Information quality of IFRS and US-GAAP

A comparison of multiple earnings attributes under IFRS and US-GAAP

Master Thesis by:
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Enschede, 21st of April, 2008

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Enschede, April 2008

"Financial reporting should provide information that is useful to present to potential investors and creditors and other users in making rational investment, credit and other decisions". (FASB)

Acknowledgment

This report is the final product of my graduation assignment and the accumulation of my research on the information quality of IFRS and US-GAAP. It also signifies the final step in the completion of my Master of Science study in Industrial Engineering and Management with a track in Financial Engineering.

I would like to thank the people whose support, insight and willingness to help in order to complete this master thesis:

First of all, a word of thanks to my supervisors from the University, Drs G.C. Vergeer and Prof. dr. N. P. Mol for providing valuable support and academic insight to the completion of this report. Secondly, I would like to thank the people at Deloitte, especially my company supervisor Martijn Klein Haarhuis, for given me the opportunity to work on his team, which not only helped in finishing my report but also gave me valuable insights on different career opportunities. Finally, my gratitude goes to the ones close to me, my family and friends who continued to extend their help and support.

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Abstract

This report represents a comparison between the quality of reported earnings under IFRS and US-GAAP. Following the work of Francis et al. (2004), who summarized seven widely used earning attributes in accounting research, this report will determine differences in earning quality between IFRS and US-GAAP reported earnings, based on four of the earning attributes summarized in their article 'Cost of equity and earning attributes'. After discussing the literature on earning attributes a framework will be presented which contains four earning attributes: value relevance, timeliness, persistency and predictability. The fist two attributes are characterized as market-based attributes, while the latter two are characterized as accounting-based attributes. A sample will be used consisting of twenty two firms listed on the DJ Eurostoxx 50, which present their financial reports in compliance with IFRS and reconcile a part of their financial reports to US-GAAP because of listing requirements in the US. The results indicate that IFRS is significantly more value relevant and timelier than US-GAAP with respect to the reported earnings. Concerning the persistency and predictability of the reported earnings, no significant differences are found.

Management Summary

After the introduction of the IASB's standards in 2005 for all European listed firms, IFRS and US-GAAP were seen as the two world financial reporting standards. Before the introduction of IFRS, US-GAAP was accepted widely as the international set of standards to ensure high quality financial statements. Many discussions started after the introduction of IFRS, about the information quality of both standards. Nowadays, little academic research has been devoted to the comparison of information quality differences between IFRS and US-GAAP. This report will focus on the discussion about the earning quality of both IFRS and US-GAAP, using a sample of firms listed on the DJ Eurostoxx 50, which provide both IFRS and US-GAAP accounting information.

The information quality of the standards is measured by focusing on the reported earnings, one of the most important and extensively used accounting figures. The main question of this report is stated as follows:

What are the quality differences between IFRS and US-GAAP prepared earnings, considering several earning attributes?

The quality of the reported earnings is measured by four earning attributes which were adopted from the paper of Francis et al ("Cost of Equity and Earning Attributes", 2004) who summarized seven earning attributes that were widely applied in academic literature. Given restriction based on the chosen sample, the earning quality of both IFRS and US-GAAP is determined by the value relevance, timeliness, persistency and predictability of the reported earnings. The fist two attributes are characterized as market-based attributes, while the latter two are characterized as accounting-based attributes.

As the results of this report show, IFRS is significantly more value relevant and timelier than US-GAAP. With regard to the persistency and predictive ability, no significant differences are found between the information quality of the reported earnings of IFRS and US-GAAP.

The observed differences concerning the reported earnings in both accounting standards are further elaborated. The value relevance and timeliness results as well as results from analyzing the development of several descriptive statistics on the reported earnings show that difference are declining between IFRS and US-GAAP earnings during the sample period of 2004 through 2006. Although no hard evidence concerning the reason for this decline is found, this decline in differences may very well be due to the convergence actions set out by the IASB and FASB in order to eliminate differences between IFRS and US-GAAP. This supposition should however be further investigated in additional research to conclude if the decline in differences is due to convergence actions by the IASB and FASB.

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Introduction

1.1 Topic

This report represents a comparison between the quality of reported earnings under IFRS and US-GAAP. First of all, this report provides a timely investigation of an issue of considerable interest to both regulators and academics. Currently about 100 countries either require or allow the use of IFRS for all listed firms. In the near future, probably only two accounting standards worldwide will exist: IFRS and U.S. GAAP. [EY, 2006] Given the adoption of IFRS around the world and the relative lack of evidence on effects of such adoption, gives the motivation of comparing the quality of both accounting standards. The scope concerning the quality comparison will be limited to discussing quality aspects of the reported earnings under IFRS and US-GAAP.

Figure 1: IFRS Application (source: Fin Harmony, 2008)
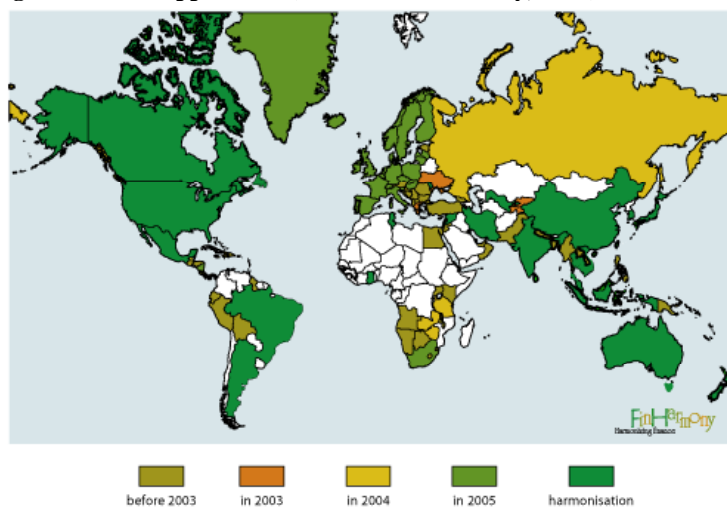
The idea behind the introduction of IFRS, was the increased need of the financial market for comparability of firms across borders. The use of different reporting standards can hinder investors and other company reviewers like banks or employees in making decisions when the accounting numbers used are based on different sets of rules. Next to the comparability problems that may rise when using different accounting standards, some international companies have to prepare their annual reports using different accounting standards in the case they are listed on more than one financial market, which causes inefficiency.

In general, the structural and organizational differences between IFRS and US-GAAP are in the literature mostly described as principle versus rule based. US-GAAP is characterized as rule based, because of the extensiveness of the rules compared to IFRS. In contrast with US-GAAP, IFRS is not a national set of standards. Also the IASB is not embedded in the national structure

as is the case with the FASB [Helleman, 2006]. Furthermore, IFRS and US-GAAP have different recognition and measurement rules that affect the information content of the accounting numbers. Whether these rules provide different information quality is still a cause for debate. Based on an agreement[2] between the two authorities which develop IFRS and US-GAAP (the International Accounting Standards Board or IASB respectively the Financial Accounting Standards Board or FASB) both accounting standards incorporate changes in order to converge to one another. Still significant differences continue to exist between US-GAAP and IFRS. [IASB & FASB, 2006]

In academic literature quality of accounting information is often determined by the quality of the reported earnings [Schipper, 2003]. Researchers use different methods in determining the quality of the reported earnings. There is no universal definition on how to determine quality of the reported earnings. This fact is recognized by many researchers as they mention the phenomenon of accounting quality. One research in particular has tried to change the lack of guidance on how to determine the quality of the reported earnings. This research was done by Francis et al. in 2004 in which they came up with seven so called earning attributes in order to determine the quality of the reported earnings. Much of the following research on accounting quality followed the framework formulated by Francis et al. Concerning the quality comparison of IFRS and US-GAAP reported earnings, this report is based on the research of Francis et al. in order to determine quality differences.

1.2 Relevance

With the introduction of IFRS in 2005 as the reporting standard for all listed EU companies, IFRS and US-GAAP are seen as the two world financial reporting standards. Before the introduction of IFRS, which is derived from the older IAS rules, US-GAAP was accepted as the most prominent set of standards to ensure high quality financial statements. [E&Y, 2006] The introduction of IFRS has led to a discussion about the relative quality of both reporting systems. Yet, little research has been devoted to the comparison of quality aspects between IFRS and US-GAAP reporting. Therefore, this report is directed towards providing some results on the IFRS / US-GAAP comparison.

Nowadays, foreign issuers listed on the US capital market who report their accounting information based on IFRS, have to reconcile their financial reporting to US-GAAP. On July 11, 2007, the SEC has stated to adopt IFRS rules which allow non-American firms listed on the US-market to present their annual reports in compliance with IFRS, without having to reconcile their reporting to US-GAAP. [SEC, 2008] According to the IASB, the SEC's decision proves that IFRS is getting more and more accepted in the international capital market. The decision is also a

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[2] On 29 October 2002, the International Accounting Standards Board and the US Financial Accounting Standards Board jointly issued a memorandum of understanding formalizing their commitment to the convergence of US and international accounting standards. The IASB and the FASB presented the agreement to the chairs of leading national standard setters at a two-day meeting in London on 28-29 October [www.iasplus.com]

sign of improvement concerning the convergence of IFRS and US-GAAP, set out by both the IASB (develops IFRS) and FASB (develops US-GAAP). During a speech in addition to the proposal by the SEC to allow IFRS in the United States, the director of the SEC, Ethiopis Tafara, claimed that lack of guidance on the enforcement of the IFRS rules is still a cause of debate. The SEC argues that there is no international commission which watches over the implementation of the IFRS standards. The SEC has claimed that US-GAAP provides qualitatively better financial reporting than IFRS. Consequently, foreign issuers listed on the US capital market have to reconcile their financial reports with US-GAAP rules. [www.sec.gov] This report may show if the claims made by the SEC about US-GAAP reporting being qualitative better than IFRS are valid based on the outcome of the earning quality differences between the two standards. In turn, the results may further contribute to the reconciliation debate.

This report may also help company reviewers, like investors, banks, employees, to interpret the quality of the earnings and to understand the differences between companies who are using IFRS or US-GAAP.

1.3 Research Objectives

The purpose of this report is to investigate the quality differences of IFRS versus US-GAAP earnings. The objectives can be summarized as follows:

1. Understand the essential aspects of earning quality, i.e. how can the quality of earnings be determined?
2. Derive a useful and coherent framework in order to determine the quality of IFRS and US-GAAP reported earnings.
3. Quantify the framework, i.e. set up the appropriate formulas, to determine the earning quality of IFRS and US-GAAP.

The comparison between IFRS and US-GAAP is based on the comparison of the reported earnings under both standards. Earnings are the primary source of information regarding the performance of a firm [Francis et al. 2004]. This is among other things supported by empirical research which shows that investors rely on earnings (synonymous with net income, profit or income attributable to share holders) more than any other summary measure of performance, i.e. dividends, cash flows, or variants of earnings such as EBITDA. [Schipper and Vincent, 2003]

1.4 Structure

This report is divided into seven chapters, the first chapter being this introduction. The second chapter discusses the basic research concept and can be seen as the foundation for the research that will be done. The third chapter deals with the literature review, in which a variety of academic literature will be reviewed in order to get a clear image of the widely discussed subject of accounting information quality. The fourth chapter lays out the sample selection on which the conclusions will eventually be drawn regarding the quality difference between IFRS and US-GAAP reported earnings. Chapter five deals with the quantitative model which is applied on the

sample selection in order to determine quality differences between IFRS and US-GAAP earnings. The results of this report are given in chapter six. Chapter seven concludes and reflects on the results found throughout this paper.

Chapter II

Research Framework

2.1 Research outline

The IFRS and US-GAAP financial reporting standards contain different accounting rules. This report will investigate whether the different rules lead to differences in the quality of the reported earnings and if so, if these differences in earning quality are significant. In this section the problem will be described and several steps will be explained in order to conclude on earning quality difference of IFRS and US-GAAP.

2.1.1 The Problem formulation

The aim of this report is to investigate the quality of accounting information for both IFRS and US-GAAP, by focusing on the quality of their reported earnings, and accordingly to show differences with respect to the earning quality between the two standards. The following specifications are made in order to determine quality differences between the two reporting standards:

- Quality of accounting information is in this report determined by the quality of the reported earnings. Most of the academic research uses this approach as earnings are very important to a firm for the reason that they are used as a summary measure of the performance of a firm by a large variety of users. Francis e.a. (2004) state that earning quality is used by investors "as a conditioning variable to extract valuation-relevant information from earning patterns". Earning quality is interesting for future and current investors as well as for contracting purposes. [Schipper and Vincent, 2003]
- When doing research on the earning quality, it is important how to determine this quality. Quality is after all a vague concept which is hard to substantiate. Empirical studies on the quality of earnings most often try to determine this quality by considering several aspects of the earnings that are considered as favorable aspects to a wide range of users. In the same way, the FASB defines the quality of financial (earnings) information in terms of criteria such as relevance, reliability, comparability and consistency. Researchers in turn made these attributes empirically operational by developing several attributes [Schipper and Vincent, 2003]. This report will focus on several earning attributes in order to compare quality differences between IFRS and US-GAAP.
- In order to compare earning quality between IFRS and US-GAAP, a sample will be selected from firms that are both listed on the European and US stock market. More specifically, the sample will consist of firms listed on the Dow Jones Eurostoxx 50, in which the leading European firms are adopted. The construction of the sample begins with the selection of the 50 firms listed on the DJ Eurostoxx 50 for the period 2004-2006. The DJ Eurostoxx 50 is a stock index of Eurozone stocks designed by STOXX Limited, a

joint venture of Deutsche Börse AG, Dow Jones & Company and SWX Group. According to STOXX, its goal is "to provide a blue-chip representation of super sector leaders in the Eurozone." Given this goal, the sample selection can be seen as a representative sample for the European financial market. Most of the firms listed on the DJ Eurostoxx 50 are also listed on the US stock market. Consequently, these firms also give US-GAAP-based financial data on the basis of the 20-F reconciliation form. All foreign filers on the US stock market are obliged by the SEC to prepare such a financial summary, the so called reconciliation sheet, based on the US-GAAP reporting system. Data used in this report comes from one financial market (the European market), providing financial data based on both IFRS and US-GAAP. Selecting firms that are listed on the same market offers the advantage that financial market elements (like market structure and organization) are comparable for all sample firms. Data regarding the sample is available for 2004 through 2006. For these years, earning data will be extracted from the IFRS annual reports and the related 20-F reconciliation sheet.

The specifications are incorporated into the following problem definition which forms the main research question in this report:

What are the quality differences between IFRS and US-GAAP prepared earnings, considering several earning attributes?

First of all this report will describe how earning quality can be determined. Second, it will explain how this determination of earning quality can be applied to the comparison of reported earnings based on IFRS and US-GAAP.

The sample that is chosen in order to compare IFRS and US-GAAP prepared earnings gives however some restrictions concerning the use of the earning attributes that can be found in academic literature. As will be explained in the literature review, seven earning attributes (three market-based and four accounting-based attributes) exist in prior research on accounting quality, each of them describing a unique feature on reported earnings [Francis et al., 2004]. Given the sample chosen, three out of the seven earning attributes have to be deleted for the purpose of this report. The US-GAAP accounting information is extracted from the 20-F reconciliation sheets. These sheets are a summary of US-GAAP based accounting information that is available in the annual reports based on IFRS. The 20-F sheets do not provide US-GAAP information on cash flow data. As a consequence accrual quality and smoothness cannot be determined as data on firms' cash flows is needed. Also conservatism with respect to the reporting of earnings will not be considered in this report as there is no 'bad' news concerning the sample firms in the chosen sample period between 2004 and 2006. Francis et al. describe bad news as negative annual market return. As the firms market return acts as a surrogate for all information available, an overall negative annual return indicates that bad news dominates the good news for that particular year. This research will not discriminate between good and bad news (reflected in the firm's positive respectively negative annual market return) as for the sample period almost none

of the firms have negative yearly returns. Earning quality will be determined using two market-based and two accounting-based attributes.

2.1.2 Research questions

The quality of earnings reported by IFRS and US-GAAP is determined in this report by using several earning attributes, each of which describes a unique information aspect on the reported earnings. According to Francis et al., the attributes used to measure earnings quality can be divided in two classes: accounting-based attributes and market-based attributes. An accounting-based attribute only uses accounting information to determine the quality of the earnings, while the introduction of market prices or returns, next to accounting information, results in a market-based attribute. More specifically, the following attributes will be used: value relevance, timeliness, persistency and predictive ability. The first two measures are clearly market-based, while the following two are accounting-based measures.

The following research questions considering this report are aimed to compare the earning quality of IFRS and US-GAAP.

   1   *What are the differences in **value relevance** between IFRS and US-GAAP reported earnings?*

   2   *What are the differences in **timeliness** between IFRS and US-GAAP reported earnings?*

   3   *What are the differences in **persistency** between IFRS and US-GAAP reported earnings?*

   4   *What are the differences in **predictability** between IFRS and US-GAAP reported earnings?*

The results give a first impression on which earning attributes are different for both reporting systems and also how much this difference is.

2.2 Research Methodology

This report concerns a study on the quality comparison of different accounting standards, which is a widely discussed topic in academic literature. Moreover, the research done in this report is characterized as a comparative research, comparing IFRS and US-GAAP earning quality using a framework consisting of several earning attributes in order to determine this quality. The earning attributes are based on prior research on the comparison of earning quality.

The research done in this report can be characterized as a comparative research, as it compares the information quality based on the earning quality of both accounting standards.

An essential element for comparative studies is the use of one or more touchstones which form the basis on which the conclusions will be drawn [Verschuren & Doorewaard, 2005]. Reported

earnings are in this report the touchstone as it represents the information quality of the specified accounting standard. Accordingly several evaluation criteria will be formulated to determine earning quality. These evaluation criteria can be based on requirements or rules that are agreed upon in practice, for instance the IFRS and US-GAAP accounting rules as set out by the IASB and FASB. The criteria can also be based on a common set of norms and standards. For example, the criteria in order to determine earning quality are based on a common set of norms and standards developed and applied by many researchers, which are described in literature as earning attributes. Earning attributes are in this report used as evaluation criteria. In the next section the use of these attributes will be explained and why this report applies these evaluation standards.

