}$ = SIC dummy variables

As mentioned in sub paragraph 6.2.2.6, the VIF scores should not be much higher than three. Otherwise, the variable might potentially bias the regression results (Field, 2009, p. 242). Like tolerance

values lower than 0.1, VIF values higher than ten are problematic since they potentially contains information that is already processed in another variable. So, the values showed in the table above shows critical values for the SIC dummy variables. It seems that these variables contain information that already is included in the other SIC dummy variables. Perhaps, it would be better to exclude the dummy variables as a block from the regression model. This is evaluated by comparing the general model with a restricted model, without the SIC dummy variables, which results in the following ANOVA table, indicating whether the null hypothesis should be accepted; the null hypothesis states that the restricted model is valid (i.e. it is justified to omit the SIC-dummy variables from the general model).

ANOVA

Variation	df	SS	MS	F	br≥ *
H0	9	0,0009	1E-04	8,233333	1,89
Error	1729	0,021	1,21E-05		
Total	1738	0,0219			

*with df 9, 1729

Table 6.20 *SPSS-output ANOVA F-test*

Where:

H0	= null hypothesis
df	= degrees of freedom
SS	= sum of squares
MS	= mean squares
F	= F-test value
br	= right boarder for test value significance

In fact of that F > br, the null hypothesis should be rejected: the SIC-dummy variables have significant explaining value within the regression model and cannot be omitted.

6.3.2.7 Suitability of regression model II

Ultimately, it is important to evaluate the regression model on whether it accurately explains the dependent variable, firms' required rate on common stock. SPSS shows the significance of the regression model by using an ANOVA table. Moreover, the table 'Model summary' shows a R-value. This value indicates the explaining value of the regression model. Three R-values are given in the table, which mean in succession: R shows "the values of the multiple correlation coefficient between the predictors [the independent variables] and the outcome [the dependent variable]", R^2 shows "how much of the variability in the outcome is accounted for by the predictors", and the adjusted R^2 shows how well the model fits the data and is able to generalize the results to the population (Field, 2009, p. 235).

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,529[a]	,266	,207	,003451642	1,914

a. Predictors: (Constant), SIC8, Year7, SIC5, SIC1, Year8, SIC6, Year6, Year5, SIC7, Year4, SIC2, Year3, SIC3, Year2, Year1, Interaction, SIC4

Table 6.21 *SPSS-output explanatory value regression model*

As shown, the variability of beta (i.e. firms' perceived systematic risk) is explained for 26.6 per cent by the regression model of Kimmel and Warfield (1995), as included in chapter five. Adjusted for the number of independent variables in the model, the regression model (i.e. the independent variables) declares 20.7 per cent of firms' perceived systematic risk.

6.2.2.8 Conclusion

The statistical results show that there are no outliers to note in the total sample. The regression residuals are normally distributed, no heteroskedasticity, and also no autocorrelation exists. There is some multicollinearity for the SIC dummy variables. However, it has been tested that these variables cannot be omitted, since they have explanatory value. The regression model is significant, and therefore suitable to use in this study. Now one knows these observations, we are able to analyze the statistical results in a non-numerical way. However, firstly the statistical results of the two sub samples (pre-SFAS No. 150 and post-SFAS No. 150) will be discussed.

6.3.3 Sample pre-SFAS No. 150

The test procedures as described above –when discussing the total sample– will be rehearsed for this sub sample (pre-SFAS No. 150: before June 15th, 2003). The author has not chosen to re-examine the detailed discussion about the test procedures and their belonging thoughts, but –instead of that– merely the SPSS-outputs will be discussed.

6.3.3.1 Descriptive statistics

The SPSS-output of the regression coefficients are included in the table below.

Coefficients[a]				
Model		Unstandardized Coefficients		
		B	Std. Error	Sig.
1	(Constant)	,091	,002	,046
	Interaction	,206	,011	,000
	Year1	-,001	,001	,033
	Year2	-,002	,000	,000

Year4	-,002	,001	,000
SIC1	,001	,002	,736
SIC2	,002	,002	,340
SIC3	,001	,002	,610
SIC4	,000	,002	,860
SIC5	,001	,002	,705
SIC6	,001	,002	,781
SIC7	,002	,002	,355
SIC8	,001	,002	,615

a. Dependent Variable: Ri

Table 6.22 *SPSS-output regression coefficients*

Where:

Interaction	= firms' systematic risk (beta) times (r_M-r_f)
r_i	= firms' required rate of return on common stock
r_M	= market rate of return
r_f	= risk free rate of return (return on Treasury bills)
$Year_{1-4}$	= year dummy variables
SIC_{1-8}	= SIC dummy variables

6.3.3.2 Outliers

Firstly, the data is screened on potential outliers. This is done by plotting the regression residuals. As mentioned earlier, the sample size is large enough to mitigate large impacts of individual cases. However, it is still interesting to see the graph. There are some outliers to note: case 327 is a selected case, and cases 770 and 297 are unselected case (and are therefore not interesting for this sub sample). However, as can be deduced from the Cook's distance (this value amounts to 0.188), individual cases of this sub sample will not affect the regression results significantly (Field 2009, p. 219).

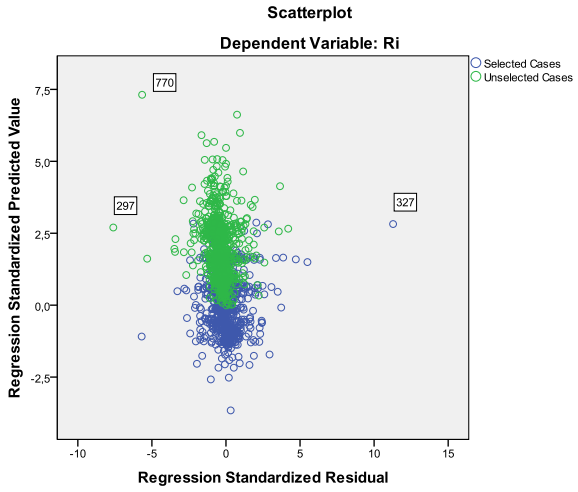

Figure 6.9 *Plot of dispersion of the regression residuals*

6.3.3.3 Normality

The normality of the regression residuals of the sub sample pre-SFAS No. 150 (data before June 15th, 2003) is visibly tested by the P-P plot below. In fact of that the regression residuals lie near the straight line (which depicts the normal distribution), one may assume that the regression residuals are normally distributed.

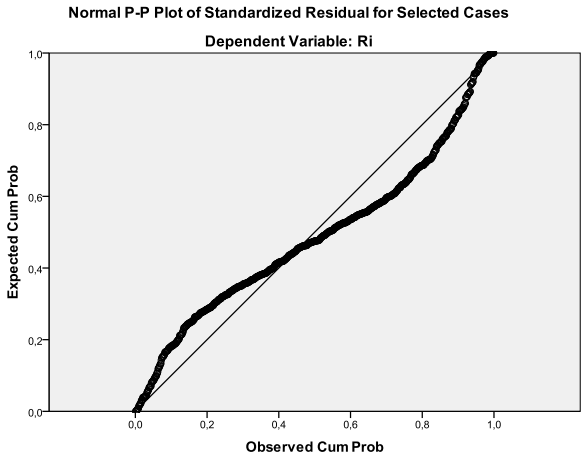

Figure 6.10 *Plot of the normality of the regression residuals*

6.3.3.4 Heteroskedasticity

After testing the normality of the regression residuals, the residuals are tested on whether or not heteroskedasticity exists. One can conclude that no heteroskedasticity exists. This conclusion is based on the fact that the scatterplot (see figure 6.9) shows that the residuals do not "fans out" and does not show any pattern that indicates heteroskedasticity

6.3.3.5 Autocorrelation

After assessing no heteroskedasticity, the data are tested on potential autocorrelation. The SPSS-output shows a Durbin-Watson value of 1.947, which means a positive correlation between adjacent residuals. According to Field (2009, p. 220), this Durbin-Watson value does not require further investigation.

6.3.3.6 Multicollinearity

Fourthly, the regression data are scrutinized on whether there is multicollinearity. This is done by (a) requesting SPSS to put a correlation matrix of the correlations between the dependent and the independent variables, and (b) requesting the tolerance and VIF (Variance Inflator Factor) values.

For the correlation matrix, see the table included in sub paragraph 6.3.2.6. The correlation matrix shows no extremely high (and significant) correlation, which indicates that no multicollinearity exists within the sample.

With regard to collinearity tolerance and VIF scores, SPSS delivers the following printout.

Coefficients[a]				
Model		Sig.	Collinearity Statistics	
			Tolerance	VIF
1	(Constant)	,046		
	Interaction	,000	,531	1,883
	Year1	,033	,419	2,384
	Year2	,000	,520	1,925
	Year4	,000	,409	2,445
	SIC1	,736	,073	13,742
	SIC2	,340	,040	24,961
	SIC3	,610	,037	27,298
	SIC4	,860	,025	40,210
	SIC5	,705	,102	9,793
	SIC6	,781	,053	18,893
	SIC7	,355	,043	23,212
	SIC8	,615	,064	15,658
a. Dependent Variable: Ri				

Table 6.23 *SPSS-output tolerance and VIF-scores*

Where:

Interaction	= firms' systematic risk (beta) times (r_M-r_f)
r_i	= firms' required rate of return on common stock
r_M	= market return
r_f	= risk free return (return on Treasury bills)
$Year_{1-4}$	= year dummy variables
SIC_{1-8}	= SIC dummy variables

As mentioned, the highest VIF score should not be higher than three, otherwise the independent variables are multicorrelated and the regression results might be biased (Field, 2009, p. 241). The table above shows low tolerance and high VIF scores for the dummy variables SIC. This implicate that these variables include very high mutual relationships: the variables include information of each other and/or they contain the same information about the dependent variable, r_i (firms' required rate of return on common stock). In conclusion, the dummy variables with regard to SIC are multicorrelated. The other variables are not multicorrelated. Perhaps, it would be better to exclude the dummy variables as a block from the regression model. This is evaluated by comparing the general model with a restricted model, without the SIC dummy variables, which results in the following ANOVA table, indicating whether the null hypothesis should be accepted; the null hypothesis states that the restricted model is valid (i.e. it is justified to omit the SIC dummy variables from the general model).

ANOVA					
Variation	df	SS	MS	F	br≥ *
H0	5	0,001	0,0002	13,1	2,22
Error	786	0,012	1,53E-05		
Total	791	0,013			
*with df 5, 786					

Table 6.24 *SPSS-output ANOVA F-test*

Where:

H0	= null hypothesis
df	= degrees of freedom
SS	= sum of squares
MS	= mean squares
F	= F-test value
br	= right boarder for test value significance

In fact of that F > br, the null hypothesis should not be accepted: the SIC-dummy variables have significant explaining value within the regression model and cannot be omitted.

6.3.3.7 Suitability of regression model II

Ultimately, it is important to evaluate the regression model on whether it accurately explains the dependent variable, r_i (i.e. firms' required rate of return on common stock). SPSS shows the significance of the regression model by using an ANOVA table.

Model Summary[a,b,c]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,461 [a]	,186	,157	,003984370	1,947

a. Predictors: (Constant), SIC8, Interaction, Year 2, SIC7, Year4, SIC4, SIC1, SIC2, SIC3, SIC5, Year1, SIC6, Year3

b. Dependent Variable: Beta

c. Significance is p ,000

Table 6.25 *SPSS-output explanatory value regression model*

As shown, the variability of r_i (i.e. firms' perceived systematic risk) is explained for 18.6 per cent by the regression model of Kimmel and Warfield (1995), as included in chapter five. Adjusted for the number of independent variables in the model, the regression model (i.e. the independent variables) declares 15.7 per cent of firms' perceived systematic risk.

SPSS shows a significance of p<.000, and hence, the regression model have significant explaining value. Therefore, the conclusion is that the regression model of Kimmel and Warfield (1995) is useful within this sample.

6.3.3.8 Conclusion

The statistical results show that there are no outliers to note in the total sample. The regression residuals are normally distributed, no heteroskedasticity, and also no autocorrelation exists. There is some multicollinearity for the SIC dummy variables. However, it has been tested that these variables cannot be omitted, since they have explanatory value. The regression model is significant, and therefore suitable to use for this sub sample. Now one knows these observations, we are able to analyze the statistical results in a non-numerical way. Before we analyze the statistical results, the statistical results of the second sub sample (post-SFAS No. 150: data after June 15th, 2003) will be discussed.

6.3.4 Sample post-SFAS No. 150

Like the last sub paragraph, this sub paragraph discusses merely the SPSS-outputs, and not the underlying thoughts and procedures of the tests performed. Firstly, the data (post-SFAS No. 150: data after June 15th, 2003) will be investigated on outliers, and after that, the generalizibility of the regression results will pass in review.

6.3.4.1 Descriptive statistics

The SPSS-output of the regression coefficients are included in the table below.

Coefficients[a]

Model		Unstandardized Coefficients		
		B	Std. Error	Sig.
1	(Constant)	,053	,001	,035
	Interaction	,257	,009	,042
	Year5	,002	,000	,000
	Year6	,000	,000	,366
	Year7	-,001	,000	,057
	Year8	,000	,000	,452
	SIC1	,005	,001	,001
	SIC2	,004	,001	,009
	SIC3	,004	,001	,005
	SIC4	,004	,001	,012
	SIC5	,004	,002	,012
	SIC6	,004	,001	,011
	SIC7	,004	,001	,003
	SIC8	,004	,001	,005

a. Dependent Variable: Ri

Table 6.26 *SPSS-output regression coefficients*

Where:

Interaction	= firms' systematic risk (beta) times (r_M-r_f)
r_i	= firms' required rate of return on common stock
r_M	= market return

r_f = risk free return (return on Treasury bills)
$Year_{1-4}$ = year dummy variables
SIC_{1-8} = SIC dummy variables

6.3.4.2 Outliers

Firstly, the data is screened on potential outliers. This is done by plotting the regression residuals. As mentioned earlier, the sample size is large enough to mitigate large impacts of individual cases. However, it is still interesting to see the graph. There are some outliers to note: case 1860 to 1863 are selected cases, and cases 327 and cases 1856 to 1859 are unselected cases (and are therefore not interesting for this sub sample). However, as can be deduced from the Cook's distance (this value amounts to 0.412), individual cases of this sub sample will not affect the regression results significantly (Field 2009, p. 219).

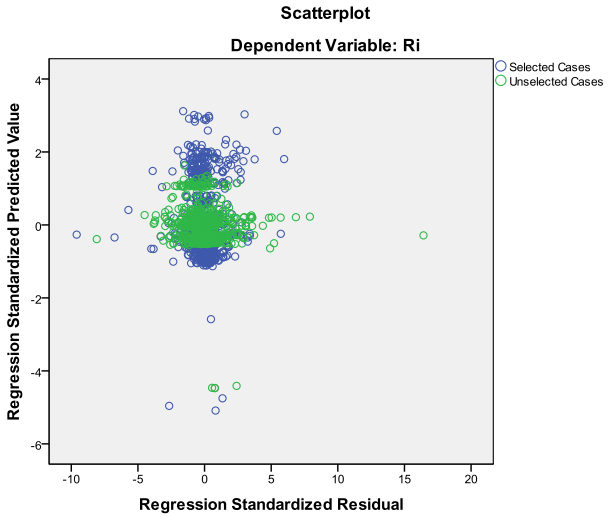

Figure 6.11 *Plot of dispersion of the regression residuals*

6.3.4.3 Normality

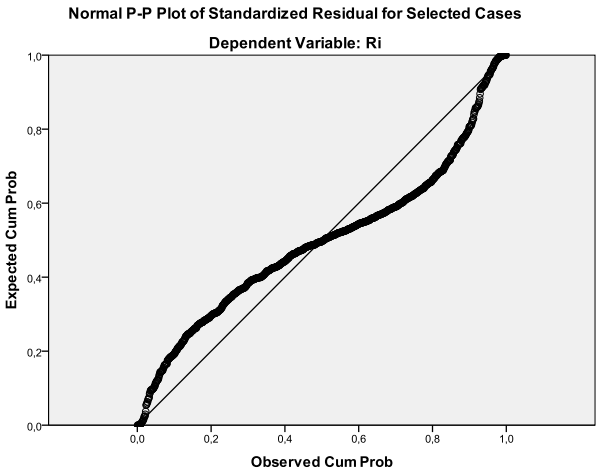

Figure 6.12 *Plot of the normality of the regression residuals*

The normality of the regression residuals of the sub sample post-SFAS No. 150 (data after June 15th, 2003) is visibly tested by the P-P plot below. In fact of that the regression residuals lie near the straight line (which depicts the normal distribution), one may assume that the regression residuals are normally distributed.

6.3.4.4 Heteroskedasticity

After testing the normality of the regression residuals, the residuals are tested on whether or not heteroskedasticity exists. One can conclude that no heteroskedasticity exists. This conclusion is based on the fact that the scatterplot (see figure 6.11) shows that the residuals do not "fans out" and does not show any pattern that indicates heteroskedasticity

6.3.4.5 Autocorrelation

After assessing no heteroskedasticity, the data are tested on potential autocorrelation. The SPSS-output shows a Durbin-Watson value of 2.029, which means a lightly negative correlation between adjacent residuals. According to Field (2009, p. 220), this Durbin-Watson value does not require further investigation.

6.3.4.6 Multicollinearity

Fourthly, the regression data are scrutinized on whether there is multicollinearity. This is done by (a) requesting SPSS to put a correlation matrix of the correlations between the dependent and the independent variables, and (b) requesting the tolerance and VIF (Variance Inflator Factor) values.

For the correlation matrix, see the table included in sub paragraph 6.3.2.6. The correlation matrix shows no extremely high (and significant) correlation, which indicates that no multicollinearity exists within the sample.

With regard to collinearity tolerance and VIF scores, SPSS delivers the following printout.

Coefficients[a]

Model		Sig.	Collinearity Statistics	
			Tolerance	VIF
1	(Constant)	,035		
	Interaction	,042	,406	2,464
	Year5	,000	,360	2,774
	Year6	,366	,619	1,617
	Year7	,057	,597	1,676
	Year8	,452	,494	2,023
	SIC1	,001	,059	16,961
	SIC2	,009	,033	30,408
	SIC3	,005	,034	29,509
	SIC4	,012	,021	48,062

SIC5	,012	,087	11,466
SIC6	,011	,044	22,925
SIC7	,003	,036	27,697
SIC8	,005	,050	19,895

a. Dependent Variable: Ri

Table 6.27 *SPSS-output tolerance and VIF-scores*

Where:

Interaction	= firms' systematic risk (beta) times (r_M-r_f)
r_i	= firms' required rate of return on common stock
r_M	= market return
r_f	= risk free return (return on Treasury bills)
$Year_{1-4}$	= year dummy variables
SIC_{1-8}	= SIC dummy variables

As mentioned, the highest VIF score should not be higher than three, otherwise the independent variables are multicorrelated and the regression results might be biased (Field, 2009, p. 241). The table above shows low tolerance and high VIF scores for the dummy variables SIC. This implicate that these variables include very high mutual relationships: the variables include information of each other and/or they contain the same information about the dependent variable, beta. In conclusion, the dummy variables with regard to SIC are multicorrelated. The other variables are not multicorrelated. Perhaps, it would be better to exclude the dummy variables as a block from the regression model. This is evaluated by comparing the general model with a restricted model, without the SIC dummy variables. This results in the following ANOVA table, indicating whether the null hypothesis should be accepted; the null hypothesis states that the restricted model is valid (i.e. it is justified to omit the SIC dummy variables from the general model).

