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Abbreviations

CEO	Chief Executive Officer
cf.	confer
CFO	Cash Flow from Operations
CV	Curriculum Vitae
e.g.	exempli gratia
EBIT	Earnings Before Interest and Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
EPS	Earnings Per Share
EQA	Earnings Quality Assessment
ERC	Earnings Response Coefficient
et al.	et alii
etc.	et cetera
EVA	Economic Value Added
FASB	Financial Accounting Standards Board
GAAP	Generally Accepted Accounting Principles
IASB	International Accounting Standards Board
ibid	ibidem
i.e.	id est
IFRS	International Financial Reporting Standards
Iss.	Issue
No.	Number
NYSE	New York Stock Exchange
p.	page
pp.	pages
R&D	Research and Development
resp.	respectively
S&P 500	Standard & Poor's 500
SEC	Securities and Exchange Commission
U.S., USA	United Stated of America
Vol.	Volume

1 Introduction

Earnings quality: Those two words are in the central point of many discussions, research and analyses. Typing them as keywords into an Internet search machine, no matter if commercial (e.g. Google, Yahoo) or scientific (e.g. ProQuest, ScienceDirect), returns numerous hits. Articles from as well-know business magazines as Forbes pop up. The same happens for the scientific world, where research papers concerning earnings quality can be found in the most renowned journals. Extra issues on the quality of earnings exist of such papers as Accounting Horizons and the Accounting Review and quite a number of conferences were and are held on it.

The topic – respectively aspects of it – occupies practitioners and researchers likewise since many years, not to say decades, but the catalyst of the recent boosted engagement were the big accounting scandals of companies like Enron in 2001 or WorldCom in 2002[1]. This also caused an Anglo-American focus on the issue. But especially through the setting of international accounting standards and the influence of the American economy on the rest of the world, publications about earnings quality do exist in a not so small number outside the United States of America, too.

Although the occupation with earnings quality is intense, it is still a broad and unclearly defined topic. Earnings quality is no stand alone topic. Related themes are earnings management, accrual accounting, financial reporting, information disclosure, valuation, auditing, corporate governance, pro-forma-earnings and cash flows. Therefore many different issues, views, and interests subsume this term. It is agreed upon that it should be a measure, but of many different things at once. Among others the company performance, the information provided, the (intrinsic) value of the firm, the company's future performance, or the accounting quality should be measured. One can say that all these (to be measured) values somewhat point in the same direction, but it is hard to grasp them with only one number.

Throughout this thesis an overview of the topic of earnings quality is given. A first point is to define the term, explain the usage of earnings in contrast to residual

[1] Patsuris, 2002

income, pro-forma-earnings, and cash flows, and describe perspectives and influential factors on it. The main part is made up of the desirable and undesirable earnings attributes as identified by researchers, the way they are being measured, and their international differences. These attributes are analyzed in a setting of perfect markets and certainty through cash flow examples and some further critical points are considered for these characteristics of earnings. Thereafter the possibilities and attempts to measure aggregated earnings quality in two ways – theory- and practice-based – are discussed. A summary and conclusion form the end of this paper.

2 Defining Earnings Quality

As already mentioned in the introduction there exists no agreed-upon definition of earnings quality. It is a rather context-dependent topic. At first it might help to take a separate look on the two terms, explain what the terms of earnings and quality stand for and take this into consideration for the combined definition.

2.1 Earnings, Pro-Forma-Earnings, Residual Income, and Cash Flows

The term "earnings" usually refers to the bottom line of the income statement, i.e. (after-tax) net income. It is the connecting part between income statement and balance sheet during the closing entries. As an aggregated accounting performance measure it shows the result of a company's financial reporting and, in doing so, tells analysts, investors, management, and other interested groups about the success or failure of the firm, i.e. its profitability. Therefore earnings are also a main determinant of the company's share price. All these make earnings "the single most studied number in a company's financial statements"[2]. But during the last decade, especially since the late 1990s, it became fashionable to rather look at pro-forma-earnings and cash flows to value a company's performance.[3]

Pro-forma-earnings measure earnings other than those that are calculated respectively formed due to generally accepted accounting principles. Examples for pro-forma-earnings are "EBIT" (i.e. earnings before interests and taxes) or "EBITDA" (i.e. earnings before interests, taxes, depreciation and amortization) and several variations of those two. Pro-forma-earnings are said to form a closer to market earnings number than GAAP earnings do. The original hope leading to the creation of pro-forma-earnings was that several of the problems of GAAP could be solved this way and those numbers would show the "permanent" respectively "true" earnings of a company. Through them a more unbiased view on the company should be given and comparisons across different companies, industries, and even countries should

[2] Investopedia, 2008a, Earnings
[3] Cf. Penman, 2003, p. 79, Dechow & Schrand, 2004, p. 114, and Investopedia, 2008a, Earnings

become easier. This is done in taking out the parts of annual accounts that vary the most from company to company to get a common basis for comparisons. Taking out taxes – for instance – helps to compare companies in different tax jurisdictions, subtracting interest payments nulls the effect of different capital structures and leaving out depreciation and amortization eliminates two more non-cash items.[4]

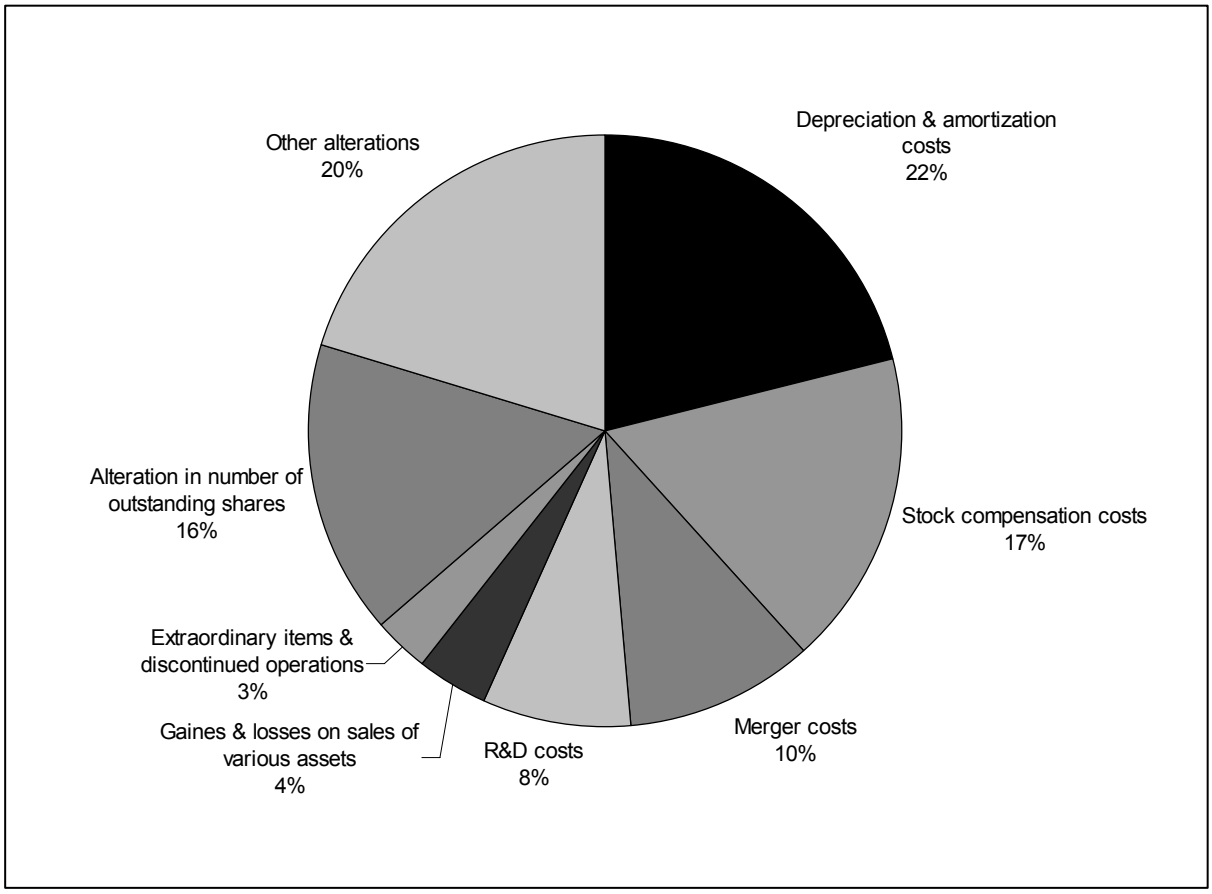

Table 1: Items excluded from pro-forma-earnings, 1998-2000

Data source: Bhattacharya et al., 2003, pp. 294

Firms try to condition their investors and analysts on certain pro-forma-earnings, e.g. Amazon puts the emphasis on EBIT while WorldCom promoted EBITDA.[5] Bhattacharya et al. (2003, p. 287) show that especially service and high-tech industries' firms like the usage of pro-forma-earnings. While the firms claim to leave out non-recurring and non-cash items, the study finds that "routine expenses, which should be included in operating income under GAAP, are the most common types of

[4] Cf. Investopedia, 2008b & 2008c & 2008d, EBIT, EBITDA and EBT, Penman, 2003, p. 81, and Dechow & Schrand, 2004, pp. 114

[5] Cf. Penman, 2003, p. 81

pro forma adjustments"[6]. Table 1 shows which adjustments are made the most often to reach pro-forma-earnings. It has to be noted that there is no common way of calculating those numbers and even for one single company the composition of pro-forma-earnings changes quite often from one period to the next. So, while these numbers already make intra-company-comparisons (along the time-series) difficult, it is clear that comparisons across companies hardly ever make sense.[7]

This "widespread confusion about pro forma earnings"[8] leads easily to the critics of pro-forma-earnings. With leaving out interests, taxes, depreciation, and/or amortization valuable information and real costs are being ignored. E.g. EBITDA turns a blind eye on "cash required to fund working capital and the replacement of old equipment, which can be significant."[9] Lynn Turner, SEC chief accountant from 1998 to 2001, finds quite clear words on pro-forma-earnings. He calls them ""EBS" or "Everything but Bad Staff""[10] and criticizes pro-forma-earnings for showing an incomplete, inaccurate and unclear picture to investors.[11] These numbers can help management to opportunistically influence the market perception as there is unlimited discretion in their determination.[12] This discretion is shown, e.g. in the fact that pro-forma-earnings meet or beat analysts' mean forecasts in 80.1 percent while only 38.7 percent of the related GAAP operating earnings figures would do so.[13]

Penman (2003, p. 81) gives two examples how firms fade out important parts of accounting with pro-forma-earnings: If interests are ignored the company can reach higher earnings with increased borrowing as it seems that they do not have to pay for this liability although in reality they have to and earnings are being decreased. The other example concerns leaving depreciation out of the picture. That way the fact that the value of certain assets decreases over time and incentives to rather capitalize expenses are created, is ignored. The effect is the same as in the previous example. The pro-forma-earnings are a lot higher than GAAP earnings would be, so they show a distorted reality and therefore a wrong performance of the company. Bhattacharya

[6] Bhattacharya et al., 2003, p. 287
[7] Cf. Cornell & Landsman, 2003, p. 20
[8] Bellovary et al., 2005, p. 35
[9] Investopedia, 2008c, EBITDA
[10] Turner, 2000, p. 5
[11] Cf. Turner, 2000, pp. 5
[12] Cf. Dechow & Schrand, 2004, pp. 114
[13] Cf. Bhattacharya et al., 2003, pp. 301; The meeting and beating of analysts' forecast numbers is used to gauge earnings management; see also Section 3.5

et al. (2003, pp. 300) show that pro-forma-earnings per share are in 70 percent of the cases higher than GAAP earnings per share.

Only bottom line earnings show the whole available accounting information and thus the whole (available) truth about a company. Earnings are the only number to catch the "big picture" including all influences on a company, but as additional information pro-forma-earnings could profound this picture. So they are welcome in voluntary disclosure including an exact scheme of their calculation, but not as substitute for GAAP earnings.

However, accounting does not always show the underlying reality exactly either. There are plenty of articles and papers which criticize GAAP rules for not helping companies to show their potential. In response to this high number of critics of GAAP – and hence, GAAP earnings – practitioners frequently prefer using other numbers to value companies. While pro-forma-earnings have been criticized in this context, residual income concepts are on the rise. They take the cost of equity into account which is ignored by GAAP.[14] What is not seen by those critics is that although the relevance of the cost of equity is unquestioned high it is difficult to get a reliable number, on which generally accepted accounting principles can only be based. For instance EVA, i.e. economic value added, – as one residual income measure - does not only require the estimation of the cost of equity but many more adjustments that involve expert's judgment. Additionally, different consulting firms developed different residual income concepts, which make the comparability delicate. So residual income might be the theoretically right concept and as a valuation tool show the value creation and destruction of a company a lot better than net income, but its reliability is hard to assess.