2.3 Research structure

This report tries to determine if the accounting information based on IFRS and US-GAAP differs, by focusing on significant quality differences in the reported earnings.

For this matter the research of Francis et al. (2004) will be adopted in this report, who came up with seven earning quality attributes: accrual quality, persistence, predictability, smoothness, value relevance, timeliness and conservatism. Much of the following research uses one or more of these seven earnings attributes in determining the quality of reported earnings (e.g. Boonlert 2004, Gunny et al. 2007). The sample used in this report implies several restrictions to the earning attributes that can be applied on the sample data, discussed in the problem formulation. As a consequence of these restrictions this report will limit the discussion on earnings attributes by selecting two accounting-based and two market-based attributes.

Earning quality of reported earnings is here defined in terms of four earning attributes; value relevance, timeliness, persistency and predictability. The goal is to perform a comparative study on the quality of IFRS and US-GAAP reported earnings. The results may give a first impression on the earning quality differences between IFRS and US-GAAP reported earnings. This will indicate the information quality differences of both standards from the perspective of quality differences in the reported earnings. The research structure is visualized in the next figure.

Figure 2: Visualization of the earning quality construct
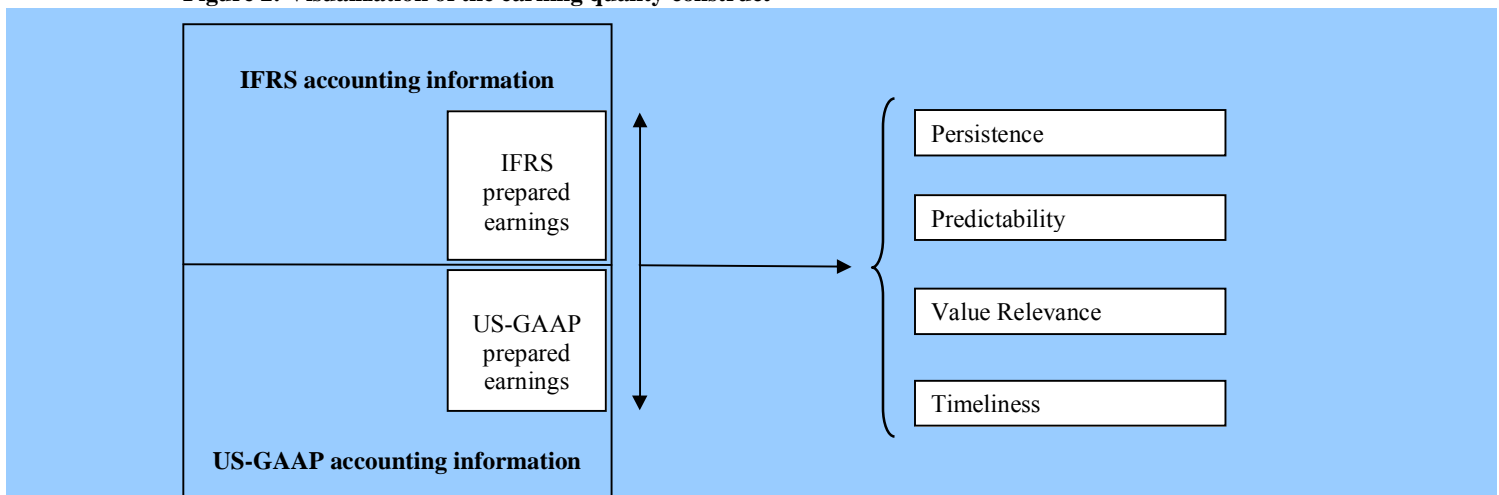
Chapter III

Literature Review

Given the aim of this report, the literature review will consist of two parts. Firstly, literature explaining the concept of earning quality will be reviewed, focusing on the research by Francis et al. which gives an overview of the earning attributes used in prior research. The discussion of their article will be followed by a more detailed analyses of the four measures applied in this report.

The second phase of this review discusses the literature on the determination of earning quality of accounting standards, focusing on studies concerning the quality differences between IFRS and US-GAAP.

The literature review will form the basis for the framework that is used in order to compare IFRS and US-GAAP earning quality differences. This review further more gives a better understanding on the purpose of earning attributes which will be used in order to conclude on IFRS and US-GAAP earning quality.

3.1 Earning Attributes

Earnings are important to a firm for the reason that they are used as a summary measure of the performance of a firm by a large variety of users. When doing research on the quality of accounting information, it is first of all important how to determine this quality. In academic literature, quality of the accounting information is very often determined by the quality of the reported earnings. For this matter, researchers have made the quality of accounting information empirically operational by developing several attributes in order to determine the earning quality. [Schipper and Vincent, 2003]

However, the term earning quality in itself has no established meaning and has been used with different interpretations; i.e. with the use of different earning metrics or attributes, each covering a different feature of the quality aspects of earnings.

Because earnings can be decomposed into cash flows and accruals, several researchers use accruals quality to draw conclusions about the earning quality. [Dechow Dichev, 2002; Francis et al., 2004]. Other researchers in turn interpret the quality of earnings when earnings are persistent. [e.g. Penman, 2002, Richardson, 2003] Mikhail et al. (2003) explain the quality of earnings in terms of the predictive ability of the earnings. They view earnings to be of high quality when a firm's past earnings are strongly associated with its future earnings. Other researchers view earnings to be of higher quality when earnings are value relevant, i.e. the earnings are strongly associated with the security price. [Francis and Schipper, 1999]

Regarding the academic literature on accounting information quality, no agreed upon definition or framework for determining the quality of reported earnings exists. As a consequence, researchers determine earning quality in various ways, i.e. looking at different aspects of earning in line with their view of what are important aspects of earnings. This report tries to give a general overview on the earning quality of IFRS and US-GAAP and will cover several earning attributes which in turn may give a general view on the quality of the reported earnings. Francis et al conducted a research in 2004 where they discussed the most important and widely used earning attributes in order to come up with a summary of seven earning attributes. Their research discusses seven earning attributes used in prior research and are divided into two groups, the market- and accounting-based attributes, each describing a unique characteristic of earnings. Most literature on earning quality investigates one or two earning attributes, while Francis et al. provide a summary of seven attributes that are discussed in academic research. For this reason and also the fact that their research was widely referred to by other researchers in studying the earning quality concept followed after the publication of their research, the summary of widely used attributes by Francis et al will be used in order to extract a suitable framework in determining the earning quality for IFRS and US-GAAP earnings. The research by Francis et al. will now be discussed.

3.1.1 "Cost of equity and earning attributes"

Francis et al. (2004) summarized the widely used criteria for measuring earnings quality in accounting research in their fundamental article "Costs of Equity and Earnings Attributes". Based on prior literature they came up with seven earning attributes that can be divided into market-based and accounting-based attributes. The accounting-based attributes consist of accrual quality, predictability, persistency and smoothness. The market-based measures consist of value relevance, timeliness and conservatism.

In general their research investigates the relation between attributes of accounting earnings and investors' resource allocation decisions, using the cost of equity capital as a summary indicator of those decisions. In the first part of their research, they give an extensive review on "seven earning attributes that are viewed as distinct by many in accounting research".

In their research it is stated that accounting-based measures in general take cash or earnings itself as the dependent variables and these are consequently measured using other accounting information only.
Market-based attributes take market returns or stock prices into account. These attributes are based on the estimated relation between accounting earnings and the firm's market return. E.g. value relevance is referred to the ability of accounting numbers (independent variables) to explain the firm's market return in financial markets (dependent variable). Each of these seven earning attributes will now briefly be discussed below. [Francis et al. 2004]

Accrual Quality determines the extent to which accruals (and earnings in general) map into operating cash flow. Dechow and Dichev (2002) have recently developed this proxy to measure earnings quality. In particular, they argue that since accruals are intended to adjust the recognition of cash flows over time, errors in estimating those accruals and subsequent

corrections by management might reduce the beneficial role of accruals. With respect to the accrual quality, high quality earnings will map more closely into cash.

Persistence refers to the extent to which past earnings map into future earnings. Thus, earnings persistence captures the permanent component of earnings. Persistent earnings are seen as desirable because of there recursiveness. For investors this implies less risk when investing in firms with persistent earnings.

Predictability implies that the presented data must provide information that can be used as a good predictor in the firm valuation process. Lipe (1990), for example, defines predictive ability as the ability of past earnings to predict future earnings. Shareholders, as the primary users of the financial statements, try to estimate a firm's ability to generate cash and cash equivalents as well as the timing and certainty of this cash generation. Current earnings are an important input to forecasting these future earnings/cash flows.

Smoothness is measured by the amount of variability of cash flow and the variability of earnings (Leuz et al., 2003). Smoothness can be seen as a desirable earning attribute as managers use their information about future income to smooth out momentary fluctuations. This will give more representative reported earnings, as these earnings contain future information. Management can use earning smoothing by introducing or leaving out transitory components to the income series in order to decrease timely fluctuations, which in turn increases the earnings predictability (Schipper and Vincent 2003). In addition, Former SEC Chairman Arthur Levitt (1998) claimed that managers smooth earnings because they believe investors prefer smoothly increasing earnings

Value relevance is determined by measuring the correlation between income variables (e.g. net income) and market prices. Research on the value relevance of accounting information started with the work of Ball and Brown (1968). In their study, Ball and Brown build on capital theory where it is argued that the financial market, if efficient, will adjust to newly released information, that is useful in forming asset prices, i.e. earning reporting. Therefore, they argue that higher relations between reported earnings and returns are indicative for higher accounting quality of earnings, assuming an efficient financial market. More research on measuring value relevance followed after the work of Ball and Brown.

Combined **Timeliness** and **conservatism** are described as transparency, a desirable attribute of accounting earnings. These measures are determined using the same formula. [Ball et al. 2000]

The timeliness measure can show how fast and to what extend the earning information is captured in the stock price. This measure looks at the stock price development starting e.g. 3 months from the time that the earning information is released. Conservatism looks if there is any difference in the timeliness relation when the stock return has a negative and a positive evolution for the period after the earning information was released. Conservatism therefore differs from timeliness in that it reflects the differential ability of accounting earnings to reflect economic losses (measured as negative stock returns) versus economic gains (measured as positive stock returns)

Based on the sample restriction, this report will restrict to four of the earning attributes proposed by Francis. Namely, two accounting-based attributes: persistency and predictability; and two market-based attributes: value relevance and timeliness.

In the following section the four earning attributes used and extracted from the framework imposed by Francis et al. will be discussed in more detail.

3.1.2 Accounting-based earning attributes

The first class of earning attributes consists of the accounting-based earning attributes. An accounting-based attribute determines the relation between only accounting elements (like reported earnings). Persistency and predictability will be used in this paper in order to determine the accounting-based quality of IFRS and US-GAAP earnings and prior research will be considered that characterize these attributes as desirable.

3.1.2.1 Persistency

Earnings are said to be persistent when they recur over time, or when they are sustainable or permanent. It also refers to the extent to which an innovation (unexpectedness) in the earnings series causes investors to revise their future earnings expectations. [Boonlert, 2004]

Researchers measure the persistency of earnings by looking at the explanatory power of past earnings on present earnings. When past earnings are not associated with present earnings, the earnings are not persistent, or not recurring.

Since more permanent and less transitory earnings are more useful to e.g. the valuation process of a company, earnings are judged to be of high (information) quality when they are highly persistent. [Schipper and Vincent, 2003] Also, investors are more likely to view more persistent earnings as desirable since those earnings are recurring, i.e. the stock value will be higher for a firm with persistent earnings compared to a firm with non persistent earnings when both earnings have the same long term average. This view is also explained in the article of Richardson (2003), which states that earning volatility decreases the stock value. Fluctuating or non persistent earnings may seem desirable for opportunistic investors. However, in the context of earning quality, this type of investor prefers less persistent earnings and thus a lower earning quality with respect to the firms in which he would invest. Consistent with this view, Lipe (1986) shows that earning quality increases when persistence is increasing.

3.1.2.2 Predictability

Predictability -in this case, the earnings ability to predict itself- is not only valued in security analysis and equity valuation, but it is also an element of the relevance criterion in the FASB's and IASB's conceptual framework and thus also a desirable attribute from the perspective of the standard setters. [FASB, 1980] Traditionally, this measure is defined as the ability of current earnings to predict future earnings and cash flows from operations. Current and also past earnings are the input to forecasting the future earnings/cash flows. Simply stated, the predictive ability is the ability of past earnings to predict future earnings.

Related to predictability is earnings persistence. While persistency focuses on the explanatory power of past earnings to determine present earnings, predictability looks at the variance in the

explanatory power of past earnings (say past year's earnings, *t-1*) to determine present earnings (present, *t*). Given two samples of firms (see figure 3 below: sample X exist of earnings reported under accounting standard X, sample Y exist of earning reported under accounting standard Y), both sample firms' earnings might exhibit the same persistency (in the example the persistency is 0,5), but the variance around the persistency number when looking at the firms in the two samples may be higher in one sample than in the other (sample X has higher variance in the persistency than sample Y). In this case, the sample with the least variance in the persistency is said to be more predictable, i.e. next years earnings (*t+1*) are better predictable as the variance of past earnings are lower.

Figure 3: Visualization of the difference between predictability and persistency
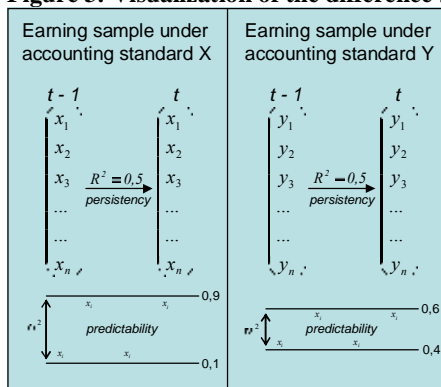
Given a certain persistency number, which implies the recursiveness of the reported earnings, predictability will look at the variance around this persistency number. Given that a larger number of firms are far above or below this number shows that there is a lot of variance in the persistency number which in turn makes it hard to say what next year's earning will be. Earnings are supposed to be better predictable given a small variance in the persistency equation, i.e. next year earnings are more likely to have the same persistency as present year's earnings when the variance around the present persistency number is small.

3.1.3 Market-based Earnings Attributes

In this subsection the two market-based attributes will be explained which are used in determining the earning quality of IFRS and US-GAAP. More specifically, value relevance and timeliness will be explained, as these two market-based attributes, along with two accounting-based attributes persistency and predictability, are the attributes that will be used in order to determine the information quality of the reported earnings under IFRS and US-GAAP.

3.1.3.1 Value relevance

This construct is often measured as the ability of earnings to explain variation in the firm's market return, where greater explanatory power of earnings to explain market returns is viewed as desirable.

According to capital theories, the financial market, if efficient, will adjust to newly released information that influences the asset prices. In line with the subject of this paper, the newly released information refers to the release of the reported earnings, which in turn contain a lot of information with respect to the firm's performance. Ball and Brown (1968) were the first to come up with the value relevance attribute. They state that higher relations between earnings and returns indicate higher accounting quality of the earnings. Earnings are a summary of events that have affected the firm over the fiscal period for which the report has been prepared. Similarly, returns capture financial market changes in firm value during that same period. More specifically, in the value relevance construct the return of a company is expressed by the firm's earning, i.e. the relation between a change in earnings with a change in market price.

The fact that returns are used as the benchmark to evaluate quality of accounting numbers is not surprising. The relation between returns and reported earnings can be explained from an earnings valuation perspective. According to the article by Lang (1991) it is proven that stock prices can be explained as a multiple of earnings. Market prices follow earnings, i.e. changes in earnings will affect the market prices. In this article it is also stated that the relation between earnings and the firm's market return is best modeled when taking the firm's market return of 15 months, ending 3 months after the fiscal year with respect to the reported earning. Most research which use value relevance in determining earning quality, estimate the value relevance of reported earnings from a specified fiscal year with respect to the 15 months market return (e.g. Francis et al, 2003 and 2004, Schipper and Vincent, 2003) Still a significant part of the stock prices consists of future expectations of the underlying firm. Therefore, reported earnings alone will not entirely explain the firm's market return, i.e. the explanatory power of earnings on the firms market return will not be 100%. However the higher the explanatory power of the earnings, the more value relevant the earnings are.

Since more value relevant earnings would describe the firm's asset price more accurately, earnings are judged to be of high quality when they are highly value relevant.

3.1.3.2 Timeliness

Timeliness is another market-based attribute on which earnings are evaluated. Timeliness captures the earning's ability to reflect quickly both good and bad news concerning the firm's performance. The firm's market return is considered as the surrogate for the firm's performance as the market return is expected to capture all current information with respect to the performance. Timely information is information which is useful for decision-making in the sense that it is released to the public before it loses its informative capacity.

As a market-based attribute, it assumes that accounting numbers are intended to measure and report changes in the firm's economic position, i.e. the firm's market return. Timely information is considered not only more relevant in decision making, as most of the information is included in the economic value of a firm, but also more reliable. Earnings information should be timely, given that the information has a high level of certainty, in order to be useful for investors and other users. Timeliness thus provides an indicator for reliability. Francis et al. (2004) argue that

timeliness increases the reliability of the information reported. In doing so, it increases the ability of earnings to predict future cash flows, as most of the important information needed is already reflected in the stock price of the firm. In turn, timeliness contributes in getting reliable predictions on cash flows.

As in the value relevance literature, timeliness is defined in terms of the relations of reported earnings with returns (as a market-based attribute). The difference between the two measures is that value relevance explains the firm's market return based on the reported earnings, while timeliness determines the earnings based on the firm's market return, where this return acts as a surrogate for all company information available to investors. Timeliness measures how much of the information available to investors is adopted in the firm's earnings. In the literature this is known as a so-called reverse regression. [e.g. Lipe, 1990] The two market-based attributes also differ in the aspect that value relevance tries to explain the firm's market return over a 15-month period, ending 3 months after the end of the fiscal year. Timeliness tries to explain the fiscal year earnings based on the market return over the same fiscal year, so taking a market return of the 12-months period that comprises the fiscal year. As will be shown in the next paragraph, Francis et al. performed a study in order to test if each of the attributes describes a unique characteristic of the quality of earnings. For the case of value relevance and timeliness their study shows that while they are positively correlated, the two attributes are unique.