ANOVA

Variation	df	SS	MS	F	br≥ *
H0	5	0,00019	3,8E-05	4,46975	2,22
Error	941	0,008	8,5E-06		
Total	946	0,00819			

*with df 5, 941

Table 6.28 *SPSS-output tolerance and VIF-scores*

Where:

H0	= null hypothesis
df	= degrees of freedom
SS	= sum of squares
MS	= mean squares
F	= F-test value
br	= right boarder for test value significance

In fact of that F > br, the null hypothesis should not be accepted: the SIC-dummy variables have significant explaining value within the regression model and cannot be omitted.

6.3.4.7 Suitability of regression model II

Ultimately, it is important to evaluate the entire regression model on whether it accurately explains the dependent variable, r_i (i.e. firms' required rate of return on common stock) for this sub sample (post-SFAS No. 150: data after June 15th, 2003). SPSS shows the significance of the regression model by using an ANOVA table.

Model Summary[a,b,c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,529 [a]	,298	,246	,002896764	2,029

a. Predictors: (Constant), SIC8, Year9, Interaction, Year 5, SIC7, Year7, SIC4, SIC1, SIC2, SIC3, SIC5, Year6, SIC6, Year8

b. Dependent Variable: Beta

c. Significance is p ,000

Table 6.29 *SPSS-output explanatory value regression model*

As shown, the variability of beta (i.e. firms' perceived systematic risk) is explained for 29.8 per cent by the CAPM regression model, as included in chapter five. Adjusted for the number of independent variables in the model, the regression model (i.e. the independent variables) declares 24.6 per cent of firms' perceived systematic risk.

SPSS shows an significance of p<.000, and hence, the regression model have significant explaining value. Therefore, the conclusion is that the regression model of Kimmel and Warfield (1995) is useful within this sample.

6.3.4.8 Conclusion

The statistical results show that there are no outliers to note in the total sample. The regression residuals are normally distributed, no heteroskedasticity, and also no autocorrelation exists. There is some multicollinearity for the SIC dummy variables. However, it has been tested that these variables cannot be omitted, since they have explanatory value. The regression model is significant, and therefore suitable to use for this sub sample. Now one knows these observations, we are able to analyze the statistical results in a non-numerical way. At this very moment, the three parts of paragraph 6.3 –statistical discussion of the total sample, of the pre-SFAS No. 150 sub sample, and statistical discussion of the post-SFAS No. 150 sub sample– have been completed. Hence, the discussion of the statistical results of the second regression model has been completed. At this moment, we recapitulate the statistically tested hypothesis (II) and we

are able to give an indication whether or not the hypothesis should be accepted. The null hypothesis II states: "MRPS' reclassification had no or a decreasing effect on firms' required rate of return on common stock". Since the regression coefficient is increased from .206 (significant) to .257 (significant), the null hypothesis should be rejected. And therefore, the alternative hypothesis will be accepted: "MRPS' reclassification had an increasing effect on firms' required rate of return on common stock". An analysis of the results will be performed in the seventh chapter.

6.4 Difference between pre-SFAS No. 150 and post-SFAS No. 150 sub sample with regard to regression coefficient a_3 (concerning hypothesis I)

As mentioned, regression coefficient a_3 captures the influence of the interaction between operating risk (OP) and MRPS on firms' systematic risk (beta). Before the introduction of SFAS No. 150, this regression coefficient amounts to -.005 (significant). I.e.: the higher the value of OPMRPS, the lower the market perception of firms' systematic risk. According to Kimmel and Warfield (1995), this effect is similar to the effect of equity on the market perception of firms' systematic risk. Namely, introducing MRPS in firms' capital structure lowers firms' perceived systematic risk (beta). More about this will be discussed in the analysis in chapter seven.

After MRPS' reclassification (as result of the introduction of SFAS No. 150), the mentioned regression coefficient (a_3) takes the value -.001 (insignificant). This means that when firms introduce MRPS in their capital structure, their perceived systematic risk will not be influenced. In other words, MRPS do not have any influence on firms' perceived systematic risk during the post-SFAS No. 150 period. According to Kimmel and Warfield (1995), this effect is similar to the effect of 'quasi-equity' on the market perception of firms' systematic risk. The effect of 'quasi-equity' falls between the effect of equity and liabilities. Equity have a lowering effect and liabilities have an increasing effect on firms' perceived systematic risk. As mentioned, 'quasi-equity' falls between these two extremes.

In conclusion, MRPS' reclassification has influenced the market perception of firms' perceived systematic risk. This is observable from the difference between the values of regression coefficient a_3 before and after the introduction of SFAS No. 150. Coefficient a_3 (this coefficient captures the effect of the interaction between operating risk and MRPS on firms' perceived systematic risk) does have lesser (negative) impact on firms' systematic risk after the introduction of SFAS No. 150 as compared to the impact before SFAS No. 150.

6.5 Difference between pre-SFAS No. 150 and post-SFAS No. 150 sub sample with regard to regression coefficient b_1 (concerning hypothesis II)

Regression coefficient b_1 captures the effect of the interaction term between firms' beta and the market risk premium (r_M minus r_f). In the preceding chapters, it has already been explained that the introduction of SFAS No. 150 is expected to cause an increasing effect on firms' required rate of return on

common stock. This is expected since the capital market requires higher returns for higher perceived systematic risk. Therefore, since this study found evidence that MRPS' reclassification has had an increasing effect on firms' perceived systematic risk, it is also expected that there is an increasing effect on firms' required rate of return on common stock.

Before the introduction of SFAS No. 150, regression coefficient b_1 amounts to .206 (significant). After the introduction of the accounting standards, this coefficients is increased to .257 (significant). This means that SFAS No. 150 had increasing effect on firms' required rate of return. Both the pre-SFAS No. 150 value and the post-SFAS No. 150 value mean that the higher firms' perceived systematic risk, the higher the required rate of return on common stock.

In conclusion, MRPS' reclassification (SFAS No. 150) has influenced firms' required rate of return on common stock. This appears from the values of the effect of the interaction term within the regression model (CAPM), b_1, before and after MRPS' reclassification.

In conclusion, coefficient b_1 (this coefficient captures the effect of the interaction term between firms' systematic risk and the market risk premium) is higher after the introduction of SFAS No. 150 as compared to the value before SFAS No. 150.

At this very moment, the reader is pointed out that only the sample firms' beta and required rate of return on common stock are scrutinized. This figures are not investigated for other firms (firms without MRPS). Therefore, it is not investigated in this study whether or not other firms also suffered an increase of the mentioned figures. This is not done since the data collection is a very extensive process, that could be a study on itself. Therefore, this falls out of the scope of this study, and is recommended for further investigation.

6.6 Conclusion

This paragraph concludes chapter six with a short discussion about the main statistical findings with regard to the regression data. The empirical testable hypotheses included in chapter five and the findings about these hypotheses will be shortly discussed below. The two regression models will be discussed subsequently. Herewith, the thirteenth and the fourteenth sub question of this thesis will be subsequently be answered: *What is the effect of the introduction of SFAS No. 150 on firms' systematic risk?* and *What is the effect of the introduction of SFAS No. 150 on the required rate of return on common stocks?*

6.6.1 Final statistical conclusions regression model I

A: Testing whether the model is suitable:

$H_0 : a_0 = a_1 = a_2 = a_3 = 0$ (model has no explanatory value)

H_a : at least one slope coefficient $\neq 0$

The first null hypothesis is for each sample –total sample, pre-SFAS No. 150 (data before June 15th, 2003), and post-SFAS No. 150 (data after June 15th, 2003)– not accepted. This means that the regression model of Kimmel and Warfield (1995) does have explanatory value and is significant (all with a significance of p<.000). According to Alwan, et al. (2007, p. 644), this means that at least one of the independent variables (a_0, to a_3) differs from zero.

B: Testing the significance of the regression coefficient a_3:

Hypotheses:

$H_0 : a_3 = 0$ (coefficient has no explanatory value)

$H_a : a_3 \neq 0$

The total sample and the pre-SFAS No. 150 sample show significant negative values for regression coefficient a_3 (if one includes the other variables in the model). In other words, the higher the value of the interaction between operating risk (OP) and MRPS, the lower firms' systematic risk.

After the introduction of SFAS No. 150, regression coefficient a_3 captures an insignificant negative value (if one includes the other variables in the model[96]). This means a shift from significant negative to insignificant negative if one compares the results of the pre-SFAS No. 150 sub sample with the post-SFAS No. 150 sub sample. It was discussed that an insignificant coefficient statistically has no explanatory. However, according to Kimmel and Warfield (1995) an insignificant coefficient for the interaction between operating risk (OP) and MRPS is dealt with as evidence that the capital market regards MRPS as a form of capital that is somewhere between equity and liabilities (regarding the influence on firms' perceived systematic risk).

C: Testing the effect of MRPS' reclassification on firms' systematic risk:

Hypotheses:

H_0 : $_{post}a_3$ minus $_{pre}a_3 = \leq 0$ (MRPS' reclassification had no or decreasing effect on firms' perceived systematic risk)

H_a : $_{post}a_3$ minus $_{pre}a_3 = > 0$

Where:

μ_d = $_{post}a_3$ minus $_{pre}a_3$
$_{post}a_3$ = slope coefficient after the introduction of SFAS No. 150
$_{pre}a_3$ = slope coefficient before the introduction of SFAS No. 150

Before the introduction of SFAS No. 150, the regression coefficient for the interaction between operating risk (OP) and MRPS amounts to -.005 (significant). After MRPS' reclassification (as result of the

[96] Alwan, et al. (2007, p. 640) describe this condition, and state that conclusions of inference about the value and significance of individual independent variables in a multiple regression model "depend on what other explanatory variables are also included in the model".

introduction of SFAS No. 150), the coefficient takes the value -.001 (insignificant). In conclusion, MRPS' reclassification has had increasing effect on firms' systematic risk. This is in fact of that the mentioned interaction does have lesser impact on firms' systematic risk after the introduction of SFAS No. 150 as compared to the impact before SFAS No. 150.

6.6.2 Final statistical conclusions regression model II

A: Testing whether the model is suitable:

Hypotheses:

$H_0 : b_0 = b_1 = 0$ (model has no explanatory value)

H_a : at least one slope coefficient $\neq 0$

As mentioned, three samples are scrutinized on their regression results: the total sample, the pre-SFAS No. 150 sub sample (data before June 15th, 2003), and the post-SFAS No. 150 sub sample (data after June 15th, 2003). Since SPSS shows that the model is significant for all samples, the model has explanatory value (all with a significance of p<.000). Hence, the null hypothesis stated above should not be accepted. One can conclude that at least one independent variable (b_0 or b_1) differs from zero (Alwan, et al., 2007, p.644).

B: Testing the significance of the regression coefficient b_1:

Hypotheses:

$H_0 : b_1 = 0$ (coefficient has no explanatory value)

$H_a : b_1 \neq 0$

All samples (total sample, pre-SFAS No. 150 sub sample, and post-SFAS No. 150 sub sample) show significant positive values for regression coefficient b_1 (if one includes the other variable in the model). In other words, the higher the value of the interaction between firms' perceived systematic risk and the market risk premium (r_M minus r_f) the higher firms' required rate of return.

C: Testing the effect of MRPS' reclassification on firms' required rate of return on common stock:

Hypotheses:

H_0 : $_{post}r_i$ minus $_{pre}r_i$ = ≤ 0 (MRPS' reclassification had no or decreasing effect on firms' required rate of return on common stock)

H_a : $_{post}r_i$ minus $_{pre}r_i$ = > 0

Where:

$_{pre}r_i$ = required rate of return on common stock before the issuance of SFAS No. 150

$_{post}r_i$ = required rate of return on common stock after the issuance of SFAS No. 150

Since we expect a growth of firms' required rate of return after the introduction of SFAS No. 150, it will be interesting to check the findings of the pre-SFAS No. 150 sub sample as compared to the post-SFAS

No. 150 sub sample. The pre-SFAS No. 150 sub sample shows with regard to regression coefficient b_1 a value of .206 (significance of p<.000). After the introduction of SFAS No. 150, this coefficient has changed to a value of .257 (significance of p<.042). This means a growth of the effect of the interaction term (beta times the market risk premium) on firms' required rate of return on common stock. Hence, the null hypothesis stated above should (preliminary) be rejected. So, MRPS' reclassification did affect firms' required rate of return on common stock, and well considered, the MRPS' reclassification has increased the relation between the mentioned interaction and firms' required rate of return.

7. Analysis of (statistical) research results

7.1 Introduction

The statistical results of chapter six will be analyzed in this chapter. Herewith, the fifteenth sub question of this thesis will be answered in this chapter: *What underlying analytical conclusions can be drawn?* It is important to perform analyses with regard to the reclassification of MRPS, and to involve the data that are obtained within this study. Therefore, this chapter includes a non-numerical or non-statistical review of the research results as obtained in the former chapter. Firstly, the results belonging to hypothesis I will be discussed. After that, the results for hypothesis II will be analyzed. The discussions are structured as follows: (1) the hypothesis will be presented, (2) the pre-SFAS No. 150 sub sample results will be analyzed, (3) the post-SFAS No. 150 sub sample results will be discussed, (4) the differences between the two sub samples will be discussed, and after all (5) this chapter closes with a concluding paragraph.

7.2 Analysis of hypothesis I

In advance, null hypothesis and alternative hypothesis HI (as introduced in chapter four) will be show below.

H I:	H_0 : MRPS' reclassification had no or a decreasing effect on firms' perceived systematic risk
	H_a : MRPS' reclassification had an increasing effect on firms' perceived systematic risk

The statistical results included in chapter six will be further discussed as follows: firstly, the results for the sub sample of the period before June 15th, 2003 will be discussed, then, the results for the sub sample of the period after June 15th, 2003 will be discussed, and after all, the differences between the two sub samples will pass in review.

7.2.1 Pre-SFAS No. 150 sub sample

7.2.1.1 Perceived systematic risk decomposition: operating and financial risk

As already mentioned in the literature review, firms' (perceived) systematic risk consists of operating risk and financial risk (Hamada, 1972; Rubinstein, 1973; Kimmel and Warfield, 1995; and others). This systematic risk composition meets the 'thoughts' of the model that is used in this study (the regression model of Kimmel and Warfield, 1995).

Kimmel and Warfield argue in their study (1995) that liabilities increase firms' systematic risk and that equity elaborates the opposite (liabilities are expected to have a significant positive effect and equity a significant negative effect on firms' perceived systematic risk). Besides, operating risk (OP) is, according to Kimmel and Warfield (1995), Hamada (1972) and others, a significant part of firms' beta. This means that

operating risk, like liabilities, also is expected to be significant positive. The SPSS-output (table 6.9) shows that the results within this study support these theoretical predictions.

As stated above, liabilities cause an incline of firms' systematic risk. This is in fact of the interest and redemption obligations (these payments are required, regardless of financial performance), which make debt risky (i.e. riskier than straight equity). Therefore, coefficient OPDebt (a_2), the interaction between operating risk and debt, should be significant positive. Hamada (1972) has confirmed this statement and says: "the covariance of the asset's rate of return with the market portfolio's rate of return (which measures the nondiversifiable risk of the asset–the proxy β will be used to measure this) should be greater for the stock of a firm with a higher debt-equity ratio than for the stock of another firm within the same risk-class with a lower debt-equity ratio". As one can deduce from the SPSS-output (table 6.9), this is the case for the pre-SFAS No. 150 sub sample belonging to this study, because debt has an increasing influence on firms' systematic risk (beta).

7.2.1.2 Regression results regarding coefficient OPMRPS (a_3)

The SPSS-output shows that coefficient OPMRPS (a_3), the interaction between operating risk and the level of MRPS, is significant negative (-.005). This means that the market perception of the economic substance of MRPS is equal to equity (Kimmel and Warfield, 1995). In other words, introducing MRPS in firms' financial structure on the balance sheet will reduce firms' systematic risk (depicted by beta). So, i.e., one could state that the effect of MRPS, during the pre-SFAS No. 150 period, is similar to equity: MRPS reduce the market perception of firms' riskiness, and hence, MRPS have an inverse relationship with firms' beta (with respect to the pre-SFAS No. 150 sub sample). As earlier mentioned in this study, MRPS are hybrid instruments with characters of both equity and liabilities. Irrespective of their hybrid character, MRPS are regarded as a form of equity by the capital market. One could argue that the equity character included in MRPS prevails above the liability character included in MRPS.

7.2.1.3 Regression results of coefficient OPMRPS (a_3) as compared to the results of Kimmel and Warfield (1995)

As discussed in the literature review of this study, Kimmel and Warfield (1995) have found an insignificant coefficient for the interaction between operating risk and MRPS. This means that the results of Kimmel and Warfield (1995) are not (fully) similar to the evidence gathered during this study. It is interesting to search for explanations for this divergence to preclude as much as possible potential misunderstandings.

Firstly, the sample periods are different and might be an explanation for the difference. Perhaps, firms' management might have changed their dividend and/or redemption behavior in time, and hence, the market assessment of MRPS' riskiness has changed accordingly. The mentioned behavioral change can be based on the times of financial prosperity during the sample period that is chosen by Kimmel and Warfield

(1995). Financial prosperity delivers firms growth opportunities and a more generous position to meet their redemption obligations and to payout dividends (firms are more financial healthy), which may cause that MRPS' economic substance will move in the same direction as liabilities (coefficient OPMRPS (a_3) will be significant positive: i.e. MRPS will increase firms' systematic risk, beta) (see also the discussion about the study of Chan and Seow (1997)). However, hard evidence for this explanation is not gathered during this investigation and is out of the scope of this study.

Secondly, one could expect that the capital market has 'advancing insights', which means that the capital market better understands the 'real' economic substance of MRPS. This is not very surprising considering the importance of and discussions, literature and other correspondence about hybrid instruments' balance sheet classification.

Thirdly, although this study controls for industries, this study makes no distinction between utility and non-utility firms while Kimmel and Warfield (1995) do. This might have influence on the regression results. Although Kimmel and Warfield (1995) have only found 'little indication' of differences between their utility and non-utility sub sample[97], it might be of interest with regard to explaining the divergence between the regression coefficient results (with regard to a_3) in this paper and the study of Kimmel and Warfield (1995).

7.2.1.4 Firms' financial healthiness

The SPSS-output shows a significant negative coefficient for OPMRPS (a_3). As mentioned, this means that the capital market perception of MRPS' economic substance is similar to the economic substance of equity. In the literature review, the results of Chan and Seow's study (1997) have been discussed. They have found that for financial unhealthy firms the equity characteristics dominates the liability characteristics. This is in fact of the residual nature of MRPS (as compared to liabilities) and firms' possibilities to avoid redemption and dividend payments to MRPS holders in times of financial distress or a poor financial position (see sub paragraph 3.4.2 and 3.4.3). Therefore, potentially, the significant negative coefficient in the SPSS-output, OPMRPS (a_3), is a result of firms' financial unhealthiness: indeed, MRPS are more equity-like in times of financial disadvantages. This is because in those periods steady streams of redemption and dividend payments are not forthcoming, like it is the case for liabilities (see the discussion about the study of Chan and Seow, 1997). However, this study does not control for firms' financial healthiness, and therefore, this will not be the final conclusion, although it will be interesting for further studies.

[97] Kimmel and Warfield (1995) found that utilities in fact of their "regulated status" should disclose more inquiry. Therefore, the capital market might better understand MRPS' economic substance. This is confirmed by Linn and Pinegar (1988). Linn and Pinegar (1988) also found other explanations for differences between utilities and non-utility firms. For a discussion of these differences, the author refers to sub paragraph 3.7.3.