While this does not solve the problems with GAAP and due to the fact that managerial discretion is included in accounting numbers the question arises why cash flows are not taken instead of earnings. After all the cash basis is what keeps a company operating. Without cash there is soon no business and it is much harder to bias cash flows than earnings. Additionally, in recent years it became compulsory not only for firms in the USA but also for certain mostly stock-exchange-listed European companies – through the application of international accounting standards like U.S.-

[14] Cf. Stewart III., 2003, p. A.16

GAAP or IFRS – to prepare a cash flow statement for the company's financial statement, so it need not be done by analysts or investors anymore.[15]

In the comparison between cash flows and earnings, there are two ways to look at it. The first deals with arguments of accounting basics, the other concerns forecasts and their accuracy. To follow both comparisons, but especially the first, it is important to note that the difference between earnings and cash flows is the accrual component. Putting it in a simple equation earnings X_t equal operating cash flows CFO_t plus accruals A_t in one period *t*: $X_t = CFO_t + A_t$.[16]

The objective of accrual accounting can be seen from an income statement and a balance sheet perspective. For the first, a company's economic (not its cash) performance should be shown through such principles as revenue recognition and matching. Hence, revenue should be recognized in the period it is earned without regard to the point in time when the cash really flows. Of course the same is true for expenses. Seen from the balance sheet perspective, a firm's rights (assets) and obligations (liabilities) have to be recognized when they occur. Both sides focus on the basic idea of accounting, namely to record value and not cash flows.[17]

The argument for earnings over cash flows from this accounting perspective is usually made due to the higher persistence of earnings, which is nothing else than the outcome of the usage of accruals. So, from this point of view the discussion is really about accruals. Except for persistence, they are also the cause of earnings being in general less volatile than cash flows. But they can also be used to adjust the values of assets and liabilities which might lead to a biasing of earnings; this is much harder with cash flows where this involves the cooperation with a second party. Researchers and practitioners likewise experience difficulties in drawing a line between the enhancing information content of accruals and earnings management. Therefore with

[15] Cf. Kieso et al., 2004, pp. 190, and Küting & Weber, 2004, p. 555
[16] Cf. Dechow & Schrand, 2004, pp. 10, Wagenhofer & Dücker, 2007, p. 268, and Penman, 2003, pp. 81
[17] Cf. Kieso et al., 2004, pp. 39, Penman, 2004, pp. 44, Dechow & Skinner, 2000, p. 237 and Dechow & Schrand, 2004, p. 11

this view the dominance of earnings over cash flows depends on the quality of accruals.[18]

Concerning forecasts a recent study by Liu et al. (2006) about valuations based on cash flows versus earnings multiples gives a quite forward answer: Forecasts based on earnings are better predictors than those based on cash flows.[19] The study was carried out with data from five countries and the results were the same for all of them – with a statistically significant margin. In sum, forecasts based on earnings are better predictors of both future earnings and future cash flows. As the whole point of financial analyses usually is to value a company and give an outlook on the future firm performance, it makes more sense to use the number that is a better predictor.[20]

Summarizing earnings are seen superior to pro-forma-earnings, because the latter have no universally valid method of calculation or composition and leave out important accounting information. Similarly, the dilemma with reliability and comparability makes the usage of residual income numbers problematic. With cash flows earnings are preferred – despite the possibility of manipulation through accruals – due to their time-series properties which make them more persistent, more predictable and smoother than cash flows.

2.2 Quality

After taking a closer look on earnings and contrasting them with close-by numbers as pro-forma-earnings, residual income, and cash flows, it is time to turn to the subject of quality. Quality as defined by the Oxford Popular Dictionary is the "degree of excellence", but it also refers to a "characteristic, something that is special in a [...] thing".[21] The term of quality turns up quite often in business, but although it always complies with the "degree of excellence" – meaning its exact interpretation depends on the item whose quality is meant. The criteria for what quality represents in the

[18] Cf. Dechow & Schrand, 2004, p. 14, Dechow & Skinner, 2000, p. 237, Wagenhofer & Dücker, 2007, pp. 267; The quality of accruals will be discussed more deeply as an earnings attribute in Section 3.4
[19] For the USA Liu et al. (2006) also compared EBITDA, an above described pro-forma-earnings number, with earnings and the latter were again the better predictor of a company's valuation.
[20] Cf. Liu et al., 2006, and Authers, 2007
[21] The Oxford Popular Dictionary, 1995, p. 331

context with human resources are different to the ones in connection with product quality. In order to progress we have to look at earnings and quality together now.

2.3 Earnings Quality

Both researchers and practical experts try to define earnings quality from different point of views and aspects. The first point suggested for instance by Wagenhofer and Dücker (2007, pp. 266) or Entwistle and Phillips (2003, p. 85) is to look at earnings quality from the standard setter's view (e.g. the American FASB, IASB, or the German/Austrian commercial law). The annual accounts should deliver a report of assets, liabilities, and returns reflecting the real situation of the company. The information provided through financial reporting should be useful for investors, creditors, and other interested parties, to value the business, its potential and to be able to base sound decisions on it. So, high-quality earnings have high decision usefulness. The other point made e.g. by Penman (2003, 2004) is from an analyst's view. The mere part of any analysis is usually to do forecasts. Therefore "current earnings are of good quality if they are a good indication of future earnings"[22].

These two points also reflect in theoretical approaches which try to enlighten as many aspects of earnings quality as possible. Dechow and Schrand (2004, p. 5) classify that "a high-quality earnings number is one that accurately reflects the company's current operating performance, is a good indicator of future operating performance, and is a useful summary measure for assessing firm value". Overall, they want earnings to indicate the intrinsic value of the firm. Even from the theoretical side these expectations on what earnings quality can stand for are extremely high, not to say impossible. It is hard to imagine that one tiny number even if it is the aggregate output of annual accounts, can fulfill all of them.

Schipper and Vincent (2003) take a different approach. They define earnings as of high-quality when they represent Hicksian income, i.e. "the amount that can be consumed […] during a period, while leaving the firm equally well off at the beginning and the end of the period"[23]. This definition refers to the fact that accounting

[22] Penman, 2003, p.81
[23] Hicks, 1939 p. 176 – quoted by Schipper & Vincent, 2003, p. 97

earnings should actually reflect the economic income of a firm. Schipper and Vincent (2003) focus on decision usefulness as the major property of earnings that are close or equal to Hicksian income.

To complete the picture two more practical inspired definitions of earnings quality are given: McClure (2002) writes that the key features of high-quality earnings are to be repeatable (and fairly predictable), controllable, and bankable. Bellovary et al. (2005) see the reflection of the company's true earnings, the usefulness to predict future earnings as well as stability, persistence, and lack of variability as the most important qualities of reported earnings. Again, the prior defined points of decision usefulness, reflection of the real situation of the company, and the ability to forecast have their way into these definitions.

Analysts also tend to use a red-flag-analysis of financial reports as an inverse definition/measure of earnings quality. They define several items in annual accounts that can be critical for earnings quality, such as big lease obligations, high goodwill and debt or revenue growth from non-operating items, and look deeper into those. Still, this way of looking on earnings quality requires a substantial amount of experience in accounting analysis and to a degree simply a good feeling, where something could be wrong.[24]

As it is hard and nearly impossible to come up with measures for exactly these definitions and due to the problem that they are only part of a rather never-ending-story of attempted definitions, a number of earnings attributes, i.e. favorable and unfavorable characteristics of earnings, were developed. Earnings quality is defined through the impact of the different attributes on it. Chapter 3 deals with the meaning, measurement and effect of these earnings attributes.

2.4 Interested Parties

Earnings quality is of interest to all financial statement users and stakeholders of a firm, but they might differ in their focus. Still, all interested parties see earnings in some sense as the aggregated output of a company's accounting, which is used to

[24] Badenhausen et al., 2005

measure current performance and gives an outlook on the future. Shareholders and investors want their investments to pay off. They "buy earnings" as Penman (2003, p. 80) puts it. The current earnings number decides on the to-be-paid dividends and thus, the personal income of an investor through the company. The decision for further investment is made on a valuation of the future company performance and hence, shareholders stand to benefit from earnings that are decision useful and a good indicator for future earnings. Similarly, creditors and suppliers want to gain insight to the soundness and solvency of a company through its earnings number. They consider a high (possible) liquidity as important. Regulators, standard setters and auditors want earnings to be consistent with generally accepted accounting principles. Additionally, "standard setters view the quality of financial reports as an indirect indicator of the quality of financial reporting standards"[25] and usually focus on outputs like earnings when seeking feedback in this case.[26] The press and analysts need to prepare valuations and forecasts of companies' performance. They prefer earnings to be transparent and predictable, so that they can give accurate prognoses.[27]

The interest of management in the quality of earnings is divided in two parts. At first there is their role to satisfy shareholders and other stakeholders to their expectations of earnings quality as identified in the previous paragraph. But there is also the possible connection between managerial compensation and accounting numbers as performance measures. If earnings are used as performance measure for managers, what is of quality in this scenario differs quite substantially from the ideas of the other interested parties. Christensen et al. (2005) take a look at earnings as performance measures and find that there is a tradeoff between the valuation and contracting purposes of accounting earnings. A more noisy measure of performance can reduce the risk imposed on the manager and thus requires the payment of a smaller risk premium. But this somewhat desired noise is due to factors that reduce the earnings quality in other definitions (e.g. the level of accrual estimation errors).[28] Throughout this thesis the emphasis lies with the valuation aspect of earnings quality but without excluding that managers try to manipulate earnings because of the contracting aspect.

[25] Schipper & Vincent, 2003, p. 98
[26] Cf. Schipper & Vincent, 2003, p. 99
[27] Cf. Dechow & Schrand, 2004, p.2
[28] Cf. Christensen et al., 2005

2.5 Influential Factors

As broad as the topic of earnings quality is the many influential factors exist and are being discussed in the literature. It is not the aim of this paper to give an exhausting description but rather to summarize several important factors.

Before considering any other factor it is obvious that the underlying business of a company has an influence on the quality of earnings. The volatility of it might be high and certain characteristics differ from industry to industry. The accounting policies, flashpoints and incentives for manipulation depend on the sector.[29] Furthermore, Ball and Shivakumar (2005) show that the earnings quality differs between public and private companies due to a difference in demand. Private firms tend to exchange financial reporting for private communication with their stakeholders. All these aspects have to be taken into account when considering the firm's quality of earnings.

In international comparisons otherwise exogenous factors like the general economic situation of a country or its system of law can create a difference in the outcome of earnings quality studies. The predominant form of corporate ownership, the degree of investor protection, the development of stock markets or the distinction between different legal origins and traditions can be crucial for cross-country-comparisons.[30]

The quality of accounting is a major influencing variable on how earnings are treated as the aggregate output of a company's accounting. Supposedly there is a positive correlation between high-quality accounting and high-quality earnings. This seems logical as only right and reliable numbers can be of good quality. Accounting quality can be split in two fields: the quality of GAAP in general and the application of GAAP in particular. The first refers to the fact that generally accepted accounting principles do not fit well for all companies. It differs in the ability to capture all value relevant aspects of a firm. High-growth companies, companies with intangible assets, complex

[29] Cf. Penman, 2004, pp. 608
[30] Cf. Leuz et al, 2003, Van der Meulen, 2007, and Boonlert-U-Thai et al., 2006

transactions or a volatile business environment are not in favor of today's way of financial reporting.[31]

GAAP's application quality depends on how the choice among several possible methods, estimates, and procedures is used. So a simple fulfillment of generally accepted accounting principles is not enough, but it is rather required that the accounting reflects the company's operations truthfully even if the regulations leave a possibility to choose among various rules.[32] Regulation authorities like the U.S. Securities and Exchange Commission tried to tighten up accounting rules during the last years – especially after such accounting scandals like Enron's – to force company's into high accounting quality. At this point it is hard to say if it works out. Arya et al. (2003, p. 115) describe the connection between accounting standards and quality as follows:

"Even if we think financial reporting could take photograph-like "true" pictures of firms, the relationship between financial reporting and business is not like that of a photographer and a landscape. It is more like that between a photographer and a model: the model smiles and poses for the camera even as the photographer changes camera angle and settings in reaction to the model."

A factor that has a strong association to the application quality of GAAP as well as the transaction timing quality of a business, but which is also considered an important, self-dependent influence on earnings quality is earnings management respectively earnings manipulation. It is defined to be connected negatively with earnings, accounting and transaction timing quality. In fact the (degree of) existence of earnings management is often used as an inverse measure for earnings quality. So, ceteris paribus, the less earnings are managed the higher their quality. The relationship seems very straight-forward as manipulated earnings do not show a true picture of the firm. In line with the connection to transaction timing and GAAP application quality, the so-called real earnings management exists, which involves revenue and expenditure timing, and the manipulation of accruals.[33] Earnings management is also used as an earnings attribute and will be discussed as such in Section 3.5.