Generally, timeliness implies providing information and news in the financial statements in a timely manner. Returns are used as an indicator which contains all of the specific and non-specific information, i.e. yearly returns are expected to capture all the developments concerning a specific firm for a specific year. Timeliness analyses the recognition of the firm's return (as a surrogate for the firm information) in the reported earnings, to enable the users of current financial statements to form an expectation about the future earnings and cash flows of the business. Returns reflect immediately all good and bad news about a company when this news is released to the public. From prior research it concluded that this is not the same concerning the financial reporting information. Financial reporting information tends to suffer from lack of timeliness due to conservatism, more specifically, prior research concludes on bad news (i.e. when the firms yearly market return is negative) reflected more quickly in earnings than good news (i.e. when the firms yearly market return is positive). [Beaver, 1987]

3.1.4 Relations between the earning attributes

The four earning attributes discussed above have all been widely applied in earning quality research. This report will restrict to four earning attributes out of the seven attributes used in prior literature. Although these attributes capture different quality aspects of earnings, links between these attributes exist. Especially between the two market-based attributes and between the two accounting-based attributes these links were found in the work of Francis et al. These links are mostly because value relevance and timeliness both look at the relation between returns and earnings while persistency and predictability take only the firm's earnings into account.

To prove that each earning attribute is unique, Francis et al. performed a correlation test in order to determine how much the attributes are associated to one another. For this matter they

performed a correlation test among each of the seven attributes discussed in their article. Their conclusion was that accounting-based attributes exhibit small positive correlation with values ranging from 0,20 through 0,30, i.e. accounting-based attributes are slightly correlated to one another. The correlation between persistency and predictability is 0,23 concerning their sample consisting of US firms. Similarly, the market-based attributes are also positively correlated. However this correlation is higher than the correlation between the accounting-based attributes. The correlation between value relevance and timeliness is 0,67. Finally, correlations between market-based and accounting-based measures are small with values ranging from 0,08 through 0,12, meaning there is relatively little overlap between the accounting-based and the market-based attributes.

Overall, Francis et al. conclude that each of the seven attributes exhibit positive correlation with the other attributes. The two accounting-based attributes exhibit positive correlation exceeding 0,20. Similarly, for the two market-based attributes the correlations is large, in economic terms, being 0,67. Overall, their research suggests relatively little overlap between the accounting-based and market-based attributes.

Three conclusions were drawn by Francis et al. regarding the correlation study among attributes. First, correlation among attributes found in their study was similar to values reported in prior studies. Second, there is little overlap between the accounting-based and the market-based attributes. Third, the correlation across the different attributes is positive but not so strong as to indicate that any attribute is not unique or that any attribute subsumes another. The result section of the report shows that the results for the earning attributes in this report are in line with the results found in the research of Francis. In the same line, it can be argued that the correlation between the earning attributes found in the research of Francis is also in line with the correlation between earning attributes in this report, i.e. with the correlation of the results for the earning attributes based on the IFRS and US-GAAP data from the sample used in this report. Consequently it is concluded that the four earning attributes in this report -that comprise the framework in order to compare earning quality- are positively correlated with each other but also these attributes are considered to be unique.

3.2 Research on Financial Reporting Systems

Earning quality and the quality of financial reporting in general are subjects that, since a few years, receive more and more attention and are the center of debate for investors, regulators as well as for researchers. The first discussions on this subject started in 2002, after the IASB and FASB agreed upon convergence between IFRS and US-GAAP. When IFRS was introduced for European firms in 2005, research accumulated on this matter. Before the introduction of IFRS, US-GAAP was accepted widely as the international set of standards to ensure high quality financial statements. Also due to the ongoing debate about the reconciliation of IFRS and US-GAAP more attention was paid to the quality of both systems. [Helleman, 2006]
The objective of this literature review is to give an overview of the recent studies devoted to the topic on earnings quality that aim to evaluate the quality or usefulness of existing or newly imposed standards. The results from prior studies can already give an indication on which quality

differences exist between IFRS and US-GAAP. Also, investigating these researches will provide input on how to determine the earning quality of IFRS and US-GAAP for this particular report.

3.2.1 Areas of research on Financial Reporting systems

In general there are two areas of research: the quality determination of one particular accounting standard (e.g. investigating the value relevance of US-GAAP earnings), and on the other hand the quality comparison between different standard regimes (e.g. local GAAP compared to US-GAAP).

The first research area is prominent in the US. Most of this research examines whether the individual standards complies with the relevance and reliability criteria set out by the FASB. Given this aim, the value relevance approach is often used (see for example Ohlson, 2001 and Penman, 2001)

The second area of accounting quality research focuses on the comparison between standards. Research has focused on the comparison of information quality of US-GAAP and national standards and more recently on US-GAAP and IFRS. These studies are motivated by the global accounting debate about IFRS and US-GAAP. The debate focuses primarily on comparisons of the stipulated accounting methods. So far, little empirical research is done on the comparison of US-GAAP and IFRS, especially compared to studies on the comparison of US-GAAP and local GAAP. Further on the research found on the comparison of US-GAAP and IFRS will be discussed.

The following part will focus on prior research concerned with the comparison of earning quality between IFRS and US-GAAP, which is in line with the research concept of this report. Prior research on the comparison of IFRS and US-GAAP used International Accounting Standards (IAS), the precursor of IFRS. IAS was issued by the International Accounting Standards Committee (IASC) from 1973 to 2001, while IFRS was issued by the International Accounting Standards Board (IASB) from 2001 onwards. The IASB is basically the successor for IASC. When IASB was installed in 2001, it adopted the existing IAS and decided to name any future standards as International Financial Reporting Standards. Consequently, IAS 1 Presentation of Financial Statements defines IFRS as standards and interpretations adopted by the IASB. [IASB & FASB, 2006] In total, five articles on the comparison of earning quality between IFRS and US-GAAP exist, which use earning attributes in order to conclude on differences between earning quality. Prior research will now be discussed.

3.2.2 Research on the comparison of IFRS and US-GAAP

The impact of accounting standards used in a specific country or market can be tested by two different approaches. The first approach looks at the quality of earnings before and after the introduction of a different standard. More specifically, this approach first determines the quality of the financial information of the former standard (e.g. local GAAP). After the introduction of the new standard (e.g. US-GAAP) quality of the financial information is measured again. This approach is for instance used in the study of Jennings (2004).

In their study they investigate if the adoption of IFRS increases the timeliness and value relevance of financial statements. Specifically, they examine whether IFRS earnings are timelier and more value relevant for countries with high tax alignments. Tax legislation effectively determines financial accounting standards in countries with high tax alignment. Firms in high tax aligned countries will try to underestimate their firm profits to minimize taxes, thereby reducing the extent to which the financial statements reflect the economic value of the firm. In literature it is often claimed that IFRS imposes a degree of freedom on how to apply the rules for determining the accounting data in specific accounting situations. The research of Jennings proves that as a consequence high and low tax aligned countries will use the IFRS rules differently in specific accounting situations. Countries with high respectively low tax alignment are referred to as HIGH and LOW countries. They find IFRS earnings to be significantly more timely in HIGH countries, due primarily to quicker incorporation of economic losses under IFRS. They also find IFRS earnings and book values to be more value-relevant than HIGH countries. [Jennings, 2004]

The second approach concerning the comparison on different accounting standards, the valuation model is run simultaneously on the two sets. This is possible when in one country or market two or more accounting standards are being used. This is for instance the case in the former German New Market, where firms had to report financial statements that are either IFRS or US-GAAP compliant.
The second approach is also used in this report where the sample is based on a group of firms listed on the DJ Eurostoxx 50 as discussed in chapter two. Firms listed on the DJ Eurostoxx 50 have to comply on one hand to IFRS rules, consistent with the EU legislation. On the other hand, a large proportion of firms on the DJ Eurostoxx are listed on the US-Market as well, for which the firms have to report in compliance with US-GAAP, consistent with SEC requirements. The following section will deal with prior research on the area of the comparison of US-GAAP and IFRS earnings using the second approach. Four studies applying this approach based on the comparison between IFRS and US-GAAP could be found in academic literature.

The first research found on the comparison of US-GAAP and IFRS was done by Harris and Muller in 1999, where they investigate if earnings and book value on the US market prepared by foreign filers under IFRS are more value relevant than the earnings prepared by US firms using US-GAAP. To address these questions, Harris and Muller use a sample of foreign firms, for the period 1992-1996, listed in the US that prepare their home country financial statements using IFRS and provide reconciliations to US-GAAP through Form 20-F fillings. The purpose of this research was to provide evidence for the debate between the US SEC and NYSE on whether foreign firms should be allowed to list in the US by only using IFRS. They found that IFRS accounting data is more associated with price-per-share and security returns than US-GAAP accounting data, i.e. IFRS is more value relevant than US-GAAP accounting data. [Harris and Muller, 1999]

In 2002 Leuz compares US-GAAP and IFRS in terms of information asymmetry and market liquidity - two key constructs in securities regulation. They use firms trading in Germany's New

Market for the years 1999 and 2000. The firms must choose between IFRS and US-GAAP in preparing their financial statements, but face the same regulatory environment. Their findings do not indicate that US-GAAP is of higher quality as frequently claimed. Analyses of the dispersion of analysts' forecasts, IPO underpricing and firms' standard choices support these findings. Thus, at least for New Market firms and based on the researchers' quality valuation model, IFRS and US-GAAP appear to be comparable. [Leuz, 2002]

The third study was performed in 2006 by Van der Meulen et al. In their study, they compare the quality of US-GAAP and IFRS using a sample consisting of German new market firms for the period between 1997 through 1999. They find that the quality of US-GAAP prepared financial statements and IFRS information is overall very comparable, based on several earning quality attributes such as accrual quality, value relevance, persistency and timeliness. They found US-GAAP to be significantly more persistent than IFRS. [Van der Meulen et al., 2006]

Finally, the study by Ndubizu (2006) compares the differences in value relevance of earnings prepared under US-GAAP Chile with IFRS in Peru. In their research, on data from 1992 through 2000 on they observe that earnings contain value-relevant information for investors in the two accounting regimes. However, US-GAAP earnings are more value relevant than the IFRS earnings. They also find that US-GAAP losses in Chile are timelier than IFRS numbers in Peru. The higher timeliness is due to higher market sensitivity to economic losses (income conservatism) in Chile than in Peru. Therefore, the Chilean US-GAAP has higher quality accounting information than the Peruvian IFRS based on value relevant and timeliness measures. [Ndubizu, 2006]

3.2.3 Conclusion

Although US-GAAP is widely accepted and frequently viewed (and used) as the benchmark for high-quality standards, research on the comparison of US-GAAP and IFRS is scarce. Only five academic studies could be found. From the five studies discussed above in can be concluded that the results concerning the earning quality differences between the two standard sets are partly conflicting. However, Leuz and Van der Meulen both conclude that there are almost no significant quality differences between US-GAAP and IFRS (sample periods were 1999-2000 respectively 1997 through 1999). The study by Van der Meulen only found a difference between IFRS and US-GAAP with respect to the predictive ability, where US-GAAP is significantly more predictable than IFRS. On the other hand, the study by Harris and Miller showed that IFRS is more value relevant than US-GAAP earnings when comparing the 20-F filings which comprise of US-GAAP accounting data from foreign filers who report under IFRS in their country of residence (sample period was 1992 through 1996). Finally, Ndubizu shows that US-GAAP earnings in Chile are more value relevant and exhibit greater timeliness than IFRS earnings in Peru.

Unfortunately, the studies found on the comparison of IFRS and US-GAAP take different financial markets and different time periods in to account which makes the results from these studies conflicting with each other. Based on results of prior literature, it is impossible to conclude whether IFRS or US-GAAP earnings exhibit greater information quality. The studies

indicate that results concerning the comparison of IFRS and US-GAAP are unique to the specific sample and time period as well as the framework in order to determine the earning quality that is chosen in each study.

Unlike prior research found on the comparison of reported earning under IFRS and US-GAAP, this study will be the first to consider European firms who report their earnings in compliance with IFRS and reconcile these earnings to US-GAAP after the introduction of IFRS in 2005. The results on the comparison of IFRS and US-GAAP earnings are only applicable to firms on the European financial market and to the specific sample period of 2004 through 2006. As results from studies found on the comparison of IFRS and US-GAAP earnings are conflicting, generalizing the results from this report to other financial markets and time periods can be misleading.

Chapter IV

Sample Selection and Descriptive Statistics

Firms from the DJ Eurostoxx 50 will comprise the sample in the report in order to compare the information quality of IFRS and US-GAAP. As stated in the problem formulation, the DJ Eurostoxx 50 can be seen as a representative sample for the European financial market. Although IFRS is used throughout the international financial markets, this research focuses on one financial market (the European market) in which IFRS is the primary accounting standard. Selecting firms from different financial markets would bias the results, as the financial markets differ in market structure and organization. However, restricting to one financial market has the disadvantage that the conclusion made in this report will refer to this particular financial market.

According to the listing requirements by the SEC, foreign companies listed on the US financial market have to fill in a reconciliation sheet, the so called 20-F form, which includes financial accounting data according to US-GAAP. Selecting firms from the DJ Eurostoxx 50 provide financial data on both IFRS and US-GAAP while offering the advantage of comparable financial market elements (like market structure and organization). Each stock market knows its own market elements. These market elements are affected by the market structure and organization of the particular market, and is reflected in sellers' and buyers' pricing policies and practices, inter-firm cooperation, product line and advertising strategies, R&D commitments and innovation and tax legislation. Also the rules with regard to financial statement reporting are different when comparing for example US, European and Asian markets. It is thus important to choose firms that are all listed on the same financial market in order to draw valid conclusions. On the other hand, choosing a sample from one financial market significantly limits the sample size and limits the generalizability of the results. When including the US market as well, a large number of firms reporting under US-GAAP could have been added to the sample as well. Also more European firms could have been added which only report under IFRS and not using both.

Table 1 presents the companies that are listed on the DJ Eurostoxx 50 and the sample concerning this research after deleting the financial firms and several companies that were not any more listed on the DJ Eurostoxx 50.

First of all, 17 financials are deleted from the 50 firms that comprise the DJ Eurostoxx 50, because of their very specific accounting rules which would bias the final results. Secondly, another 11 firms had to be deleted because they were not listed on the US market anymore or the firm was delisted from the US market before or during the sample period. In total 28 firms were deleted out of the 50 firms comprising the DJ Eurostoxx 50. The final sample consists of 22 firms from 6 different countries with a total of 66 firm-year observations. As will be shown in the result section, this number of firm year observation is large enough to make significant interferences on each of the earning attributes. More specifically, the regression parameters

which determine the results for the earning attributes show significant numbers which is proven by several test statistics.

The restriction of the 11 firms that delisted from the US market and have to be eliminated from the sample may cause the sample to be less representative for the European non-financials market. Figure 4 shows the geographical (with respect to EU countries) and sector dispersion of the 'Eurostoxx 50 minus financials' compared with the sample selection after the elimination of the delisted firms. Comparing both samples, there is not much change in the sector and geographical sample. Based on the later, the sample consisting of 22 European blue chips should still gives a representative view of the European non-financials market.

Next, for each of the 22 firms the necessary accounting and market data from the corresponding annual report (providing the IFRS data) and the 20-F reconciliation forms (providing US-GAAP data) is extracted. More specifically, for the 22 firms several performance measures such as earnings per share, sales and net income, and also market data such as stock price and stock returns are collected on an annual basis for the period 2004-2006.

Table 1: Sample selection from DJ Eurostoxx 50

Dow Jones Eurostoxx - non financials		
Company	Country	Sector
1 Ahold N.V.	Netherlands	Retail
2 Air Liquide S.A.*	France	Industry
3 Alcatel-Lucent S.A.	France	Electronics
4 BASF AG	Germany	Chemicals
5 Bayer AG	Germany	Pharmaceutical
6 Carrefour S.A.*	France	Retail
7 Compagnie de Saint-Gobain*	France	Industry
8 DaimlerChrysler AG*	Germany	Industry
9 Deutsche Telekom AG	Germany	Telecommunication
10 E.ON AG	Germany	Electricity
11 ENDESA S.A.	Spain	Electricity
12 ENEL S.p.A.	Italy	Oil & Gas
13 ENI S.p.A.	Italy	Energy
14 France Telecom	France	Telecommunication
15 Groupe DANONE S.A.	France	Retail
16 Iberdrola S.A.*	Spain	Oil & Gas
17 LAFARGE S.A.	France	Industry
18 L'Oreal S.A.*	France	Retail
19 LVMH S.A.*	France	Retail
20 Nokia Corp.	Finland	Technology
21 Philips Electronics N.V.	Netherlands	Technology
22 Renault*	France	Industry
23 Repsol YPF S.A.	Spain	Oil & Gas
24 RWE AG*	Germany	Industry
25 Sanofi-Aventis S.A.	France	Pharmaceutical
26 SAP AG*	Germany	Technology
27 Siemens AG*	Germany	Technology
28 SUEZ S.A.	France	Industry
29 Telecom Italia S.p.A.	Italy	Telecommunication
30 Telefónica S.A.	Spain	Telecommunication
31 Total S.A.	France	Oil & Gas
32 Unilever N.V.	Netherlands	Retail
33 Vivendi S.A.	France	Media & Entertainment
* Firms that are no more listed on the US-Market		

Sample selection		
Company	Country	Sector
1 Ahold N.V.	Netherlands	Retail
2 Alcatel-Lucent S.A.	France	Electronics
3 BASF AG	Germany	Chemicals
4 Bayer AG	Germany	Pharmaceutical
5 Deutsche Telekom AG	Germany	Telecommunication
6 E.ON AG	Germany	Electricity
7 ENDESA S.A.	Spain	Electricity
8 ENEL S.p.A.	Italy	Oil & Gas
9 ENI S.p.A.	Italy	Energy
10 France Telecom	France	Telecommunication
11 Groupe DANONE S.A.	France	Retail
12 LAFARGE S.A.	France	Industry
13 Nokia Corp.	Finland	Technology
14 Philips Electronics N.V.	Netherlands	Technology
15 Repsol YPF S.A.	Spain	Oil & Gas
16 Sanofi-Aventis S.A.	France	Pharmaceutical
17 SUEZ S.A.	France	Industry
18 Telecom Italia S.p.A.	Italy	Telecommunication
19 Telefónica S.A.	Spain	Telecommunication
20 Total S.A.	France	Oil & Gas
21 Unilever N.V.	Netherlands	Retail
22 Vivendi S.A.	France	Media & Entertainment