7.2.1.5 Regression results coefficient OPMRPS (a_3) as compared to MRPS' balance sheet classification

The literature review has already discussed that firms, in the pre-SFAS No. 150 period, predominantly classify their MRPS as equity or as 'quasi-equity' (Mulford and Maloney, 2003; Schauer, et al., 2003; Kimmel and Warfield, 1995; and others). Only a few firms classify their MRPS as liabilities. The sample belonging to this study confirms this observation: none of the selected firms present MRPS as liabilities. Therefore, one could expect that it is out of the question that the coefficient for the interaction between operating risk and MRPS, OPMRPS (a_3), for any firm in the sample selection is significant positive (like liabilities). This expectation is based on the thought that MRPS' classification (and broader: financial instruments' classification) guides their market perception of the economic substance (as asserted and confirmed by Hopkins, 1996). However, if one regards an efficient market (see paragraph 1.7) it remains possible that the mentioned coefficient is significant positive (like liabilities) if the capital market, based on the publicly available information, regard MRPS as liabilities-like.

As discussed above, coefficient OPMRPS (a_3) takes a significant negative value, which means that MRPS' influence on firms' perceived systematic risk is similar to equity. So, this regression result is supported by the theoretical construction that instruments that are classified as 'quasi-equity' or as equity have in first instance no or a declining effect on firms' systematic risk, unless the capital market judges that the instruments characteristics and/or attributes require another effect (increasing or no effect). In other words, the results in the SPSS-output confirm the first part of the last sentence, and the second part does not apply here.

It is good for readers understanding to explicitly state that –with regard to the pre-SFAS No. 150 period– both Hopkins (1996) findings and the thoughts of the efficient market hypothesis (see paragraph 1.7) cannot be rejected with the results belonging to this study, regarding coefficient OPMRPS (a_3), the interaction between operating risk and MRPS[98]. Moreover, the capital market's perception of MRPS' economic substance (depicted by MRPS' influence on firms' perceived systematic risk, beta) is consistent with MRPS' balance sheet classification in the pre-SFAS No. 150 period. Regarding to this results, it had not been recommendable for the FASB to prescribe a shift of MRPS' balance sheet classification.

7.2.2 Post-SFAS No. 150 sub sample

7.2.2.1 Systematic risk decomposition: operating and financial risk

Like the pre-SFAS No. 150 sub sample results, also the regression coefficients for operating risk (a_1) and its interaction with debt (a_2) are significant positive. This is consistent with the theoretical thoughts, as pointed out in the literature review, and is supported by earlier studies (Kimmel and Warfield, 1995; Cheng, et al., 2003; Chan and Seow, 1997; Hamada, 1972; Rubinstein, 1973). Recapitulated, firms' systematic risk (beta) consists of operating risk and financial risk. Therefore, it is expected that both parameters have a

[98] The reader should note that EMH is a 'joint hypothesis'. See for background information paragraph 1.7.

significant positive value within the regression model of Kimmel and Warfield (1995), which is confirmed by the SPSS-output above.

7.2.2.2 Regression results regarding coefficient OPMRPS (a_3)

The regression results show an insignificant negative coefficient for OPMRPS (a_3) (-.001). In accordance with Kimmel and Warfield (1995) and Cheng, et al. (2003), this means that the market perception of the economic substance of MRPS is neither equal to equity nor to liabilities. This is not surprisingly since MRPS is a hybrid instrument, which contains characteristics of both equity and liabilities. The market perception of MRPS' economic substance (i.e. MRPS' influence on firms' perceived systematic risk, beta) is therefore –with regard to the post-SFAS No. 150 period– equal to 'quasi-equity'. This justifies the 'quasi-equity' classification of MRPS, which was permitted in the pre-SFAS No. 150 period. These results are supported by earlier researches, which are discussed in the literature review (Kimmel and Warfield, 1995; Cheng, et al., 2003; Chan and Seow, 1997).

7.2.2.3 Regression results of coefficient OPMRPS (a_3) as compared to the results of Kimmel and Warfield (1995)

Although the regression results –belonging to the post-SFAS No. 150 sub sample– confirm earlier studies (Kimmel and Warfield, 1995; Cheng, et al., 2003; Chan and Seow, 1997), one should deal carefully with the regression results as compared to earlier research results. Within the discussion of the regression results of the pre-SFAS No. 150 period, it is already explained that differences in research periods, sample compositions and 'advancing insights' of the capital market might have influence on the regression results. These factors cause that one should be careful with analyzing the regression results of this study as compared to earlier investigations. Providing that the mentioned factors (differences in research periods, sample compositions and advancing insights of the capital market) have had no effect on the regression results, the latter are supported by the theoretical thoughts and empirical studies discussed in the literature review (Kimmel and Warfield, 1995; Cheng, et al., 2003; Chan and Seow, 1997).

7.2.2.4 Firms' financial healthiness

The SPSS-output shows an insignificant negative coefficient OPMRPS (a_3). As mentioned, this means that the capital market perception of MRPS' economic substance is similar to the economic substance of 'quasi-equity'. Like the discussion with regard to the results of the pre-SFAS No. 150 sub sample, the regression coefficient results might be influenced by firms' financial healthiness. This factor has been discussed by Chan and Seow (1997). As mentioned, they have found that for financial unhealthy firms the equity characteristics dominates the liability characteristics. This is in fact of the residual nature of MRPS (as compared to liabilities) and firms' possibilities to avoid redemption and dividend payments to MRPS holders in times of financial distress or a poor financial position (see sub paragraph 3.4.2 and 3.4.3).

Therefore, potentially, the insignificant negative coefficient in the SPSS-output, OPMRPS (a_3), is a result of firms' financial healthiness/position: the position is neither weak nor rosy. The dividend and redemption payments are not as whimsical as payments to equity holders, but they are also not as steady as payments to holders of liabilities (Chan and Seow, 1997). However, as mentioned earlier, this study does not control for firms' financial healthiness, and therefore, this will not be the final conclusion, although it will be interesting for further studies.

7.2.2.5 Regression results coefficient OPMRPS (a_3) as compared to MRPS' balance sheet classification

In the aforementioned studies of Kimmel and Warfield (1995), Cheng, et al. (2003), and Chan and Seow (1997), the authors have posit several times that the FASB should account for the results of their studies, which deliver evidence about the economic substance of MRPS, which (in their studies) equals to 'quasi-equity' and not to liabilities, as implied by FASB's statements No. 150.

On the other hand, Hopkins (1996) states that the market perception of MRPS' economic substance follows their balance sheet classification. Hence, according to Hopkins (1996), MRPS' classification guides their economic substance. This would mean that MRPS' reclassification (SFAS No. 150) has caused that the market perception of MRPS' economic substance follows their reclassification, and hence, should be equal to liabilities during the post-SFAS No. 150 period (the relation between firms' perceived systematic risk (beta) and MRPS should equals the relation between liabilities and firms' perceived systematic risk). However, the SPSS-output proves that this statement is not consistent with evidence gathered in this study. Perhaps, this divergence between the research results of this study and Hopkins' study (1996) is cause of differences in research designs, research period, et cetera. In any case, based on the results included in the table above, one can state that the capital market has not followed MRPS' reclassification on the balance sheet: MRPS should be classified as liabilities after SFAS No. 150, but their economic substance is similar to 'quasi-equity'. Therefore, MRPS' economic substance does not match with their (re)classification (with regard to the post-SFAS No. 150 period).

Two explanations are self-evident:

(1) It is possible that the capital market does not consult firms' financial statements (and added notes) within the risk assessment of firms. This means that the financial statements are not of interest for assessing the firms' perceived systematic risk (beta), and hence, fluctuations of firms' perceived systematic risk are results of other factors than financial statement disclosures.

(2) Potentially, the capital market aggregates the information on the balance sheet with the notes to the financial statements, and hence, the capital market forms a more complete picture within the assessment of MRPS' economic substance than merely takes the line of informing MRPS' balance sheet classification.

The explanations can be subjected to separate investigations. However, this is out of the scope of this study, and hence, these factors will be a hiatus within the analysis of the regression results of this study. The explanations can be characterized as questions on the research field of value relevance. Since this study focuses on the research field economic consequences, it is too far-reaching to explore the explanations above. Both explanations are included in the limitations as elaborated in chapter five.

One lesson can be retrieved from the regression results: the market perception of MRPS' economic substance (i.e. MRPS' influence on firms' perceived systematic risk) after SFAS No. 150 is not consistent with MRPS' balance sheet classification. This means that Hopkins' research results (1996) are, potentially, not fully applicable to this study. Indeed: the reclassification of MRPS is not fully impounded in the market perception of MRPS' economic substance (their influence on firms' systematic risk)[99]. Consciously is chosen for the word *potentially*. This is in fact of that other factors might have disturbing effects on the regression results. These factors are included in the explanation stated above[100].

During the sample period of the post-SFAS No. 150 sub sample, it was neither permitted to classify MRPS as equity nor as 'quasi-equity': firms are obligated to classify their MRPS as liabilities. Regarding the regression results for coefficient OPMRPS (a_3), the results are in contradiction with MRPS mandatory classification as liabilities, which is prescribed by SFAS No. 150. As already mentioned in this study, one considers the dichotomous classification approach not conducive for hybrid financial instruments, being pursued by the FASB (Kimmel and Warfield, 1995; Cheng, et al., 2003). Because MRPS (a hybrid instrument) includes both equity and liabilities characteristics, one do not consider a classification that includes MRPS within the liabilities section of the balance sheet to be useful. These concerns arise from the perspective that a class on the balance sheet should consists of instruments with a similar economic substance, otherwise the classification is not useful "in accurately communicating information about the relative claims to firm resources" and analyzing of the financial position will be hard to perform (Kimmel and Warfield, 1995).

In conclusion, the market perception of MRPS' economic substance (i.e. their influence on firms' perceived systematic risk) is, with regard to the post-SFAS No. 150 period, equal to the economic substance of 'quasi-equity'. However, MRPS' balance sheet classification is since the introduction of SFAS No. 150 not consistent with the economic substance. Therefore, MRPS' balance sheet classification is less useful as compared to the pre-SFAS No. 150 period (Kimmel and Warfield, 1995). The results for this sub sample are supported by the findings of Kimmel and Warfield (1995). However, as mentioned, one should be careful to lump the results together, in fact of that there exist design differences. As discussed, Hopkins' results

[99] Although the market perception of MRPS' economic substance is not equal to MRPS' balance sheet classification, there is a shift observable, which indicates that MRPS' classification really does matter. Therefore, it seems that surely Hopkins' research results (1996) (partly) are applicable to the results of this study.

[100] Hopkins (1996) has not added notes to the financial statements included in his study, and therefore, Hopkins (1996) does not control for the aggregated effect of financial statements and their belonging notes (see explanation two).

(1996) do not fully support the results of this study, but cannot be rejected with the findings belonging to this study.

7.2.3 Effect of SFAS No. 150 on firms' beta

7.2.3.1 Differences between the pre- and post-SFAS No. 150 sub samples

The pre- and post-SFAS No. 150 period differs from each other. The first difference is MRPS' balance sheet classification. During the pre-SFAS No. 150 period firms classify their MRPS as equity and 'quasi-equity' (the sample includes no firms with MRPS classified as liabilities). After the introduction of SFAS No. 150, it was prohibited to classify MRPS as equity or as 'quasi-equity', and hence, firms should classify their MRPS as liabilities. The second difference is MRPS' effect on firms' perceived systematic risk (beta). The SPSS-output for the pre-SFAS No. 150 sub sample shows a significant negative coefficient for the interaction between operating risk and MRPS (OPMRPS, a_3) (-.005), and for the post-SFAS No. 150 sub sample this coefficient is insignificant negative (-.001). This means a shift from significant negative to insignificant negative. In other words, this can be characterized as a shift from 'MRPS have similar influence on firms' beta as equity' to 'MRPS have similar influence on firms' beta as 'quasi-equity'.

The introduction of SFAS No. 150 requires for the sample firms a shift of their MRPS' classification, and this reclassification has lead to a changed market perception of the riskiness of MRPS. With an eye to the regression model of Kimmel and Warfield (1995), MRPS have no longer a declining effect on firms' perceived systematic risk (as it was the case before the introduction of SFAS No. 150), but, after the introduction of SFAS No. 150, MRPS have no or a 'neutral' effect. Therefore, the capital market regards MRPS no longer as a form of equity, but as 'quasi-equity' (somewhere between equity and liabilities).

7.2.3.2 Influence of MRPS' reclassification on the market perception of MRPS' economic substance

The aforementioned observation allows one to state that the introduction of SFAS No. 150 has had a 'neutralizing' effect on the market perception of MRPS' economic substance (i.e. while MRPS had a decreasing effect on firms' beta in the pre-SFAS No. 150 period, MRPS have no effect on firms' beta after SFAS No. 150). Hence, it is justified to conclude that MRPS' reclassification has had influence on their economic substance, measured by MRPS' influence on firms' perceived systematic risk (beta).

Therefore, it seems that Hopkins' (1996) conclusions are supported by the evidence gathered in this study. Namely, it seems that the capital market is guided by MRPS' balance sheet classification. However, as mentioned, the market perception of MRPS' economic substance is not consistent with their current classification. Nevertheless, the latter does not reject the statement that the capital market/the financial statement users are guided by MRPS' classification. Indeed, a shift of the market perception is observed. So, it is plausible to state that, although the reclassification not fully reflects the market perception of MRPS' economic substance, the capital market is guided by MRPS' reclassification. Potential explanations

for the incomplete processing of the reclassification are included in the bullet points of sub paragraph 7.2.2.5.

7.2.3.3 SFAS No. 150's effect on coefficient OPMRPS (a_3) in relation to EMH

As mentioned in paragraph 1.7, Fama, et al. (1969) defines the Efficient Market Hypothesis: the market "adjusts rapidly to fully impound information into share prices when the information is released".

Paragraph 1.7 discusses that this study uses the Capital market research approach. It had been demonstrated that the available literature shows that within Capital market research, with regard to accounting, mostly a semi-strong efficient market is assumed (Van Aalst, et al., 1997, p. 117; Deegan and Unerman, 2006, p. 378)[101]. In consequence of this, differences were not expected between the pre-SFAS No. 150 sub sample and the post-SFAS No. 150. Indeed, as mentioned, the rights and obligations of firms with outstanding MRPS will not change due to the introduction of SFAS No. 150. Following EMH, there is no new information, and hence, no increase or decrease of the required returns, and more profound, firms' perceived systematic risk (Deegan and Unerman, 2006, p. 377). However, the regression results belonging to this study really show a difference between both sub samples. At this very moment one will wonder how EMH is related to these findings. To understand the research findings of this study, it is necessary to study EMH and the research findings in their true perspective.

As explained, if one looks at the influence of MRPS on firms' perceived systematic risk (beta), the capital market regards MRPS during the post-SFAS No. 150 period as 'quasi-equity', while it by statement SFAS No. 150 is required to classify MRPS as liabilities. So, there exists some divergence between the market perception of MRPS' economic substance and there classification. It seems that the capital market sees 'trough' the balance sheet classification of MRPS. Although it looks like that the capital market is partly influenced by the reclassification, she indicates with their perception of MRPS' influence on firms' beta (depicted by coefficient a_3) that the required reclassification does not reveal completely new information.

Another explanation, with which EMH remains to be accepted (like the aforementioned explanation), is that the capital market has get 'advancing insights' during time. So, for the post-SFAS No. 150 sub sample one could expect that the capital market has better understanding of the 'real' economic substance of MRPS as compared to the pre-SFAS No. 150 sub sample. As previously discussed in this study, this is not surprising since there have been extensive discussion and correspondence about MRPS' reclassification.

[101] In accordance with Deegan and Unerman (2006, p. 378), the Capital market research approach in accounting assumes the semi-strong EMH. This form is "the most relevant for capital market research in accounting" since this form assumes that all *publicly available information* is impounded into stock prices. Watts and Zimmerman (1986, p. 19) indicate that the literature –on average– is consistent with the semi-strong EMH. Therefore, this thesis assumes a semi-stringent EMH, in fact of the use of the Capital market research approach.

Readers should note that EMH is a 'joint hypothesis', which means that the conclusions made in this chapter regarding to EMH are under the assumption of the correctness of the used models (Van Aalst, et al., 1997, p. 112). The author refers to paragraph 1.7 for more background information.

7.3 Analysis of hypothesis II

In advance, null hypothesis and alternative hypothesis HII (as introduced in chapter four) will be show below.

H II: H_0 : MRPS' reclassification had no or decreasing effect on the required rate of return on common stock (r_i)

H_a : MRPS' reclassification had an increasing effect on firms' required rate of return on common stock (r_i)

The statistical results included in chapter six will be further discussed as follows: firstly, the results for the sub sample of the period before June 15th, 2003 will be discussed, then, the results for the sub sample of the period after June 15th, 2003 will be discussed, and after all, the differences between the two sub samples will pass in review.

7.3.1 Pre-SFAS No. 150 sub sample

Decomposition of firms' required rate of return on common stock: risk free rate and interaction between firms' beta and the market risk premium

Fama and French (2004), and the 'inventors' of the CAPM model (Sharp and Lintner, 1964-65) declare that firms' required rate of return consists of a risk free rate on the one hand and a market risk premium on the other hand. The latter should show any positive interaction with firms' perceived systematic risk. This is because firms' returns react in some way on market return fluctuations. Therefore, for each firm, the systematic risk (i.e. the way how firms' returns react on market return fluctuations) is individually determined, and hence, the actual premium for market risks is for each firm different.

Firstly, the descriptive statistics show that the coefficient for the risk free rate of return is positive significant. This is expected since Fama and French (2004) state that firms' required rate of return consists of the risk free rate.

Secondly, the descriptive statistics show a positive significant regression coefficient for the interaction between firms' beta and the market risk premium (b_1 .206). This means that this regression coefficient has an increasing effect on firms' required rate of return (the dependent variable in the regression model). This is not surprising since Fama and French (2004) and earlier Sharp and Lintner (1964-65) argued that firms' required rate of return consists of a risk free rate plus the interaction between firms' beta and the risk premium. This 'thought' is included in the CAPM model, which is captured by $r_i = r_f + ß (r_M - r_f)$ (Fama and French, 2004). For readers' understanding: the beta in the centre of the CAPM formula captures firms' perceived systematic risk. This figure is the same beta as already been discussed in the

preceding paragraph (by discussing the first regression model). Therefore, this figure is the link between both models used in this study, and hence, the link between the two hypotheses stated in chapter four.

7.3.2 Post-SFAS No. 150 sub sample

Decomposition of firms' required rate of return on common stock: risk free rate and interaction between firms' beta and the market risk premium

As mentioned, the CAPM model explains that firms' required rate of return on common stock consists on the one hand of a risk free rate and on the other hand of a market risk premium (which interacts with firms' beta) (Fama and French, 2004). These two parts of firms' required rate of return will be shortly discussed for the post-SFAS No. 150 sub sample.

Firstly, the descriptive statistics show a significant positive value for the risk free rate of return. Like discussed in the previous sub paragraph, this is expected since Fama and French (2004) state that firms' required rate of return consists of the risk free rate of return.