[31] Cf. Penman, 2004, p. 604 and Dechow & Schrand, 2004, p. 3
[32] Cf. Penman, 2004, p. 604
[33] Cf. Penman, 2004, pp. 604, and Dechow & Schrand, 2004, pp. 39

Corporate governance structures and monitoring play another major role among the influences on earnings quality. The focus lies especially with internal and external auditing as a controlling force of the firm, but the board of directors, institutional investors, analysts, or the press can also be considered as monitors.[34] Dechow et al.'s (1996) study on the manipulation of earnings showed that companies with weak governance structures are more likely to be the subject of SEC enforcement actions, i.e. through the engagement in serious and detected manipulation of earnings. They found in particular that these firms had a greater proportion of insiders on the board of directors, who held a greater proportion of total board stockholdings and the majority of the board seats; the companies were less likely to have audit committees or outside block holders and the CEO was more often the chairman of the board or/ and the original founder of the company as in the control sample of firms.[35] Since at the time of this study several legislation reforms were made (e.g. the Sarbanes-Oxley Act of 2002 in the U.S. or the adaptation of corporate governance codices around the world), which addressed those flaws in corporate governance e.g. through strengthening the independence and expertise of audit committees.[36] The overall conclusion is that the better corporate structures are the better is the earnings quality. The relationship is assumed this way, because if the monitoring works, for instance, (attempted) earnings management will be discovered early enough to ensure high-quality accounting and therefore a high-quality earnings number. If the structures are set right there might be no incentive for manipulations from the very beginning. There are quite a number of further studies that investigate the relationship between corporate governance and earnings quality on various more detailed aspects, e.g. Big 6 auditors expertise (Krishnan, 2003) or auditors' fees for nonaudit services (Frankel et al., 2002).

Auditors, which are seen as the first control authority, have an important part in monitoring. If the audit quality is high, it can be assumed that grey areas in accounting rules are not interpreted for the company in a manipulation promoting way. Then again a qualified audit opinion gives a very bad sign towards earnings quality.[37]

[34] Cf. Dechow & Schrand, 2004, pp. 62
[35] Cf. Dechow et al., 1996, pp. 21
[36] Cf. Dechow & Schrand, 2004, pp. 64
[37] Cf. Penman, 2004. p. 604

A last influential factor is disclosure quality. It actually has no direct influence on earnings, but sets the basic conditions for a financial analysis. Based on the numbers in disclosed financial reports e.g. investors and analysts can examine the quality of earnings. Even if earnings quality would be high otherwise, if it cannot be observed through the given data, analyses, valuations, and forecasts get tentative and might not show the actual performance of the firm.[38]

As with the broad, complex, and context-dependent issue of earnings quality common plenty of influential factors can be thought of. The way they influence earnings quality seems usually logical and among the influences there are again connections. For instance, corporate governance structures form the background so that earnings management at best does not exist and accounting quality is high, which in sum would lead to high-quality earnings. The downside is the difficulty of finding out exact and quantifiable data about the influences as they themselves again depend on various factors.

[38] Cf. Penman, 2004, pp. 605

3 Earnings Attributes

Earnings attributes refer to certain desirable as well as undesirable characteristics of earnings that are supposed to have an influence on earnings quality. The eight most stated attributes are described here. They can be split into accounting- and market-based attributes, i.e. those which are only taking accounting numbers into consideration and those which compare accounting and stock market numbers. The first three (persistence, predictability, volatility & smoothness) illustrate the time-series properties of earnings, i.e. how earnings develop over time.

3.1 Persistence

"Components that are generated by repetitive business are called core income, persistent earnings, sustainable earnings, or underlying earnings."[39] Hence, persistent earnings are current earnings that are likely to be maintained in the future. They are repetitive, continuous and recurring. Therefore effects that are non-recurring are impermanent. In the annual accounts these items are often seen as unfavorable respectively non-representative of the firm's performance. In the calculation of pro-forma-earnings they are usually excluded in order to show the company's real performance.[40]

In the connection with earnings quality, persistence is seen as favorable and some definitions of it depend only on the characteristic of earnings as persistent and sustainable[41]: The more persistent the earnings the higher the quality.

But why is persistence a positive attribute of earnings? The favorability lies in the recurring part. The bigger the recurring component of earnings the easier they are to foresee. It makes forecasts easier and more reliable. Earnings become more useful for decisions and risk is reduced in taking away variability. It seems as if all interested parties profit: Analysts can give better forecasts, managers can plan more accurately, and investors have more reliable information.

[39] Penman, 2004, p. 389
[40] For a more detailed explanation of pro-forma-earnings see Section 2.1
[41] Cf. Richardson, 2003, p. 49

The critical part of persistence lies with its origin. If the sustainability of earnings is the outcome of a very stable, recurring business background it is for sure positive. The "but" comes with the always existing possibility of managed earnings[42]. As persistent earnings give such a positive picture of the firm and are very practicable for the interested parties, there is a high incentive to somehow "help" earnings to be recurring. Different studies found out that certain depreciation treatments and accounting rules can increase persistence but reduce the decision usefulness and therefore the quality as those practices do not represent the underlying business operations.[43] So although persistence is usually seen as positive towards earnings quality, this possibility has to be considered.

In terms of measurement the persistence of earnings is usually measured through a simple regression equation. Next year's earnings $X_{i,t+1}$ equal the constant α plus the persistence coefficient β times this year's earnings $X_{i,t}$ plus the random term $\varepsilon_{i,t}$: $X_{i,t+1} = \alpha + \beta \cdot X_{i,t} + \varepsilon_{i,t}$. As persistence is measured through the slope coefficient, the earnings recur the more the higher β.[44] Based on other research Wagenhofer and Dücker (2007, pp. 271) also suggest the possibility of splitting this year's earnings in the equation into cash flows from operations and accruals to differentiate the influence of those two earnings components, i.e. $X_{i,t+1} = \alpha + \beta_1 \cdot CFO_{i,t} + \beta_2 \cdot A_{i,t} + \varepsilon_{i,t}$. However, the connection between β_1 and β_2 is unclear and not analyzed.

Dechow and Schrand (2004, p. 13) present a ranking of the persistence of different income and cash flow statement items through using the first regression equation with the data of American companies between 1987 and 2002. The highest persistence is shown with sales numbers. The fact that the tested income statement and thus earnings numbers all have a higher persistence than the different cash flows adds to the argument for earnings as of Section 2.1. But it also gives rise and an explanation to the usage of pro-forma-earnings numbers as they tend to have a higher persistence.

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[42] Earnings management will be discussed more deeply in Section 3.5.
[43] Cf. Dechow & Schrand, 2004, pp. 5
[44] Cf. Wagenhofer & Dücker, 2007, p. 271, Dechow & Schrand, 2004, p. 12, or Francis et al., 2004, p. 980

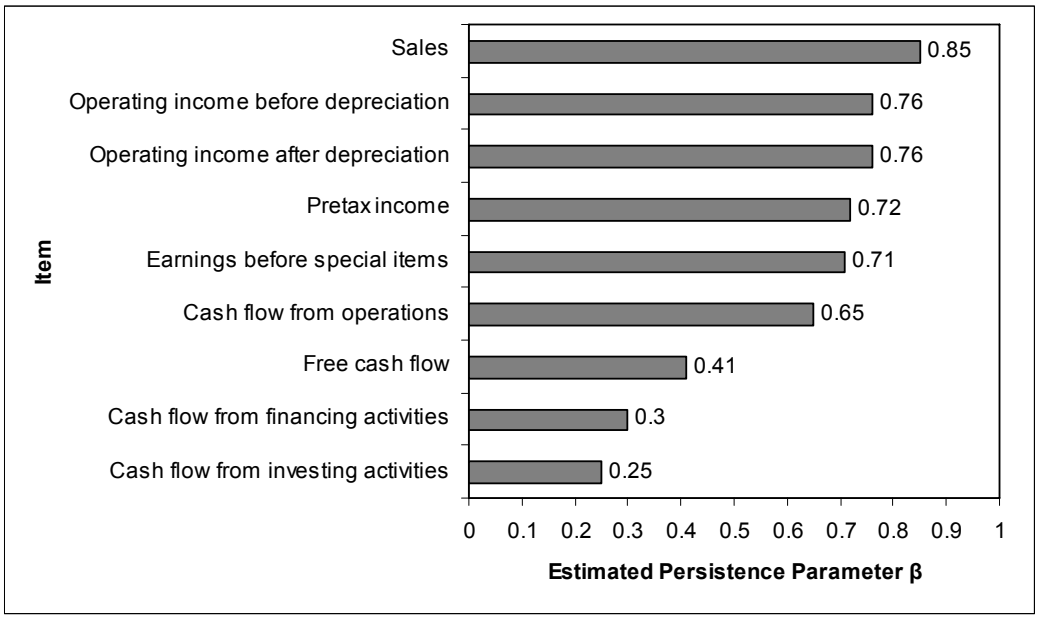

Table 2: Persistence of Income Statement and Cash Flow Statement Items, 1987- 2002
Source: Dechow/Schrand, 2004, p. 13

Additionally, Dechow and Schrand (2004, pp. 24) find, that the cash flow component of earnings is more persistent than the accrual component, i.e. expressed through the parameters of the second regression equation: $\beta_1 > \beta_2$. They state that persistence of both earnings and cash flows is related to the magnitude of accruals. So in connection to Section 2.1 of this thesis, this means that in terms of persistence even though earnings are of better use in financial analysis than cash flows, earnings have to be highly backed by cash to achieve that.

3.2 Predictability

Predictability captures the ability of earnings to predict themselves or/and cash flows. FASB and IASB as well as other standard setters see it as a very relevant and important property of earnings. Analysts logically like a high predictability as it makes their life easier in reducing risk of their predictions about the company's (future) value. Additionally, predictability gives the impression of a stable setting of the company. These reasons make it also popular for management or investors. [45]

[45] Cf. Francis et al., 2004, p. 972, and Wagenhofer & Dücker, 2007, pp. 272

When measuring predictability the same regression equations as for persistence are used. The connection between persistence and predictability is pretty straightforward: The more persistent the earnings the more predictable they are. Thus, predictability is measured through the determination coefficient R^2, i.e. the explanatory power, of the equations $X_{i,t+1} = \alpha + \beta \cdot X_{i,t} + \varepsilon_{i,t}$ resp. $X_{i,t+1} = \alpha + \beta_1 \cdot CFO_{i,t} + \beta_2 \cdot A_{i,t} + \varepsilon_{i,t}$. The higher R^2 is the higher is the predictability and therefore earnings quality.[46] Based on Lipe (1990) Francis et al. (2004, p. 980) use the standard deviation of the error term, i.e. $\sigma(\varepsilon_{i,t})$, to determine earnings' predictability. The smaller this standard deviation is the more predictable are the earnings.

Another approach is to directly measure the predictability of earnings towards future cash flows. The regression equations from before are adjusted as follows: Either cash flows from operations are only being forecasted through earnings or they are split in (past) cash flows from operations and accruals, i.e. $CFO_{i,t+1} = \alpha + \beta \cdot X_{i,t} + \varepsilon_{i,t}$ resp. $CFO_{i,t+1} = \alpha + \beta_1 \cdot CFO_{i,t} + \beta_2 \cdot A_{i,t} + \varepsilon_{i,t}$. Again, predictability can be measured either through the explanatory power R^2 of the equations or the standard deviation of the error terms. It was found that the R^2 for the equation with split up earnings is higher and it gets the higher the more fractionalized components are used.[47]

Wagenhofer and Dücker (2007, pp. 272) point out that it does not only need to be the time-series property of earnings that defines the predictability of earnings. There are additional information sources like the outlook part of the company's annual report, speeches of the top management, newspaper articles, or the company's long-term strategic goals. There is plenty of voluntary disclosure that enhances predictability, but it is hard to quantify.

The argument against predictability is again earnings management. As analysts prepare forecasts, managers try to meet (and at best beat) them. This is a very high incentive to manage earnings as "naturally" this would not always be possible, but the consequences of providing less than expected earnings are too severe. "Because investors tend to punish a stock if the numbers come in below the Street's

[46] Cf. Wagenhofer & Dücker, 2007, pp. 271
[47] Cf. Wagenhofer & Dücker, 2007, p. 273, and Barth et al., 2001, pp. 43

expectations, companies often will do what they can to ensure that targets are hit, even if it means selling a few assets or tossing in a restructuring charge or taking their eye off of the longer term."[48]

The abandonment of providing earnings guidance, i.e. earnings estimates, at some major companies like Coca-Cola Inc. goes along these lines. Giving forecasts of their own earnings and then trying to meet them at "no matter what" rather equals "[setting] artificially low targets and then do everything possible to meet them"[49] and making self-fulfilling prophecies. The numbers get hallow and do not provide a description of the company's potential anymore. Coca-Cola Inc. or Intel Corp. now put their emphasis on long-term goals and additional information that helps investors to understand the status-quo of the firm as well as its future possibilities.[50] So these companies shift from the easily quantifiable parts of predictability to the more difficult ones.

3.3 Volatility & Smoothness

The third time-series-based earnings attribute is volatility respectively smoothness. The latter refers to "the relative absence of variability"[51], i.e. the smoother the earnings the less volatile they are. The less volatile the more predictable and persistent are earnings and hence, the higher is their quality. Cash flows are relatively volatile in comparison to earnings as accrual accounting "smoothes" through the usage of both the matching and the revenue recognition principle.[52] Pro-forma-earnings tend to be smoothest as the variable, one-time items are usually cancelled out in addition to the effects of accrual accounting. As Ball et al. (2000, p. 15) state, "volatility can be reduced, at the expense of timeliness".