Figure 4: Geographical & sector dispersion for DJ Eurostoxx–non financials and Sample selection compared
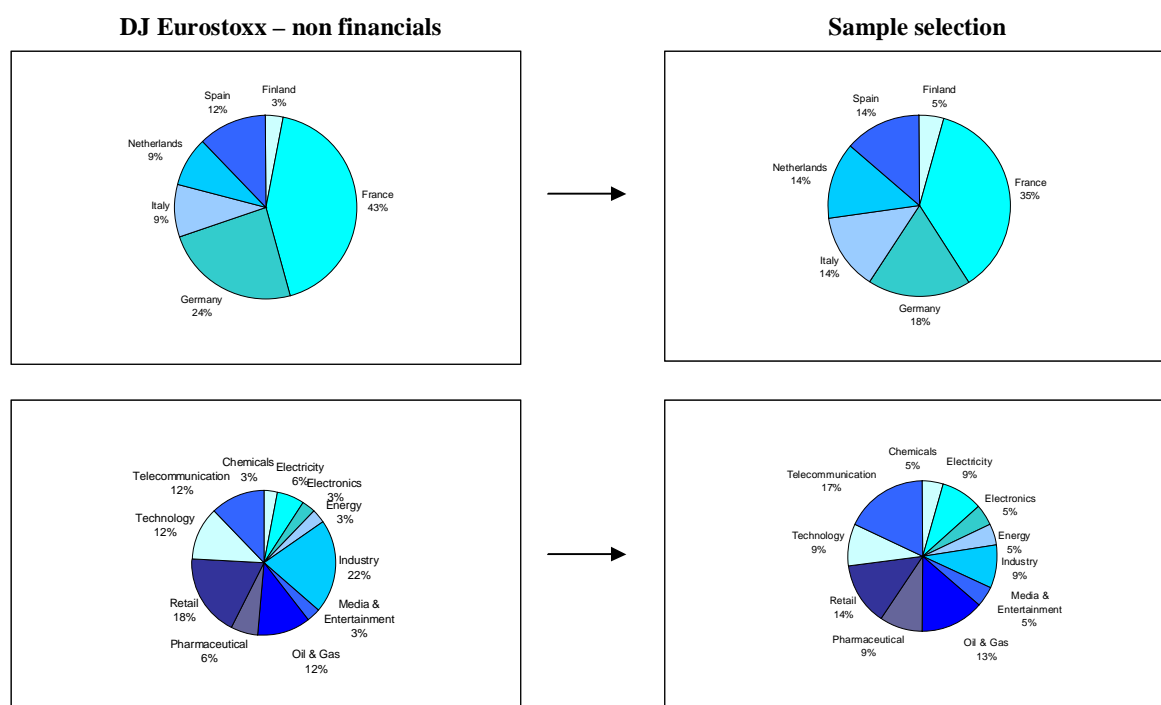
Table 2 (page 32) shows the descriptive statistics on the accounting and market data. Comparing the accounting data (net income, earnings per share and sales numbers) between IFRS and US-GAAP it can be concluded that they differ significantly (with a confidence level of 5%). In Table 2 this is shown by the p-value which is extracted from the t-test. All calculations concerning the data process are performed in Excel. A t-test determines whether the means of two groups are statistically different from each other. This analysis is appropriate whenever comparing the means of two groups. The p-value shows at which confidence interval the H_0 is rejected in favor of the H_1 hypothesis which states that the two means are different. In most research, the "rule of thumb" is to set the alpha level at 0,05. This means that five times out of a hundred you would find a statistically significant difference between the means. In this case, where the p-value indicates a value smaller than the arbitrary 0,05 the H_1 is accepted, i.e. the means are significantly different. When the p-value is higher than the 0,05, the H_0 is accepted, meaning that there is no significant difference between the two sample means.

Regarding the sample data, IFRS reports significantly higher numbers for the accounting data for most of the yearly and pooled observations compared with the reported numbers for US-GAAP accounting data.

The earnings per share concerning the pooled sample are 2.37 and 2.00 for respectively IFRS and US-GAAP. More specifically, earnings per share reported under IFRS are on average 19% higher than US-GAAP earnings per share (with p-value of 0,0002, i.e. highly significant). Looking at the other performance measures, net income and sales, it is also IFRS that reports significant larger numbers than US-GAAP. Regarding the pooled sample IFRS reports 26% higher net income and 4% higher sales compared to US-GAAP net income and sales.

According to the year specific results the difference between the accounting data for IFRS and US-GAAP is the highest for the year 2004. The earnings per share reported under IFRS are 52% larger than the reported earnings under US-GAAP, followed by 12% in 2005 and 11% for 2006. Year specific results regarding the net income show a similar pattern compared to the earnings per share. Difference regarding net income for the year 2004, 2005 and 2006 are respectively 44%, 15% and 5% in favor of IFRS. Year specific results for sales differences in IFRS and US-GAAP show a different pattern. For the year 2004, 2005 and 2006 these differences are respectively 8%, 17% and 22%. Sales differences are increasing, which doesn't seem logical compared to the yearly pattern found for differences in earnings per share and net income. Not all differences between IFRS and US-GAAP are significant, which is the case when the p-value is larger than 0,05.

The stock market for the sample period is characterized by an overall uptrend, with an average grow of 18,0% return per year. This market growth is also reflected in the growth of the accounting numbers, e.g. in the earnings per share (1.41, 2.32 and 2.79 respectively, 25% growth on average). This indicates a positive relation between earnings and stock prices or returns; investors seem to appreciate the growth in earnings. Market prices and returns are adjusted for dividends and splits, i.e. market-adjusted prices, and were extracted from finance.yahoo.com.

Data from the descriptive accounting and financial market information shows a first indication that IFRS and US-GAAP accounting information are significantly different. More specifically, IFRS accounting data is significantly higher than US-GAAP data comparing earnings per share, net income and sales. The year specific results on differences between IFRS and US-GAAP for the period 2004 through 2006 shows that differences are declining. However, when looking at sales numbers, which is also an important performance measure, differences between IFRS and US-GAAP increase. The overall significant differences between IFRS and US-GAAP accounting data raises question which of the two produces qualitatively better data. In the following section the model will be presented in order to determine quality differences between IFRS and US-GAAP earnings, based on four attributes using earnings per share and market returns as input data.

Table 2: Descriptive accounting and Financial market information

		Full Sample			IFRS firms compared to US-GAAP firms				
		Mean	Median	St. Dev.	IFRS		US-GAAP		p-value* t-test
					Mean	St.Dev	Mean	St Dev	
Accounting information									
Net income	2004	2245.43	1964.50	2316.72	2652.61	2382.43	1833.25	2231.29	0.192895
	2005	3470.78	3114.50	2712.05	3705.58	2790.09	3235.99	2679.15	0.002427
	2006	3761.18	3274.00	2809.88	3874.03	2754.34	3668.32	2926.10	0.02291
	Pooled	3175.41	2864.00	2687.46	3417.98	2662.11	2932.84	2709.71	0.000215
Earning per share	2004	1.41	1.07	1.70	1.70	1.57	1.12	1.81	0.042458
	2005	2.32	1.76	1.91	2.46	1.98	2.19	1.88	0.015259
	2006	2.79	2.18	2.43	2.94	2.50	2.65	2.40	0.052091
	Pooled	2.19	1.63	2.11	2.37	2.09	2.00	2.12	0.002665
Sales	2004	32558.94	29596.00	18549.09	33857.11	19874.35	31260.73	17516.06	0.048391
	2005	38294.35	34842.50	23203.17	38619.26	23805.56	37969.45	23168.24	0.125462
	2006	43713.86	40100.50	28079.03	44182.56	26834.93	43245.13	25922.82	0.000748
	Pooled	38275.38	34546.50	23156.36	38969.07	23739.86	37581.69	22724.14	0.000021
Capital market information		Mean	Median	S. Dev.					
Market price	2004	25.73	13.34	18.70					
	2005	32.24	23.78	24.07					
	2006	39.22	28.10	30.09					
	Pooled	32.40	23.78	24.99					
return	2004	0.20	0.12	0.22					
	2005	0.21	0.28	0.21					
	2006	0.12	0.13	0.19					
	Pooled	0.18	0.17	0.21					

* p-value with alpha = .05

Chapter V

Model Specification

This chapter explains the model that will be used in order to determine the quality differences between IFRS and US-GAAP prepared information. Quality is here defined in terms of the scores for the four earning attributes used in this research.
Unlike many of the prior research on earning quality of different reporting standards that tend to focus on one or two attributes (mostly market-based attributes), this research focuses on four earning attributes, which can determine a better overall earning quality on the reported earnings. More specifically, this research focuses on two accounting-based attributes, i.e. persistency and predictability; and two market-based attributes, i.e. value relevance and timeliness.

Three out of the four attributes will be determined using a regression analysis, predictability is determined by looking at the variance in the persistency regression. This regression analysis is a form of statistical modeling that attempts to evaluate the relationship between the dependent variable and the independent variable. For instance, for the value relevance regression formula, the independent or explanatory variable is the earning per share, and the dependent or explained variable is the market adjusted return. The intensity or power of this relation is given by the models R^2s, or regression coefficients.

The first step is to apply each of the four earning attributes on the IFRS and US-GAAP data separately. Next, the value relevance, timeliness, persistency and predictability results for IFRS respectively US-GAAP data will be compared per earning attribute. Finally the significance of the difference between the regression coefficient of the IFRS data and US-GAAP is determined, in order to determine if there is a significant quality difference between IFRS and US-GAAP earnings.
First of all, the statistical techniques of performing regression analyses will be discussed. Next, the model specification for each of the earning attributes is given.

5.1 Regression models

The use of regression models is a technique used for the modeling and analysis of numerical data consisting of values of a dependent variable (or response variable) and of independent variables (predictor or explanatory variable). Regression is a tool for determining causal relations between two or more variables. The regression coefficient gives the strength of this relation. When the regression is 1, the dependent variable is entirely explained by the independent variable is, if 0 there is no relation what so ever between the two variables. The relation itself has the following expression:

$$y_i \quad \alpha_0 + \alpha_1 \cdot x_i + \varepsilon_i, \ where \ i \quad 1, m$$

y_i *is the dependent variable,* x_i *is the independant variable*

α_0 *(intercept)* α_1 *(slope) are the parameters of the equation*

ε_i *is the error term*

i is one element out of the all the m elements

The regression equation shows how the dependant variable is explained by the independent variable. The strength of this relation is indicated by the according regression coefficient or R^2. [Larsen and Marx, 2001]

The book of Larsen and Marx on mathematical statistic provide some statistical analysis on test statistics which are important to incorporate in order to control for the significance of the relation between variables. Typically, an F-test and accordingly a t-test will determine if the regression coefficient, showing the explanatory power of the independent variable on the dependent variable, is significant, i.e. reliable.

The F-test value indicates if there is evidence that the independent variable (in the case of the value relevance model these are the reported earnings, which will try to explain the market return) is linearly associated with the dependent variable (the market return in the value relevance attribute). The results from the F-test can be interpreted according to the H_0 and H_1 hypothesis. The H_0 hypothesis states that the predictor (or the independent variable) is linearly associated to the response (or dependent variable). If this is rejected, the H_1 hypothesis is accepted which states that there is no linearly relation between the predictor and response ($R^2 \sim$ 0). The larger this F-statistic, the more useful the model. The critical value for the test depends on the sample size, i.e. the degree of freedom, and of course the arbitrary confidence interval. For this research, a confidence interval, or alpha, is chosen to be 5%, which is very typical in academic research. When having determined the degrees of freedom (number of observations minus 2, df -2) and the according confidence interval on which the H_0 will be accepted, the critical F-value can be determined from the table of F-statistics. When the calculated F-value is larger than the critical value, the H_0 hypothesis will be accepted, i.e. it is proven that the regression between the two variables is indeed statistical significant, i.e. the independent variable is linearly associated with the dependent variable. The strength of this relation is given by the regression coefficient itself.

The final test in order to check the reliability or significance of the regression is to check if the parameters from the regression equation, α_1 and α_0, are significant. This is done by a t-test on these parameters. The t-test shows how significant the outcome for the parameters is by taking the t-value into account. For a given value of α_1 and α_0 which makes up the regression formula the t-value for each of the parameters indicates the confidence of the value found for α_1 and α_0. For example the regression formula between the independent variable X and the dependent variable Y may be described as follows:

$$Y - 0,01 - 0.9 \cdot X + \varepsilon_{YX}$$

Now say the t-value found for α_1 (here 0,9) equals 3,00. With the use of the table of t-statistics the critical t-value can be found, given the degrees of freedom (which is equal to the sample size minus 2 in the case of a t-test) and an arbitrary confidence interval. If the calculated t-value (in this example 3,00) is larger than the critical t-value from the table of t-statistics, the according parameter for the regression is significant, i.e. the slope of the according regression formula is successfully determined. [Larsen and Marx, 2001]

After having determined the regression coefficient from two samples, these have to be compared in order to conclude if one is significantly higher than the other. For this research regression analyzes will determine the value relevance, timeliness and persistency of IFRS earnings and US-GAAP earnings. After having determined the regression coefficients, which indicates the strength of the relation, the regression coefficients from both IFRS and US-GAAP have to be compared. If, for instance, the value relevance coefficient concerning IFRS earnings is higher than the value relevance coefficient concerning US-GAAP earnings, a t-test will determine if the IFRS coefficient is significantly higher. If so, it will conclude in this case that IFRS earnings are significantly more value relevant than US-GAAP earnings. The test-statistic in order to compare regressions from different data sets (by taking IFRS and US-GAAP as example) is not automatically generated (in excel or SPSS for example) as is the case for the rest of the test statistics found in this research (F-test for regression coefficients and t-tests for regression parameters). The T-test for comparing regression coefficients is calculated as follows [Larsen and Marx, 2001]:

$$T - \frac{R^2_{IFRS} \quad R^2_{US\ GAAP}}{SE(R^2_{IFRS} + R^2_{US\ GAAP})}$$

R^2 *is the regressioncoefficient*

SE *is the standard deviation*

The calculated T-value has to be compared with the critical T-value that can be found from the same table of t-statistics, given the degrees of freedom (sample size minus 2) and the arbitrary confidence interval (throughout this research for all statistical tests a confidence interval is used of 5%). Again, if the calculated T-value is higher than the critical T-value from the according t-table, the regressions of both data sets are significantly different.

Summarizing, for each of the two samples (IFRS earnings and US-GAAP earnings) the regression, or R^2, is determined and controlled by an F-statistic (controlling if the independent variable is significantly associated with the dependent variable) and a t-statistic (controlling if the regression parameters, α_1 and α_0, are significant). When both the IFRS and US-GAAP regression coefficients belonging to a particular earning attribute are determined they are compared in order to conclude if they differ, which would indicate quality differences with respect to the specific earning attribute. In order to check for significant differences between the

regression coefficients the T-statistic is used, indicating the significance of the difference between two regression coefficients.

5.2 Persistence

Based on the research of Francis et al. (2004) the following formula will be used to test the persistency of earnings:

$$X_{i,t} - \alpha_0 + \alpha_1 X_{i,t\ 1} - \varepsilon_{i,t}$$

where $X_{i,t}$ are the earnings for firm i for fiscal year t

$X_{i,t\ 1}$ are the earnings for firm i for fiscal year t 1

$\varepsilon_{i,t}$ is the standard error

The formula measures persistency by explanatory power of past earnings on present earnings. A high regression coefficient (R^2) indicates that the earnings are highly persistent. In the extreme case when R^2 equals 1, the earning of the present fiscal year are entirely explained by the earning of the previous fiscal year. An R^2 close to zero imply highly fluctuating earnings. Persistent earnings are viewed as higher quality, while transitory or fluctuating earnings are viewed as lower quality.

For this research only the persistency for fiscal year 2005 and 2006 can be calculated. For 2004 the persistency cannot be determined because earning data from 2003 is needed, which is not available regarding the IFRS sample as European firms adopted IFRS in 2004 for the first time. Persistence of the reported earnings, and also the predictability which is discussed in the following paragraph, can only be determined for fiscal year 2005 and 2006. Here, persistency and predictability for fiscal year 2005 is based on fiscal year 2004 observations compared with fiscal year 2005 observations and persistency and predictability for fiscal year 2006 is calculated based on data from 2005 and 2006. All 66 firm-year observations regarding the sample period 2004-2006 are used.

5.3 Predictability

The second measure of earnings quality is the ability of earnings to predict future earnings. Following the research of Francis et al. this research will use a measure of earnings predictability that is reflected in the variance of the earnings shocks (as variance increases, the predictability decreases). More specifically, Francis et al. (2004) follow this study by measuring earnings predictability using the standard deviation of the estimated error from the earnings persistence equation (shown in the formula on the next page).

$$Predictability - \sqrt{\sigma^2 (\varepsilon_{i,t})}$$

$\varepsilon_{i,t}$ *is the standard error of firm i's earning in year t from the persistency equation*

$\sigma^2(\varepsilon_{i,t})$ *is the variance of the standard error of firm i's earning in year t.*

The term *predictability* indicates the amount of variance or shocks between present and last years earnings. When for example the persistency is determined to be 0,5, predictability looks at the variation around this number, or in other words the variation in the standard error of the persistency equation.
Large (small) values of predictability imply less (more) predictable earnings. More predictable earnings are viewed as higher quality, while less predictable earnings are viewed as lower quality.

5.4 Value relevance

In accounting research, many equity valuation models have been used to examine the value relevance of accounting data. Studies measure value relevance as the relation between an accounting measure and market returns and operationalize the value relevance by a regression variation approach.

As in Francis et al., value relevance concerning this research is measured using this approach. Value relevance explains the ability of earnings to explain the firm's market return over the 15 month period beginning at the start of the annual fiscal year and ending three months after the end of the annual fiscal year. The arbitrary 15 months is based on researcher's view that returns follow earnings by another 3 months after the end of the fiscal year which the reported earnings are related to, which means information in the earnings is adopted in the market returns over this 15 months period. More specifically, with the use of the following regression formula, the relation between the return and the fiscal year earnings can be measured.

$$RET_{i,t+0.25} - \alpha_0 + \alpha_1 X_{i,t} / P_{i,t\ 1}$$

where $RET_{i,t\ 0.25}$ *is the 15 $-$ month market adjusted return* (*adjusted for dividends / splits, etc.*)
$X_{i,t}$ *are the earnings for firm i for fiscal year t,*
$P_{i,t\ 1}$ *is the security price at the beginning of fiscal year t.*

The explanatory power of the earnings to explain the 15-month market return is expressed in the R^2 or the regression coefficient of the according regression formula.