Secondly, the descriptive statistics show also a positive significant regression coefficient for b_1 (.257). As mentioned above, this means that regression coefficient b_1 has an increasing effect on firms' required rate of return (the dependent variable in the regression model). Since it was argued by Fama and French (2004) and Sharp and Lintner (1964-65) that the interaction between firms' beta and the market risk premium is part of firms' required rate of return, this finding is not surprising. As already discussed, this ´thought´ is captured by CAPM, which includes the mentioned interaction.

7.3.3 Effect of SFAS No. 150 on firms´ required rate of return

7.3.3.1 Differences between the pre- and post-SFAS No. 150 sub samples

This paragraph is closely connected with the matters discussed in sub paragraph 7.2.3. Indeed, via the CAPM model, firms' perceived systematic risk is connected with firms' required rate of return on common stock (see sub paragraph 7.3.1).

The findings of the pre-SFAS No. 150 period differs from the post-SFAS No. 150 period because MRPS' classification differs. Before the introduction of SFAS No. 150, firms were permitted to classify their MRPS as equity or as 'quasi-equity'. However, SFAS No. 150 excludes MRPS from the mentioned sections of firms' balance sheet. Due to this reclassification, firms suffer an increase of their perceived systematic risk. With regard to the increase of this figure, the author refers to sub paragraph 7.2.3.1. Since firms' perceived systematic risk is connected with firms' required rate of return, it is expected that firms subjected to SFAS No. 150 also suffer an increasing effect on their required rate of return on common stock (r_i). I.e. it is expected that regression coefficient of the interaction term (b_1) is increased after the introduction of SFAS No. 150. The second alternative hypothesis (II) states this with the words that MRPS' reclassification has an increasing effect on the required rate of return on common stock. So, it is interesting to review whether the

SPSS-outputs show differences between the pre-SFAS No. 150 sub sample and the post-SFAS No. 150 sub sample.

Regression coefficient of the interaction between firms' beta and the market risk premium (b_1) amounts in the pre-SFAS No. 150 period to .206 and in the post-SFAS No. 150 period to .257. Therefore, MRPS' reclassification has had an increasing impact on firms' required rate of return. We have seen an increase of the effect of OPMRPS on firms' perceived systematic risk (see analysis of the findings belonging to hypothesis HI). As a result, one expects –*ceteris paribus*– an increasing effect of the interaction term on firms' required rate of return, since firms' perceived systematic risk is connected with firms' required rate of return. This has been confirmed with the abovementioned research findings (the interaction term, b_1, increases from .206 to .257) .

However, since the interaction term within the CAPM formula consists of different variables, it is not quite transparent which variable cause in increase of the explaining value of the interaction term within the CAPM formula. The absolute value of beta has increased, and hence, this is a reason for an absolute increase of the interaction term. However, for negative values of the market risk premium, the absolute value of the interaction term will decrease. For this study, it is primarily not interesting to know which variable causes the increase of the effect of the interaction term on firms´ required rate of return. It is more interesting *whether* MRPS´ reclassification has caused an increase of the mentioned effect. The hypothesis (II) is developed in line with this thought.

In conclusion, the effect of the interaction term on firms' required rate of return has increased after the introduction of SFAS No. 150 from .206 to .257. This means that –*ceteris paribus*– firms suffer an increasing effect on their required rate of return on common stock: i.e. after SFAS No. 150, common stockholders require higher returns for market risks that are included in investments of common stock for firms with MRPS in their capital structure.

7.3.3.2 Influence of MRPS' reclassification on the market perception of the interaction term between firms' beta and the market risk premium

The market perception of the interaction term between firms' beta and the market risk premium is captured by regression coefficient b_1 within the CAPM model. Since this perception has changed after MRPS' reclassification, it seems that Hopkins' conclusions (1996) should be accepted. Indeed, Hopkins (1996) states that the market perception of the riskiness of financial instruments follows their classification. The evidence found in this study is therefore supported by Hopkins (1996). At the opposite, it is not very clear whether the market perception (translated in the required rate of return on common stock) *exactly* follows MRPS' (re)classification on the balance sheet. This is in fact of that this regression model (CAPM) does not indicate the boarders of the levels of firms' required rate of return on common stock at which the capital market regards MRPS as equity, 'quasi-equity', or as liabilities. This was possible with the regression

model of Kimmel and Warfield (1995) which is used by testing hypothesis I. However, this is not possible with the model that is chosen for testing hypothesis II (CAPM).

In conclusion, we could state that this study found that –like Hopkins (1996) found– the level of firms' required rate of return on common stock is influenced by or follows the balance sheet classification of MRPS. However, it is not clear whether MRPS' balance sheet classification is *exactly* translated in firms' required rate of return on common stock.

7.3.3.3 SFAS No. 150's effect on the interaction term (coefficient b_1) in relation to EMH

The efficient market hypothesis has been already explained in this study. Therefore, it will not rehearsed. Merely the definition as used in this study will be presented to help for readers' understanding. As mentioned in paragraph 1.7, Fama, et al. (1969) defines the efficient market hypothesis: the market "adjusts rapidly to fully impound information into share prices when the information is released". The semi-strong form is used (Van Aalst, et al., 1997, p. 117; Deegan and Unerman, 2006, p. 378).

As discussed, differences between the pre-SFAS No. 150 and post-SFAS No. 150 sub sample are not expected, since no 'new information' is available due to the mentioned accounting standard. However, a difference is found between firms' required rate of return during the pre-SFAS No. 150 period as compared to the post-SFAS No. 150 period. As a result, it seems that EMH be on strained relation with the research findings presented in this study. However, that is not true in fact of the explanations below.

Like the discussion in sub paragraph 7.2.3, two explanations are self-evident. The first explanation is that the capital market not exactly 'price' MRPS as liabilities since they are mandatory classified as liabilities (this pricing process is translated into the required rate of return on common stock). As mentioned, this cannot be stated for the findings of regression model II because this model does not indicate whether a financial instrument is 'priced' as equity, 'quasi-equity' or as liabilities. Hence, it is not possible to state that the capital market sees trough the balance sheet classification of MRPS, because there is a lack of 'hard' evidence. However, although there is no hard evidence in this study, it remains to be a potential explanation.

Another explanation, with which EMH remains to be accepted (like the aforementioned explanation), is that the capital market has get 'advancing insights' or grown attentiveness during time. So, for the post-SFAS No. 150 sub sample one could expect that the capital market has better understanding of the 'real' economic substance of MRPS as compared to the pre-SFAS No. 150 sub sample. As previously discussed in this study, this is not surprising since there have been extensive discussion and correspondence about MRPS' reclassification.

Readers should note that EMH is a 'joint hypothesis', which means that the conclusions made in this chapter regarding to EMH are under the assumption of the correctness of the used models (Van Aalst, et al., 1997, p. 112). The author refers to paragraph 1.7 for more background information.

7.4 Answering the research question central to this study

The research question as possessed in paragraph 1.5 is as follows:

To what extent is there a relationship between the introduction of SFAS No. 150 and the level of the required rate of return on US listed common stock?

In the previous paragraphs, it is explained that at first the introduction of SFAS No. 150 has had an increasing effect on firms' perceived systematic risk. It was discussed that common stockholders were partly influenced by MRPS' balance sheet classification (which was argued by Hopkins, 1996). On the other, it was not possible to reject the EMH since (1) MRPS' balance sheet classification does not *fully* reflect MRPS' economic substance –as impounded in firms' perceived systematic risk– (i.e. it might be that common stockholders see 'through' the balance sheet classification), and (2) it might be that common stockholders have 'advancing insight' in the real economic substance of MRPS. This will not be surprising since there have been many discussion and correspondence about MRPS (and broader: hybrid instruments) in time.

Since firms' perceived systematic risk is included in the CAPM model, which measures the required rate of return on common stock (see chapter four), it was also expected that the introduction of SFAS No. 150 also had an increasing effect on firms' required rate of return. The research findings shown that this actually is the case for the sample firms' required rate of return. It was found that it is not possible for the CAPM-model to assess whether the common stockholders were influenced by MRPS' balance sheet classification and whether the EMH should be rejected, since the CAPM-model does not indicate the boarders of the levels of firms' required rate of return on common stock at which the capital market regards MRPS as equity, 'quasi-equity', or as liabilities.

Based on the research findings, one could state that there exists a positive relationship between the introduction of SFAS No. 150 and firms' required rate of return on common stock. This can be stated since SFAS No. 150 has had an increasing effect on firms' perceived systematic risk. Firms' perceived systematic risk is in sequence positively related with firms' required rate of return on common stock. In answering this relationship, the research results have shown an increasing effect of the introduction of SFAS No. 150 on firms' required rate of return.

As mentioned, readers should note that EMH is a 'joint hypothesis', which means that the conclusions made in this chapter regarding to EMH are under the assumption of the correctness of the used models (Van Aalst, et al., 1997, p. 112). The author refers to paragraph 1.7 for more background information.

7.5 Conclusions

This chapter dealt with the analysis of the statistical findings that were included in chapter six. In this chapter, the statistical findings are discussed in a non-numerical way, and hence, the fifteenth sub

question of this thesis is answered: *What underlying analytical conclusions can be drawn?* The main findings are shortly rehearsed below.

Firstly, the first null hypothesis (HI) should be (preliminary) rejected. The null hypothesis is formulated as: *MRPS' reclassification had no or a decreasing effect on firms' perceived systematic risk*. Hence, it is shown that the introduction of SFAS No. 150 actually has caused an increasing effect on firms' systematic risk. This is shown by an increased regression coefficient for the interaction between firms' operating risk and their level of MRPS in their capital structure (OPMRPS, a_3) from -.005 (significant) to -.001 (insignificant). As discussed, this finding is partly supported by Hopkins' study (1996) since it shows that the capital markets perception of MRPS' economic substance translated into firms' perceived systematic risk 'follows' MRPS' balance sheet classification. However, the EMH cannot be (preliminary) rejected since the market perception of MRPS' economic substance does not *exactly* follow MRPS' balance sheet classification. Indeed, after SFAS No. 150, MRPS' economic substance is equal to 'quasi-equity' while they are classified as liabilities. Two explanations are given: (1) the capital market is partly influenced by MRPS' reclassification, but the reclassification does not reveal completely new information, hence the capital market sees 'trough' the balance sheet classification of MRPS, and (2) the capital market might have 'advancing insight' during time, which explains that the market perception of MRPS' economic substance has changed.

Besides, the second null hypothesis (HII) should also be (preliminary) rejected. As mentioned, the second regression model is connected with the first regression model via beta. Therefore, since there was an increasing effect of MRPS' reclassification on firms' perceived systematic risk, it was also expected that –*ceteris paribus*– SFAS No. 150 has lead to an increasing effect on firms' required rate of return on common stock. The second part of this study mainly focused on the effect of the interaction between firms' beta and the market risk premium (capture by regression coefficient b_1) included in the second regression model. Before SFAS No. 150 this coefficient amounts to .206 and after the introduction of SFAS No. 150 it is .257. This means that MRPS' reclassification has lead to an increase of the effect of the interaction term of beta with the market risk premium. As mentioned, this was expected based on the theoretical thoughts as developed in this study. It was not possible to assess whether Hopkins' study results (1996) supports the findings of this study with regard to the second regression model, since CAPM does not indicate whether the capital market regards MRPS as equity, 'quasi-equity' or as liabilities. Therefore, it is not possible to investigate whether the effect of MRPS on firms' required rate of return on common stock is equal to the changed classification on the balance sheet. Besides, the EMH will not be rejected since it cannot be assessed whether or not MRPS are 'priced' as equity, as 'quasi-equity' or as liabilities.

Readers should note that EMH is a 'joint hypothesis', which means that the conclusions made in this chapter regarding to EMH are under the assumption of the correctness of the used models (Van Aalst, et al., 1997, p. 112). The author refers to paragraph 1.7 for more background information.

In conclusion, MRPS' reclassification/SFAS No. 150 has had an increasing effect on both firms' perceived systematic risk and firms' required rate of return on common stock. Hence, both null hypotheses central to this study should be rejected.

8. Summary and conclusions

8.1 Introduction

In this chapter the summary, results, conclusions, limitations, and recommendations for further research will be discussed. The conclusions are based on the statistical findings of chapter six and the non-numerical analysis as performed in chapter seven. The limitations are already given in paragraph 5.6, but will be shortly rehearsed. After all, the recommendations for further research as discussed in paragraph 5.6 will be given to anticipate on the limitations belonging to this study and to improve the findings.

8.2 Summary

This thesis investigates whether and to what extent the transition of Mandatorily Redeemable Preferred Stock[102] (MRPS hereafter) from equity or 'quasi-equity'[103] to the liabilities section of the balance sheet –as prescribed in Statement of Financial Accounting Standards (SFAS hereafter) No. 150– has had an effect on firms' required rate of return on common stock[104].

The credit-side of the balance sheet depicts the sources of firms' capital. Usually, the credit-side includes two separate categories of capital sources: liabilities and equity. However, some financial instruments have features of both liabilities and equity. These instruments are called hybrid instruments. As a result of the combined characteristics included in a hybrid instrument, these instruments do not strictly fit in one section or category of firms' capital sources: liabilities or equity. A "dichotomous classification approach" (a liabilities and equity section) on the one hand and on the other hand the issuance of hybrid instruments has led to many discussions. In addition, the Security and Exchange Commission in 1979 precludes MRPS from the equity-section while she does not require to list MRPS as liabilities. Hence, a 'quasi-equity' or a 'mezzanine section' on the balance sheet was introduced by US firms (Nair, et al., 1990). This section is used for hybrid instruments.

In response to the classification problems, the Financial Accounting Standards Board has considered changes to the classification regime (Levi and Segal, 2006). In this context, Statement of Financial

[102] MRPS are defined as "any of various instruments issued in the form of shares that embody an unconditional obligation requiring the issuer to redeem the instrument by transferring its assets at a specified or determinable date (or dates) or upon an event that is certain to occur" (FASB, 2003). MRPS have various advantages: in times of financial distress firms have the possibility to postpone dividend payments, MRPS have relatively predictable dividend payments, MRPS' holders have preference over common stock in case of liquidation, and the ability to use strategically the stock voting rights (De Jong, et al., 2006). Chan and Seow (1997) supplement this with the remark that MRPS often is issued rather than bond loans to avoid an increase of the debt-equity ratio and, hence, "reduces technical default risk".

[103] The use of a quasi-equity or mezzanine section on the balance sheet was consistent with the SEC-requirements with regard to the treatment of MRPS (Chan and Seow, 1997). These requirements are set in ASR No. 268 (see sub paragraph 3.2.1).

[104] This is the return that at least should be offered before an investment project or stock will be attractive to a rational investor (Van Aalst, et al., p. 43).

Accounting Standards (SFAS hereafter) No. 150 is issued, which prescribes that certain hybrid instruments – MRPS included– should be shift to the liabilities section on the balance sheet. SFAS No. 150 had been effective on June 15, 2003 (FASB, 2003). This thesis deals with the mentioned accounting standard, specifically with MRPS' reclassification from equity or 'quasi-equity' to the liabilities section of firms' balance sheet (due to the introduction of SFAS No. 150).

Understandably, SFAS No. 150 might lead to a change in the reported debt-equity ratio of firms that are subject to this accounting standard. In fact of the shift of MRPS to the liabilities section of the balance sheet, the liabilities increase and the reported debt-equity ratio increases too. Whether and to what extent the liabilities –and indirectly the reported debt-equity ratio– increase, depends on the classification of MRPS before the issuance of SFAS No. 150: some MRPS are classified as equity, some firms create a 'mezzanine' section (also called 'quasi-equity'), and some MRPS are already classified as liabilities.

The question raised to what extent there is a relationship between the introduced accounting standard and stock trade decisions of common stockholders. A possible change of trade decisions can be characterized as an economic consequence of SFAS No. 150[105]. Specifically, it is interesting to investigate to what extent SFAS No. 150 affects the requirements with regard to the rate of return on common stocks since this subject is not investigated yet. Therefore, this study adds value to the field of research into economic consequences of accounting standards[106]. There are various factors that may influence the required rate of return due to SFAS No. 150. An important factor is the debt-equity ratio, of which the author of this thesis expects to be crucial within the determination of the level of the required rate of return. Normally, a higher reported debt-equity ratio leads to a higher required rate of return in fact of that "the market's perception of the riskiness of investing in the firm's stock also rises" (Schauer, et al., 2006) – *ceteris paribus*–. The last quotation indicates that the riskiness of firms' stock is strictly connected with firms' debt-equity ratio on the one hand and on the other hand with the required rate of return on common stock. This reciprocal relation is included in the CAPM model as introduced by Sharp and Lintner (1965-64), and is used in this master thesis.

The belonging research question is formulated as follows:

To what extent is there a relationship between the introduction of SFAS No. 150 and the level of the required rate of return on US listed common stock?

In the introduction of this thesis, it is outlined that prior research does not provide a clear-cut picture on the relation between the introduction of SFAS No. 150 (i.e. MRPS' (re)classification due to SFAS No. 150) and the level of the required rate of return. On the one hand, the Efficient Market Hypothesis

[105] Generally, economic consequences can be characterized as impacts of changing accounting standards. In paragraph 2.3, studies in the area of economic consequences are reviewed.

[106] Besides the fact that this study is new in this research area, also several parties benefit from taking notice the results of this study, since SFAS No. 150 is involved in their decision-making behavior (see also paragraph 1.8), which makes this study relevant.

(EMH) assumes that the capital market sees 'through' the balance sheet classification, and hence, expects no relation between SFAS No. 150 and the level of the required rate of return on common stock. On the other hand, some research (e.g. Hopkins, 1996) showed that financial statements' users are influenced by the balance sheet classification of hybrid instruments. Therefore, these thoughts and/researches indicate that the introduction of SFAS No. 150 not necessarily have an increasing effect on firms' required rate of return on common stock, although the theoretical relationships really exist. Hence, this study is performed in the research field of these strained thoughts: on the one hand, common stockholders might see through MRPS' balance sheet classification, on the other hand, they might be influenced by MRPS' reclassification (due to the introduction of SFAS No. 150).

Firstly, prior research is extensively discussed in chapter three. Some aspects make it difficult to assess the accounting treatment of MRPS and delivers ambiguity of their economic substance (how the capital market regards MRPS: as equity, 'quasi-equity' or as liabilities). These aspects are *avoidability*, *residual nature*, and *control*. These aspects troubled differences between straight equity and straight liabilities. For further explanation of these aspects, the author refers to paragraph 3.4.

After that, the relations between firms' debt-equity ratio, firms' perceived systematic risk, and their required rate of return on common stock are discussed[107]. The first half of paragraph 3.5 discusses some prior research that delivered empirical evidence of a positive relation between firms' debt-equity ratio (i.e. leverage) and their perceived systematic risk: Hamada (1972), Hill and Stone (1980), and Bowman (1979). In the concrete, the mentioned studies conclude the following: firms with higher debt-equity ratios should have greater values of perceived systematic risk as compared to firms with lower debt-equity ratios in the same risk-class. The second half of paragraph 3.5 deals with (predominantly) empirical studies that show the mentioned relationship between firms' perceived systematic risk and their required rate of return on common stock: Ammeraal and Heezen (2006), Van Aalst, et al. (1997), Campbell, et al. (2009), and Fama and French (2004). The conclusions drawn by the authors of the mentioned studies can be quoted with Fama and French (2004): "the relation between average return and beta [firms' perceived systematic risk]…is roughly linear".

The literature review continues with empirical studies that prove an increased debt-equity ratio due to the introduction of SFAS No. 150 (Schauer, et al. (2006), Maloney and Mulford (2003), Schneider and Wertheim (1993), and De Jong, et al. (2006)).