Volatility is always connected with risk. Hence, for management compensation contracts, which use accounting numbers as performance measures, smooth earnings seem preferable as they reduce risk for the managers. Moreover, "arguments that

[48] McKay & Brown, 2002, p. A.3
[49] Jensen, 2001, p.101
[50] Cf. McKay & Brown, 2002, p. A.3
[51] Schipper & Vincent, 2003, p. 101
[52] Cf. Wagenhofer & Dücker, 2007, p. 273

smoothness is a desirable earnings attribute derive from the view that managers use their private information about future income to smooth out transitory fluctuations and thereby achieve a more representative, hence more useful, reported earnings number."[53] Practice-oriented earnings quality definitions see smoothness as desirable as well. For instance McClure (2002) calls for controllability of earnings, i.e. the absence of risk and volatility.

Among others[54] Dechow and Skinner (2000, p. 237) define "income smoothing" as a certain form of earnings management. This corresponds to the fact that Leuz et al. (2003) use smoothness as a measure for earnings management arguing that smoothing happens through accruals respectively what is known as the accounting discretion and it hides poor current performance. The scope in which smooth earnings go from improving the decision usefulness of earnings to implying earnings management is rather narrow and, as so often, unclearly defined.[55] Again, the question that lies behind the smoothness of earnings is if it refers to the actual state of the firm. If earnings are artificially smoothed they do not represent faithfully the current operation of the business. Dechow and Skinner (2000, p. 240) give an example of income smoothing that shows the ambivalence of the topic:

"Consider a company whose software product must be continuously upgraded and supported to maintain market share. Customers pay cash for the product up-front, and the company defers recognition of part of this revenue because management believes the revenue is not earned until customer support has been provided. The deferred revenue is recognized as support is provided and uncertainties about the costs of support are resolved, so that the proportion of revenue that is deferred may vary from quarter to quarter. As it turns out, the estimates managers make to implement this revenue recognition policy mean that when sales are unusually high relatively more is transferred into the unearned revenue reserves, and conversely when sales are unusually low (in periods, say, right before new versions of popular software are released). Thus, because of management's best judgments about when their firm's revenues from this product are earned, reported revenues and earnings are smoother than would otherwise occur were revenue to be recognized entirely at the point of sale."

To identify the extent of smoothness of earnings two measures have been developed. The first measure compares the volatility/smoothness of earnings and cash flows from operations: $\frac{\sigma(X_{i,t})}{\sigma(CFO_{i,t})}$. As the difference of earnings and cash flows is defined

[53] Francis et al., 2004, p. 972
[54] E.g. Shaw, 2003
[55] Cf. Dechow & Skinner, 2000, pp. 237

through accruals, their smoothing effect is measured through this number. It should not be used to compare companies of different branches as the industry specific volatility of business is included in this number which might cause distortions in a cross-sectional analysis. The second measure refers to the correlation between the change in accruals and cash flows from operations: $\rho(\Delta A_{i,t}, \Delta CFO_{i,t})$. As accounting accruals smooth out the cash flows volatility this correlation is supposed to be negative.[56]

If earnings are smooth, the first measure should be below one and the correlation negative. The smaller these numbers are the higher the earnings quality should be. However, with the earnings-management-interpretation of smoothness, small values of the measures indicate low earnings quality. In addition, Leuz et al. (2003, p. 510) point out that the correlation between the change of accruals and cash flows has to be highly negative to indicate managed earnings. So, the smoothness respectively volatility of earnings can be measured quite easily, but research does not agree on the sign it gives towards earnings quality.[57]

3.4 Quality of Accruals

As already described in the previous chapter and sections, accruals mark the difference between cash and value flows and are the result of the matching and the revenue recognition principle. "The rationale for accrual accounting is the attempt to match costs with related revenues, to better reflect underlying economic performance."[58] Wagenhofer and Dücker (2007, p. 274) identify accruals as the extra information gained trough accounting. Earnings are composed of cash flows and accruals. As mentioned before with smoothness, accruals filter the volatility of cash flows and thus, their quality is systematically related to firm and industry characteristics.

Negative associations with accruals are due to the discretion that comes with their determination. The discretion can help to improve informativeness – e.g. when

[56] Cf. Wagenhofer & Dücker, 2007, p. 273
[57] Cf. Wagenhofer & Dücker, 2007, p. 274
[58] Statement of Accounting Concepts No. 1, FASB, 1978, para. 44 – quoted by Marnet, 2007, p. 199

managers use their private information for accounting choices - but this comes at the cost of estimations and valuations of future conditions. As with all estimations there is always the chance of estimation errors. Those errors create noise, reduce the information benefit of accruals, and allow an easy entrance to earnings management as the distinction between real and intended mistakes is difficult. The part of accruals that is caused by earnings management is called "discretionary" or is referred to as "abnormal accruals".[59]

When measuring the quality of accruals researchers try to quantify the amount of abnormal accruals. The bigger the value of discretionary accruals the higher is the evidence of earnings management and the lower the accrual and earnings quality.[60] This is the basic setting of the often cited and further developed model of Jones (1991).[61] In this model, that is mainly used to measure the degree of earnings management, the discretionary part of total accruals is calculated through a comparison with the prior period and the elimination of exogenous factors, i.e. those that rather affect the whole industry rather than a single firm.

Dechow and Dichev (2002) developed one of the recently most used measures for accrual (and hence earnings) quality. They measure how much accruals succeed in filtering the volatility of cash flows. Their focus lies on working capital accruals and the influence of last, this, and next year's cash flows on them to include the different timing of receipt respectively disbursement of cash flows and their recognition in earnings. The accruals are measured through the change in working capital. They use the following equation: $\Delta WC_{i,t} = b_0 + b_1 \cdot CFO_{i,t-1} + b_2 \cdot CFO_{i,t} + b_3 \cdot CFO_{i,t+1} + \varepsilon_{i,t}$, i.e. the change in working capital in one period equals last, this, and next periods cash flows from operations plus an error term. Accrual estimation errors are depicted through the residuals of this regression. Finally, the standard deviation of these residuals $\sigma(\varepsilon_{i,t})$ is used as Dechow and Dichev's (2002, p. 36) "firm-specific measure of quality of accruals and earnings, where a higher standard deviation signifies lower quality." Through this measure intentional and unintentional estimation errors are not differentiated as Dechow and Dichev (2002) argue that both kinds of errors imply a

[59] Cf. Marnet, 2007, p. 199, and Wagenhofer & Dücker, 2007, pp. 274
[60] Cf. Aboody et al., 2005, p. 655
[61] E.g. Dechow et al. (1995), Francis et al. (2005), Aboody et al. (2005), Dechow & Schrand (2004)

low quality of accruals and earnings. So the difference between real errors and earnings management is left in the dark.[62]

In their paper Dechow and Dichev (2002, pp. 46) discover that accrual quality is negatively related to the absolute magnitude of accruals, the length of the operating cycle, loss incidence, and the standard deviation of sales, cash flows, accruals, and earnings, and it is positively related to firm size. Besides, they find a strong positive relation between accrual quality and earnings persistence.

Francis et al. (2005) study the link between accrual quality, which they measure through an adapted version of the Dechow and Dichev (2002) model, and the cost of capital. They use the quality of accruals as a proxy for information risk, i.e. "the likelihood that firm-specific information that is pertinent to investor pricing decisions is of poor quality"[63]. Additionally they split accruals into an "innate", i.e. reflecting the true underlying performance of the business, and a "discretionary" part. They find that the major portion of accruals is indeed innate and the pricing effect of this part is substantially higher. Therefore, investors react on the source of information risk and the quality of accruals.[64]

3.5 Earnings Management

The term earnings management is one of the most connected with earnings quality. It seems as much discussed as earnings quality itself. There are several reasons for this fact: First, it constitutes one of the influences on the quality of earnings. Second, it is one of the attributes of earnings, and finally, it is often used as an inverse measure of earnings quality. This strong connection is also acknowledged with the fact that most earnings attributes that are used to define earnings quality are used for the explanation of earnings management, too. For nearly each other earnings attribute in this chapter a reference to earnings management is included. What is inherent in all cases is the negative effect of earnings management on earnings quality.[65] It seems logical that highly managed earnings have low quality but to draw the inverse

[62] Cf. Wagenhofer & Dücker, 2007, pp. 274
[63] Francis et al., 2005, p. 296
[64] Cf. Francis et al., 2005, p. 321
[65] Cf. e.g. Kieso et al., 2004, pp. 126

conclusion is critical as the absence of earnings management does not cancel out other influential factors on earnings and their quality. Still, ceteris paribus, there is a strong connection between earnings management and earnings quality and thus, measures build on that.[66]

What exactly is earnings management? Two popular definitions[67] were given by Schipper (1989) and Healy and Wahlen (1999) in their reviews respectively commentaries on earnings management and the linked research:

- "By "earnings management" I really mean "disclosure management" in the sense of a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutral operation of the process)."[68]
- "Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers."[69]

The emphasis in both definitions lies with the intent of manipulation to show a "better picture" of the company or mask some flaws in the operations due to different reasons. Kieso et al. (2004, p. 126) also call earnings management "the planned timing of revenues, expenses, gains, and losses to smooth out bumps in earnings". Thus, earnings can be managed both, upwards and downwards depending on the desired effects.

Although fraud can be seen as the extreme version of earnings management it is usually not meant by researchers. Usually earnings management ranges in order of severity from within-GAAP choices that do not reflect the underlying company performance correctly to those that provoke a qualified audit opinion to SEC enforcement actions.[70]

Only very few argue towards earnings management. E.g. Arya et al. (2003, p. 111) advance the view that after a certain point increased transparency of financial reporting is not of advantage to shareholders anymore. They produce the argument that in extreme it equals the installment of monitoring cameras in offices, which –

[66] Cf. Lo, 2007, p. 2
[67] E.g. used by Dechow & Schrand (2004), Nelson et al. (2003), or Dechow & Skinner (2000)
[68] Schipper, 1989, p. 92
[69] Healy & Wahlen, 1999, p. 368
[70] Cf. Dechow & Skinner, 2000, Dechow et al., 1996, and Nelson et al., 2003

against initial intentions – does not increase but decreases performance. Their point seems to be made from a rather psychological angle.

Formally two forms of earnings management are differentiated. The first is the so-called real earnings management. It is the form that gets less attention from research and describes the manipulation of real transactions. Usually this kind of earnings management neither interferes with GAAP nor results in a qualified audit opinion.[71] Examples are channel stuffing respectively trade loading, where for instance high discounts are offered to consumers to make them buy more goods now rather than later. The outcome of these (mal)practices is that actual future revenues are booked today and financial statements are window dressed this way.[72] Overall, real earnings management includes the interference with other parties to make it work and hence, comes at quite more cost than the second form of earnings management, i.e. the manipulation of accruals through intended errors and misstatements. Although real earnings management is more costly and seems to involve more managerial effort as other parties are involved, there are studies suggesting that managers "prefer" real earnings management.[73] Lo (2007, p. 4) argues that they take the burden of higher cost in exchange for the fact that these manipulations are harder to detect. He reasons that while accounting standards are a benchmark that accountants and auditors are bound to[74] there are no concrete benchmarks for all existing and upcoming business situations and the "business judgment rule" is widely adjustable. Still, researchers rather deal with the management of accruals. As Dechow and Schrand (2004, p. 40) explain it: "In this method, the company does not change its activities but, rather, opportunistically reports income for an existing activity." So, management uses their room to maneuver in a discretionary way. They benefit from the fact that in accrual accounting forecasts, estimates, and judgments have to be used and thus can be misused.[75] This reduces the information of financial reporting and adds to the so-called opacity of earnings.[76]

[71] Cf. Dechow & Schrand, 2004, p. 39
[72] Cf. Kieso et al., 2004, p. 907
[73] Cf. Lo, 2007, p. 4
[74] This fits with the hypothesis of Barton and Simko (2002) that earnings management is actually limited through the balance sheet.
[75] Cf. Dechow & Schrand, 2004, p. 40
[76] Cf. Wagenhofer & Dücker, 2007, p. 275

A wide variety of possibilities to manage earnings exists and they have been of high concern to regulators since quite some years. An American study by Nelson et al. (2003)[77] shows that earnings management is attempted within all parts of annual accounts with the "manipulation through revenue recognition" appearing narrowly the most. In all categories the attempt to increase current period income is highest.

In his famous speech "The numbers game" in 1998 Arthur Levitt, chairman of the United States Securities and Exchange Commission from 1993 to 2001, identified five popular illusions that are created by earnings management and quite frequently stated in the financial press and related research:

- "Big bath" charges – overestimated charges associated with companies restructuring their business.
- Creative acquisition accounting – e.g. the abnormal creation of big one-time-charges or liabilities in the process of a consolidation, acquisition, or spin-off.
- "Cookie jar reserves" – overstatement of liabilities during "good years" to smooth out earnings through reversing the so created accruals during "bad years".
- Materiality – intentional recording of errors up to a certain percentage with the argument that their impact on earnings is to small to matter[78].
- Revenue recognition – namely boosting earnings through the premature recognition of revenue.