5.5 Timeliness

Similar as the research of Francis et al, this research investigates timeliness by calculating the relation between reported annual income and again the fiscal-year returns as a proxy for economic income.
The according regression formula is given below.

$$\frac{X_{i,t}}{P_{i,t\ 1}} - \alpha_0 + \alpha_1 RET_{i,t}$$

Where $X_{i,t}$ are the earnings for firm i for fiscal year t,

$P_{i,t\ 1}$ is the security price at the beginning of fiscal year t,

RET is the annual market adjusted return for firm i for fiscal year t

This approach is based on the observation that stock prices follow accounting earnings. From the formula above it can be derived that timeliness measures the relation between the annual market return and the present earning (in proportion with the security price). When the regression coefficient is high (say 0,9), the annual return is for the most part reflected in the present earnings. Accordingly it can be concluded that the earnings are timely, as they comprise the annual returns of the security. When the regression coefficient is close to zero, the annual return is not reflected in the earnings at all, the earnings are not timely.

In the following table an overview is given of the four earning attributes used in this research with the according formula.

Table 3: Overview on Earnings Attributes Measures

Attribute	Model Sepecification
Percistence	$X_{i,t} - \alpha_0 \quad \alpha_1 X_{i,t\ 1}$
Predictability	$Predictability = \sqrt{\sigma^2\left(v_{i,t}\right)}$
Value Relevance	$RET_{i,t\ 025} - \alpha_0 - \alpha_1 X_{i,t} / P_{i,t\ 1}$
Timeliness	$X_{i,t} / P_{i,t\ 1} = \alpha_0 + \alpha_1 RET_{i,t}$

Where $X_{i,t}$ is the net earnings per share. $P_{i,t}$ is the market price of firm i in year t, $RET_{i,t}$ is the return over year t. The terms $\alpha_0 + \alpha_1$ indicate the regression parameters for that particual regression equation.

Chapter VI

Results

The descriptive statistics from table 2 on page 32 already show significant differences between the reported earnings under IFRS and US-GAAP for the sample period between 2004 and 2006. This difference in the reported earnings indicates a possible difference with respect to the quality of the earnings. In order to investigate the quality difference, the results per earnings attributes will be discussed below. The overall results of this investigation may give a first impression on the quality differences between IFRS and US-GAAP reported earnings.

Differences between the reported earnings under IFRS and US-GAAP with regard to the four earning attributes are reflected in differences between the model's regression coefficients, or R^2s. The results of the differences are presented per earning attribute in tables 4 through 7. As can be noticed from the tables, the regressions are done per fiscal year separately but also for the sample as a whole (the pooled sample). The pooled estimation gives the result regarding the differences in the R^2s for the total sample period, i.e. by taken the three years (in case of the market-based attributes) or two years (in case of the accounting-based attributes) of observations together. The advantage of pooling is that it increases the sample size. However pooling doesn't show the development within the sample period; in this case it determines a quality aspect for the entire three year period. The results per year provide interesting information about the time-dependent aspect, i.e. the trend and the according volatility of the differences in the R^2s throughout the sample period.

6.1 Value relevance results

Table 4 shows the results concerning the value relevance comparison of IFRS and US-GAAP earnings. The value relevance of both IFRS and US-GAAP earnings is calculated taking the three sample years together (the pooled sample) and for each fiscal year separately.

At first the value relevance regression is run for the pooled sample. From this results it can be concluded that in general IFRS earnings are more value relevant than US-GAAP earning. More specifically, the IFRS regression coefficient (regression is showing the strength of the relation between the earnings and stock returns) is 22,0%, compared to 12,5% for US-GAAP earnings value relevance concerning the pooled results.

When looking at the pooled T-statistic it can be concluded that IFRS earnings are significantly more associated with stock returns than US-GAAP earnings, i.e. IFRS earning are significantly more value relevant than US-GAAP earnings.
The T-statistic (given on the right hand of the table) for the pooled sample is 2,28. At the arbitrary 5% confidence level the T-statistic has to be higher than 1,73 in order to reject the H_0 hypothesis which states the that the R^2s are equal, in favor of the H_1 hypothesis which states that

the R²s are not equal. IFRS presents significantly more value relevant earnings than US-GAAP, based on a 5% confidence interval.

Concerning the year specific results, differences in the value relevance for IFRS and US-GAAP can be found. Concerning the IFRS earnings, the value relevance is relatively high (37,7%) in 2004 after which it drops to 17,7% in 2005 and finally to 12,6% in 2006 (see figure 5). The value relevance concerning the US-GAAP earnings are fairly constant; in 2004, 2005 and 2006 the value relevance is respectively 15,0%, 9,6% and 12,2%.

The results with respect to the regression coefficients, or R²s, for the value relevance found in this report are comparable to the findings in prior research that used the same value relevance metric as applied in this report. For instance, Francis (2004) found a pooled R² of 17,4% for the sample consisting of a large number of US firms for the period 1975-2001, where in this research the value relevance for the three-year period equals 12,5% for the US-GAAP earnings and 21,9% for the IFRS earnings. Furthermore, Francis and Schipper (1999) found an average earnings value-relevance of 22% for a pooled sample consisting of a large number of US technology firms for the period from 1952 through 1994.

Figure 5: Development of Value Relevance
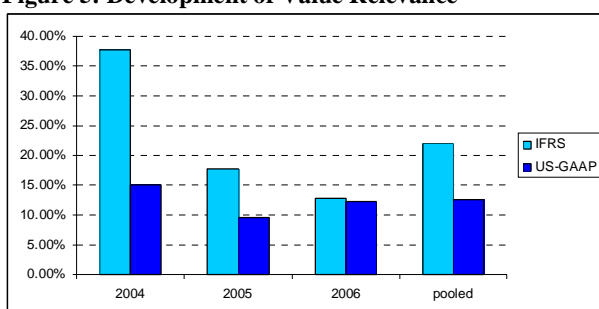
All results concerning the year specific and pooled R²s are highly significant. This can be concluded from the F-statistic, which indicates if the strength of the relation given by the regression coefficient is indeed significant. Given an arbitrary 5% confidence level, the H_0 hypothesis which states that there is no relation between the dependent and independent variable is rejected when this F-value is larger than 0,43 for the year specific results (this F-value can be found in the according F-table in mathematic literature, given the sample size, here: 22 observations), or 0,63 for the pooled results (based on 66 observations). The F-values concerning the pool results as well as the year specific results are higher than the critical value; there is a relation between the independent and dependent variable (see table 4, F-values are mentioned between [..]).

The regression parameters α_0 (intercept, where the trend line crosses the y-axis) and α_1 (representing the slope of the trend line), shown in table 4, give the exact relation between the independent variable (in the case of value relevance this variable consist of the reported earnings data) and dependent variable (the firms market adjusted return), also explained in section 5.1.

The α_0 (intercept) parameter shows insignificant results as t-values, presented between (..), are much smaller than the critical value of 1,73. The fact that the intercept values given by the regression model are insignificant is not strange as the model doesn't provide data around the intercept as would be the case when the sample had data points around 0. Earnings however don't come close to 0. This makes it difficult to determine a significant intercept value for a regression model, as the regression information doesn't provide information on its behavior around the intercept point. Values concerning the α_1 parameter, representing the slope of the trend line, give mostly significant numbers at a 5% confidence level, as the according t-values are above 1,73. Given for example an α_1 of 2 indicates that if the independent variable (earnings) goes up by 1%, the dependent variable (the stock return) will increase by a factor of 2, i.e. by 2%.

For the purpose of this research, only the R^2 will be analyzed in order to conclude on significant differences between earning attributes for IFRS and US-GAAP earning data. The information needed for determining the value relevance is given by the R^2s presented in table 4, as this number gives an indication how strong the two variables are related to one another. Providing additional information about the regression parameters, α_0 and α_1, specifies the exact relation if the parameters can be determined significantly. The regression parameters are shown for additional information about the performed regression.

Overall it can be concluded that IFRS earnings are more value relevant than US-GAAP earnings. Concerning the year specific results, an interesting development is noticed. Differences are high in 2004, i.e.20,0% and decline to an 8,1% difference in 2005 and finally 0,3% difference in 2006. This declining trend in differences in the value relevance results can also be noticed in the yearly development in differences in the reported earnings per share between IFRS and US-GAAP. Difference between the reported earnings is the highest in 2004, i.e. € 0,58 difference in favor of IFRS after which the difference declined to € 0,27 in 2005 and € 0,28 in 2006 in favor of IFRS. The interpretation of the value relevance results will be discussed in paragraph 6.3.

Table 4: Value relevance results

	IFRS			US-GAAP			T-statistic
	α_0	α_1	R^2	α_0	α_1	R^2	
2004	-0.048085 (-0.6873)	2.359348 (3.3917)	0.377127 [11.5038]	0.155423 (1.8319)	0.504934 (1.8309)	0.149976 [3.3522]	3.358039
2005	0.090766 (0.8354)	1.763852 (2.0217)	0.17704 [4.0873]	0.122361 (0.9752)	1.716686 (1.4130)	0.095829 [2.0137]	1.040915
2006	0.031248 (0.2553)	1.96099 (1.6536)	0.12661 [2.7543]	0.05899 (0.5379)	1.898094 (1.6245)	0.122006 [2.6402]	-0.056392
Pooled	0.014308 (0.2552)	2.112803 (4.1452)	0.219361 [17.1911]	0.075667 (1.3531)	1.794858 (2.9562)	0.125318 [6.7386]	2.276933

t-statistics for alphas are presented between ( ) while the overall model's F-test is mentioned between [ ]. p-value < .05

6.2 Timeliness results

Table 5 shows the results concerning the timeliness of the earnings for IFRS and US-GAAP. Timeliness is, according to prior studies, correlated with the value relevance metrics. Comparing the value relevance results with the timeliness results, there are clear indications of this correlation between the two attributes. This is not surprising as both metrics use earnings and the firm's market returns as input.

According to the pooled sample, IFRS is significantly more timely than US-GAAP in reflecting news in the earning numbers. IFRS scores 16,4% on timeliness against 11,1% for US-GAAP earnings (T = 6,06, i.e. highly significant at a 5% confidence level).

Year specific results show a constant decline of the timeliness concerning the IFRS earnings, just as in the case of the value relevance results, which is not surprising given the correlation between these two attributes, discussed in the research of Francis. For US-GAAP the timeliness of the earnings are rather constant. The biggest difference in timeliness is for the year 2004 (IFRS equals 23,6%, US-GAAP equals 7,6%, T = 10,8). All F-values concerning the yearly and pooled R²s are higher than the critical F-values of 0,43 (yearly data) and 0,63 (pooled data), i.e. the R²s are significant.

This same declining trend, as was found in the value relevance results, is found for the timeliness of IFRS earnings, while timeliness of US-GAAP earnings shows a rather constant pattern. This trend can be interpreted in different ways as explained in the following paragraph. Timeliness of IFRS earnings is relatively high for the year 2004, 23,6% (significant, F = 5,88, which is larger than the critical F-value of 0,43 given the sample size with 22 year observations) after which it drops to 16,7% (significant, F = 3,86) in 2005 and finally in 2006 earnings' timeliness is 16,4% (significant, F = 1,91). Timeliness of US-GAAP earnings are, as in the case of the value relevance results, fairly constant; in 2004, 2005 and 2006 the timeliness is respectively 7,6% (F = 1,56, significant) 11,8% (significant, F = 2,55) and finally 7,8% (significant, F = 1,69).

Figure 6: Development of Timeliness
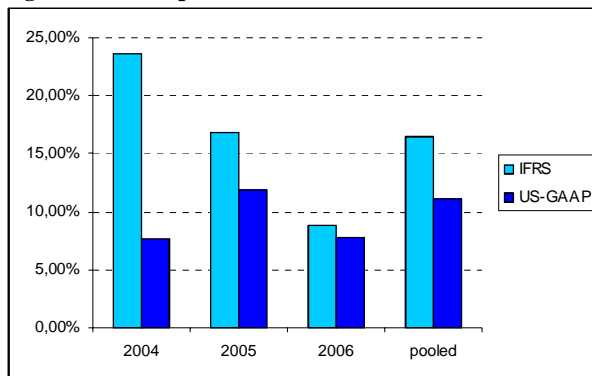
The regression parameters α_0 (intercept with the y-axis) and α_1 (slope of the trend line), are shown in table 5. Just as in the case of the value relevance results, the α_0 (intercept) parameter shows insignificant results as t-values, presented between (..), are much smaller than the critical value of 1,73. Again, the sample data for determining earnings' timeliness doesn't provide data around the intercept, as earnings don't come close to 0. The α_1 parameter values, representing the slope of the trend line, doesn't give significant numbers at a 5% confidence level, concluded from the calculated t-values (the calculated t-values are lower than the critical t-value of 1,73). Although the regression number, or R^2, shows that there is a positive and significant relation between the two variables in the timeliness attribute (F-values larger than 0,43), the slope of this relation is insignificant, i.e. more data points have to be provided in order to conclude on the slope of the trend line of the two variables.

In the research of Jennings (2003) the researchers found similar results for timeliness. They found that for a sample using IAS as the accounting standard, the timeliness was 21,0% on average. Francis et al. (2004) found an average R² for timeliness of 21,9% for the sample consisting of a large number of US firms for the period 1975-2001.

The pooled results as well as the year specific development are in line with the value relevance results. Both market-based measures proof that IFRS and US-GAAP earnings are significantly value relevant and exhibit significant timeliness. However, the numbers are in favor of IFRS. IFRS earnings are significantly more value relevant and timelier than US-GAAP earnings.

Table 5: Timeliness result

	IFRS				US-GAAP			T-statistic
	α_0	α_1	R^2		α_0	α_1	R^2	
2004	0.067084	0.13712	0.236385	0.049877	0.06757	0.07606	10.76955
	(0.0000)	(0.1815)	[5.8816]	(0.0005)	(0.2262)	[1.5638]	
2005	0.08295	0.122305	0.156901	0.076683	0.07743	0.116465	3.062539
	(0.0002)	(0.0612)	[3.8612]	(0.0000)	(0.1265)	[2.5533]	
2006	0.07849	0.064559	0.0875	0.067532	0.051889	0.076121	0.643728
	(0.0000)	(0.1815)	[1.9177]	(0.0001)	(0.2077)	[1.6948]	
Pooled	0.075362	0.107027	0.154173	0.063086	0.07832	0.111147	6.061927
	(0.0000)	(0.0005)	[12.1779]	(0.0000)	(0.0071)	[7.7528]	

t-statistics for alphas are presented between ( ) while the overall model's F-test s mentioned between [], p-value < .05

6.3 Interpretation of the market-based attributes results

Given the results on the market-based attributes from paragraph 6.1 and 6.2 it can be concluded that, on a 5% confidence interval, IFRS earnings are significantly more value relevant and timelier than US-GAAP earnings. Summarizing, the results concerning the value relevance for the pooled sample are 21,9% for IFRS earnings against 12,5% for US-GAAP earnings. The timeliness of IFRS earnings are 16,4% against 11,1% for the US-GAAP earnings, considering the pooled sample.

Concerning the year specific results for the market-based attributes, an interesting development is noticed. Differences are relatively high in 2004, decline in 2005 and finally in 2006 the differences become insignificant, i.e. no significant differences exist in 2006 between the value relevance and timeliness results. This declining trend is visualized in figures 5 and 6 on page 40 and 43.

Higher reported earnings for IFRS compared to US-GAAP

A first remark concerns the trend noticed in the yearly difference between IFRS and US-GAAP value relevance and timeliness. This same trend is noticed in the differences between IFRS and US-GAAP net income and also in the differences in the earnings per share, shown in the descriptive statistics table on page 32. Concerning the IFRS and US-GAAP net income numbers, the difference is highest in 2004 with an average differences of € 814.000 in favor of IFRS, after which it declines to € 470.000 in 2005 and finally to € 186.000 in 2006. Difference between the reported earnings per share between IFRS and US-GAAP is also the highest in 2004, i.e. € 0,58 difference in favor of IFRS after which the difference declines to € 0,27 in 2005 and € 0,28 in 2006 in favor of IFRS.

Although differences with respect to the value relevance and timeliness results are declining, IFRS earnings are significantly more value relevant and timelier, as a consequence of IFRS earnings being significantly higher than US-GAAP earnings (table 2, page 32). A reason for IFRS reported earnings to be higher can possibly be explained by investigating the accounting rules imposed by IFRS. In academic literature IFRS is often described as principle-based whereas US-GAAP is described as rule-based [EY, 2006]. This might suggest that IFRS leaves more room for interpretation by the firms in specific accounting situations. This could lead to higher reported earnings, as described in the descriptive statistics, compared to US-GAAP as firms may use the degree of freedom which IFRS imposes in their advantage, i.e. apply the accounting principles in such a way that it will increase reported earnings. This affect is shown in a study by Ernst & Young [EY, 2006]. In this study principles concerning the use of financial instruments (IAS 32 and IAS 39), pensions (IAS 19) and business combinations (IFRS 3) show considerable more freedom when comparing the rules imposed by US-GAAP concerning these issues. More freedom with respect to the application of accounting rules in specific accounting situations doesn't necessary have to imply higher reported earnings. Given the descriptive statistics on reported earnings from both IFRS and US-GAAP and the knowledge about key

differences between the two reporting standards might suggest that due to more accounting freedom within the IFRS framework, IFRS reported earnings are significantly higher than reported earning under US-GAAP.
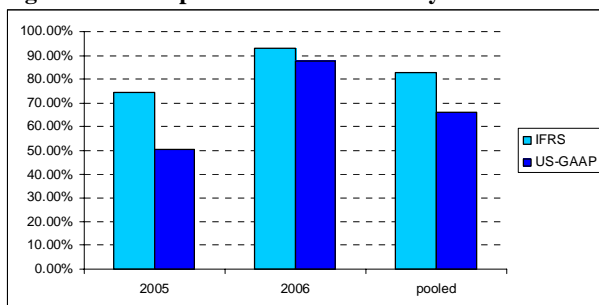
6.4 Persistency results

The results from the persistency metrics are presented in table 6. Persistency of IFRS and US-GAAP earnings is calculated for the years 2005 (based on the earnings relation between 2004 and 2005) and for the year 2006 (based on the earnings relation between 2005 and 2006). Persistency will also be calculated on the pooled sample, based on the data from the three sample years together.