Next, the literature review is directed towards the market perception of MRPS' economic substance. This means that prior research has been informed on how common stockholders regard MRPS: as equity, 'quasi-equity' or as liabilities? The main conclusion is that MRPS are predominantly regarded as hybrid instruments, somewhere between equity and liabilities. This is measured by MRPS' effect on firms'

[107] The debt-equity ratio is often expressed as a percentage and measures how far a firm is financed by debt rather than its own capital (McKenzie, 2007). Systematic risk is the "systematic sensitivity to changes in the market rate of return" and "is captured by the common stock beta" (Kimmel and Warfield, 1995).

perceived systematic risk. The following articles are informed: Kimmel and Warfield (1995), Cheng, Frischmann and Warfield (2003), and Chan and Seow (1997).

Moreover, some studies are attached in the literature review that empirically confirm that users of financial statements are influenced and/or influenced by the balance sheet classification of MRPS. This means that financial statements' users will regard MRPS as a form of equity if they are classified as equity and the financial statements' users will regard MRPS as a form of liabilities if they are classified as liabilities. This is investigated by Hopkins (1996), and Bishop, et al. (2005).

Ultimately, the literature review closed with a discussion about an article in which empirical evidence is retrieved about a decreasing use of MRPS as financing instruments after the introduction of SFAS No. 150 since there are lesser reporting incentives to issue MRPS (Levi and Segal, 2006). The results of the study Levi and Segal (2006) do not make this thesis of less importance. On the contrary, this thesis remains interesting in fact of that MRPS are representative for other hybrid instruments included in SFAS No. 150.

The answer to the research question is provided by testing two hypotheses, developed in chapter four. The next paragraph deals with these hypotheses and the research results will be shortly discussed.

8.3 Results and conclusions

Since SFAS No. 150 requires a shift of MRPS from equity or 'quasi-equity' to the liabilities section of the balance sheet, it is expected that the sample firms' debt-equity ratio will increase (based on the findings of Schauer, et al. (2006), Maloney and Mulford (2003), Schneider and Wertheim (1993), and De Jong, et al. (2006)). Following the aforementioned theoretical relationships (see paragraph 8.2), this will have an increasing effect on firms' perceived systematic risk, and subsequently, this will have an increasing effect on firms' required rate of return on common stock –ceteris paribus–. Hence the following two (alternative) hypotheses are possessed:

I *"MRPS' reclassification had an increasing effect on firms' perceived systematic risk"*, and

II *"MRPS' reclassification had an increasing effect on firms' required rate of return on common stock*"

The first hypothesis is tested with help of the regression model of Kimmel and Warfield (1995)[108] and the second hypothesis is tested by using CAPM[109]. The arguments for using these models are discussed in sub paragraph 5.1.1 and 5.2.1. The research data covers the period between June 15th, 1999 to June 14th, 2007. This research period is divided into two sub periods. One period before the introduction of SFAS No.

[108] The regression model of Kimmel and Warfield (1995) measures the relation between financing instruments and firms' perceived systematic risk. For understanding this model, the author refers to sub paragraph 5.1.1.

[109] The regression model of CAPM (Fama and French, 2004) measures the relation between firms' perceived systematic risk and their required rate of return on common stock. For understanding this model, the author refers to sub paragraph 5.2.1.

150, and one period after the introduction of the mentioned accounting statement (effective date June 15th, 2003). Consciously, the research period is not extended, to pre-eliminate potential effects of the financial crisis. The sample includes US public firms with outstanding MRPS during the research period, identified by the Compustat database. For further requirements with regard to the inclusion of firms in the sample, the author refers to paragraph 5.4.

SFAS No. 150 has had an increasing effect on firms' perceived systematic risk

The results indicate that at first the introduction of SFAS No. 150 has had an increasing effect on firms' perceived systematic risk. It was discussed that common stockholders were partly influenced by MRPS' balance sheet classification (which was argued by Hopkins, 1996). On the other hand, it was not possible to reject the EMH since (1) MRPS' balance sheet classification does not *fully* reflect MRPS' economic substance –as impounded in firms' perceived systematic risk– (i.e. it might be that common stockholders see 'through' the balance sheet classification), and (2) it might be that common stockholders have 'advancing insight' in the real economic substance of MRPS[110]. This will not be surprising since there have been many discussion and correspondence about MRPS (and broader: hybrid instruments) in time.

SFAS No. 150 has had an increasing effect on firms' required rate of return on common stock

Since firms' perceived systematic risk is included in the CAPM model, which measures the required rate of return on common stock (see chapter four), it was also expected that the introduction of SFAS No. 150 also had an increasing effect on firms' required rate of return on common stock. The research findings shown that this actually is the case for the sample firms' required rate of return. Sub paragraph 7.3.3.2 discusses that it is not possible for the CAPM-model to assess whether the common stockholders fully were influenced by MRPS' balance sheet classification and whether the EMH should be rejected, since the CAPM-model does not indicate the boarders of the levels of firms' required rate of return on common stock at which the capital market regards MRPS as equity, 'quasi-equity', or as liabilities.

Based on the research findings, one could state that there exists a positive relationship between the introduction of SFAS No. 150 and firms' required rate of return on common stock. This can be stated since SFAS No. 150 has lead to higher debt-equity ratios (Schauer, et al. (2006), Maloney and Mulford (2003), Schneider and Wertheim (1993), and De Jong, et al. (2006)). In sequence, the introduction of SFAS No. 150 had an increasing effect on firms' perceived systematic risk (firms' debt-equity ratios are positively related to their perceived systematic risk: Hamada (1972), Hill and Stone (1980), and Bowman (1979)). Moreover, firms' perceived systematic risk is positively related with firms' required rate of return on common stock (Ammeraal and Heezen (2006), Van Aalst, et al. (1997), Campbell, et al. (2009), and Fama

[110] Readers should note that EMH is a 'joint hypothesis', which means that the conclusions made in this thesis regarding to EMH are under the assumption of the correctness of the used models (Van Aalst, et al., 1997, p. 112). The author refers to paragraph 1.7 for more background information.

and French (2004)). In answering this relationship, the research results of this thesis have shown an increasing effect of the introduction of SFAS No. 150 on firms' required rate of return.

8.4 Limitations

The author is acknowledged that this study includes various limitations. The limitations are already summed in paragraph 5.6. Therefore, they will not be rehearsed here. However, a summation will be given.

(1) The proxy for firms' perceived systematic risk in the systematic risk analysis/model may not be sufficient to completely assess the mentioned risk (Chan and Seow, 1997).

(2) Low trading frequencies/volumes might have influenced stock prices, but this thesis does not control for this since this is not possible in the used database.

(3) This study does not control for market-wide changes on the date of effectiveness of SFAS No. 150.

(4) The Sharp-Lintner CAPM-model (1965-64) is not well-specified for predicting returns in predominant bad or good economic times (Fama and French, 2004).

(5) CAPM might be incomplete to explain differences in returns by beta.

(6) By using CAPM, this study merely focus on financial-economic considerations with regard to the trade-off between risk and required returns; CAPM does not account for non-financial aspects (Van Aalst, et al. (1996)).

(7) Within CAPM, 'the market' is not clearly defined, this study uses a narrow view, namely 'the market' is equal to the capital market of common stock.

(8) It might be that some firm characteristics (e.g. size, book-to-market ratios, low/high betas, financial healthiness, et cetera) have influenced the findings; the sample firms are joined into different sectors to mitigate these effects, however, it is not fully clear whether these effects actually are eliminated.

(9) The Exposure Draft of SFAS No. 150 and the announcement of the statement itself might have immediately affected firms' perceived systematic risk and their required rate of return on common stock, however this is not measured since this is not an event-study.

(10) The CAPM-model does not indicate the boarders of the levels of firms' required rate of return on common stock at which the capital market regards MRPS as equity, 'quasi-equity', or as liabilities, and hence, it was not possible to assess what the market's perception of common stockholders is with regard to MRPS.

(11) All assumptions underlying to CAPM are restrictions of application in practice, however, Fama and French (2004) argue that "all interesting models involve unrealistic simplifications, which is why they must be tested against data", which is subscribed by the author of this thesis.

8.5 Recommendations for further research

Also the recommendations are already summed in paragraph 5.6. Therefore, they will not be rehearsed here. However, a summation will be given.

(1) Further research should assess to what extent firms' perceived systematic risk is captured by the beta proxy that is used in this thesis.

(2) Besides, comparable research should find a tool to control for stock with low trading frequencies/volumes.

(3) Including a control group in the sample will be valuable to control for other fluctuations (i.e. market wide changes) of firms' perceived systematic risk and their required rate of return on common stock on the issuance date of SFAS No. 150.

(4) It might be interesting to further investigate the effect of firms' financial healthiness on the regression results, since this might affect the results.

(5) Moreover, the proxy for firms' perceived systematic risk should be further scrutinized on whether it is a complete measure for firms' perceived systematic risk: possibly other factors does count.

(6) Since CAPM captures a narrow view of the assessment of the required rate of return, it is recommended to broaden the focus of the study from a purely financial-economic trade-off between risk and required return to a 'more-dimensional' study that includes both financial and non-financial aspects.

(7) Further, it is recommendable to use a model for testing the second hypothesis that is capable for indicating whether common stockholders regard MRPS as equity, as 'quasi-equity', or as liabilities.

(8) Moreover, an event-study is recommended for further research. Then, it is possible to control for stockholder reactions on the issuance date of the Exposure Draft of SFAS No. 150 and the announcement of the statement itself.

(9) Finally, the role of the use of firms' financial statements and their notes should be more thoroughly investigated, since this might have effect on the capital market perception of MRPS' economic substance. Some discussion is already presented in sub paragraph 7.2.2.5.

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Appendix I-*Common stock vs. Preferred stock*

(Alver, 2007)

Similarities and differences		Common stock	Preferred stock
1. Similarities	**1.1**	Common stock dividends are not a contractual obligation which, if unpaid, could precipitate bankruptcy proceedings.	Preferred stock dividends are not a contractual obligation which, if unpaid, could precipitate bankruptcy proceedings.
	1.2	In the event of bankruptcy or other dissolution, common stockholders will be paid after holders of debt securities. The equity of common stockholders is a residual interest.	In the event of bankruptcy or other dissolution, preferred stockholders will be paid after holders of debt securities. The equity of preferred stockholders is a residual interest subordinate to debt.
	1.3	Common dividends are not deductible for tax purposes.	Preferred dividends are not deductible for tax purposes.
2. Differences	**2.1**	The common stockholders are the residual owners of the corporation after the preferred stockholders have received their dues.	In the event of bankruptcy or other dissolution, preferred stockholders will be paid a specific amount (usually at least equal to the par or stated value of their stock) before any distribution is made to common stockholders.
	2.2	Common stockholders have not a stipulated dividend rate.	Preferred stockholders have usually a stipulated dividend rate.
	2.3	Common stock is voting.	Preferred stock is usually nonvoting.
	2.4	Common stockholders' dividends depend on payment of dividends to preferred stockholders.	Preferred stocks have preference over the common stocks in the receipt of dividends.
	2.5	Common dividends are noncumulative.	Preferred dividends are usually cumulative.
	2.6	Return on the investment of common stockholders (dividend) is not fixed.	Preferred stockholders receive a fixed or limited return on their investment regardless of profitability. Dividend preference practically ensures a relatively fixed return.
	2.7	Common stock is riskier than preferred stock.	Preferred stock is less risky than common stock.
	2.8	Issuance of common stock dilutes common equity.	By issuing preferred stock, the firm avoids the dilution of common equity.
	2.9	Common stock is more costly to issue than preferred stock.	Preferred stock is less costly to issue than common stock.

Appendix II-*Debt securities vs. Preferred stock*

(Alver, 2007)

Similarities and differences		Debt securities	Preferred stock
1. Similarities	**1.1**	In the event of bankruptcy or other dissolution, holders of debt securities will be paid before any distribution is made to common stockholders.	In the event of bankruptcy or other dissolution, preferred stockholders will be paid before any distribution is made to common stockholders.
	1.2	Debt securities are nonvoting	Preferred stock is usually nonvoting.
	1.3	Holders of debt securities have no direct control over the affairs of the firm.	Preferred stock have no direct control over the affairs of the firm.
	1.4	Holders of debt securities continue receiving income during 'hard times.'	Dividend preference practically ensures a relatively fixed return for preferred stockholders.
	1.5	Debt securities have a specified interest rate.	Preferred stock have usually a specified rate per stock, just as debt securities' interest rate. Specified dividend rate and dividend preference actually assure a relatively fixed return.
	1.6	Debt securities offers the lower yield of a preferred stock.	Preferred stock can be offer the higher yield of a debt security.
2. Differences	**2.1**	Holders of debt securities have a legally enforceable claim against an issuer which default on an interest payment.	Unlike interest expense, preferred stock dividends are not a contractual obligation which, if unpaid, could precipitate bankruptcy proceedings.
	2.2	Holders of debt securities receive only interest and principal repayment.	Preferred stockholders receive a fixed or limited return on their investment regardless of profitability.
	2.3	Interest are tax deductible (paid from earnings before taxes)	Preferred dividends are not deductible for tax purposes.
	2.4	In the event of bankruptcy or other dissolution, holders of debt securities will be paid before any distribution is made to preferred stockholders.	In the event of bankruptcy or other dissolution, preferred stockholders will be paid after holders of debt securities. The equity of preferred stockholders is a residual interest subordinate to debt.
	2.5	Debt securities are less risky than preferred stock.	Preferred stock are riskier than debt securities. Investors require a higher return on preferred stock than with the purchase of debt securities.
	2.6	Debt securities are less costly to issue than preferred stock.	Preferred stock are more costly to issue than debt securities.

Appendix III-*FASB procedures*

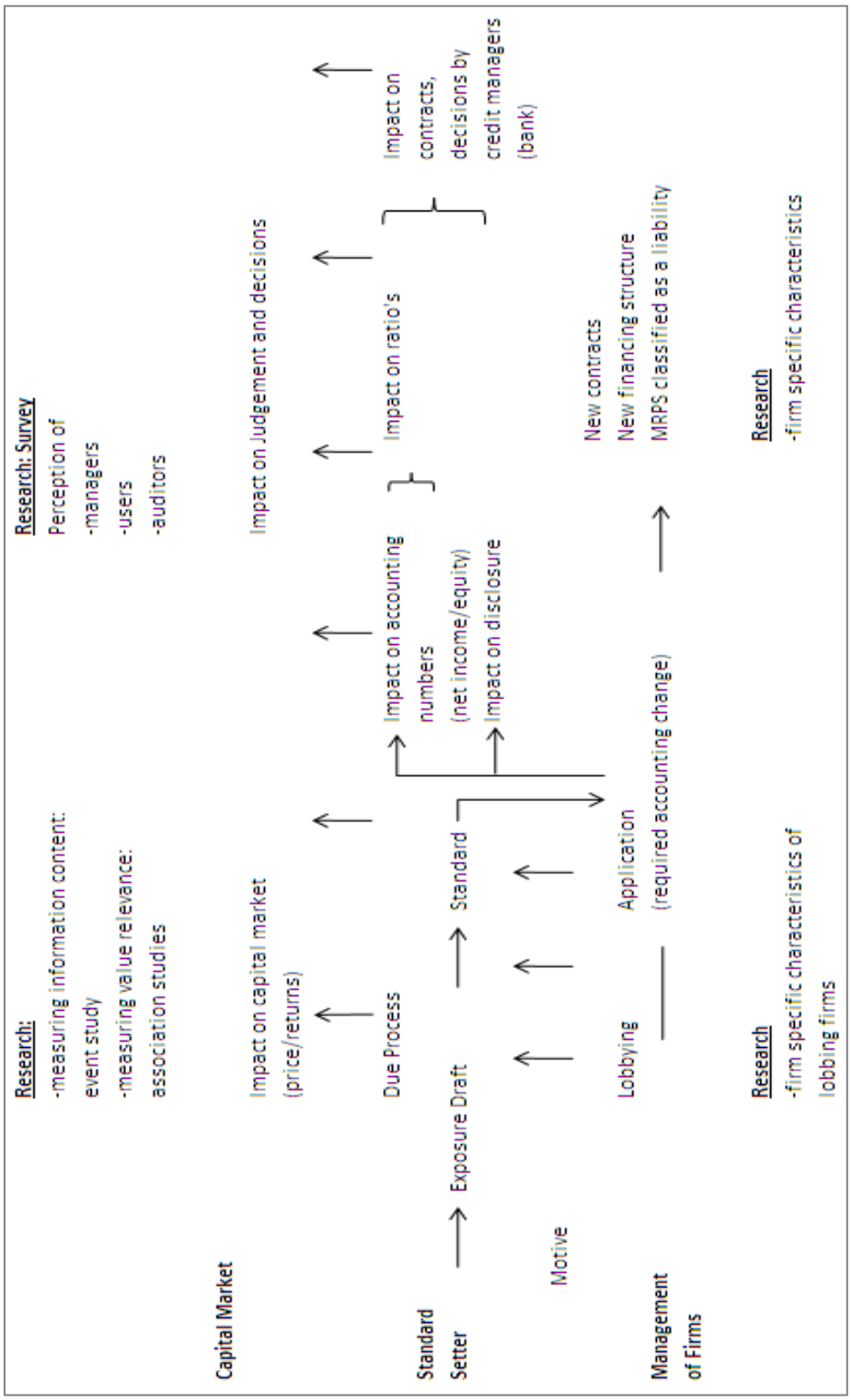
Different procedures are completed within the standard-setting process. Prior to establishing new accounting standards or carry amendments to existing standards, the following steps will be passed through (FASB.org, 2010):

1. receive of requests and/or recommendations to start a project or to reconsider current standards by the FASB's Board;
2. after consultation with FASB's Members and others, the FASB's chairman decides whether or not a request is add to the technical agenda (the FASB's chairman is "subject to oversight by the Foundation's Board of Trustees");
3. deliberations of different issues "identified and analyzed by the staff" at public meetings by the FASB's Board;
4. an Exposure Draft is issued by the FASB's Board; (Sometimes, a Discussion Paper is released "to obtain input at an early stage that is used to develop an Exposure Draft")
5. if necessary, a public meeting to debate about the issued Exposure Draft is organized by the FASB's Board;
6. comments letters, the debates, and other information will be analyzed by the staff, and ultimately, the FASB's Board "redeliberates the proposed provisions at public meetings";
7. an accounting standard is issued by the FASB's Board or an update to an existing accounting standard is made.

Note that the procedures showed above are applicable to major projects. Not all steps should be completed within narrow amendments or implementations.

Appendix IV-*Economic consequences*

The figure below summarizes the research approaches within the area of economic consequences. (Knoops, 2010)[111]:



[111] Note that the author has altered the figure: on the lowest level (Management of firms), 'new financing structure', and 'MRPS classified as a liability' were added.