All these illusions are created as earnings management misuses the flexibility in accounting that gives it the possibility to keep up with the business environment.[79]

As descriptive as earnings management definitions seem to be, they are hard to quantify empirically. This is also due to the fact that earnings management is more efficient the harder it is to discover. Therefore, research does not only focus on accrual earnings management, but also on some "easier" factors, that are said to describe a shape of earnings management. Into this category fall most of the other characterized earnings attributes as well as some further measures.

[77] They present a sample of 515 earnings management attempts identified through 253 auditors.
[78] Cho et al. (2003) show that the users' tolerance of financial statement errors (in the sense of misuse of materiality) is equal and below 0.3 percent, which lies way below the "materiality ceiling of six percent earnings" which was heavily criticized by Levitt (1998, p. 5)
[79] Cf. Levitt, 1998, pp. 3

Auer (2004, pp. 256) gives an example of one of those rather simple ratios. He actually defines earnings quality as the ratio of operative cash flows and earnings, i.e. $\frac{CFO_{i,t}}{X_{i,t}}$. Ignoring the possibility of real earnings management, he considers cash flows as a number of insusceptible control. Thus, the lower the ratio is the higher the executed earnings management. Another ratio compares the absolute values of accruals and cash flows: $\frac{|A_{i,t}|}{|CFO_{i,t}|}$. The higher the value of this measure the higher is the degree of earnings management.[80]

Alternative Methods focus on accruals trying to partition them in normal $NA_{i,t}$ and discretionary accruals $DA_{i,t}$, i.e. $A_{i,t} = NA_{i,t} + DA_{i,t}$. A basic approach was formulated by Jones (1991) which was complemented and expanded over the years.[81] The consideration behind it is that the magnitude of discretionary, thus manipulated, accruals in comparison with total assets shows the degree of earnings management.[82]

There is also the possibility of measuring earnings management through the meeting/beating of forecasts or special benchmarks and loss avoidance. Small earnings surprises are measured e.g. by Barton and Simko (2002). Not at last with this way of measurement it becomes clear that empirically the difference between favorable earnings attributes, such as predictability or smoothness, and earnings management is quite a hard one to make. Managers try everything to reach these attributes, including manipulation of earnings, to satisfy the environment's expectations. It is the vicious cycle that earnings management creates. Levitt (1998, pp. 2) describes it strikingly:

"... companies try to meet or beat Wall Street earnings projections in order to grow market capitalization and increase the value of stock options. Their ability to do this depends on achieving the earnings expectations of analysts. And analysts seek constant guidance from companies to frame those expectations. Auditors, who want to retain their clients, are under pressure not to stand in the way."

This corresponds to the reasons explained in Section 3.2 why several well-known listed companies stopped providing earnings guidance. With the meeting of capital

[80] Cf. Wagenhofer & Dücker, 2007, p. 276
[81] See also Section 3.4
[82] Cf. Wagenhofer & Dücker, 2007, pp. 276

market expectations and valuations an important cause and motive for earnings management was already described. Others, as identified e.g. by Healy and Wahlen (1999), Dechow and Skinner (2000), Schipper (1989), include contracts on the basis of accounting numbers (management compensation and lending contracts), and government regulations.

3.6 Timeliness

Timely recognition of earnings means that if the performance or value of a company changes it should be quickly seen in earnings. The closer the recognition of events the better it is in terms of earnings' timeliness. It enhances the decision usefulness of financial reporting as financial statement users have the latest numbers and news on hands and thus, earnings quality is improved, too. Through timely income statement recognition variables and ratios based on the financial reporting are also revised and updated in a timely fashion. Timeliness also refers to the fact that accounting earnings are initially intended to measure economic income.[83]

Research shows that bad news is mostly recognized quicker than good news. So the timeliness of bad news in earnings is higher.[84] The obvious reason for this seems to be conservatism as the faster recognition of losses and write-down of assets is a key point of it. A lower verification standard is required for the booking of decreases in income, i.e. losses, than increases, i.e. gains.[85] Further research of Shaw (2003, p. 1050) provides evidence that this asymmetry in the timeliness of earnings is only shown to the news by firms with lower-quality disclosures while it does not occur with high-quality disclosure firms.

Together with conservatism timeliness forms the concept of transparency of earnings and financial reporting, which is logically seen as a favorable attribute of earnings.[86] Putting conservatism, which is one cause for the asymmetric recognition of earnings,

[83] Cf. Wagenhofer & Dücker, 2007, p. 277, Francis et al., 2004, p. 972, and Ball & Shivakumar, 2005, pp. 84
[84] Cf. e.g. Basu, 1997, or Watts, 2003a&b
[85] Cf. Ball & Shivakumar., 2005, pp. 86, and Basu, 1997, pp. 4
[86] Cf. Francis et al. 2004, p. 973, and Ball et al., 2000, p. 2

into the concept of transparency seems a bit strange at first, but Ball et al. (2000, p. 2) explain it this way:

"In comparison with a system that allows economic losses to be reflected in accounting income gradually over time, timely incorporation of economic losses in accounting income incents managers to stem the losses more quickly. Because accounting income flows into balance sheet accounts, conservatism as we define it also makes leverage and dividend restrictions binding more quickly. It makes optimistic non-accounting information released by managers less credible to uninformed users. Conservative accounting thus facilitates monitoring of managers and of debt and other contracts, and is an important feature of corporate governance."

To measure timeliness a reference number is needed, for which stock returns are usually used. As so often this reference depends on the fact that capital markets are (close to) perfect and stock returns equal the economic income. The coefficient of determination R^2 of the following reverse regression equation measures earnings' timeliness: $\frac{X_{i,t}}{P_{i,t-1}} = \alpha + \beta \cdot R_{i,t} + \varepsilon_{i,t}$. The ratio of earnings $X_{i,t}$ and market capitalization $P_{i,t-1}$ equals stock returns $R_{i,t}$ and an error term $\varepsilon_{i,t}$. The higher the explanatory power R^2 of the equation is the better the timeliness of earnings and hence, their quality.[87]

3.7 Conservatism

Defining conservatism in accounting is not easy. Although there are many indicators for this practice definitions vary in their articulateness and focus. Still, it has a central role in accounting theory, research and practice.

Ball and Shivakumar (2005, pp. 89) explain the existence of two versions of conservatism, conditional and unconditional. The first is a "bias conditional on firms experiencing contemporaneous economic losses"[88]. The other one refers to the reporting of low book values of stockholder equity – through the understatement of assets, the overstatement of liabilities, or both. The latter is independent from the actual earnings number of the period. They also see it connected to the German (and also Austrian) "Vorsichtsprinzip" (prudence principle) which justifies the

[87] Cf. Francis et al., 2004, pp. 972, and Wagenhofer & Dücker, 2007, pp. 277
[88] Ball & Shivakumar., 2005, p. 89

unconditional carrying out of conservative accounting principles. Along these lines the asymmetric recognition of losses and gains is usually portrayed as conditional, the understatement of book values – independent of this asymmetry – as unconditional conservatism.[89]

Generally speaking conservative accounting means that if there is doubt the smaller value for an asset should be taken.[90] If there is uncertainty how much an asset is worth, maybe it is better to expense the costs instead of putting something on the balance sheet that is not reliable. So, accounting methods are chosen "that keep book values of net assets relatively low."[91] Usually conservative accounting leads to an understatement of book values compared to their real value.[92] It is also characterized by the anticipation of all losses, but not of profits. Losses are therefore faster recognized than gains.[93] This leads to the asymmetric timeliness of earnings described in Section 3.6.

Liberal accounting on the contrary refers to the writing up of assets, so that it represents the opposite to conservative accounting. The line between these two concepts is drawn by the so-called neutral accounting. It results in expected returns on equity which equal the internal rate of return. Therefore the residual income becomes zero if the investment does not add value. This, however, cannot be said of liberal or conservative accounting. They both bias future profitability: liberality lowers, conservatism increases it. [94]

At a first glance, conservatism might seem preferable over liberal accounting. If assets are understated and liabilities are overstated, it makes the company look poorer than it actually is, but one can also see it as hidden potential. If the economic situation gets rougher it still has some reserves. With liberal accounting the company might try to show its future potential, but the creation of bubbles that the firm cannot live up to is possible as well.

[89] Cf. Beaver & Ryan, 2005, pp. 269, and Brown, Jr. et al., 2006, p. 607
[90] Cf. Kieso et al., 2004, p. 46
[91] Penman & Zhang, 2002, p. 238
[92] Cf. Penman, 2004, p. 48
[93] Cf. Watts, 2003a, p. 208
[94] Cf. Penman, 2004, p. 561

At a second glance, conservatism simply stays what it is: a caution concept. Kieso et al. (2004, pp. 43) define conservatism as one of the constraints in the recognition and measurement concepts of financial reporting and therefore accounting:

"Few conventions in accounting are as misunderstood as the constraint of conservatism. Conservatism means when in doubt choose the solution that will be least likely to overstate assets and income. Note that there is nothing in the conservatism convention urging that net assets or net income be understated. Unfortunately it has been interpreted by some to mean just that. [...] If the issue is in doubt, it is better to understate than overstate net income and net assets. Of course, if there is no doubt, there is no need to apply this constraint."[95]

If there is doubt, caution and therefore conservatism help protect investors from false information and hope, present a company in the right way and give guidelines for managers, e.g. the lower-of-cost-or-market approach in valuing inventories.[96] But without doubt, when there is actually no need for caution, using the "emergency"-rules of conservatism reduce the decision usefulness of financial statements in masking true firm performance. So the understatement of net assets – which according to Kieso et al. (2004) should not emerge from conservatism – does exist due to these principles. That is what makes conservatism such a controversial topic.

This is also true in the context with earnings quality. On the one hand conservatism restricts the numbers on the balance sheet to be reliable and not overstated which is good for the quality of earnings. On the other hand – through the convenient practical misinterpretation of the concept and the usage without doubt but as well through the fact that there have to be estimations of dangers and losses, which tend to include estimation errors – it favors earnings management e.g. in the creation of "cookie-jar-reserves" or makes the practice of "big baths" easier. Those two "concepts" were also described by Levitt (1998, pp. 3) as the illusions created by earnings management. He especially brought big bath charges in connection with conservatism. Therefore conservatism is often seen as unfavorable in the earnings-quality-debate as the accounting information can get asymmetric and distorted[97] and it is often related with respectively stated as an incentive for earnings management[98].

[95] Kieso et al., 2004, p. 46
[96] Cf. Kieso et al., 2004, p. 46
[97] Cf. Wagenhofer & Dücker, 2007, p. 278
[98] Cf. Abdelghany, 2005, pp. 1006

On the contrast Wagenhofer and Dücker (2007, p. 279) state that empirically caution respectively conservatism is associated with higher earnings quality as it leads to a more timely recognition of information at least for "unfavorable numbers". During the tests they carried out in the second part of their paper, they used conservatism as a positive influence on earnings quality. Ball and Shivakumar (2008) consider conservatively formed earnings of high-quality as well. Another argument in favor of conservatism is that the asymmetric recognition is basically what the public asks for, because managers rather release information about positive numbers, hence, there need to be principles to ensure that losses are likewise recorded.[99]

Watts (2003a) gives four reasons for conservatism in accounting all of which suggest that financial statement users are benefiting of it:

- The first explanation is contracting where conservatism helps to solve the problems due to the existence of asymmetric information, asymmetric payoffs and limited liability. The reasoning is based on debt and executive compensation contracts. For the first, conservatism creates a reliable lower bound value, for instance of net assets, for lenders and for the latter, it reduces agency cost that occur through the moral-hazard-situation of such contracts.
- A company with understated net assets is less likely to face litigation costs than one with overstated net assets as the possibility of a successful suit seems smaller if the company "looks poorer".
- Through the faster recognition of losses the present value of taxes can be reduced, because the present value of taxable income is reduced, too. This is due to the strong link between tax and commercial law.
- The political costs for standard setters and regulators are smaller with conservatism, as they are blamed if companies overstate their net assets and thus create stock market bubbles and the like.