Both IFRS and US-GAAP earnings are highly persistent given the R^2 of 82,6% for the IFRS pooled sample and 65,9% for the US-GAAP pooled sample. Given the low T-statistic of 0,73 (which shows if the difference in R^2 between IFRS and US-GAAP is significant), the difference for the pooled sample is not significant. In order to conclude that the persistency of IFRS and US-GAAP earnings differ significantly on a 5% confidence interval, the found T-value has to be larger than the critical T-value of 1,73. According to the performed test it can be concluded that there is no significant differences in persistency between IFRS and US-GAAP earnings concerning the pooled sample for the year 2005 and 2006.

Considering the year specific results, i.e. 2005 and 2006, no significant differences are found between IFRS and US-GAAP earnings persistency. Although IFRS exhibits greater persistency shown in figure 7, these differences are not significant on a 5% confidence level. IFRS persistency equals 74,4% and 92,8% for respectively 2005 and 2006 against 50,2% and 87,5% concerning US-GAAP earnings for respectively 2005 and 2006. The T-value concerning the yearly differences equals 0,65 in 2005 and 0,25 in 2006. Given the critical T-value of 1,73, both year specific differences are again not significant. There is no significant difference in persistency for IFRS and US-GAAP earnings for the year specific and pooled results.

Figure 7: Development of the Persistency

Looking at the persistency results of IFRS and US-GAAP individually (table 6) it is concluded that all results concerning the year specific and pooled R^2s are highly significant. This is concluded first of all from the F-statistics, indicating the strength of the regression or in this case

the relation between the past year's earnings with present earnings. The F-value has to be higher than 0,63 concerning the pooled sample data (66 observations) and 0,43 concerning the year specific sample data (44 observations), given a 5% confidence interval. From table 6 it can be concluded that all regressions performed on the pooled and year specific data are highly significant.

The regression parameters concerning α_0 (intercept) and α_1 (slope) are also determined for the persistency attribute. The α_1 parameters for the pooled and year specific results are highly significant which can be concluded from the high values for the t-statistics presented between the (..) in table 6. The α_1 shows the slope between past year earnings with present year earnings. The intercept of the trend line with the y-axis are significant for the sample year 2005 and for the pooled sample. That means that for the sample year 2005 and the pooled sample a trend line can be constructed that describes the relation between the dependent and independent variable.
The most important figure however, which represents the persistency of the reported earnings, is the regression coefficient, or R^2. The parameters which describe the trend line concerning the regression are not further used in this research

The results found in this research show that earnings under IFRS and US-GAAP for the sample period are highly persistent. Other researchers found much lower persistency numbers for reported earnings, which were gathered from different sample firms and sample periods. First of all, Monem and Farshadfar (2007) conclude that Australian earnings are persistent with R²s between 40% and 90% for the period 1993 through 1999. Results from Francis et al (2004) on the persistency shows a lower number, i.e. an overall 21,7% persistency for US firms for the period 1975-2001. The reason why in this report the persistency results were higher than the results found in other researches is likely because the underlying stock market was not volatile, i.e. the market was going up every year by around 20%. A volatile market is likely to be followed by volatile earnings, which causes lower persistency results.

Table 6: Persistency results

	IFRS			US-GAAP			
	α_0	α_1	R^2	α_0	α_1	R^2	T-statistic
2005	0.614012 (1.8328)	1.086891 (7.4284)	0.74387* [55.1813]	1.361118 (3.8689)	0.735221 (4.3788)	0.502283 [19.1743]	0.648948
2006	0.002732 (0.0126)	1.084608 (15.7317)	0.928702 [247.1874]	0.051596 (0.1933)	1.079998 (11.5555)	0.875435 [133.5311]	0.245239
Pooled	0.384978 (1.8163)	1.048723 (13.7915)	0.826244 [190.2073]	0.880515 (3.508)	0.857775 (8.8009)	0.659447 [77.4561]	0.731523

t-statistics for alphas are presented between ( ) while the overall model's F-test is mentioned between [, p-value < .05

Table 7: Predictability results

|	IFRS $\sqrt{\sigma^{-1}(\sigma_w)}$	LS-GAAP $\sqrt{\sigma^{-1}(\sigma_w)}$	F-statistic
2005	1.0024212	1.326650935	0.2187538
2006	0.5952419	0.766079454	0.2675830
Pooled	0.8693201	1.172429126	0.0587792

p-value for the F-test is 0.05

6.5   Predictability results

Predictability is measured by looking at the variance shocks of the persistency equation. More specifically, the predictability measure used in this research determines the variance between present earnings with prior year earnings. If the variance between these two earnings is high, the earnings exhibit low predictive value. The variance is extracted from the residuals from the persistence equation, discussed in chapter five.

Table 7 shows the results concerning the predictability of IFRS and US-GAAP earnings. The values in the table correspond to the standard deviation (square root of the variance) in the standard error from the persistency equation. At first sight, US-GAAP earnings seems to exhibit greater variance in the residuals on the pooled sample, with a standard deviation of 1,17, compared with IFRS earnings, with a standards deviation of 0,86. However the F-statistic, which in this case shows if the variances of two samples are significantly different, gives a value of 0,059, which is smaller than the critical value of 0,63 given the 66 data points for the pooled sample. It can be concluded that there is no significant difference in the predictive value of IFRS and US-GAAP earnings.

The year specific results show an identical development as for the persistency results. Concerning the years 2005 and 2006, IFRS exhibits greater predictability, as the variance of the earning shocks is lower (see figure 8). However this difference in predictability is not significant as the calculated F-values are 0,21 and 0,26 which are lower than the critical F-value of 0,43, given the 44 data points for the yearly results.

Figure 8: Development of the variance of the earnings shocks
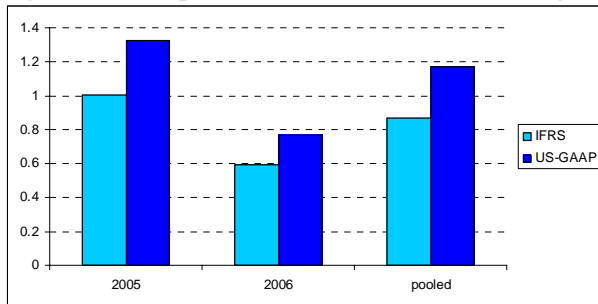
There is no significant difference between IFRS and US-GAAP earnings concerning the predictability of the earnings.

The numbers found in this research for the standard deviations of the residuals are comparable to prior research. The results for the standard deviations from Monem and Farshadfar (2007) range from 0,32 through 1,16 with a mean value of 0,6 concerning the predictability results for Australian firms for the period 1993-2003. The results are also in line with the results found in the research of Francis et al. (2004), where they found an average standard deviation of 1,054

(pooled result) for US-firms for the period of 1975-2001, which is close to the pooled results fount in this report (IFRS: 0,86; US-GAAP: 1,17).

6.6 Interpretation of the accounting-based attributes results

No significant differences with respect to the persistency and predictability are found concerning the reported earnings from the IFRS and US-GAAP sample data. Although the results at first sight show that IFRS earnings exhibit greater persistency and predictability, these differences are not significant. More data is necessary to conclude on significant differences between IFRS and US-GAAP persistency and predictability.

No signs on the convergence of IFRS and US-GAAP can be noticed looking at the persistency and predictability results concerning the sample period. Comparing the difference between persistency and predictability for the year 2005 with 2006 doesn't indicate a significant decline in this difference. The results from the market-based attributes show however that differences between IFRS and US-GAAP earnings are declining significantly. This is likely because no significant differences could be found between accounting-based attributes for IFRS and US-GAAP earnings.

As the results show, earnings – as one of the most important figures in accounting information- are highly persistent. This can be concluded from persistency results. The IFRS earnings' persistency equals 83% against 66% regarding US-GAAP earnings. The predictive value of earnings, represented by the variance in the persistency of the earnings, shows that there is a lot of uncertainty in the persistency, meaning that future earnings, based on present earnings show a high degree of variance. The same findings were found with respect to the predictive power of earnings in prior research, using different samples (e.g. Francis et al. 2004 and Monem and Farshadfar, 2007).

Several arguments can be formulated that challenge the results based on the comparison of IFRS and US-GAAP earnings persistency and predictability. First, unlike the value relevance and timeliness results, no signs of convergence can be noticed, i.e. differences are not significantly declining between IFRS and US-GAAP earnings. Secondly, several studies on the implementation of IFRS claim that IFRS reporting are more volatile than for instance US-GAAP reporting [DNB,2005]. Looking at the persistency and predictability results, which are both good measures for the volatility within reported earnings, no significant differences can be found between both standards. Based on the findings of this report, it doesn't seem that IFRS earnings are more volatile than US-GAAP earnings.

6.7 Final results

First of all the results from applying the earning attributes suggest that accounting information, whether it is stated according to IFRS or US-GAAP is value relevant, persistent, predictable and exhibits timeliness, proven by the significance found in the according results.

Concerning the comparison of IFRS and US-GAAP prepared earnings, significant differences in value relevance and timeliness are found. Considering the accounting-based attributes, i.e. persistency and predictability, no significant differences could be found between the two financial accounting standards.

Several remarks are however to be made. First of all, the overall findings can only be applied to the European equity market for the period 2004-2006. Prior literature on the quality of IFRS and US-GAAP earnings using different sample selections, show different results. Also the results are for a short period, i.e. 2004-2006, which is characterized by an overall up-trend in the stock market. Results may differ significantly when doing the same research on a different sample period with also different market trends.

Secondly, the overall quality is determined by a selection of four earning attributes, based on a summary of seven earnings attributes that are widely used in accounting literature, provided by Francis et al. (2004). Next to the four attributes applied in this research, there are three earning attributes mentioned by Francis et al. that had to be excluded from this research, i.e. accrual quality, smoothness and conservatism. Including more attributes gives a better picture on overall earning attribute differences. However, the two accounting-based and two market-based attributes were able to provide interesting insights on several quality differences between IFRS and US-GAAP reported earnings.

This report shows some interesting results on the comparison of IFRS and US-GAAP earnings. It gives an indication that there are significant differences between earnings prepared under both reporting systems, based on the descriptive statistics on net income and earnings per share. These differences have led to significant differences concerning value relevance and timeliness of the reported earnings. The results on the market-based attributes further more show an interesting pattern in the year specific result. Difference where much higher for the year 2004 and started to decline in 2005 and 2006.

Chapter VII

Conclusions and Reflection

This chapter represents the final conclusions to this report and will reflect the outcome of this report regarding the research objective, the main question and the research questions.

7.1 Conclusions and answers to the Research Questions

The motives for this research are to show if there are quality differences between IFRS and US-GAAP reported earnings, based on four unique earnings attributes. Many of the academic literature on the information quality of accounting standards determine the quality of these standards by looking at the reported earnings. The literature on earnings quality currently embraces various aspects of this concept. No unique definition of earnings quality can be found. Different studies focus on just one earning attribute in determining this quality, other researchers take several earning attributes into account, depending on the researcher's view about what they see as important criteria for reported earnings. Quality of the reported earnings is determined by different earning attributes developed by several researchers. Francis et al. summarized these widely used earning attributes in their article "Cost of equity and earning attributes" which is used as a leading article in this paper.

The research objective of this report is to compare the earning quality of IFRS and US-GAAP reported earnings using a sample of European firm which report their earnings under both IFRS and US-GAAP. The main question of this paper is stated as follows:

> *What are the quality differences between IFRS and US-GAAP prepared earnings, considering several earning attributes?*

The research framework for this comparative study consists of four evaluation criteria on which the overall earning quality will be determined. The research findings are further elaborated considering each research question:

*What are the differences in **value relevance** between IFRS and US-GAAP reported earnings?*

Concerning the value relevance results it can be concluded that IFRS earnings are significantly more value relevant than US-GAAP earnings. The results show that the explanatory power of reported earnings to explain the firm's market return for IFRS is 0,21 against 0,12 for US-GAAP, regarding the pooled sample over the sample period of 2004 through 2006.

Regarding the year specific results, IFRS is significantly more value relevant than US-GAAP for the sample year 2004 and 2005. For the year 2006, IFRS and US-GAAP reported earnings are

equally value relevant. There is an interesting pattern found for the year specific value relevance results regarding the IFRS and US-GAAP data. More specifically, in 2004 the difference between value relevance for IFRS and US-GAAP is much larger (22,8% in favor of IFRS, significant) than in 2005 (8,1% in favor of IFRS, significant), where in 2006 the very small difference is not significant anymore (0,4% in favor of IFRS).

The decline in difference may very well be caused by convergence actions set out by the IASB and FASB in order to reduce differences between IFRS and US-GAAP. More discussion will follow in the second part of this conclusion concerning the relation between convergence actions and the results from this report.

*What are the differences in **timeliness** between IFRS and US-GAAP reported earnings?*

Timeliness results are identical to the value relevance results. IFRS earnings exhibit more timeliness than US-GAAP earnings. Looking at the pooled results, the firms' market return explains 16,4% of the IFRS earnings and 11,1% of the US-GAAP earnings, i.e. IFRS is significantly timelier than US-GAAP.

The same trend as in the value relevance results can be found for the timeliness results. Differences in 2004 are much larger (16,0% in favor of IFRS, significant) than in 2005 (5,1% in favor of IFRS, significant). In 2006 this difference in timeliness is not significant anymore (0,1% in favor of IFRS).

The results concerning the timeliness of IFRS and US-GAAP earnings can be interpreted in the same way as the value relevance results. Both results show the same differences with respect to the IFRS and US-GAAP earning quality comparison. The reason for the declining trend concerning the difference in the earnings' timeliness may be caused by convergence actions between IFRS and US-GAAP imposed by the IASB and FASB, also supported by the decline in differences between IFRS and US-GAAP earnings per share as well as the net income during the sample period of 2004 through 2006.

*What are the differences in **persistency** between IFRS and US-GAAP reported earnings?*

First of all, both IFRS and US-GAAP reported earnings are highly persistent according to the year specific and pooled results. More specifically, IFRS earnings show that past year's earnings explain present earnings for 83%, US-GAAP past year's earnings show an explanatory power, or R^2, of 66%. Year specific results showed almost identical numbers, with IFRS earnings imposing more persistency than US-GAAP earnings. The differences for the pooled as well as the year specific results are however not significant. Although it might seem that IFRS earnings are more persistent, more research, i.e. data over a longer period of time, is needed in order to conclude on this difference in favor of IFRS. So far, there is no significant difference in persistency for IFRS and US-GAAP earnings.

*What are the differences in **predictability** between IFRS and US-GAAP reported earnings?*

Somewhat identical to the persistency results are, not surprisingly, the predictability results. At first sight IFRS seems more predictable as the standard deviation in the persistency equation is lower. Standard deviation of the residuals in the persistency equation concerning the pooled sample for the IFRS earnings are 0,87 compared to a standard deviation of 1,17 for US-GAAP earnings. Again, the results do not conclude that IFRS earnings exhibit greater predictability than US-GAAP earnings, as the results are not significant. More research, i.e. more data over a longer period of time, is needed in order to conclude if IFRS is to be significantly more predictable than US-GAAP earnings.

Having answered the sub questions, the main research question can now be answered: '*What are the quality differences between IFRS and US-GAAP prepared earnings, considering several earning attributes?*' In general, this report finds significant differences with respect to the market-based attributes between reported earnings under IFRS and US-GAAP. More specifically, IFRS earnings are significantly more value relevant and timelier than US-GAAP earnings. Concerning the accounting-based attributes, no significant differences were found between the reported earnings of IFRS and US-GAAP. Given a larger sample on IFRS and US-GAAP data may prove otherwise, as the results seem to be in favor of IFRS.

An interesting finding on the market-based attributes results is that differences started to decline between IFRS and US-GAAP for the period from 2004 through 2006, which may be caused by convergence actions by the IASB and FASB. This view will further be elaborated in section 7.3. This report has not been able to provide a general overview on the information quality differences between IFRS and US-GAAP reported earnings due to several limitations, which will be discussed in the next section, 7.2. The first goal of the author, providing a general overview, is however partly met by determining the quality of reported earnings based on several earning attributes adopted from prior literature.

As discussed earlier, US-GAAP is regarded as a rule-based system as opposed to the principle-based approach of IFRS. The results of this research indicate that the principle-based approach applied in the IFRS standard produces qualitatively better earnings (based on the results on the four earning attributes) than the reported earnings based on the rule-based approach applied in the US-GAAP standard. Due to the convergence actions of the IASB and FASB, both standards are changing. In literature on the convergence of IFRS and US-GAAP it is often read that IFRS seems to be becoming more and more complex or detailed over the years, i.e. the FASB seems to have the upper hand with respect to the direction of the convergence, i.e. rule- versus principle-based. As a consequence, it should be important for the IASB to indicate to which degree IFRS should be based on general accounting rules (principle-based approach) or specific rules (rule-based approach), and also to which degree deviation from the specific rules is allowed.

Eventually, one global GAAP should be created as to improve the efficiency on the financial markets. The IASB and FASB are already working towards one global standard by their jointly efforts in order to eliminate differences between both IFRS and US-GAAP. An interesting

question is to what extent the convergence will be directed towards a rule-based or a principle-based set of rules. This research suggest a principle-based approach produces qualitatively equal, if not better, reported earnings than a rule-based approach, despite several claims made by the SEC that a rule-based approach should ensure for qualitatively better reporting in stead of a principal-based approach. The SEC has recently recognizes the principle-based IFRS as high quality and transparent reporting, as it has accepted the use of IFRS by foreign filers in the future. This development suggests that IFRS will eventually be adopted as the global standard, but probably not until the FASB has changed the IFRS rules to its preference.