Appendix V-*Scope of SFAS No. 150*

The conditions to fall within the scope of the statement are reproduced below (FASB, 2003):

> "This statement [SFAS No. 150] requires an issuer to classify the following [financial] instrument as liabilities (or assets in some circumstances):
>
> -A financial instrument issued in the form of shares that is mandatorily redeemable—that embodies an unconditional obligation requiring the issuer to redeem it by transferring its assets at a specified or determinable date (or dates) or upon an event that is certain to occur;
> -A financial instrument, other than an outstanding share, that, at inception, embodies an obligation to repurchase the issuer's equity shares, or is indexed to such an obligation, and that requires or may require the issuer to settle the obligation by transferring assets (for example, a forward purchase contract or written put option on the issuer's equity shares that is to be physically settled or net cash settled);
> -A financial instrument that embodies an unconditional obligation, or a financial instrument other than an outstanding share that embodies a conditional obligation, that the issuer must or may settle by issuing a variable number of its equity shares, if, at inception, the monetary value of the obligation is based solely or predominantly on any of the following:
>
> a. A fixed monetary amount known at inception, for example, a payable settleable with a variable number of the issuer's equity shares;
> b. Variations in something other than the fair value of the issuer's equity shares, for example, a financial instrument indexed to the S&P 500 and settleable with a variable number of the issuer's equity shares;
> c. Variations inversely related to changes in the fair value of the issuer's equity shares, for example, a written put option that could be net share settled."

Appendix VI-*Research model (I)*

The authors use the following model (Bishop, et al., 2005):

$$MVE = \alpha_0 + \alpha_1 NI + \alpha_2 BVE + \varepsilon \quad (35)$$

Where:

MVE	= closing price per stock * number of stock outstanding
NI	= net income after tax
BVE	= assets minus liabilities
α_0	= intercept
$\alpha_{1\text{-}2}$	= slope coefficients
ε	= error term

Bishop, et al. (2005) use the weighted least squares by employing the following equation:

$$1 = b_0 \frac{1}{MVE} + b_1 \frac{NI}{MVE} + b_2 \frac{BVE}{MVE} + \varepsilon \quad (36)$$

Where:

$b_{0\text{-}2}$	= slope coefficients

The null hypothesis[112] tested is: the accounting classification of convertible instruments is not value relevant. This is investigated by using the following equation (Bishop, et al., 2005):

$$1 = c_0\frac{1}{MVE} + c_1\frac{NI}{MVE} + c_2\frac{NETBV}{MVE} + c_3\frac{CLASSD}{MVE} + c_4\frac{CLASSO}{MVE} + c_5\frac{CLASSE}{MVE} \qquad (37)$$

Where:

$c_{0\text{-}2}$ = slope coefficients
NETBV = book value of equity excluding convertible instruments
CLASSD = convertible financial instruments classified as liabilities
CLASSO = convertible financial instruments classified as other capital funds (i.e. 'quasi-equity')
CLASSE = convertible financial instruments classified as equity

Appendix VII-*Research model (II)*

To determine the issuances of MRPS, Levi and Segal (2006) use the following model that denotes the dollar amount of MRPS at moment t, $MRPS_t$, issued:

$$MRPS_t = \alpha_1 + \alpha_2 Dum03/04 + \beta_1 Debt_t + \beta_2 Equity_t + \beta_3 Interest_t + \beta_4 Market_t + \varepsilon_t \qquad (38)$$

Where:

Dum03/04	= dummy variable that equals 1 for 2003/2004 observations and 0 for 1981-2002 observations
$Debt_t$	= dollar amount of debt issued during period t
$Equity_t$	= dollar amount of equity issued during period t
$Interest_t$	= average interest rate on five-year Treasury bills during period t
$Market_t$	= excess market return during period t, calculated as the value-weighted return on the NYSE, AMEX, and NASDAQ index minus the rate of return on a Treasury bill
$\alpha_{1\text{-}2}$	= intercept terms
$\beta_{1\text{-}4}$	= slope terms
ε_t	= error term for period t

Firms were regarded as issuing MRPS when their MRPS-value increases during the fiscal year. The increase should correspond with a cash inflow from MRPS issuance. Increases of the MRPS-value that can be assigned to dividend arrearages were excluded. Debt issuances arise when the book value of debt increases during the fiscal year. Firms were considered as equity issuers when they raised money through the issuance of common stock and/or preferred stock (other than MRPS).

Appendix VIII-*Test procedures*

N.B.: all hypotheses will be tested with a significance level of 5 per cent (i.e. $\alpha = 0.05$ or $p < 0.05$). It is common practice to use this significance level (Alwan, et al., 2007, p. 365; Kennisbankstatistiek.net, 2010).

N.B.: the legend which explains the variables included in the test procedures below, is presented behind the test procedures.

[112] This is the most important one of the hypotheses tested. The other one is not discussed, in fact of that it is out of the scope of this thesis.

N.B.: SPSS is the statistical software program that will be used to test the hypotheses (version 18.0).

Hypothesis I

A: Testing the suitability of the model for the sample:

1. $H_0 : a_0 = a_1 = a_2 = a_3 = a_4 = 0$ (model has no explanatory value)

   H_a : at least one slope coefficient $\neq 0$

2. Testing variable[113]:

   (under H_0): $\underline{F}$ F (p, n-p-1) >> F = MSR/MSE

3. Sample:

   F* = MSR/MSE

   P_{value} ($\underline{F} \geq F^*$) = …

4. Conclusion:

   P_{value} ($\underline{F} \geq F^*$) = … ≥ 5% α, and hence, accept (provisionally) H_0, or < 5% α, and hence, reject H_0

5. Translation results sample: H_0 is, based on this sample, (provisionally) true, or H_0 is not true (the model is insignificant and not suitable for the sample, or the opposite)

B: Testing the significance of the regression coefficient a_3:

1. Hypotheses:

   $H_0 : a_3 = 0$ (coefficient has no explanatory value)

   $H_a : a_3 \neq 0$

2. Testing variable[114]:

   $\underline{t} = b_j/SEb_j$

   (under H_0): $\underline{t}$ t-distr., with df = n-p-1

3. Sample:

   $t^* = b_1/SEb_1$

   P ($\underline{t} > |t^*|$) = …

4. Conclusion:

   P ($\underline{t} > |t^*|$) = … ≥ 5% α, and hence, accept (provisionally) H_0, or < 5% α, and hence, reject H_0

5. Translation results sample: H_0 is, based on this sample, (provisionally) true, or H_0 is not true (the coefficient is insignificant and not useful in explaining the sample firms' perceived systematic risk, or the opposite)

[113] The F-distribution will be used in fact of that this is required by Alwan, et al. (2007, p. 644). For simple linear regressions, the t-test will be used. The null hypothesis of this simple linear regression states that "the slope of the regression line is 0" (Alwan, et al., 2007, p. 644). However, "the null hypothesis for the F test states that all of the regression coefficients (with exception of the intercept) are 0", which is used in this thesis (Alwan, et al., 2007, p. 644).

[114] The t-distribution will be used in fact of that –approximately, following the Central Limit Theorem– the mean of the difference between the levered and the unlevered beta is a normal distribution, and the standard deviation is unknown (Alwan, et al., 2007, p. 299, 424).

C: Testing the effect of MRPS' reclassification on firms' perceived systematic risk:

1. Hypotheses:

   H_0 : $_{post}a_3$ minus $_{pre}a_3$ = ≤ 0 (MRPS' reclassification had no or decreasing effect on firms' perceived systematic risk)

   H_a : $_{post}a_3$ minus $_{pre}a_3$ = > 0

   Where:
   $_{post}a_3$ = slope coefficient after the introduction of SFAS No. 150
   $_{pre}a_3$ = slope coefficient before the introduction of SFAS No. 150

2. Conclusion:

   $_{post}a_3$ minus $_{pre}a_3$ = ≤ 0, hence accept H_0, or $_{post}a_3$ minus $_{pre}a_3$ = > 0, hence reject H_0

3. Translation results sample: H_0 is, based on this sample, (provisionally) true, or H_0 is not true (MRPS' reclassification had no or decreasing effect on firms' perceived systematic risk, or the opposite)

Hypothesis II

A: Testing the suitability of the model for the sample:

1. $H_0 : b_0 = b_1 = 0$ (model has no explanatory value)

   H_a : at least one slope coefficient ≠ 0

2. Testing variable[115]:

   (under H_0): $\underline{F}$ F (p, n-p-1) >> F = MSR/MSE

3. Sample:

   F* = MSR/MSE

   P_{value} ($\underline{F}$ ≥ F*) = …

4. Conclusion:

   P_{value} ($\underline{F}$ ≥ F*) = … ≥ 5% α, and hence, accept (provisionally) H_0, or < 5% α, and hence, reject H_0

5. Translation results sample: H_0 is, based on this sample, (provisionally) true, or H_0 is not true (the model is insignificant and not suitable for the sample, or the opposite)

B: Testing the significance of the regression coefficient a_1:

1. Hypotheses:

   $H_0 : b_1 = 0$ (coefficient has no explanatory value)

   $H_a : b_1 \neq 0$

2. Testing variable[116]:

   $\underline{t} = b_j/SEb_j$

[115] See footnote 113 for the use of the F-distribution.
[116] See footnote 114 for the use of the t-distribution.

(under H_0): $\underline{t}$ t-distr., with df = n-p-1

3. Sample:

   $t^* = b_1/SEb_1$

   $P(\underline{t} > |t^*|) = \ldots$

4. Conclusion:

   $P(\underline{t} > |t^*|) = \ldots \geq 5\%\ \alpha$, and hence, accept (provisionally) H_0, or $< 5\%\ \alpha$, and hence, reject H_0

5. Translation results sample: H_0 is, based on this sample, (provisionally) true, or H_0 is not true (the coefficient is insignificant and not useful in explaining the sample firms' required rate of return on common stock, or the opposite)

C: Testing the effect of MRPS' reclassification on sample firms' required rate of return on common stock:

1. Hypotheses:

   H_0 : ${}_{post}r_i$ minus ${}_{pre}r_i$ = ≤ 0 (MRPS' reclassification had no or decreasing effect on firms' required rate of return on common stock)

   H_a : ${}_{post}r_i$ minus ${}_{pre}r_i$ = > 0

   Where:
   ${}_{pre}r_i$ = required rate of return on common stock before the issuance of SFAS No. 150
   ${}_{post}r_i$ = required rate of return on common stock after the issuance of SFAS No. 150

2. Conclusion:

   ${}_{post}a_3$ minus ${}_{pre}a_3$ = ≤ 0, hence accept H_0, or ${}_{post}a_3$ minus ${}_{pre}a_3$ = > 0, hence reject H_0

3. Translation results sample: H_0 is, based on this sample, (provisionally) true, or H_0 is not true (MRPS' reclassification had no or decreasing effect on firms' required rate of return on common stock, or the opposite)

Where (Alwan, et al., 2007):

a_0	= intercept (p. 633)
a_{1-4}	= slope coefficients (p. 633)
b_0	= intercept (p. 633)
b_1	= slope coefficients (p. 633)
bl	= left boarder
br	= right boarder
b_j	= scatter of the regression coefficient (p. 589)
C.A.	= critic area (depicted as 'Z')
C.I.	= confidence interval
df	= degrees of freedom
F	= distribution (p. 644)
F*	= sample value of F (p. 644)
H_0	= null hypothesis
H_a	= alternative hypothesis
MSE	= mean squared residual (p. 644)
MSR	= mean squared regression (p. 644)
n	= degrees of freedom in the denominator (number of sample firms) (p. 621)
N	= distribution (p. 298)
p	= degrees of freedom in the numerator (number of explanatory variables) (p. 621)
s	= scattered standard deviation (p. 639)
s^2	= variance of scattered standard deviation (p. 638)
SEb_j	= standard error of b_j (p. 589)
t	= distribution (p. 639)
t*	= sample value of t (p. 639)
xgem	= sample mean value of independent variable (p. 424)
xi	= observed value of independent variable (p. 424)
α	= level of significance (p. 384)
σ	= sample standard deviation (p. 279)

Appendix IX-*SIC codes*

(SEC.gov, 2010)

100	AGRICULTURAL PRODUCTION-CROPS
200	AGRICULTURAL PROD-LIVESTOCK & ANIMAL SPECIALTIES
700	AGRICULTURAL SERVICES
800	FORESTRY
900	FISHING, HUNTING AND TRAPPING
1000	METAL MINING
1040	GOLD AND SILVER ORES
1090	MISCELLANEOUS METAL ORES
1220	BITUMINOUS COAL & LIGNITE MINING
1221	BITUMINOUS COAL & LIGNITE SURFACE MINING
1311	CRUDE PETROLEUM & NATURAL GAS
1381	DRILLING OIL & GAS WELLS
1382	OIL & GAS FIELD EXPLORATION SERVICES
1389	OIL & GAS FIELD SERVICES, NEC
1400	MINING & QUARRYING OF NONMETALLIC MINERALS (NO FUELS)
1520	GENERAL BLDG CONTRACTORS - RESIDENTIAL BLDGS
1531	OPERATIVE BUILDERS
1540	GENERAL BLDG CONTRACTORS - NONRESIDENTIAL BLDGS
1600	HEAVY CONSTRUCTION OTHER THAN BLDG CONST - CONTRACTORS
1623	WATER, SEWER, PIPELINE, COMM & POWER LINE CONSTRUCTION
1700	CONSTRUCTION - SPECIAL TRADE CONTRACTORS
1731	ELECTRICAL WORK
2000	FOOD AND KINDRED PRODUCTS
2011	MEAT PACKING PLANTS
2013	SAUSAGES & OTHER PREPARED MEAT PRODUCTS
2015	POULTRY SLAUGHTERING AND PROCESSING
2020	DAIRY PRODUCTS
2024	ICE CREAM & FROZEN DESSERTS
2030	CANNED, FROZEN & PRESERVD FRUIT, VEG & FOOD SPECIALTIES
2033	CANNED, FRUITS, VEG, PRESERVES, JAMS & JELLIES
2040	GRAIN MILL PRODUCTS
2050	BAKERY PRODUCTS
2052	COOKIES & CRACKERS
2060	SUGAR & CONFECTIONERY PRODUCTS
2070	FATS & OILS
2080	BEVERAGES
2082	MALT BEVERAGES
2086	BOTTLED & CANNED SOFT DRINKS & CARBONATED WATERS
2090	MISCELLANEOUS FOOD PREPARATIONS & KINDRED PRODUCTS
2092	PREPARED FRESH OR FROZEN FISH & SEAFOODS
2100	TOBACCO PRODUCTS
2111	CIGARETTES
2200	TEXTILE MILL PRODUCTS
2211	BROADWOVEN FABRIC MILLS, COTTON
2221	BROADWOVEN FABRIC MILLS, MAN MADE FIBER & SILK
2250	KNITTING MILLS
2253	KNIT OUTERWEAR MILLS
2273	CARPETS & RUGS
2300	APPAREL & OTHER FINISHD PRODS OF FABRICS & SIMILAR MATL
2320	MEN'S & BOYS' FURNISHGS, WORK CLOTHG, & ALLIED GARMENTS
2330	WOMEN'S, MISSES', AND JUNIORS OUTERWEAR
2340	WOMEN'S, MISSES', CHILDREN'S & INFANTS' UNDERGARMENTS
2390	MISCELLANEOUS FABRICATED TEXTILE PRODUCTS
2400	LUMBER & WOOD PRODUCTS (NO FURNITURE)
2421	SAWMILLS & PLANTING MILLS, GENERAL
2430	MILLWOOD, VENEER, PLYWOOD, & STRUCTURAL WOOD MEMBERS
2451	MOBILE HOMES
2452	PREFABRICATED WOOD BLDGS & COMPONENTS
2510	HOUSEHOLD FURNITURE
2511	WOOD HOUSEHOLD FURNITURE, (NO UPHOLSTERED)
2520	OFFICE FURNITURE
2522	OFFICE FURNITURE (NO WOOD)
2531	PUBLIC BLDG & RELATED FURNITURE
2540	PARTITIONS, SHELVG, LOCKERS, & OFFICE & STORE FIXTURES
2590	MISCELLANEOUS FURNITURE & FIXTURES
2600	PAPERS & ALLIED PRODUCTS
2611	PULP MILLS
2621	PAPER MILLS
2631	PAPERBOARD MILLS
2650	PAPERBOARD CONTAINERS & BOXES
2670	CONVERTED PAPER & PAPERBOARD PRODS (NO CONTANERS/BOXES)
2673	PLASTICS, FOIL & COATED PAPER BAGS
2711	NEWSPAPERS: PUBLISHING OR PUBLISHING & PRINTING
2721	PERIODICALS: PUBLISHING OR PUBLISHING & PRINTING
2731	BOOKS: PUBLISHING OR PUBLISHING & PRINTING
2732	BOOK PRINTING
3829	MEASURING & CONTROLLING DEVICES, NEC
3841	SURGICAL & MEDICAL INSTRUMENTS & APPARATUS
3842	ORTHOPEDIC, PROSTHETIC & SURGICAL APPLIANCES &
3843	DENTAL EQUIPMENT & SUPPLIES
3844	X-RAY APPARATUS & TUBES & RELATED IRRADIATION
3845	ELECTROMEDICAL & ELECTROTHERAPEUTIC APPARATUS
3851	OPHTHALMIC GOODS
3861	PHOTOGRAPHIC EQUIPMENT & SUPPLIES
3873	WATCHES, CLOCKS, CLOCKWORK OPERATED DEVICES/PARTS
3910	JEWELRY, SILVERWARE & PLATED WARE
3911	JEWELRY, PRECIOUS METAL
3931	MUSICAL INSTRUMENTS
3942	DOLLS & STUFFED TOYS
3944	GAMES, TOYS & CHILDREN'S VEHICLES (NO DOLLS & BICYCLES)
3949	SPORTING & ATHLETIC GOODS, NEC
3950	PENS, PENCILS & OTHER ARTISTS' MATERIALS
3960	COSTUME JEWELRY & NOVELTIES
3990	MISCELLANEOUS MANUFACTURING INDUSTRIES
4011	RAILROADS, LINE-HAUL OPERATING
4013	RAILROAD SWITCHING & TERMINAL ESTABLISHMENTS
4100	LOCAL & SUBURBAN TRANSIT & INTERURBAN HWY
4210	TRUCKING & COURIER SERVICES (NO AIR)
4213	TRUCKING (NO LOCAL)
4220	PUBLIC WAREHOUSING & STORAGE
4231	TERMINAL MAINTENANCE FACILITIES FOR MOTOR FREIGHT
4400	WATER TRANSPORTATION
4412	DEEP SEA FOREIGN TRANSPORTATION OF FREIGHT
4512	AIR TRANSPORTATION, SCHEDULED
4513	AIR COURIER SERVICES
4522	AIR TRANSPORTATION, NONSCHEDULED
4581	AIRPORTS, FLYING FIELDS & AIRPORT TERMINAL SERVICES
4610	PIPE LINES (NO NATURAL GAS)
4700	TRANSPORTATION SERVICES
4731	ARRANGEMENT OF TRANSPORTATION OF FREIGHT & CARGO
4812	RADIOTELEPHONE COMMUNICATIONS
4813	TELEPHONE COMMUNICATIONS (NO RADIOTELEPHONE)
4822	TELEGRAPH & OTHER MESSAGE COMMUNICATIONS
4832	RADIO BROADCASTING STATIONS
4833	TELEVISION BROADCASTING STATIONS
4841	CABLE & OTHER PAY TELEVISION SERVICES
4899	COMMUNICATIONS SERVICES, NEC
4900	ELECTRIC, GAS & SANITARY SERVICES
4911	ELECTRIC SERVICES
4922	NATURAL GAS TRANSMISSION
4923	NATURAL GAS TRANSMISISON & DISTRIBUTION
4924	NATURAL GAS DISTRIBUTION
4931	ELECTRIC & OTHER SERVICES COMBINED
4932	GAS & OTHER SERVICES COMBINED
4941	WATER SUPPLY
4950	SANITARY SERVICES
4953	REFUSE SYSTEMS
4955	HAZARDOUS WASTE MANAGEMENT
4961	STEAM & AIR-CONDITIONING SUPPLY
4991	COGENERATION SERVICES & SMALL POWER PRODUCERS
5000	WHOLESALE-DURABLE GOODS
5010	WHOLESALE-MOTOR VEHICLES & MOTOR VEHICLE PARTS &
5013	WHOLESALE-MOTOR VEHICLE SUPPLIES & NEW PARTS
5020	WHOLESALE-FURNITURE & HOME FURNISHINGS
5030	WHOLESALE-LUMBER & OTHER CONSTRUCTION MATERIALS
5031	WHOLESALE-LUMBER, PLYWOOD, MILLWORK & WOOD
5040	WHOLESALE-PROFESSIONAL & COMMERCIAL EQUIPMENT &
5045	WHOLESALE-COMPUTERS & PERIPHERAL EQUIPMENT &
5047	WHOLESALE-MEDICAL, DENTAL & HOSPITAL EQUIPMENT &
5050	WHOLESALE-METALS & MINERALS (NO PETROLEUM)
5051	WHOLESALE-METALS SERVICE CENTERS & OFFICES
5063	WHOLESALE-ELECTRICAL APPARATUS & EQUIPMENT, WIRING
5064	WHOLESALE-ELECTRICAL APPLIANCES, TV & RADIO SETS
5065	WHOLESALE-ELECTRONIC PARTS & EQUIPMENT, NEC
5070	WHOLESALE-HARDWARE & PLUMBING & HEATING
5072	WHOLESALE-HARDWARE
5080	WHOLESALE-MACHINERY, EQUIPMENT & SUPPLIES
5082	WHOLESALE-CONSTRUCTION & MINING (NO PETRO)
5084	WHOLESALE-INDUSTRIAL MACHINERY & EQUIPMENT
5090	WHOLESALE-MISC DURABLE GOODS
5094	WHOLESALE-JEWELRY, WATCHES, PRECIOUS STONES &
5099	WHOLESALE-DURABLE GOODS, NEC