According to research the first two explanations are the strongest, but all are possible. Time-series evidence suggests that conservatism rose over time. A reason of this rise could be that the more conservatism explanations "kicked-in" over time. It started with contracting; then came taxes, regulation and finally litigation.[100]

[99] Ball & Shivakumar, 2005, p. 88
[100] Cf. Watts, 2003b, pp. 291

In the attempt of measuring conservatism researchers developed three types of measures, all of which tend to either emphasize the extent to which earnings are asymmetrically deferred or the extent to which net assets are understated. They are either based on the relation between earnings and stock returns, on net assets, or earnings and accruals.[101]

Francis et al. (2004) use stock returns – with a focus on the negative returns – as a reference construct for conservatism. Their measure is based on Basu's (1997) widely-used equation which focuses on the different sensitivity of earnings per share to positive and negative returns, i.e. "earnings response coefficients (ERCs) are higher for positive earnings changes than for negative earnings changes"[102]. It includes a binary dummy variable $D_{i,t}$ which indicates whether returns are positive or negative, i.e. $D_{i,t} = 0$ when $R_{i,t} \geq 0$ and $D_{i,t} = 1$ when $R_{i,t} < 0$. The other variables are the same as used in the measure/equation for timeliness of Section 3.6: $\frac{X_{i,t}}{P_{i,t-1}} = \alpha_0 + \alpha_1 \cdot D_{i,t} + \beta_1 \cdot R_{i,t} + \beta_2 \cdot D_{i,t} \cdot R_{i,t} + \varepsilon_{i,t}$. The coefficient β_1 shows earnings' sensitivity towards positive returns, $(\beta_1 + \beta_2)$ towards negative returns. The degree of conditional conservatism, i.e. the difference in sensitivity of earnings between negative and positive returns, is measured through β_2, where a higher number signals more (conditional) conservatism. For the same matter the relation of the two coefficients $\frac{(\beta_1 + \beta_2)}{\beta_1}$ is used, too.[103]

Zhang (2008, pp. 32) uses three further approaches to measure conservatism: the explanatory power of negative returns relative to the one of positive returns of the before cited equation, the time-series skewness of earnings, where conservatism causes a negative skewness of earnings, and accumulated non-operating accruals deflated by accumulated total assets, which summarizes the recording of bad news. The latter is consistent with Givoly and Hayn's (2000, p. 292) use of "the sign and magnitude of accumulated accruals over time" to measure conservatism.

[101] Cf. Watts, 2003b, pp. 288
[102] Basu, 1997, p. 3
[103] Cf. Wagenhofer & Dücker, 2007, p. 278, and Givoly et al, 2007, pp. 68

Unconditional conservatism is usually measured through book-to-market ratios to see if respectively how much book values are understated.[104] For example Rajan et al. (2007) quantify conservatism this way. They define a conservative depreciation schedule in which the depreciation rate for each year is bigger than one that would be used with neutral accounting. Market values are being used as benchmarks for neutral accounting values.

3.8 Value Relevance

"Value relevance is the degree to which accounting earnings summarize information impounded in market prices. It is generally agreed upon that the greater the value relevance of earnings, the more useful it is for market participants when making investment decisions."[105]

Value relevant earnings are able to explain variations in returns. The better they are at explaining them the more desirable this attribute is for earnings.[106] It also enhances the decision usefulness of earnings and captures the two accounting qualities of relevance and reliability, which are defined as most important by the FASB.[107]

The interplay of relevance and reliability is described as follows[108]: There are many items that are necessary for a company and would be relevant to be put on the balance sheet, for instance brand equity, human capital or research and development expenses. No firm could function without its employees; they actually represent an asset to the company. The same can be said of R&D expenses. A company such as Microsoft could not survive in the future if they do not invest in R&D. So both R&D and human capital would be relevant information to be put on the balance sheet. – But this imposes the question of measurement and therefore reliability: How exactly can the worth of people for a company or the benefit of R&D be valued? What would the depreciation rate of these assets be? Although it is out of question that there is a benefit for the company, it is hard to quantify. So this leads back to the conservative principles used in accounting: "…when in doubt choose the solution that will be least

[104] Cf. Brown, Jr. et al., 2006, p. 615
[105] Brown, Jr. et al., 2006, p. 607
[106] Cf. Francis et al., 2004, p. 972
[107] Cf. Francis et al., 2004, p. 972, and Entwistle & Phillips, 2003, p.85
[108] Cf. Entwistle & Phillips, 2003

likely to overstate assets and income."[109] So even if the information would be relevant for the valuation of the firm and its potential, the numbers need to be reliable or they should not be put on the balance sheet. The more value relevant earnings are the more reliable and relevant they are at the same time, so that there need not be a trade-off between those two primary accounting qualities.

When measuring value relevance two approaches are possible: portfolio-returns and regression variation. With the first it is measured through "the total return that could be earned from a portfolio based on perfect foreknowledge of [accounting] earnings adjusted for market effects."[110] Hedge portfolios are formed on the foreknowledge in the change of earnings per share and of returns, their returns are pooled and the value relevance measure is calculated with the mean of the earnings-based portfolio scaled by the mean of the returns-based portfolio. The higher this number is the more value relevant are earnings.[111]

For measuring value relevance through the regression variation a reference construct is necessary. As with timeliness and conservatism stock returns are usually used for this matter. The association between stock returns and earnings is estimated as follows: $R_{i,t} = \alpha + \beta \cdot \frac{X_{i,t}}{P_{i,t-1}} + \varepsilon_{i,t}$. It is simply the inverse equation of the measure of timeliness. Alternatively, the equation also includes the year's change in earnings $\Delta X_{i,t}$: $R_{i,t} = \alpha + \beta_1 \cdot \frac{X_{i,t}}{P_{i,t-1}} + \beta_2 \cdot \frac{\Delta X_{i,t}}{P_{i,t-1}} + \varepsilon_{i,t}$. Again, the higher the explanatory power R^2 of these equations is the higher is the earnings' value relevance. The effect on earnings quality is a good one, too, as a high correlation between earnings and the market price is seen as desirable. The coefficient β is known as the earnings response coefficient, i.e. it measures how much investors react to earnings numbers.[112]

[109] Kieso et al., 2004, p. 46
[110] Brown, Jr. et al., 2006, p. 611
[111] Cf. ibid
[112] Cf. Wagenhofer & Dücker, 2007, pp. 279 and Francis et al., 2004, p. 981

3.9 International Properties of Earnings Attributes

There are several studies, of which a few are presented here, that examine international variations of earnings attributes due to different factors. The connection of earnings quality, represented through various earnings attributes, with the political-economical influence on accounting (e.g. law system, investor protection) and accounting systems is tested.

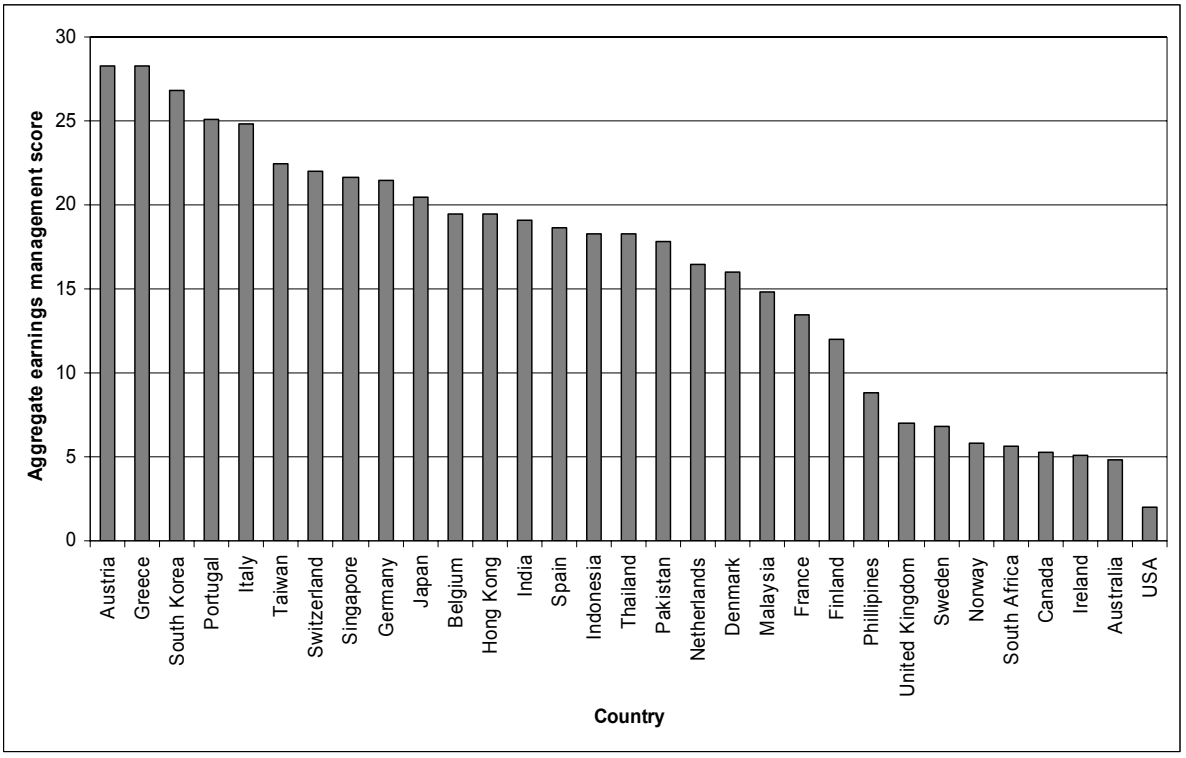

Table 3: International Earnings Management

Data source: Leuz et al., 2003, pp. 514

Leuz et al. (2003) carried out one of the most cited studies on earnings management. They connect its emergence with three country clusters that are grouped through the kind of ownership of companies, the investor protection, and the development of stock markets. To measure earnings management they use the smoothness of earnings, through the two ratios described in Section 3.3, the magnitude of accruals and small loss avoidance. Thirty-one countries with financial data from 1990 to 1999 were included in the study. They find "that outsider economies with relatively dispersed ownership, strong investor protection, and large stock markets exhibit lower levels of earnings management than insider countries with relatively

concentrated ownership, weak investor protection, and less developed stock markets."[113] The magnitude of earnings management per country is shown in Table 2. It is interesting to notice that among the "Top Ten" nine of ten countries have a code-law tradition and all six included countries with a German legal origin can be found in the middle of them.[114]

Boonlert-U-Thai et al. (2006) also relate earnings quality to investor protection. They tested data from thirty-one countries of the time-period between 1994 and 2003. Their hypothesis is that the better the investor protection in a country the higher is the earnings quality there. This is measured through the time-series earnings attributes of persistence, predictability and smoothness, and the quality of accruals. They find that earnings are less smooth in countries with low investor protection, but for the attributes of accrual quality and predictability their findings are inconsistent with their hypothesis and they cannot find a conclusion at all for persistence.

Ball et al. (2000) measure earnings quality through timeliness and conservatism in common- and code-law countries. They explore the data from seven countries in the period from 1985 to 1995. Their analysis implies that although e.g. German accounting (as an example for a code-law country) is said to be more conservative than e.g. American accounting, the income in common-law countries exhibits significantly greater timeliness in the sense of conservatism. Watts (2003b, p. 293) explains this finding such that information asymmetries are solved privately within the firm without the use of external contracts in code-law countries.

Finally, Van der Meulen et al. (2007) explore the differences of earnings attributes between the two accounting principles of U.S. GAAP and IFRS. They analyze value relevance, timeliness, predictability and accruals quality in this context and find no significant difference except for predictability being better for U.S. GAAP earnings. As they use a specific sample of high-growth firms in a period of economic downturn, their findings might not fully represent the average U.S. GAAP respectively IFRS adopter.

[113] Leuz et al., 2003, p. 525
[114] Cf. Leuz et al., 2003, pp. 516

So, even though accounting systems are said to become more alike through international accounting standards[115] and globalization seems to make the world "one village", significant differences among countries and country clusters remain. For instance, disparities emerge because the focus of American standard setters lies on the protection and "support" of shareholders/investors while the German (commercial) law is dominated by the idea of creditor protection.[116] This is also reflected in the differences of international properties of earnings attributes.

[115] Cf. Land & Lang, 2002
[116] Cf. Küting & Weber, 2004, p. 549

4 Critical Considerations on Earnings Attributes

After describing eight earnings attributes, ways to measure them and their international differences in the previous chapter, these characteristics of earnings are now critically analyzed through the calculation of cash flow examples. Additionally, the difficulties of empirical studies are shown and some further considerations are made.

4.1 Cash Flow Examples

The setting used for these examples is the "world of classical economics"[117] with certainty and perfect markets. These are "daunting, unrealistic assumptions"[118], but they are useful to get an idea how earnings attributes work and what they imply. Through simple cash flow examples considerations when earnings attributes are perfectly definitive/distinctive in this setting are presented.

A cash flow is given for three periods, $T = 3$ and earnings are formed in deducting depreciation from the cash flows in every period, i.e. $X_t = CF_t - D_t$, $\forall t$. Depreciation forms the only difference between earnings and cash flows and hence, constitutes the accrual component in the equation. Cash flows are exogenously given and occur in three types: steady (only with no interest), increasing, and decreasing. Due to perfect markets – which imply perfect competition – the present value of cash flows is zero.[119] The examples are calculated with straight line, degressive and progressive depreciation. The scenario is completed in using no interest first and an interest of ten percent second.

Now, when are earnings attributes perfect in this setting?

- Persistence: Taking the equation from Section 3.1 the error terms can be ignored due to the setting of certainty and so $X_{t+1} = \alpha + \beta \cdot X_t$. Earnings are perfectly persistent when β is one. In this case α equals the difference between X_1 and

[117] Christensen & Demski, 2003, p. 34
[118] ibid
[119] Cf. Christensen & Demski, 2003, p. 38

X_2, so that over time earnings grow steadily by this amount. Without thinking of the before used equations, one can also speak of perfectly persistent earnings if they stay exactly the same over time, i.e. $X_1 = X_2 = X_3$. In this case α is zero. One can argue that β is still one, but as it is no straight line anymore but rather only one steady point in the co-ordinate system a calculation of the slope coefficient causes a division through zero. So, it can be concluded that persistence is not captured perfectly through the regression equation.