A global GAAP would have many benefits for firms and investors. More than a hundred countries, under which the EU-countries, already require or demand IFRS. Also superpowers like Canada, India and South Korea will demand IFRS in the near future (see figure 1 on page 9). The United States, as the most important superpower, has not yet demand for the use of IFRS, but the recent decisions made by the SEC which will allow the use of IFRS for foreign filers is an important step towards the acceptance of IFRS as the global standard to ensure high quality reporting. A possible consequence is that the American influence on IFRS will rise because of the recent decision by the SEC to allow IFRS in the United States. It would be interesting to see IFRS still holding its principle-based approach, in stead of a far-reaching level of detailed rules which characterize US-GAAP. In the light of the results, the author suggest that although convergence is a very important issue, the IASB should not be focused on convergence with US-GAAP, rather the IASB's resources should be used to develop international accounting standards.

7.2 Limitations of the Research

Certain remarks and observations can be made concerning the research output and research process in reflection to the research objectives.

In order to achieve the intended objective, comparing the information quality between IFRS and US-GAAP by focusing on the reported earnings, the chosen framework is an essential aspect of the final outcome. The decision to focus on the reported earnings stems from discussions in accounting literature in which it is stated that earnings are the most important accounting figure in annual reports for various users such as investors. The sample used in order to compare reported earnings under IFRS and US-GAAP consists of European firms which report in compliance with IFRS and reconcile a part of their information to US-GAAP. Selecting firms that are listed on the same market offers the advantage that financial market elements (like market structure and organization) are comparable for all sample firms. Data regarding the sample is available for 2004 through 2006.

The next step was to choose an appropriate framework in order to investigate quality differences between IFRS and US-GAAP reported earnings. The research from Francis (2004) offered a summary of seven widely applied earning attributes throughout accounting research. However, due to several restrictions based on the sample firms and sample period used in this report, three out of the seven earning attributes could not be determined.

The research objective, i.e. comparing quality differences between IFRS and US-GAAP earnings by considering several earning attributes, is considered to be met, but several remarks are in order.

- Results concerning the quality differences between IFRS and US-GAAP are based on a specific framework of analysis on earning quality that was used for the purpose of this research. When investigating US-GAAP and IFRS reported earnings based on a different set of earning attributes, that are not included in this report, or any other framework in order to determine quality differences in reported earnings for that matter, the overall results may be different from the overall results found based on the four selected earning attributes. The results based on the four earning attributes applied in this report are in favor of IFRS, i.e. IFRS reports qualitative better earnings with respect to value relevance and timeliness. Considering the results of this report it is thus not possible to conclude on which accounting standards, IFRS or US-GAAP, reports qualitatively better earnings. Only some of the quality aspects of earnings are investigated throughout this research, which cannot form an overall conclusion on the quality of the reported earnings.

- The results are based on a short time interval, i.e. from 2004 through 2006, and on a specific capital market, i.e. the European market. Within the time-period from 2004 through 2006, the European stock market was in a rather constant uptrend. The market adjusted stock return for the Dow Jones Eurostoxx was 22%, 21% and 19% for respectively 2004, 2005 and 2006. Investigating earning quality in a more volatile market, with also negative yearly returns, can produce different results concerning the differences between market-based and accounting-based attributes. Research from Harris and Muller (1999) showed that quality of reported earnings decline when the underlying stock market is more volatile. Results from this research are thus restricted to a positive stock market. It would be interesting to also determine earning quality differences between IFRS and US-GAAP where the sample period is characterized by a volatile stock market. Also investigating a different capital market where firms report their accounting information in compliance with IFRS may produce different results with regard to the results of this report.

In retrospect, a more structured approach could have significantly improved the efficiency and decrease the time spent on this report. Specific factors complicated the research context that should have been resolved in an early stage. The framework of analysis could have been earlier developed, as the author considered several methods in order to determine the quality of the reported earnings reported under IFRS and US-GAAP. After the paper of Francis et al. (2004) was adopted as a leading article, the framework in order to investigate quality differences was defined and the model, consisting of the regression equations, was constructed. However, the first goal when the author started writing this report was to give an overall overview of quality differences between IFRS and US-GAAP. This goal could not be met due to the complexity of the topic and restrictions based on the chosen framework for investigating earning quality differences between IFRS and US-GAAP.

7.3 Reflection on the results

Having discussed the findings of this report regarding quality differences between IFRS and US-GAAP earnings, it is interesting to investigate the accounting differences between the two reporting systems, as this would help readers to interpret these reported results.

It would be almost impossible to discuss all accounting differences between both standards and the effect of these differences on the quality of the reported earnings. These different rules however are due to a different philosophy of both standards. In literature these philosophies are described as principle-based (IFRS) and rule-based (US-GAAP). The following will discuss both of these philosophies and accordingly how these different philosophies produce a different set of rules which in turn may be the cause for qualitatively different earnings.

While both standards developed their rules in order to improve the quality of financial reporting, they both have different principles on which these rules are developed. The FASB, which issues US-GAAP rules, aims at the US market. The FASB wants to have accounting standards which lead to high quality reporting with a maximal protection for investors on the American market. [Ernst & Young, 2006] The American standard is fairly detailed and tries to answer every complex accounting situation. IFRS on the other hand is not tied to one country and aim at increasing the comparability of financial information in the international financial markets. Because IFRS tries to become a world standard [Helleman, 2006] it doesn't focus on just one specific financial market, like US-GAAP..

In the US, the SEC controls for the enforcement of the US-GAAP accounting rules to which US firms have to apply to. For IFRS this is done by the government of each country in which IFRS is used as the accounting standard. The Dutch authority for financial markets (the AFM) concludes in a study on the application of IFRS across European countries that IFRS rules are applied differently across countries. [http://www.afm.nl, see reference for exact address] What most researchers on IFRS and US-GAAP agree upon is that IFRS offers firms more freedom in choosing how to determine their financial information than US-GAAP. [Helleman, 2006]

Empirical research has shown that IFRS produces higher reported earnings and book value than US-GAAP [EY, 2006]. A possible explanation for these findings is perhaps that IFRS offers more freedom than US-GAAP on how to interpret the accounting rules in specific firm situations. Helleman states that *"US-GAAP is in Europe characterized as 'cookbook-accounting'. Due to extensive rules, the required reporting is determined for almost any firm situation, without much freedom for interpretation."* When looking at these differences in rules set out in the IFRS and US-GAAP standard, it is important to know which specific rules cause differences in reported earnings. This affect is shown in a study by Ernst & Young [EY,2006]. In this study principles concerning the use of financial instruments (IAS 32 and IAS 39), pensions (IAS 19) and business combinations (IFRS 3) show considerable more freedom when comparing the rules imposed by US-GAAP concerning these accounting issues.

Looking at the appendix of this report [PriceWaterhouseCoopers, October 2007], interesting differences can be noticed on several accounting issues for IFRS and US-GAAP. The very first

issue mentioned in the summary concerns the issue of valuation of certain assets. The summary states that on the basis of IFRS certain assets (such as intangible assets, PPE, investment property and derivatives) *may* be revalued to fair value, while US-GAAP states that revaluation is only allowed for certain types of financial instruments. This example indicates that IFRS offers first of all more freedom in choosing how to revaluate certain assets. Also applying fair value revaluation on certain assets may increase the reported earnings when these assets are revaluated at a higher level than the year before. Another difference on IFRS and US-GAAP which may very well influence the reported earnings concerns the issue of revenue recognition. IFRS states that revenue is recognized 'based on several criteria, which require the recognition of revenue when risks and rewards and control have been transferred and the revenue can be measured reliably'. US-GAAP states on this issue that revenue is recognized 'similar to IFRS in principle, although there is extensive detailed guidance for specific types of transactions that may lead to differences in practice'. This example indicates the rightness of claims often read in literature concerning the principle-based IFRS approach against the rule-based US-GAAP approach. It also indicates IFRS having more accounting freedom as there is no such an extensive detailed guidance for specific types of transactions such as in the case of the US-GAAP standard. More of these differences can be found throughout this summary of differences and similarities which might cause differences in the reported earnings under both standards.

Together the IASB and the FASB have made a significant commitment to reducing the differences between IFRS and US-GAAP in recent years. In their first joint meeting on September 18, 2002 at Norwalk, Connecticut, the IASB and FASB both agreed to commit resources to achieve convergence. The Boards also discussed "an historic project" which, in collaboration with the SEC, was aimed at eliminating the major differences between IFRS and US-GAAP. As a consequence IFRS and US-GAAP are converging to another since 2002 onwards. [IASB & FASB, 2006] Looking at the results on the information quality of both IFRS and US-GAAP it can be noticed that during the sample period of 2004 through 2006 differences in earning quality are declining. This may very well be an indication of actions taken by the FASB and IASB regarding the convergence of IFRS and US-GAAP during the sample period.
During the sample period between 2004 through 2006 the IASB and the FASB had various joint initiatives to accomplish the goal of convergence. One of these initiatives was the so called short-term convergence[3]. This project started in 2002 after the meeting of the IASB and FASB at Norwalk, were the two boards agreed to commit resources to achieve convergence. [IASB & FASB, 2006] This project resulted for instance in changes in the financial accounting rules concerning earning per share reporting during the sample period of 2004 through 2006[4].

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[3] The overall objective of the short-term convergence effort is to improve financial reporting in the United States, while concurrently eliminating a variety of individual differences between U.S. generally accepted accounting principles (GAAP) and International Financial Accounting

[4] A summary of decisions reached to Date can be found at: http://www.fasb.org/project/short-term_intl_convergence.shtml#eps.

Next to issues on the quality differences concerning IFRS and US-GAAP, other issues play a role in the acceptance of financial reports that comply with IFRS in the US capital market. A recent article concerning the possible acceptance of IFRS by foreign filers in the US market shows there are serious concerns for American regulators and US-GAAP-filing firms. Should the SEC for instance enforce the IFRS rules differently than the enforcement by other countries? Will the enforcement of IFRS lead to more legal proceedings? Is IFRS easier to understand than US-GAAP? How will the role of the FASB change when accepting IFRS? How will the enforcement of IFRS impact the competitiveness of US financial markets and US companies? [Cheney, 2007]. The US has committed itself to a convergence agreement set up by the IASB and FASB towards accepting IFRS in the US without a US-GAAP-based reconciliation sheet. The same is done in the EU, were US-GAAP based financial reports will be accepted as of 2009. At the mean time the IASB and FASB are trying to converge the two accounting standards, as to minimize differences concerning the accounting information. As for these differences, the results from this report show that concerning the reported earnings, differences declined during the sample period. More specifically, where in 2004 and 2005 significant quality differences were found, these differences disappeared in the year 2006. The overall results indicate that the two accounting standards are indeed conferencing with respect to the reported earnings.

References

Abdelghany, K.E., *Measuring the quality of earnings*, Accounting Department, College of Business and Economics, Qatar University, 2007.

Ashbaugh, H., Pincus, M., *Domestic Accounting Standards, International Accounting Standards, and the Predictability of Earnings*, Journal of Accounting Research, 2001.

Ball, R., Brown, P., *An empirical evaluation of accounting income numbers*, Journal of Accounting Research, 1968.

Ball. R., S. P. Kothari, and A. Robin, *The effect of international institutional factors on properties of accounting earnings*, Journal of Accounting and Economics 29: 1-51, 2000

Beaver, William H., Clarke, Roger, Wrigh, William F. *The Relation between Unsystematic Security Returns and the Magnitude of Earnings Forecast Errors*, Journal of Accounting Research, Vol. 17, No. 2, 1979.

Boonlert, K., *Earnings Properties and Investor Protection: International Evidence*, Oklahoma State University, 2004.

Bowen, R., S. Rajgopal, and M. Venkatachalam, *Accounting Discretion, Corporate Governance and Firm Performance*. Working Research, University of Washington and Duke University, 2003.

Cheney, G., *If IFRS offer the answers, they sure raise a lot of questions*, Financial Executives International, November 2007.

DNB, IFRS, *de stand van zaken 1 jaar na de introductie*, 2005.

Dechow, P., and 1. Dichev, *The quality of accruals and earnings: The role of accrual estimation errors*, The Accounting Review 11: 35-59, 2002.

Ernst & Young, *ifrs: stand van zaken één jaar na de introductie*, 2006.

Financieel dagblak, *Global Gaap: bal ligt bij EU*, 29 november 2007.

Financieel dagblad, *US leggen EU hun wil op bij boekhoudregels*, 27 juni 2007.

Francis, J., LaFond, R., Olsson, P.M., Schipper, K., *Costs of Equity and Earnings Properties*, The Accounting Review 4: 967-1010, 2004.

Francis, J., Schipper, K., *Have Financial Statements Lost Their Relevance?*, Journal of Accounting Research, 1999.

Gunny et al., *Earnings Properties of Alternate Annual Reporting Periods*, 2007

Harris, M. S., Muller K. A., *The market valuation of IAS versus US-GAAP accounting measures using Form 20-F reconciliations*, Pennsylvania State University, 1999.

Helleman, J., *Goedkeuring van IFRS voor toepassing in Europa*, Maanblad voor Accountancy en Bedrijfseconomie (MAB), 2006.

Hicks, J., *Value and capital*, Oxford University, 1939.

International Accounting Standards Board (IASB) & Financial Accounting Standards Board (FASB), *Memorandum of understanding: A roadmap for convergence between IFRSs and US-GAAP 2006 – 2008*, 2006.

Lang, M., *Time Varying Stock Price Response to Earnings Induced by Uncertainty About the Time-Series Process of Earnings, Journal of Financial Economics*, 1999.

Larsen, R., Marx, M., *An introduction to Mathematical Statistics and its Applications*, 2001.

Leuz, C., Nanda, Dhananjay, Wysocki, P.D., *Earnings Management and investors protection: an international comparison*, Journal of Financial Economics, 2001.

Leuz, C., IAS Versus US-GAAP: *Information Asymmetry-Based Evidence from Germany's New Market*, Journal of Accounting Research, 2003.

Lipe. R., *The relation between stock returns and accounting earnings given alternative information,* The Accounting Review 65: 49-71, 1990.

Meulen, Van der, S., Gaeremynck , A., Willekens, M, *Attribute differences between US-GAAP and IFRS earnings*, 2006.

Monem, R., Farshadfar, S., *Has earnings quality declined over time? Australian evidence*, 2007.

Niskanen, J., Kinnunen, J., Kasanen, E., *The value relevance of IAS reconciliation components: Empirical evidence from Finland*, Journal of Accounting and Public Policy, 2000.

Ndubizu, G. A., Sanchez, M. H., *The valuation properties of earnings and book value prepared under US-GAAP in Chile and IAS in Peru*, Journal of Accounting and Public Policy, 2006.

Ohlson, Earnings, *Book Values, and Dividends in Equity Valuation: An Empirical Perspective*, New York University, 2001.

Penman, S. 2001. *Financial Statement Analandis and Security Valuation,* New York. NY: McGraw-Hill/Irwin.

PriceWaterhouseCoopers, *Similarities and Differences, A comparison of IFRS and US-GAAP*, 2006.

Richardson, S., *Earnings surprises and short selling*, Accounting Horizons 17 (Supplement): 49-61, 2003.

Pope, P. And Walker M., *International Differences in the Timeliness, Conservatism, and Classification of Earnings*, Journal of Accounting Research, 1999.

Schipper, K. and Vincent, L., *Earnings quality*, Accounting Horizons, 2003.

Security and Exchange Commission, 17 CFR Parts 210, 230, 239 and 249, January 2008.

Vergoossen, R.G.A., *Invloed van IFRSs op netto resultaat en eigen vermogen*, maandblad voor accountancy en bedrijfseconomie, November 2007.

Verschuren, P., Doorewaard, H., *Het ontwerpen van een onderzoek*, 2005.

Watts, R., *Conservatism in accounting. Part 1: Explanations and implications,* Accounting Horizons 17: 207-221, 2003.

Websites used:

http://www.afm.nl/marktpartijen/default.ashx?DocumentID=10502

www.fasb.org

www.iasb.org

www.iasplus.com

www.secinfo.com

www.sec.gov

Appendix:

Summary of similarities and differences between IFRS and US-GAAP

Subject	IFRS	US GAAP	Page
Accounting framework			
Historical cost or valuation	Generally uses historical cost, but intangible assets, property, plant and equipment (PPE) and investment property may be revalued to fair value. Derivatives, certain other financial instruments and biological assets are revalued to fair value.	No revaluations except for certain types of financial instrument.	12, 39
First-time adoption of accounting framework	Full retrospective application of all IFRSs effective at the reporting date for an entity's first IFRS financial statements, with some optional exemptions and limited mandatory exceptions. Reconciliations of profit or loss in respect of the last period reported under previous GAAP, of equity at the end of that period and of equity at the start of the earliest period presented in comparatives must be included in an entity's first IFRS financial statements.	First-time adoption of US GAAP requires retrospective application. There is no requirement to present reconciliations of equity or profit or loss on first-time adoption of US GAAP.	12
Financial statements[1]			
Components of financial statements	Two years' balance sheets, income statements, cash flow statements, changes in equity and accounting policies and notes.	Similar to IFRS, except three years required for SEC registrants for all statements except balance sheet. Specific accommodations in certain circumstances for foreign private issuers that may offer relief from the three-year requirement.	13
Balance sheet	Does not prescribe a particular format. A current/non-current presentation of assets and liabilities is used unless a liquidity presentation provides more relevant and reliable information. Certain minimum items are presented on the face of the balance sheet.	Entities may present either a classified or non-classified balance sheet. Items on the face of the balance sheet are generally presented in decreasing order of liquidity. SEC registrants should follow SEC regulations.	14
Income statement	Does not prescribe a standard format, although expenditure is presented in one of two formats (function or nature). Certain minimum items are presented on the face of the income statement.	Present as either a single-step or multiple-step format. Expenditures are presented by function. SEC registrants should follow SEC regulations.	15
Exceptional (significant) items	Does not use the term but requires separate disclosure of items that are of such size, incidence or nature that their separate disclosure is necessary to explain the performance of the entity.	Similar to IFRS, but individually significant items are presented on the face of the income statement and disclosed in the notes.	16
Extraordinary items	Prohibited.	Defined as being both infrequent and unusual, and are rare. Negative goodwill is presented as an extraordinary item.	16
Statement of recognised income and expense (SoRIE)/Other comprehensive income and statement of accumulated other comprehensive income comprehensive income	A SoRIE can be presented as a primary statement, in which case a statement of changes in shareholders' equity is not presented. Alternatively, it may be disclosed separately within the primary statement of changes in shareholders' equity.	Total comprehensive income and accumulated other comprehensive income are disclosed, presented either as a separate primary statement or combined with the income statement or with the statement of changes in stockholders' equity.	16

[1] Mid-2007, the IASB voted to approve the issuance of a revised version of IAS 1, Presentation of Financial Statements.