2741	MISCELLANEOUS PUBLISHING
2750	COMMERCIAL PRINTING
2761	MANIFOLD BUSINESS FORMS
2771	GREETING CARDS
2780	BLANKBOOKS, LOOSELEAF BINDERS & BOOKBINDG & RELATD WORK
2790	SERVICE INDUSTRIES FOR THE PRINTING TRADE
2800	CHEMICALS & ALLIED PRODUCTS
2810	INDUSTRIAL INORGANIC CHEMICALS
2820	PLASTIC MATERIAL, SYNTH RESIN/RUBBER, CELLULOS (NO GLASS)
2821	PLASTIC MATERIALS, SYNTH RESINS & NONVULCAN ELASTOMERS
2833	MEDICINAL CHEMICALS & BOTANICAL PRODUCTS
2834	PHARMACEUTICAL PREPARATIONS
2835	IN VITRO & IN VIVO DIAGNOSTIC SUBSTANCES
2836	BIOLOGICAL PRODUCTS, (NO DISGNOSTIC SUBSTANCES)
2840	SOAP, DETERGENTS, CLEANG PREPARATIONS, PERFUMES, COSMETICS
2842	SPECIALTY CLEANING, POLISHING AND SANITATION PREPARATIONS
2844	PERFUMES, COSMETICS & OTHER TOILET PREPARATIONS
2851	PAINTS, VARNISHES, LACQUERS, ENAMELS & ALLIED PRODS
2860	INDUSTRIAL ORGANIC CHEMICALS
2870	AGRICULTURAL CHEMICALS
2890	MISCELLANEOUS CHEMICAL PRODUCTS
2891	ADHESIVES & SEALANTS
2911	PETROLEUM REFINING
2950	ASPHALT PAVING & ROOFING MATERIALS
2990	MISCELLANEOUS PRODUCTS OF PETROLEUM & COAL
3011	TIRES & INNER TUBES
3021	RUBBER & PLASTICS FOOTWEAR
3050	GASKETS, PACKG & SEALG DEVICES & RUBBER & PLASTICS HOSE
3060	FABRICATED RUBBER PRODUCTS, NEC
3080	MISCELLANEOUS PLASTICS PRODUCTS
3081	UNSUPPORTED PLASTICS FILM & SHEET
3086	PLASTICS FOAM PRODUCTS
3089	PLASTICS PRODUCTS, NEC
3100	LEATHER & LEATHER PRODUCTS
3140	FOOTWEAR, (NO RUBBER)
3211	FLAT GLASS
3220	GLASS & GLASSWARE, PRESSED OR BLOWN
3221	GLASS CONTAINERS
3231	GLASS PRODUCTS, MADE OF PURCHASED GLASS
3241	CEMENT, HYDRAULIC
3250	STRUCTURAL CLAY PRODUCTS
3260	POTTERY & RELATED PRODUCTS
3270	CONCRETE, GYPSUM & PLASTER PRODUCTS
3272	CONCRETE PRODUCTS, EXCEPT BLOCK & BRICK
3281	CUT STONE & STONE PRODUCTS
3290	ABRASIVE, ASBESTOS & MISC NONMETALLIC MINERAL PRODS
3310	STEEL WORKS, BLAST FURNACES & ROLLING & FINISHING MILLS
3312	STEEL WORKS, BLAST FURNACES & ROLLING MILLS (COKE OVENS)
3317	STEEL PIPE & TUBES
3320	IRON & STEEL FOUNDRIES
3330	PRIMARY SMELTING & REFINING OF NONFERROUS METALS
3334	PRIMARY PRODUCTION OF ALUMINUM
3341	SECONDARY SMELTING & REFINING OF NONFERROUS METALS
3350	ROLLING DRAWING & EXTRUDING OF NONFERROUS METALS
3357	DRAWING & INSULATING OF NONFERROUS WIRE
3360	NONFERROUS FOUNDRIES (CASTINGS)
3390	MISCELLANEOUS PRIMARY METAL PRODUCTS
3411	METAL CANS
3412	METAL SHIPPING BARRELS, DRUMS, KEGS & PAILS
3420	CUTLERY, HANDTOOLS & GENERAL HARDWARE
3430	HEARING EQUIP, EXCEPT ELEC & WARM AIR; & PLUMBING FIXTURES
3433	HEATING EQUIPMENT, EXCEPT ELECTRIC & WARM AIR FURNACES
3440	FABRICATED STRUCTURAL METAL PRODUCTS
3442	METAL DOORS, SASH, FRAMES, MOLDINGS & TRIM
3443	FABRICATED PLATE WORK (BOILER SHOPS)
3444	SHEET METAL WORK
3448	PREFABRICATED METAL BUILDINGS & COMPONENTS
3451	SCREW MACHINE PRODUCTS
3452	BOLTS, NUTS, SCREWS, RIVETS & WASHERS
3460	METAL FORGINGS & STAMPINGS
3470	COATING, ENGRAVING & ALLIED SERVICES
3480	ORDNANCE & ACCESSORIES, (NO VEHICLES/GUIDED MISSILES)
3490	MISCELLANEOUS FABRICATED METAL PRODUCTS
3510	ENGINES & TURBINES
3523	FARM MACHINERY & EQUIPMENT
3524	LAWN & GARDEN TRACTORS & HOME LAWN & GARDENS EQUIP
3530	CONSTRUCTION, MINING & MATERIALS HANDLING MACHINERY &
3531	CONSTRUCTION MACHINERY & EQUIP
3532	MINING MACHINERY & EQUIP (NO OIL & GAS FIELD MACH & EQUIP)
3533	OIL & GAS FIELD MACHINERY & EQUIPMENT
3537	INDUSTRIAL TRUCKS, TRACTORS, TRAILORS & STACKERS
3540	METALWORKG MACHINERY & EQUIPMENT
3541	MACHINE TOOLS, METAL CUTTING TYPES
3550	SPECIAL INDUSTRY MACHINERY (NO METALWORKING MACHINERY)
5110	WHOLESALE-PAPER & PAPER PRODUCTS
5122	WHOLESALE-DRUGS, PROPRIETARIES & DRUGGISTS' SUNDRIES
5130	WHOLESALE-APPAREL, PIECE GOODS & NOTIONS
5140	WHOLESALE-GROCERIES & RELATED PRODUCTS
5141	WHOLESALE-GROCERIES, GENERAL LINE
5150	WHOLESALE-FARM PRODUCT RAW MATERIALS
5160	WHOLESALE-CHEMICALS & ALLIED PRODUCTS
5171	WHOLESALE-PETROLEUM BULK STATIONS & TERMINALS
5172	WHOLESALE-PETROLEUM & PETROLEUM PRODUCTS (NO BULK
5180	WHOLESALE-BEER, WINE & DISTILLED ALCOHOLIC BEVERAGES
5190	WHOLESALE-MISCELLANEOUS NONDURABLE GOODS
5200	RETAIL-BUILDING MATERIALS, HARDWARE, GARDEN SUPPLY
5211	RETAIL-LUMBER & OTHER BUILDING MATERIALS DEALERS
5271	RETAIL-MOBILE HOME DEALERS
5311	RETAIL-DEPARTMENT STORES
5331	RETAIL-VARIETY STORES
5399	RETAIL-MISC GENERAL MERCHANDISE STORES
5400	RETAIL-FOOD STORES
5411	RETAIL-GROCERY STORES
5412	RETAIL-CONVENIENCE STORES
5500	RETAIL-AUTO DEALERS & GASOLINE STATIONS
5531	RETAIL-AUTO & HOME SUPPLY STORES
5600	RETAIL-APPAREL & ACCESSORY STORES
5621	RETAIL-WOMEN'S CLOTHING STORES
5651	RETAIL-FAMILY CLOTHING STORES
5661	RETAIL-SHOE STORES
5700	RETAIL-HOME FURNITURE, FURNISHINGS & EQUIPMENT
5712	RETAIL-FURNITURE STORES
5731	RETAIL-RADIO, TV & CONSUMER ELECTRONICS STORES
5734	RETAIL-COMPUTER & COMPUTER SOFTWARE STORES
5735	RETAIL-RECORD & PRERECORDED TAPE STORES
5810	RETAIL-EATING & DRINKING PLACES
5812	RETAIL-EATING PLACES
5900	RETAIL-MISCELLANEOUS RETAIL
5912	RETAIL-DRUG STORES AND PROPRIETARY STORES
5940	RETAIL-MISCELLANEOUS SHOPPING GOODS STORES
5944	RETAIL-JEWELRY STORES
5945	RETAIL-HOBBY, TOY & GAME SHOPS
5960	RETAIL-NONSTORE RETAILERS
5961	RETAIL-CATALOG & MAIL-ORDER HOUSES
5990	RETAIL-RETAIL STORES, NEC
6021	NATIONAL COMMERCIAL BANKS
6022	STATE COMMERCIAL BANKS
6029	COMMERCIAL BANKS, NEC
6035	SAVINGS INSTITUTION, FEDERALLY CHARTERED
6036	SAVINGS INSTITUTIONS, NOT FEDERALLY CHARTERED
6099	FUNCTIONS RELATED TO DEPOSITORY BANKING, NEC
6111	FEDERAL & FEDERALLY-SPONSORED CREDIT AGENCIES
6141	PERSONAL CREDIT INSTITUTIONS
6153	SHORT-TERM BUSINESS CREDIT INSTITUTIONS
6159	MISCELLANEOUS BUSINESS CREDIT INSTITUTION
6162	MORTGAGE BANKERS & LOAN CORRESPONDENTS
6163	LOAN BROKERS
6172	FINANCE LESSORS
6189	ASSET-BACKED SECURITIES
6199	FINANCE SERVICES
6200	SECURITY & COMMODITY BROKERS, DEALERS, EXCHANGES &
6211	SECURITY BROKERS, DEALERS & FLOTATION COMPANIES
6221	COMMODITY CONTRACTS BROKERS & DEALERS
6282	INVESTMENT ADVICE
6311	LIFE INSURANCE
6321	ACCIDENT & HEALTH INSURANCE
6324	HOSPITAL & MEDICAL SERVICE PLANS
6331	FIRE, MARINE & CASUALTY INSURANCE
6351	SURETY INSURANCE
6361	TITLE INSURANCE
6399	INSURANCE CARRIERS, NEC
6411	INSURANCE AGENTS, BROKERS & SERVICE
6500	REAL ESTATE
6510	REAL ESTATE OPERATORS (NO DEVELOPERS) & LESSORS
6512	OPERATORS OF NONRESIDENTIAL BUILDINGS
6513	OPERATORS OF APARTMENT BUILDINGS
6519	LESSORS OF REAL PROPERTY, NEC
6531	REAL ESTATE AGENTS & MANAGERS (FOR OTHERS)
6532	REAL ESTATE DEALERS (FOR THEIR OWN ACCOUNT)
6552	LAND SUBDIVIDERS & DEVELOPERS (NO CEMETERIES)
6770	BLANK CHECKS
6792	OIL ROYALTY TRADERS
6794	PATENT OWNERS & LESSORS
6795	MINERAL ROYALTY TRADERS
6798	REAL ESTATE INVESTMENT TRUSTS
6799	INVESTORS, NEC
7000	HOTELS, ROOMING HOUSES, CAMPS & OTHER LODGING
7011	HOTELS & MOTELS

3555	PRINTING TRADES MACHINERY & EQUIPMENT	7200	SERVICES-PERSONAL SERVICES
3559	SPECIAL INDUSTRY MACHINERY, NEC	7310	SERVICES-ADVERTISING
3560	GENERAL INDUSTRIAL MACHINERY & EQUIPMENT	7311	SERVICES-ADVERTISING AGENCIES
3561	PUMPS & PUMPING EQUIPMENT	7320	SERVICES-CONSUMER CREDIT REPORTING, COLLECTION
3562	BALL & ROLLER BEARINGS	7330	SERVICES-MAILING, REPRODUCTION, COMMERCIAL ART &
3564	INDUSTRIAL & COMMERCIAL FANS & BLOWERS & AIR PURIFING	7331	SERVICES-DIRECT MAIL ADVERTISING SERVICES
3567	INDUSTRIAL PROCESS FURNACES & OVENS	7340	SERVICES-TO DWELLINGS & OTHER BUILDINGS
3569	GENERAL INDUSTRIAL MACHINERY & EQUIPMENT, NEC	7350	SERVICES-MISCELLANEOUS EQUIPMENT RENTAL & LEASING
3570	COMPUTER & OFFICE EQUIPMENT	7359	SERVICES-EQUIPMENT RENTAL & LEASING, NEC
3571	ELECTRONIC COMPUTERS	7361	SERVICES-EMPLOYMENT AGENCIES
3572	COMPUTER STORAGE DEVICES	7363	SERVICES-HELP SUPPLY SERVICES
3575	COMPUTER TERMINALS	7370	SERVICES-COMPUTER PROGRAMMING, DATA PROCESSING,
3576	COMPUTER COMMUNICATIONS EQUIPMENT	7371	SERVICES-COMPUTER PROGRAMMING SERVICES
3577	COMPUTER PERIPHERAL EQUIPMENT, NEC	7372	SERVICES-PREPACKAGED SOFTWARE
3578	CALCULATING & ACCOUNTING MACHINES (NO ELECTRONIC	7373	SERVICES-COMPUTER INTEGRATED SYSTEMS DESIGN
3579	OFFICE MACHINES, NEC	7374	SERVICES-COMPUTER PROCESSING & DATA PREPARATION
3580	REFRIGERATION & SERVICE INDUSTRY MACHINERY	7377	SERVICES-COMPUTER RENTAL & LEASING
3585	AIR-COND & WARM AIR HEATG EQUIP & COMM & INDL REFRIG	7380	SERVICES-MISCELLANEOUS BUSINESS SERVICES
3590	MISC INDUSTRIAL & COMMERCIAL MACHINERY & EQUIPMENT	7381	SERVICES-DETECTIVE, GUARD & ARMORED CAR SERVICES
3600	ELECTRONIC & OTHER ELECTRICAL EQUIPMENT (NO COMPUTER	7384	SERVICES-PHOTOFINISHING LABORATORIES
3612	POWER, DISTRIBUTION & SPECIALTY TRANSFORMERS	7385	SERVICES-TELEPHONE INTERCONNECT SYSTEMS
3613	SWITCHGEAR & SWITCHBOARD APPARATUS	7389	SERVICES-BUSINESS SERVICES, NEC
3620	ELECTRICAL INDUSTRIAL APPARATUS	7500	SERVICES-AUTOMOTIVE REPAIR, SERVICES & PARKING
3621	MOTORS & GENERATORS	7510	SERVICES-AUTO RENTAL & LEASING (NO DRIVERS)
3630	HOUSEHOLD APPLIANCES	7600	SERVICES-MISCELLANEOUS REPAIR SERVICES
3634	ELECTRIC HOUSEWARES & FANS	7812	SERVICES-MOTION PICTURE & VIDEO TAPE PRODUCTION
3640	ELECTRIC LIGHTING & WIRING EQUIPMENT	7819	SERVICES-ALLIED TO MOTION PICTURE PRODUCTION
3651	HOUSEHOLD AUDIO & VIDEO EQUIPMENT	7822	SERVICES-MOTION PICTURE & VIDEO TAPE DISTRIBUTION
3652	PHONOGRAPH RECORDS & PRERECORDED AUDIO TAPES & DISKS	7829	SERVICES-ALLIED TO MOTION PICTURE DISTRIBUTION
3661	TELEPHONE & TELEGRAPH APPARATUS	7830	SERVICES-MOTION PICTURE THEATERS
3663	RADIO & TV BROADCASTING & COMMUNICATIONS EQUIPMENT	7841	SERVICES-VIDEO TAPE RENTAL
3669	COMMUNICATIONS EQUIPMENT, NEC	7900	SERVICES-AMUSEMENT & RECREATION SERVICES
3670	ELECTRONIC COMPONENTS & ACCESSORIES	7948	SERVICES-RACING, INCLUDING TRACK OPERATION
3672	PRINTED CIRCUIT BOARDS	7990	SERVICES-MISCELLANEOUS AMUSEMENT & RECREATION
3674	SEMICONDUCTORS & RELATED DEVICES	7997	SERVICES-MEMBERSHIP SPORTS & RECREATION CLUBS
3677	ELECTRONIC COILS, TRANSFORMERS & OTHER INDUCTORS	8000	SERVICES-HEALTH SERVICES
3678	ELECTRONIC CONNECTORS	8011	SERVICES-OFFICES & CLINICS OF DOCTORS OF MEDICINE
3679	ELECTRONIC COMPONENTS, NEC	8050	SERVICES-NURSING & PERSONAL CARE FACILITIES
3690	MISCELLANEOUS ELECTRICAL MACHINERY, EQUIPMENT & SUPPLIES	8051	SERVICES-SKILLED NURSING CARE FACILITIES
3695	MAGNETIC & OPTICAL RECORDING MEDIA	8060	SERVICES-HOSPITALS
3711	MOTOR VEHICLES & PASSENGER CAR BODIES	8062	SERVICES-GENERAL MEDICAL & SURGICAL HOSPITALS, NEC
3713	TRUCK & BUS BODIES	8071	SERVICES-MEDICAL LABORATORIES
3714	MOTOR VEHICLE PARTS & ACCESSORIES	8082	SERVICES-HOME HEALTH CARE SERVICES
3715	TRUCK TRAILERS	8090	SERVICES-MISC HEALTH & ALLIED SERVICES, NEC
3716	MOTOR HOMES	8093	SERVICES-SPECIALTY OUTPATIENT FACILITIES, NEC
3720	AIRCRAFT & PARTS	8111	SERVICES-LEGAL SERVICES
3721	AIRCRAFT	8200	SERVICES-EDUCATIONAL SERVICES
3724	AIRCRAFT ENGINES & ENGINE PARTS	8300	SERVICES-SOCIAL SERVICES
3728	AIRCRAFT PARTS & AUXILIARY EQUIPMENT, NEC	8351	SERVICES-CHILD DAY CARE SERVICES
3730	SHIP & BOAT BUILDING & REPAIRING	8600	SERVICES-MEMBERSHIP ORGANIZATIONS
3743	RAILROAD EQUIPMENT	8700	SERVICES-ENGINEERING, ACCOUNTING, RESEARCH,
3751	MOTORCYCLES, BICYCLES & PARTS	8711	SERVICES-ENGINEERING SERVICES
3760	GUIDED MISSILES & SPACE VEHICLES & PARTS	8731	SERVICES-COMMERCIAL PHYSICAL & BIOLOGICAL RESEARCH
3790	MISCELLANEOUS TRANSPORTATION EQUIPMENT	8734	SERVICES-TESTING LABORATORIES
3812	SEARCH, DETECTION, NAVAGATION, GUIDANCE, AERONAUTICAL SYS	8741	SERVICES-MANAGEMENT SERVICES
3821	LABORATORY APPARATUS & FURNITURE	8742	SERVICES-MANAGEMENT CONSULTING SERVICES
3822	AUTO CONTROLS FOR REGULATING RESIDENTIAL & COMML	8744	SERVICES-FACILITIES SUPPORT MANAGEMENT SERVICES
3823	INDUSTRIAL INSTRUMENTS FOR MEASUREMENT, DISPLAY, AND	8880	AMERICAN DEPOSITARY RECEIPTS
3824	TOTALIZING FLUID METERS & COUNTING DEVICES	8888	FOREIGN GOVERNMENTS
3825	INSTRUMENTS FOR MEAS & TESTING OF ELECTRICITY & ELEC SIGNALS	8900	SERVICES-SERVICES, NEC
3826	LABORATORY ANALYTICAL INSTRUMENTS	9721	INTERNATIONAL AFFAIRS
3827	OPTICAL INSTRUMENTS & LENSES	9995	NON-OPERATING ESTABLISHMENTS