- Predictability: As predictability depends – logically and as expressed in Section 3.2 – on persistence, it can be said, that if earnings are perfectly persistent they are likewise perfectly predictable. Using the regression, if β is one the explanatory power R^2 equals one, too. The same is true if earnings are completely invariable over time, e.g. (10, 10, 10), as described above.
- Volatility/Smoothness: Earnings would be smoothest if there is no change in earnings at all. This occurs when all earnings are equal, i.e. $X_1 = X_2 = X_3$.
- Quality of accruals: In this setting depreciation is the only accrual. As the function of accruals is to correctly match costs with revenues, the depreciation needs to somewhat fit the cash flow time-line. This is the case with the so called economic depreciation which forms the change in (present) value, i.e. $ED_t = PV_{t-1} - PV_t$.[120] The economic depreciation represents the relative-benefit-cost-allocation rule. Logically, the economic depreciation is present value preserving. This only fits with the clean surplus condition – which at this level means that the cumulative depreciation has to equal the initial book value – because the perfect market/competition assumption implies a present value of the project of zero.
- Earnings Management: At its best, earnings management simply does not exist. Real earnings management can be excluded here as the cash flows are exogenously given. Still, the target of earnings management is difficult to assess and therefore it will be factored out for the examples.
- Timeliness & Value Relevance: Both attributes consider the closeness to the (stock) market. Additionally to the fact, that they both have the same target, timeliness somewhat implies value relevance; if items are not value relevant there is no need for timeliness in their consideration. The more timely and value relevant earnings are the closer they are to their market value. In this setting this

[120] Cf. Christensen & Demski, 2003, p. 39

market value and therefore perfectly timely and value relevant earnings equal economic income, i.e. $X_t = EI_t, \ \forall t$. This assumption fits well with Schipper and Vincent's (2003) definition, that the earnings quality is the highest when earnings depict economic income, i.e. Hicksian income in their terminology. In the "normal" world economic income is an unobservable concept[121] but in this setting it is a quantifiable measure. Economic income is defined as the difference in value between this period and the previous one plus this period's cash flow, i.e. $EI_t = PV_t - PV_{t-1} + CF_t$ with PV_t being the present value of the project at the point of time *t*.[122]

- Conservatism: Given the contrasting views on conservatism it is hard to say what perfectly conservative earnings look like. Taking the approach of Rajan et al. (2007) conservative earnings are determined through the fact that the underlying book values are all lower than those created through neutral accounting respectively the depreciation for each period is higher than the corresponding "neutral" one, i.e. $B_t < PV_t$ resp. $D_t > ED_t, \ \forall t$. In this setting the properties of neutral accounting can be identified through the economic income, because that way all book values equal the present value of the project at this point in time (as required by Rajan et al.). Other measures of conservatism focus on the asymmetric timeliness of earnings through the anticipation of losses. While Rajan et al.'s (2007) focus on unconditional conservatism, these concepts assess conditional conservatism. The latter requires a specific reaction or change in policy, e.g. an extraordinary depreciation, due to losses.[123] As the form of depreciation is seen as given here, there are no such reactionary changes and thus conditional conservatism can not be depicted in the setting used.

Without doing any examples yet, one can see that in their perfect distinctiveness, the time-series earnings attributes work out at the same time, at least in one direction: If earnings are perfectly smooth, they are perfectly persistent and thus predictable as well. The other way round earnings are always perfectly predictable if they are persistent, but the volatility/smoothness depends on α and is only perfect if α equals zero.

[121] Cf. Schipper & Vincent, 2003, p. 98
[122] Cf. Christensen & Demski, 2003, pp. 38
[123] Cf. Beaver & Ryan, 2005, pp. 269

Due to the way of definition timeliness and value relevance – which are characterized through the same target – always arise in pairs. When concluding that the quality of accruals is the highest here if economic depreciation is used, it also works with timeliness and value relevance.

While for conservatism no ad-hoc-connection with the time-series earnings attributes can be found, it is for sure that it will not occur together with perfectly timely and value relevant earnings as well as perfect accruals: Timeliness and value relevance are presented through the market value equivalent of economic income and therefore neutral accounting. Hence, conservatism differs conceptually from them as it is explicitly defined through its deviation from neutral accounting.[124] Although conditional conservatism cannot be depicted here, it still can be said, that for perfectly timely earnings it does not exist as conditional conservatism refers to the asymmetric timeliness of earnings.

t	0	1	2	3	t	0	1	2	3	t	0	1	2	3
CF_t	-300	100	100	100	CF_t	-300	50	100	150	CF_t	-300	150	100	50
D_t	0	-100	-100	-100	D_t	0	-50	-100	-150	D_t	0	-150	-100	-50
ED_t	0	-100	-100	-100	ED_t	0	-50	-100	-150	ED_t	0	-150	-100	-50
B_t	300	200	100	0	B_t	300	250	150	0	B_t	300	150	50	0
PV_t	300	200	100	0	PV_t	300	250	150	0	PV_t	300	150	50	0
X_t	0	0	0	0	X_t	0	0	0	0	X_t	0	0	0	0
EI_t	0	0	0	0	EI_t	0	0	0	0	EI_t	0	0	0	0

Table 4: Examples where six earnings attributes are perfectly fulfilled at once [125]

The examples show that six earnings attributes are perfectly valid at once for one scenario respectively three cases. - Namely when there is no interest and cash flows fit exactly with the used depreciation, i.e. it completely "cancels out" cash flows so that earnings are (like economic income) all equally zero. Put in other words, the growth parameters of the cash flows and the depreciation are equal. Logically, this is the case for steady cash flows with straight line depreciation, increasing cash flows with progressive depreciation, and decreasing cash flows with degressive depreciation. For these three examples (as shown in Table 4) earnings are perfectly smooth, persistent, and predictable, because $X_t = 0,\ \forall t$; perfectly timely and value

[124] Cf. Rajan et al., 2007
[125] All 18 calculated examples can be found in the appendix.

relevant due to the fact, that $X_t = EI_t, \ \forall t$; and finally, the depreciation has the perfect accrual quality as $D_t = ED_t, \ \forall t$. All book values equal the present value of the project at this point in time, so according to Rajan et al. (2007) neutral accounting is used and thus, earnings are not conservative.

For none of the other examples can a case where those earnings attributes are perfectly fulfilled at once be observed. When determining the best solutions for the examples with an interest rate of ten percent, i.e. where the different earnings attributes were closest to perfect, no concentration can be detected. Logically, those attributes that occur together already by definition do not differentiate. For instance, high quality accruals as well as timely and value relevant earnings always go together. Smoothness as does persistence (and predictability) "follows" them in two out of three cases. Together smoothness and persistence appear in only one of three examples. Following the definition of Rajan et al. (2007), conservatism is present in two of the three examples, where the density of well fulfilled earnings attributes is the highest.

When thinking further it is obvious that smooth, persistent, and predictable earnings depend very much on the depreciation used and how well it fits with the occurring cash flows. The growth parameters of cash flows and depreciation need to be equal to get highly persistent and predictable earnings. Depreciation would have to be selected separately for each project and asset to fulfil this criterion. Such complete flexibility cannot be allowed with generally accepted accounting principles and thus, earnings management seems the last resource to achieve these attributes. This is assisted through the fact that real markets are not perfect. Hence, usually the present value of a project is unequal to zero and an economic depreciation would violate the clean surplus condition. So, virtual depreciation can always only be suboptimal. If stakeholders see persistent, predictable, and smooth earnings as desirable and the possibility that allowed depreciation methods fit exactly with the company's projects and assets are low, little manipulations of those anyway suboptimal numbers hardly stand out and might help to meet the market's expectations. Suboptimality is also a problem for the attributes of timeliness and value relevance. Their optimum, economic income, is unobservable in reality – as e.g. Schipper and Vincent (2003) point out.

In eighteen cases, book values are nine times conservative, six times liberal and thrice neutral.[126] This has to do with the choice of cash flows and the fit between their growth parameters and the ones of the three depreciation methods used. It cannot be seen as a proof of any kind that accounting is conservative for the better part. For the best solutions with interest the smoothest earnings always occurred with conservatism, for all other attributes it was twice out of three times. So even in this setting conservatism stays an ambivalent topic, where it can be said that conservatism helps to artificially smooth out earnings but help them get closer to economic income as well.

The earnings attributes only worked perfectly together for the cases of neutral accounting, which would strengthen standard setter's recent view to prefer fair value accounting. But this only fits for a perfect market with no interest, i.e. a completely unrealistic setting. In none of the cases with interest economic income (and thus neutral accounting) fit with regular earnings. So, if it does not work out in a perfect world there is no sense in building rules on it in reality.

4.2 Difficulties of Empirical Studies

Most evidence and ideas on earnings quality that were presented so far are based on different empirical studies on the topic. The measurements and equations for the eight earnings attributes described in Chapter 3 were developed for this purpose. Due to different hypotheses often more than one way to measure an earnings characteristic was found.

One of the biggest assumptions affects all market-based attributes. For timeliness, conservatism, and value relevance stock markets are used as reference constructs. Even though researchers are aware of the fact that today's stock markets are not perfect they use them to gauge constructs like economic income that depend on this assumption. Additionally, through the cash flow examples of the previous section it was seen how inseparable economic income, economic depreciation and the likes are from perfect markets. As soon as present value does not equal zero anymore these constructs are out of reach when accounting properly according to the rules of GAAP.

[126] Defined through the method used by Rajan et al. (2007)

Although the argument is fair, that yet no better benchmark was discovered than stock markets for this purpose, drastically put, "correlation with returns is, in part, correlation with changes in speculative beliefs."[127] Thus, it has to stay in mind that the comparison with stock markets for the market-based attributes is problematic and causes these characteristics to loose in significance.

In reaction to the not perfect markets assumptions on the best shape of earnings attributes have to be made. The difficulty here is that those hypotheses are hard to check. Researchers do carry out robustness checks for their variables and hence, try to control for other explanations than those they got due to their assumptions. They point out themselves that they cannot be sure if all possibilities were controlled for. The impact of the many different influences on earnings attributes is not well enough explored and especially in cross-country comparisons difficulties arise.[128] For instance Leuz et al. (2003, p.526) consider the complexity of institutional factors and their interdependence as a possible heaviness in their study.

The choice of measures, samples and time-periods forms another difficulty of empirical studies. Although they are based on the same concept different measures for one earnings attribute exist and their outcome varies empirically. For instance Wagenhofer and Dücker (2007, p. 293) point out that there two used measures for volatility expand in opposite directions. Additionally, capturing whole accounting concepts like accruals is not easy. Only proxies can be developed, which then can cause the variations in outcome. Furthermore, the outcome of all empirical studies logically also depends on the sample used.[129] Another problem is the chose time-period. Schipper and Vincent (2003, p.100) state that even for the widely used one-year-ahead predictions no conceptual basis exists. All this makes the outcomes of different studies pretty ambiguous.

4.3 Further Considerations

As the definitions of earnings quality differ widely it is hard to operationalize them. The usage of earnings attributes tries to solve this problem and gives a possibility of

[127] Penman, 2003, p. 89
[128] Cf. Boonlert-U-Thai et al., 2006, p. 354
[129] Cf. Wagenhofer & Dücker, 2007, pp. 282

measuring earnings quality – at least to some degree. An important flaw is the difficulty in distinguishing between positive and negative influences of the attributes on earnings quality. Seen in a positive light the fulfilment of an earnings characteristic stands for the enhanced decision usefulness of earnings. But then this meeting of the desired outcome can always be seen as a consequence of earnings management.[130] This is due to the complexity of earnings management and compounded through the fact that all other attributes are used to assess the degree of earnings management or to find out about the incentives for it. So the downside of every other earnings attribute is always – as it was mentioned in Chapter 3 – its possibility to only be an outcome of the manipulation of earnings.

Furthermore, there are some attribute "clusters", where the earnings characteristics point by definition in the same direction and their measures are based on the same equations. This was also seen in the previous section, where in their perfect outcome some attributes have the same target, so that they appear in pairs. Examples are persistence and predictability as well as timeliness and value relevance. Consequential, (strong) correlations between the different earnings attributes are highly probable and have to be considered in the construction of an aggregated earnings quality measure.[131]

Wagenhofer and Dücker (2007, pp. 282) investigate those correlations among the earnings attributes described in Chapter 3 for a sample of 148 Austrian stock exchange listed companies from 1996 to 2005. They find that theoretical suggested connections often do not hold in the empirical analysis as they seem to depend very much on the sample. Among the significant correlations predictability is quite interesting. It is pictured through two different measures and while the predictability of earnings for earnings is positively correlated with persistence the predictability of earnings for cash flows is negatively correlated. Volatility is negatively correlated with predictability and conservatism. In total there are only five out of twenty-eight correlations that are statistically significant with value relevance and the quality of accruals not being significantly correlated with any other attributes. As they point out themselves, their results do not only differ from theory but other empirical findings.