Subject	IFRS	US GAAP	Page
Statement of changes in share (stock) holders' equity	Statement shows capital transactions with owners, the movement in accumulated profit/loss and a reconciliation of all other components of equity. The statement is presented as a primary statement except when a SoRIE is presented. In this case, only disclosure in the notes applies.	Similar to IFRS except that US GAAP does not have a SoRIE, and SEC rules permit the statement to be presented either as a primary statement or in the notes.	17
Cash flow statements – format and method	Standard headings but limited guidance on contents. Use direct or indirect method.	Similar headings to IFRS, but more specific guidance for items included in each category. Direct or indirect method used.	17
Cash flow statements – definition of cash and cash equivalents	Cash includes cash equivalents with maturities of three months or less from the date of acquisition and may include bank overdrafts.	Similar to IFRS, except that bank overdrafts are excluded.	18
Cash flow statements – exemptions	No exemptions.	Limited exemptions for certain investment entities and defined benefit plans.	17
Changes in accounting policy	Comparatives and prior year are restated against opening retained earnings, unless specifically exempted.	Similar to IFRS.	19
Correction of errors	Comparatives are restated and, if the error occurred before the earliest prior period presented, the opening balances of assets, liabilities and equity for the earliest prior period presented are restated.	Similar to IFRS.	19
Changes in accounting estimates	Reported in income statement in the current period and future, if applicable.	Similar to IFRS.	19
Consolidated financial statements			
Consolidation model	Based on control, which is the power to govern the financial, and operating policies. Control is presumed to exist when parent owns, directly or indirectly through subsidiaries, more than one half of an entity's voting power. Control also exists when the parent owns half or less of the voting power but has legal or contractual rights to control, or de facto control (rare circumstances). The existence of currently exercisable potential voting rights is also taken into consideration.	A bipolar consolidation model is used, which distinguishes between a variable interest model and a voting interest model. The variable interest model is discussed below. Under the voting interest model, control can be direct or indirect and may exist with less than 50% ownership. 'Effective control', which is a similar notion to de facto control under IFRS, is very rare if ever employed in practice.	20
Special purpose entities (SPE)	Consolidated where the substance of the relationship indicates control.	Variable interest entities (VIEs) are consolidated when the entity has a variable interest that will absorb the majority of the expected losses, receive a majority of the expected returns, or both. A voting interest entity in which the entity holds a controlling financial interest is consolidated. If an SPE meets the definition of a qualifying SPE (QSPE), the transfer or does not consolidate the QSPE.	21
Definition of associate	Based on significant influence, which is the power to participate in the financial and operating policy decisions; presumed if 20% or greater interest.	Similar to IFRS, although the term 'equity investment' is used instead of 'associate'.	21
Presentation of associate results	Equity method is used. Share of post-tax results is shown.	Similar to IFRS.	22
Disclosures about associates	Detailed information on associates' assets, liabilities, revenue and profit/loss is required.	Similar to IFRS.	22

Subject	IFRS	US GAAP	Page
Accounting policies of associate	Adjustments are made for consolidation purposes to the associate's policies to conform to those of the investor.	No adjustment to accounting policies is required if the associate follows an acceptable alternative US GAAP treatment.	22
Presentation of jointly controlled entities (joint ventures)	Both proportional consolidation and equity method permitted.	Equity method required except in specific circumstances.	23
Employee share (stock) trusts	Consolidated where substance of relationship indicates control (SIC-12 model). Entity's own shares held by an employee share trust are accounted for as treasury shares.	Similar to IFRS except where specific guidance applies for Employee Stock Ownership Plans (ESOPs) in SOP 93-6.	24
Business combinations[2]			
Types: acquisitions or mergers	All business combinations are acquisitions, thus the purchase method is the only method of accounting that is allowed.	Similar to IFRS.	25
Purchase method – fair values on acquisition	Assets, liabilities and contingent liabilities of acquired entity are fair valued. Goodwill is recognised as the residual between the consideration paid and the percentage of the fair value of the business acquired. In-process research and development is generally capitalised. Liabilities for restructuring activities are recognised only when acquiree has an existing liability at acquisition date. Liabilities for future losses or other costs expected to be incurred as a result of the business combination cannot be recognised.	There are specific differences to IFRS. Contingent liabilities of the acquiree are recognised if, by the end of the allocation period: • their fair value can be determined, or • they are probable and can be reasonably estimated. Specific rules exist for acquired in-process research and development (generally expensed). Some restructuring liabilities relating solely to the acquired entity may be recognised if specific criteria about restructuring plans are met.	26
Purchase method – contingent consideration	Included in cost of combination at acquisition date if adjustment is probable and can be measured reliably.	Generally, not recognised until contingency is resolved and the amount is determinable.	26
Purchase method – minority interests at acquisition	Stated at minority's share of the fair value of acquired identifiable assets, liabilities and contingent liabilities.	Stated at minority's share of pre-acquisition carrying value of net assets.	27
Purchase method – intangible assets with indefinite useful lives and goodwill	Capitalised but not amortised. Goodwill and indefinite-lived intangible assets are tested for impairment at least annually at either the cash-generating unit (CGU) level or groups of CGUs, as applicable.	Similar to IFRS, although the level of impairment testing and the impairment test itself are different.	26
Purchase method – negative goodwill	The identification and measurement of acquiree's identifiable assets, liabilities and contingent liabilities are reassessed. Any excess remaining after reassessment is recognised in income statement immediately.	Any remaining excess after reassessment is used to reduce proportionately the fair values assigned to non-current assets (with certain exceptions). Any excess is recognised in the income statement immediately as an extraordinary gain.	28
Business combinations involving entities under common control	Not specifically addressed. Entities elect and consistently apply either purchase or pooling-of-interest accounting for all such transactions.	Generally recorded at predecessor cost; the use of predecessor cost or fair value depends on a number of criteria.	29
Revenue recognition			
Revenue recognition	Based on several criteria, which require the recognition of revenue when risks and rewards and control have been transferred and the revenue can be measured reliably.	Similar to IFRS in principle, although there is extensive detailed guidance for specific types of transactions that may lead to differences in practice.	30

[2] In June 2007, the IASB and FASB voted to approve the issuance of a joint standard on business combinations that will replace the current versions of IFRS 3 and FAS 141.

Subject	IFRS	US GAAP	Page
Multiple-element arrangements	Revenue recognition criteria are applied to each separately identifiable component of a transaction to reflect the substance of the transaction – eg, to divide one transaction into the sale of goods and to the subsequent servicing of those goods. No further detailed guidance exists.	Arrangements with multiple deliverables are divided into separate units of accounting if deliverables in arrangement meet specified criteria outlined in EITF 00-21. Specific guidance exists for software vendors with multiple-element revenue arrangements.	31
Construction contracts	Accounted for using percentage-of-completion method. Completed contract method is prohibited.	Similar to IFRS; however, completed contract method is permitted in rare circumstances.	32
Expense recognition			
Interest expense	Recognised on an accruals basis using the effective interest method.	Similar to IFRS.	34
	Interest incurred on borrowings to construct an asset over a substantial period of time are capitalised as part of the cost of the asset.	Similar to IFRS with some differences in the detailed application.	44
Employee benefits: pension costs – defined benefit plans	Projected unit credit method is used to determine benefit obligation and plan assets are recorded at fair value. Actuarial gains and losses can be deferred. If actuarial gains and losses are recognised immediately, they can be recognised outside the income statement.	Similar to IFRS but with several areas of differences in the detailed application. Actuarial gains and losses cannot be deferred and are recognised in accumulated other comprehensive income with subsequent amortisation to the income statement.	34
Employee share-based payment transactions	Expense for services purchased is recognised based on the fair value of the equity awarded or the liability incurred.	Similar model to IFRS, although many areas of difference exist in application.	36
Termination benefits	Termination benefits arising from redundancies are accounted for similarly to restructuring provisions. Termination indemnity schemes are accounted for based on actuarial present value of benefits.	Four types of termination benefits with three different timing methods for recognition. Termination indemnity schemes are accounted for as pension plans; related liability is calculated as either vested benefit obligation or actuarial present value of benefits.	37
Assets			
Acquired intangible assets	Capitalised if recognition criteria are met; amortised over useful life. Intangibles assigned an indefinite useful life are not amortised but reviewed at least annually for impairment. Revaluations are permitted in rare circumstances.	Similar to IFRS, except revaluations are not permitted.	39
Internally generated intangible assets	Research costs are expensed as incurred. Development costs are capitalised and amortised only when specific criteria are met.	Unlike IFRS, both research and development costs are expensed as incurred, with the exception of some software and website development costs that are capitalised.	40
Property, plant and equipment	Historical cost or revalued amounts are used. Regular valuations of entire classes of assets are required when revaluation option is chosen.	Historical cost is used; revaluations are not permitted.	40
Non-current assets held for sale or disposal group	Non-current assets are classified as held for sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. A non-current asset classified as held for sale is measured at the lower of its carrying amount and fair value less costs to sell. Comparative balance sheet is not restated.	Similar to IFRS.	42

Subject	IFRS	US GAAP	Page
Leases – classification	A lease is a finance lease if substantially all risks and rewards of ownership are transferred. Substance rather than form is important.	Similar to IFRS, but with more extensive form-driven requirements.	42
Leases – lessor accounting	Amounts due under finance leases are recorded as a receivable. Gross earnings allocated to give constant rate of return based on (pre-tax) net investment method.	Similar to IFRS, but with specific rules for leveraged leases.	42
Impairment of long-lived assets held for use	Impairment is a one-step approach under IFRS and is assessed on the basis of discounted cash flows. If impairment is indicated, assets are written down to higher of fair value less costs to sell and value in use. Reversal of impairment losses is required in certain circumstances, except for goodwill.	Impairment is a two-step approach under US GAAP. Firstly, impairment is assessed on the basis of undiscounted cash flows. If less than carrying amount, the impairment loss is measured as the amount by which the carrying amount exceeds fair value. Reversal of losses is prohibited.	44
Investment property	Measured at depreciated cost or fair value, with changes in fair value recognised in the income statement.	Treated the same as for other properties (depreciated cost). Industry-specific guidance applies to investor entities (for example, investment entities).	45
Inventories	Carried at lower of cost and net realisable value. FIFO or weighted average method is used to determine cost. LIFO prohibited. Reversal is required for subsequent increase in value of previous write-downs.	Similar to IFRS; however, use of LIFO is permitted. Reversal of write-down is prohibited.	45
Biological assets	Measured at fair value less estimated point-of-sale costs, with changes in valuation recognised in the income statement.	Not specified. Generally historical cost used.	46
Financial assets – measurement	Depends on classification of investment – if held to maturity or loans and receivables, they are carried at amortised cost; otherwise at fair value. Gains/losses on fair value through profit or loss classification (including trading instruments) is recognised in income statement. Gains and losses on available-for-sale investments, whilst the investments are still held, are recognised in equity.	Similar accounting model to IFRS, with some detailed differences in application.	46
Derecognition of financial assets	Financial assets are derecognised based on risks and rewards first; control is secondary test.	Significantly different model to IFRS and derecognition is based on control. Requires legal isolation of assets even in bankruptcy.	48
Liabilities			
Provisions – general	Liabilities relating to present obligations from past events recorded if outflow of resources is probable (defined as more likely than not) and can be reliably estimated.	Similar to IFRS. However, probable is a higher threshold than 'more likely than not'.	50
Provisions – restructuring	Restructuring provisions recognised if detailed formal plan (identifying specified information) announced or implementation effectively begun.	Recognition of liability based solely on commitment to plan is prohibited. In order to recognise, restructuring plan has to meet definition of a liability, including certain criteria regarding likelihood that no changes will be made to plan or that plan will be withdrawn.	50
Contingencies	Disclose unrecognised possible losses and probable gains.	Similar to IFRS.	51
Deferred income taxes – general approach	Full provision method is used (some exceptions) driven by balance sheet temporary differences. Deferred tax assets are recognised if recovery is probable (more likely than not).	Similar to IFRS but with many differences in application.	52

Subject	IFRS	US GAAP	Page
Government grants	Recognised as deferred income and amortised when there is reasonable assurance that the entity will comply with the conditions attached to them and the grants will be received. Entities may offset capital grants against asset values.	Similar to IFRS, except when conditions are attached to grant. In this case, revenue recognition is delayed until such conditions are met. Long-lived asset contributions are recorded as revenue in the period received.	54
Leases – lessee accounting	Finance leases are recorded as asset and obligation for future rentals. Depreciated over useful life of asset. Rental payments are apportioned to give constant interest rate on outstanding obligation. Operating lease rentals are charged on straight-line basis.	Similar to IFRS. Specific rules should be met to record operating or capital lease.	54
Leases – lessee accounting: sale and leaseback transactions	Profit arising on sale and finance leaseback is deferred and amortised. If an operating lease arises, profit recognition depends on whether the transaction is at fair value. Substance/linkage of transactions is considered.	Timing of profit and loss recognition depends on whether seller relinquishes substantially all or a minor part of the use of the asset. Losses are immediately recognised. Specific strict criteria should be considered if the transaction involves real estate.	54
Financial liabilities versus equity classification	Capital instruments are classified, depending on substance of issuer's contractual obligations, as either liability or equity. Mandatorily redeemable preference shares are classified as liabilities.	Application of the US GAAP guidance may result in significant differences to IFRS, for example, certain redeemable instruments are permitted to be classified as 'mezzanine equity' (ie, outside of permanent equity but also separate from debt).	55
Convertible debt	Convertible debt (fixed number of shares for a fixed amount of cash) is accounted for on split basis, with proceeds allocated between equity and debt.	Conventional convertible debt is usually recognised entirely as liability, unless there is beneficial conversion feature.	56
Derecognition of financial liabilities	Liabilities are derecognised when extinguished. Difference between carrying amount and amount paid is recognised in income statement.	Similar to IFRS.	57
Equity instruments			
Capital instruments – purchase of own shares	Show as deduction from equity.	Similar to IFRS.	58
Derivatives and hedging			
Derivatives	Derivatives not qualifying for hedge accounting are measured at fair value with changes in fair value recognised in the income statement. Hedge accounting is permitted provided that certain stringent qualifying criteria are met.	Similar to IFRS. However, differences can arise in the detailed application.	59
Other accounting and reporting topics			
Functional currency definition	Currency of primary economic environment in which entity operates.	Similar to IFRS.	62
Functional currency – determination	If indicators are mixed and functional currency is not obvious, judgment is used to determine functional currency that most faithfully represents economic results of entity's operations by giving priority to currency that mainly influences sales prices and currency that mainly influences direct costs of providing the goods and services before considering the other factors.	Similar to IFRS. However, no specific hierarchy of factors to consider. In practice, currency in which cash flows are settled is often key consideration.	62

Subject	IFRS	US GAAP	Page
Presentation currency	When financial statements are presented in a currency other than the functional currency, assets and liabilities are translated at exchange rate at balance sheet date. Income statement items are translated at exchange rate at dates of transactions, or average rates if rates do not fluctuate significantly.	Similar to IFRS.	63
Earnings per share – diluted	IAS 33 is prescriptive about the procedure and methods used to determine whether potential shares are dilutive. 'Treasury share' method is used for share options/warrants.	Similar in principle to IFRS, although there are differences in application.	63
Related-party transactions – definition	Determined by level of direct or indirect control, joint control and significant influence of one party over another or common control with another entity.	Similar to IFRS.	64
Related-party transactions – disclosures	Name of the parent entity is disclosed and, if different, the ultimate controlling party, regardless of whether transactions occur. For related-party transactions, nature of relationship (seven categories), amount of transactions, outstanding balances, terms and types of transactions are disclosed. Disclosure of compensation of key management personnel is required within the financial statements.	Similar to IFRS except that disclosure of compensation of key management personnel is not required within the financial statements.	64
Segment reporting – scope and basis of disclosures	Applies to public entities and entities that file, or are in the process of filing, financial statements with a regulator for the purposes of issuing any instrument in a public market. Reporting of operating segments is based on those segments reported internally to entity's chief operating decision-maker for purposes of allocating resources and assessing performance.	Applies to SEC registrants. Basis of reporting is similar to IFRS.	65
Segment reporting – disclosures	Disclosures for operating segments are profit or loss, total assets and, if regularly reported internally, liabilities. Other items, such as external revenues, intra-segment revenues, depreciation and amortisation, tax, interest income, interest expense and various material items, are disclosed by segment where such items are included in the segment profit/loss or are reported internally. For geographical areas in which the entity operates, revenues and non-current assets are reported. Disclosure of factors used to identify segments and about major customers is required.	Similar disclosures to IFRS.	65
Discontinued operations – definition	Operations and cash flows that can be clearly distinguished for financial reporting and represent a separate major line of business or geographical area of operations, or a subsidiary acquired exclusively with a view to resale.	Wider definition than IFRS. Component that is clearly distinguishable operationally and for financial reporting can be a reportable segment, operating segment, reporting unit, subsidiary or asset group.	66
Discontinued operations – presentation and main disclosures	At a minimum, a single amount is disclosed on face of income statement, and further analysis disclosed in notes, for current and prior periods.	Similar to IFRS. Discontinued operations are reported as separate line items on face of income statement before extraordinary items.	67
Post-balance-sheet events	Financial statements are adjusted for subsequent events providing evidence of conditions that existed at the balance sheet date and materially affecting amounts in financial statements (adjusting events). Non-adjusting events are disclosed.	Similar to IFRS.	67

Subject	IFRS	US GAAP	Page
Interim financial reporting	Contents are prescribed and basis should be consistent with full-year statements. Frequency of reporting (eg, quarterly, half-year) is imposed by local regulator or is at discretion of entity.	Similar to IFRS. Additional quarterly reporting requirements apply for SEC registrants (domestic US entities only). Interim reporting requirements for foreign private issuers are based on local law and stock exchange requirements.	67