Appendix X-*Assumptions CAPM*

(Van Aalst, et al., 1996, p. 52-61)

1. The planning horizon of the investor is one period.
2. Investors maximize the expected 'utility' over all possible market portfolios.
3. The expected 'utility' consists of the expected return and the risk on the portfolio.
4. Investors prefer higher returns against lower returns and are risk-averse.
5. There are no taxes, inflation, or transaction- and other costs.
6. All information is costless available to investors.
7. All securities are infinitely divisible.
8. Short selling is permitted and one is able to do this unlimited and costless.
9. All offers of securities are definitive and all securities are negotiable.
10. Investors have homogeneous expectations with regard to expected returns, standard deviations of expected returns of each security, and the correlations of returns of securities with each other and with the market returns.
11. Each investor have the same investment period.
12. Each investor is able to sell and buy securities for the same market price.
13. The capital market is in equilibrium.

Appendix XI-*Overview of the used empirical articles*

Author(s)	Object of study	Sample	Methodology	Outcomes
Bishop, H., Bradbury, M., & Van Zijl, T. --*The value relevance of Information about Convertible Financial Instruments*--	The researchers try to evaluate the value relevance of firms' choice for classifying convertibles* as equity, 'quasi-equity', or liabilities. Besides, they evaluate the value relevance of classifying components of convertibles separately (however, this is not of interest to this thesis in fact of that it does not deal with convertibles). *the paper includes redeemable instruments in the term 'convertibles'	-Sample size: 58 convertible issues are included (46 firms with a total of 160 firm years, the firms should be listed on the New Zealand Stock Exchange). No database is referred by the authors. -Country: New Zealand -Research period: 1988-2002	Based on a (regression) model, it is investigated whether slope coefficients were significant. For each classification alternative within the New Zealand accounting environment (equity, 'quasi-equity', or liabilities) a slope coefficient is included. If they are significant, they will be value relevant. Positive coefficients are regard by investors as equity and negative coefficients as liabilities.	It is confirmed that convertible instruments' classification is value relevant within the assessment of market value of the issuer. The results suggest that classification affects investors.
Campbell, J.Y., Polk, C., & Voulteenaho, T. --*Growth or Glamour? Fundamentals and Systematic Risk in Stock Returns*--	The paper tries to answer the question whether firms' systematic risks are determined by cash flow characteristics or by the discount rates that investors apply to cash flows.	-Sample size: 158.878 firm-years were included in the sample (of firms listed on the NYSE, AMEX and NASDAQ). Data was collected from the CRPS, the Compustat and the Moody's database. -Country: United States -Research period: 1929-2000 (data trough 2001)	The paper uses several methods to test the 'fundamentals view' and the 'sentiment view' (i.e. whether stock prices are driven by rational or irrational behaviour). First proxies are constructed to determine the effect of cash-flow news and discount-rate (i.e. required rate of return) news on stock prices. Besides, VARs (Vector Autoregression) are performed to test the mentioned effect.	Fluctuations in stock prices are not primarily caused by investor sentiment, but (primarily) by cash flow fundamentals. The paper also finds that historical beta's and figures about historical fluctuation of returns are not useful to predict future sensitivity of firms' stock to market returns. However, accounting variables, particularly return on assets and the debt-to-asset ratio, are important within the determination of firms' sensitivities to market cash flows.
Chan, K. C., & Seow, G. S. --*Debt and Equity Characteristics of Mandatorily Redeemable Preferred Stock*--	The two research objectives of the study are to investigate various equity and liabilities characteristics of MRPS, and to specify the conditions under which the equity characteristics would dominate the liabilities characteristics, and vice versa.	-Sample size: The sample consists of 113 (nonconvertible) MRPS stock listed on NYSE or AMEX. The authors use Moody's Bond Record, and Standard and Poor's Stock Record. -Country: United States	The article uses the pricing model of Emanuel (1983), which examines the monthly MRPS returns and its association with contemporaneous stock and bond returns. After that, an investigation to the conditions under which MRPS is more equity-like or more like liabilities is performed.	It is confirmed that MRPS have both equity and liabilities characteristics. Besides, MRPS issued by non-utilities are more equity-like compared to MRPS issued by utilities. Moreover, the analysis shows that high-rated (low default risk) firms (either utilities and non-utilities) have MRPS that are more liabilities-like than MRPS of low-rated firms.

		-Research period: 1970-1990		
Cheng, Q., Frischmann, P., & Warfield, T. *--The market perception of corporate claims--*	The paper tries to find the economic substance of various securities by examining the association of these securities with systematic risk and prices.	-Sample size: 2.617 firms (listed on the NYSE or AMEX, and with outstanding Minority interests, Trust preferred stock, or other preferred stock) were included, using the Compustat database. Ultimately 1.770 firm-year observations were used in the systematic risk analysis and 6.727 firm-year observations in the valuation analysis. -Country: United States -Research period: 1993-1996	The researchers have used two different ways to determine the economic substance: systematic risk analysis and valuation analysis. The first determines the effect of a security on firms' systematic risk and the latter determines the effect of a security on firms' price. Ultimately, a security is liability-like when it has the same effect on systematic risk an price as liabilities and it is equity-like when it has the same effect as equity.	MRPS is, in accordance with the empirical results, neither regard as liabilities nor as equity. This is consistent with prior research. Controlled for firm size, the results show a more equity-like substance of MRPS within small firms, and MRPS are more like liabilities within large firms. However, these coefficients are insignificant and therefore MRPS are neither regard as liabilities nor as equity.
Hamada, R.S. *--The effect of the firm's capital structure on the systematic risk of common stocks--*	The main purpose of this study is attempt to link empirically corporation finance issues with portfolio and security analyses through the effect of a firms leverage on the systematic risk of its common stock.	-Sample size: Using CRSP and Compustat data: time series of yearly rate of return (with or without liabilities and preferred stock) of 304 different firms, listed on NYSE. These firms represent a sample of the firms with complete data on both (data)tapes for all the years. -Country: United States -Research period: 1948-1967	The observed systematic risk of a stock (ß) is compared and adjusted to what it would have been over the same time period when firms had no debts and preferred stock included in the capital structure. The difference between the observed and the adjusted systematic risk could be attributed to leverage. The results were obtained using cross-section regressions.	As result, changes in leverage impact the mean ß (systematic risk) for 21 to 24 per cent. Therefore, changes in leverage can be related to a higher rate of return within CAPM: ß of a levered firm must be greater than ß of a unlevered firm –*ceteris paribus*– in order to provide higher returns in fact of higher financial risk.
Hill, N.C., & Stone, B.K. *--Accounting betas, systematic operating risk, and financial leverage: a risk composition approach to*	Purpose of the study is to provide theoretical and empirical knowledge on (1) the relation between firms' financial structure and systematic risk, and (2) the relation between accounting-based and market-based measures of systematic risk.	-Sample size: 150 firms were included (no index is referred). Data of market returns were obtained from the CRPS tapes and data of accounting were derived from the Compustat tapes. Data regarding the risk free rate a	First, two correlation test are performed. Then regression tests were carried out. With the correlation tests, Hill and Stone measure (1) the association between betas estimated over the same time period, and (2)	The empirical results show that accounting data (i.e. information on firms' financial structure) used within a risk-composition framework have significant value for explaining market betas. Besides, changes in financial structure are significant determinants of period to period changes in the market beta's.

the determinants of systematic risk--		financial paper is used: Solomon Brothers, *An analytical Record of Yields and Yield Spreads* -Country: United States -Research period: 1947 until the end of 1974, divided in two periods: 1947-1960 and 1961-1974.	the predictive association between accounting betas (during the period 1947-1960) and market betas (during the period 1961-1974). The regression tests are performed to assess the extent to which firms' financial structure affects the market beta.	However, also other (in this research omitted) factors appears to be significant in explaining the market beta (i.e. systematic risk).
Hopkins, P.E. *--The Effect of Financial Statement Classification of Hybrid Financial Analysts' Stock Price Judgments--*	The paper tries to answer the question whether the balance sheet classification of hybrid instruments, particularly MRPS, influences stock price judgments of buy-side financial analysts.	-Sample size: 38 analysts participates, of which 72% were Chartered Financial Analyst, recruited from the 1995 Association for Investment Management and Research Membership Directory. -Country: United States -Research period: Data of the hypothetical firm (which were based on an actual AMEX-listed firm) were of 1994. Data is derived from Compustat, the Lexis/Nexis database, and from the U.S. Department of Commerce.	An experiment is performed (in a laboratory setting). Buy-side financial analysts are asked to predict stock prices after issuance of MRPS (and give an explanation of their prediction). After that, an postexperimental questionnaire is taken. The analysts are grouped in a MRPS-equity, a MRPS-liabilities, and a MRPS-mezzanine subsample, which means that they use financial statements (of the hypothetical firm) prepared with MRPS classified as equity, liabilities or in the mezzanine section. The stock price predictions are compared with t-tests. The results are also controlled for the level of analysts' knowledge about debt-equity ratios.	Classification of MRPS does have influence on stock price predictions: analysts in the MRPS-equity subsample judge significant lower stock prices as compared to analysts in the MRPS-liabilities subsample. This is consistent with the thought that additional equity leads to a decline of stock prices and additional straight debt does not lead to a decline. Therefore, MRPS in the MRPS-equity subsample are regard as equity and in the MRPS-liabilities subsample as liabilities: therefore, classification does matter. Analysts in the MRPS-mezzanine subsample use more an attribute-based evaluation in order to predict stock prices.
Jong, de, A., Rossellón, M., & Verwijmeren, P. *--The economic consequences of IFRS: The impact of IAS 32 on preference shares in the Netherlands--*	The object of this study is to demonstrate one of the economic implications of international standards. The focus is on regulation to preference stock (IAS 32) in the Netherlands.	-Sample size: 34 Dutch firms, listed at the Euronext Amsterdam and have preferred stock outstanding on the 1st of January 2004. Information is derived from Euronext.nl, The Financial Daily, annual reports, interim reports, articles from firms'	At first, the study compares debt ratio's under Dutch GAAP with debt ratios under IFRS. Secondly, the management actions are considered.	The study concludes that for Dutch firms with preferred stock outstanding, IAS 32 will increase the debt ratio by 35%, 71% of the firms affected by IAS 32 buy back their preferred stock or the specifications. IFRS does not only lead to a decrease in the use of financial instruments, but also changes in the firms' real capital structure.

		websites, and by correspondence with firms' spokesmen -Country: The Netherlands -Research period: 2004 and 2005		
Kimmel, P., & Warfield, T. (1993) --*Variation in Attributes of Redeemable Preferred Stock: Implications for Accounting Standards*--	The study tries to identify important aspects characterizing the economic substance of MRPS: equity, 'quasi-equity', or liabilities. Then, the objective is to evaluate alternative classification model(s), and ultimately, provide the most useful MRPS classification.	-Sample size: 332 firms with MRPS issued during the research period, of which data were derived from Compustat (the firms' index were not mentioned) -Country: United States -Research period: 1945-1989	First, MRPS are grouped to nature (perpetual, redeemable, et cetera) and to industry. Secondly, variation in the aspects avoidability, residual nature, and control of the MRPS are scrutinized. Then, an analysis of the changes of MRPS' issues over time are identified. Finally, the Entity Approach (classification based on seniority) as reporting alternative is evaluated.	The study indicate that MRPS' classification based on avoidability, residual nature, or control (all equity characteristics) is difficult in fact of that these are soft terms that leads to ambiguity. Such a classification will no consistently reflect MRPS' economic substance. The Entity Approach is more suitable. However, this requires undesirable reconsideration of a number of issues. On this very moment, disclosure of MRPS' terms and attributes is most appropriate to address ambiguity of MRPS' economic substance.
Kimmel, P., & Warfield, T. (1995) --*The Usefulness of Hybrid Security Classifications: Evidence from Redeemable Preferred stock*--	Provide empirical evidence on the economic substance of a hybrid security: redeemable preferred stock.	-Sample size: 239 firms with outstanding RPFD were selected (no index is referred), using Compustat. -Country: United States -Research period: 1979-1989	The study uses the relation between leverage and systematic risk and investigates the effects of the classification of RPFS on the systematic risk. The ß within the CAPM framework measure the systematic risk.	The results suggests that RPFD (despite mandatory redemption) does not have a debt-like impact on systematic risk and that the market perception of a hybrid security is conditioned on attributes as voting rights and conversion features. Thus, dichotomous classification of hybrid securities may lack representational faithfulness to the economic substance of these securities, as measured by their effects on systematic risk.
Levi, S., & Segal, B. --*The Impact of Debt-Equity Reporting Classifications on Firms' Decision to Issue Hybrid Securities*--	The objective of this study is to test the influence of SFAS No. 150 on firms' financing decision to issue MRPS rather than debt, and vice versa.	-Sample size: 208 firms with outstanding MRPS and listed on the NYSE, AMEX, and NASDAQ, of which the 10-K filings were included in the tests. ADRs and banks were excluded. Data was obtained from the Compustat database. -Country:	The researchers use the dollar amount of MRPS issued as a proxy for the reporting incentive to issue MRPS rather than debt. The amount issued before and after SFAS No. 150 were compared. Financial characteristics of sample firms were included and considered to be determinants of issuing	Firstly, the use of MRPS has significantly declined over time (MRPS as % of total financing range from 5.44% to 0.72% in the research period) to 0.72% in 2004. Secondly, financial characteristics (debt-asset and debt-equity ratios) as determinants of the issuance of MRPS do not longer matter: before SFAS No. 150 firms with higher debt-equity ratios were more inclined to issue MRPS rather than debt, and after the SFAS No. 150 came into

		United States -Research period: 1981-2004, divided in two periods, 1981-2002 and 2003-2004	MRPS.	effect, this is no longer the case. The authors suggest that the link between reporting incentives and firms' financing decisions to issue MRPS does no longer exist as a result of SFAS No. 150.
Maloney, K., & Mulford, W. *--SFAS No. 150 and Mandatorily Redeemable Preferred Stock--*	SFAS No. 150 and the impact it might have on selected firms' financial statements: the authors use the 'archival method'.	-Sample size: 18 firms have been researched. No index and database are referred. -Country: United States -Research period: 2003, pre and post SFAS No. 150 statements were compared	Sample firms' debt-equity ratios before and after SFAS No. 150 were compiled. The ratio was defined as: total liabilities divided by the total stockholders' equity.	Firms that should change the MRPS classification have presented higher debt-equity ratio after SFAS No. 150. Firms classifying MRPS as 'quasi-equity' show an increase of 6% of the debt-equity ratio. The same applies to firms that classified MRPS as equity before SFAS No. 150. Firms classifying MRPS as 'quasi-equity' but do not reclassify the entire amount of MRPS outstanding, show an increase of 2%. Some other firms already classify their MRPS as liabilities or remain MRPS classified as equity in fact of that their MRPS cover conditional claims.
Schauer, D., Schroeder, R.G., & Sevin, S.K. *--The Economic Consequences of the Statement of Financial Accounting Standards (SFAS) No.150--*	The purpose of the study is to examine the economic consequences of SFAS No. 150's adaptation on a sample of public firms.	-Sample size: Starting with Russell 3000 Index, remove non-calendar year-end firms (2,162 residual firms), select randomly 1,000 firms. Only firms reporting Mandatory Redeemable Preference Stock at December 31, 2003 are included (42 firms). The database used is not referred by the authors. -Country: United States -Research period: 2002 and 2003	-Randomized selection. Only firms reporting Mandatory Redeemable Preference Stock are added to the sample. The investigators make two comparisons: first, the 2002 with 2003 D/E ratio, second a comparison between reported ratios and ratios recalculated (as if SFAS No. 150 not required)	Some firms redeemed their MRPS prior to the adaption date of the standard. Approximately 4% of sample firms (40 firms) were required to disclose Mandatory Redeemable Preference Stock as a liability. The comparison shows a difference of 43% between the reported ratio (6,9065) and the 'as if SFAS No. 150 not is required'-ratio.
Schneider, D., & Wertheim, P. *--Proposed Reclassification of Redeemable Preferred Stock: The impact on*	The authors summarized the treatment of MRPS under pre-SFAS No. 150 circumstances and under the (at that time) proposed changes (MRPS should be shift from equity or 'quasi-equity' to liabilities). Besides, the objective of the study is	-Sample size: 105 firms with outstanding MRPS (no index is referred). Whether firms had MRPS outstanding is examined by skimming footnotes in the Disclosure database. No stock exchange index is referred. The	The authors have analyzed 105 firms, to determine the impact of the classification alternatives of MRPS (equity, 'quasi-equity', or liabilities). The statements are prepared according to the three alternative MRPS	Total liabilities to total equity increases on average with 18.1% and long-term debt to total equity increases on average with 34.4% (MRPS classified as equity vs. classified as liabilities). Levi and Segal (2006) conclude that the financial ratios that are commonly used to evaluate firms' performance are significantly

Financial Statement Ratios--	to make clear the effect of the proposed changes on various financial ratios (such as debt-assets and debt-equity ratios).	relevant data is obtained from the Compustat database and Moody's Manuals. -Country: United States Research period: Firms' financial statements of 1991	treatments. Then five commonly used ratios (including the debt-equity ratio) are computed and the differences were discussed.	affected by the reclassification of MRPS. The observation is therefore: the commonly used ratios remain useful in evaluate firms' performance, but those who depend on these ratios might adjust the ratios.