[130] Cf. Wagenhofer & Dücker, 2007, p. 281
[131] Cf. Wagenhofer & Dücker, 2007, pp. 280

Francis et al. (2004, pp. 975) provide a study of seven earnings attributes – accrual quality, persistence, predictability, smoothness, value relevance, timeliness, conservatism – for a sample of an average of 1,471 U.S. companies per year during twenty-seven years from 1975 to 2001. They find positive correlations among all four accounting-based attributes – accrual quality, persistence, predictability, smoothness – as well as for the three market-based attributes – value relevance, timeliness, conservatism – while there is relatively little overlap between those two groups. Except for the correlation of 0.67 between value relevance and timeliness the earnings attributes are not high enough correlated to subsume each other.

When comparing these studies with the insight gained through the cash flow examples in the Section 4.1, Francis et al.'s (2004) results are more easily traceable. Only the connection between accrual quality, value relevance, and timeliness, which is supposedly strong, has no reflection in this study. Wagenhofer and Dücker's (2007) small sample size – in relation to Francis et al. (2004) – in terms of both, the number of companies and years, might be the most obvious reason for their results not to fit completely with the theoretical ideas reflected in the examples and other empirical studies.

Finally, the business environment and other influences have to be considered. Earnings attributes can differ substantially from one industry to another. The point here is that all attributes and measures have to be seen in the light of professional skepticism or simply called "common sense", but there might always maintain a last doubt. Even in a classical economic setting with perfect markets and certainty earnings attributes give controversial ideas and do not show a complete and harmonious picture of the quality of earnings. To really give a sound interpretation of it as many circumstantial factors as possible have to be taken into consideration.[132] Earnings quality can be used as a framing concept for most issues in accounting[133] and this omnipresence of the topic has to be kept in mind when assessing it through the calculation of earnings attributes.

[132] E.g. through the quality-of-earnings analysis described in Penman (2004, pp. 606).
[133] Cf. Amernic & Robb, 2002

5 Measuring Aggregated Earnings Quality

In the following the attempts to measure earnings quality in an aggregated way are depicted from two angles: theory, which focuses on the earnings attributes described in Chapter 3, and practice, which rather deals with rankings and evaluations of different items in the balance sheet, income statement and statement of cash flows.

5.1 Theory-based

There are not too many papers that try to measure aggregated earnings quality from a theoretical side. Usually the focus lies only on one aspect of it respectively one earnings attribute as often a connection with some other factor, e.g. capital costs or institutional characteristics, is explored. Additionally, researchers tend to study quite often only one more complex earnings attribute like earnings management or conservatism but do not just use the measures suggested for those but also the ones for other earnings attributes, so that one earnings attribute is described through the other earnings characteristics.

Abdelghany (2005) adopts three ways to measure earnings quality indirectly through earnings management from other publications - Leuz et al. (2003), Barton and Simko (2002) and Penman (2001). All three used ratios are also explained – at least in similar facets – in the previous chapter. From the actual four used measures in Leuz et al. (2003) Abdelghany (2005) only takes the first measure of volatility/smoothness, namely the standard deviation of operating income, i.e. earnings from operations, divided by the standard deviation of cash flows from operations. From Barton and Simko (2002) he uses the earnings surprise indicator defined through the fraction of the beginning balance of net operating assets and sales. A smaller number indicates higher earnings quality. The approach taken from Penman (2001) considers the proximity of earnings to cash and is the one that was also presented by Auer (2004)[134] as an earnings management measure specifically the ratio of operational cash flows divided by net income, i.e. earnings. As mentioned in Section 3.5 the possibility of real earnings management is somewhat ignored in

[134] See also Section 3.5

this ratio. The exact ways of calculation are not included in Abdelghany's (2005) paper.[135]

The study is carried out on an industry as well as a company level with the data of ninety, randomly selected NYSE-listed companies in the time span of four years between 1999 and 2003 in five industries. With consistency among the measures, the companies and industries were classified in having low or high earnings quality; otherwise they are marked for further investigation. In not adding up the results of the single measures, Abdelghany (2005) avoids the possibility of getting a distorted aggregated result through the possible correlations among the single measures. The average result is that the whole sample had low earnings quality. For the industries there was only consistency in the banking, insurance and investment industry (low earnings quality) as well as the technology industry (high earnings quality).[136]

The flaws of this study come with the fact that – even though represented through three measures – only earnings management is used as the (inverse) measure of earnings quality. But throughout this thesis it was shown that the quality of earnings does not only depend on the absence of earnings management. Among other factors there might still be difficulties in the application of GAAP or common accounting practices may simply not fit for the underlying business. So Abdelghany's (2005) paper cannot be considered as a prime example as it is not carried out well and far enough, but it seems like a step into the right direction.

While Abdelghany (2005) avoided to combine his measures for earnings quality respectively earnings management, Wagenhofer and Dücker (2007) and Francis et al. (2004) explored the properties of an aggregated earnings quality measure in analyzing the correlations among the earnings attributes[137], but they did not suggest a way to combine them properly. However, especially in papers were the connectivity of earnings quality and some other factors is examined such a measure is often created in simply adding up or connecting in another way all, some, or variations of the before presented earnings attributes. For example Leuz et al. (2003, p. 511) combine their four earnings management measures, i.e. earnings attributes, in ranking them

[135] Cf. Abdelghany, 2005, pp. 1007
[136] Cf. Abdelghany, 2005, pp. 1008
[137] See also Section 4.2

for all countries separately and then calculating an average country ranking. Penman and Zhang (2002, p. 243) take the arithmetic mean of their two measures of earnings quality.

5.2 Practice-based

While researchers rather study only one aspect of earnings quality, e.g. through one, two or a few earnings attributes, or focus on the possible considerations or problems in combining attributes, practitioners want to arrive at a conclusion through one single measure.

Bellovary et al. (2005) developed a structure for what they call an EQA, i.e. an earnings quality assessment. They took a look at eight different models for rating earnings quality, identified the ideas and critical points behind them, and merged them into a catalogue of twenty criteria. The original models have been developed and used by the Center of Financial Research and Analysis, Empirical Research Partners, Ford Equity Research, Lev-Thiagarajan, Merill Lynch, Raymond James & Associates, S&P Core Earnings and UBS. Each of the twenty Bellovary-criteria gets a score between one and five points, summing up in the best case to 100 points. To distinguish between the earnings quality of different companies they give away grades according to the total score, which are similar to the rating of bonds. The criteria and ratings are shown in Table 5.

The focus of the EQA as well as the eight original models lies in items of the balance sheet and income statement. To rate them expertise and experience in the field are required. This makes Bellovary et al. (2005, pp. 34) suggest that the assessment should be carried out by auditors as they are the logical choice for this responsibility with their knowledge and subpoena power as the first control authority.

The definition that underlies the EQA is that earnings quality refers to the ability of earnings to reflect the company's true earnings, to help predict future earnings and of

earnings being stable, persistent and invariable. Comparing this to the earnings attributes, the emphasis somewhat lies on the time-series properties of earnings.[138]

Criteria	**Score**
Revenue recognition issues (Shifts of revenues to other periods: low EQA score of 1)	1-5
Gross margin/sales ratio (High and improving relative to industry: high EQA score of 5)	1-5
Operating earnings/ sales (High and improving relative to industry: high score)	1-5
Earnings variability (Great variability: low score)	1-5
Cash flow from operations exceeds net income (Greater difference: higher score)	1-5
Expense recognition issues (Shifts of expenses to other periods: low score)	1-5
Operating leases (Greater occurrence and amount: low score)	1-5
R&D (Decreasing R&D: low score)	1-5
Pension expenses and gains *	1-5
Employee stock option expense (Pro froma and large impact on EPS: low score)	1-5
Gain (loss) from asset sales/sales (Incidence is negative. Look at trend and industry)	1-5
Acquisitions/dispositions (Evaluate soundness relative to goals)	1-5
Discontinued operations *	1-5
Ongoing restructuring charges *	1-5
One-time items *	1-5
Extraordinary items *	1-5
Accounting changes *	1-5
Reverses prior charges/provisions *	1-5
Tax-rate percentage (High variance from statutory rate and high variance: low score)	1-5
Share buyback/issuance (Examine degree and trend. High incidence: low score)	1-5
Total possible rating	100
* (Consider trend and industry. Greater occurrence and amount: low score)	

Quality	**Grade**	**Total Score**
Excellent	A	85-100
Good	AB	69-84
Fair	B	52-68
Marginal	BC	35-51
Poor	C	20-34

Table 5: Criteria in Earnings Quality Assessment & Ranking

Source: Bellovary et al., 2005, p. 35

Badenhausen et al. (2005) present an earnings quality rating of the experts of Rate Financials Inc. for the S&P 500 Index companies in their article. Certain red flags are described. For instance expensing stock options, overoptimistic assumptions about future earnings, low tax rates, discontinued operations, corporate governance structures, inventory and free cash flow are seen as crucial points in the distinction between low and high quality earnings. They also overlap to some degree with the criteria of Bellovary et al. (2005).

[138] Cf. Bellovary et al., 2005, p. 32

Rosenberg (2003) suggests a simple means of gauging earnings quality in comparing the growth of book value and operating earnings. If a company stopped all operations at the very minute, book value would indicate the worth of the company. So the growth rates do not have to be identical, but if they are somewhat close it can be counted as a positive sign towards earnings quality as a rise in book value is caused through retained earnings.

In practice it is often only called earnings quality, but in fact a broader approach is taken in considering various influences on earnings respectively valuing the whole company. The aim of these practitioners is close to Penman's (2004, p. 606) suggested quality-of-earnings analysis for which most valuation tools described in other parts of his book respectively in other books that deal with financial statement analysis and valuation are useful. It consists of an accounting quality, financial statement and red flag analysis. With the latter a "reviewing [of] financial statement ratios for warnings signs"[139] is meant. It simply refers to points in reporting, which need some further investigation to remove all doubt that there might be something wrong. Penman (2004, p. 609) provides several flash points for thirteen different industries, where there is more than usual possibility for manipulation: For instance, in the banking industry credit losses (quality of loan loss provisions) are of high importance, for the automobile sector it is overcapacity (quality of depreciation allowances), and for pharmaceuticals the flash point lies with R&D (quality of R&D expenditures) and product liability (quality of estimated liabilities). Eight general red-flag indicators are also described in Penman (2004, p. 537): They include e.g. slower sales growth, decline in order backlog, and increasing sales returns, where the latter may indicate decreasing customer satisfaction.

Practitioners take a few similar views as those expressed in theory through earnings attributes, especially with time-series characteristics. The attributes can be seen as red flags themselves. But even though some of their red flags seem logical one cannot always see the exact concept behind. The practice system in assessing earnings quality relies much more on expertise and experience in the field than statistics and exact numbers. In general practice-based measure split between being more focused in only looking at positions on the income statement and balance sheet or including the whole environment of the company.

[139] Penman, 2004, p. 607

6 Summary & Conclusion

This thesis dealt with the often quoted but ill-defined topic of earnings quality. The issue's difficulties start in pleading the usage of earnings – in contrast to pro-forma-earnings, residual income numbers, and cash flows – naturally continue in formulating an all-purpose definition and are somewhat explained through the many interested parties and the vast number of influential factors.

While researchers try to generate simplified models to get easy understandable and interpretable results as – at least – an initial solution, practitioners take up a more comprehensive, all-at-once position. This causes – for the earnings quality debate – research to rely on statistics and studies and practice to build on experience and expertise. But these different angels do not rule out the interaction between them. The eight earnings attributes described in this paper – persistence, predictability, volatility & smoothness, quality of accruals, earnings management, timeliness, conservatism, and value relevance – are predominantly used in research but the definitions and explanations for their usage also reflect in practice-inspired approaches on earnings quality. Likewise, researchers also consider the earnings' business environment and influences critically in their results. Some attempts on measuring aggregated earnings quality theory-based – through the in-depth-study and combination of earnings attributes – and practice-based – through the analysis of certain positions and red flags in the annual accounts – were described in the previous chapters.

The whole earnings quality debate supposedly has a lot to do with the strong wish of people to value a firm with just one number. - So that they can know by looking only at this figure what a company is worth or if they should invest in it. In a perfect world a single number and its simple attributes could tell us about (its) quality, but unfortunately that is not the scenario we are living it. The cash flow examples of Section 4.1 have shown that earnings attributes are already controversial in a very basic setting with the assumptions of perfect markets and certainty. Additionally, a number that tells the exact quality of a company will always be very firm- and time-specific. This makes measuring earnings quality through one number a theoretically

irresolvable issue.[140] There can only be a good but maybe no perfect solution for this problem on average. In taking a look at the whole company and its business practitioners already go in this direction. To find out about the quality of earnings in the best possible way all probable factors have to be taken into account. Only an analysis of all underlying activities and influences can give an as-close-to-reality-as-possible picture of a company. One has to take time to look at all important factors.

Finally, what becomes clear throughout this thesis is the fact that there are still many research opportunities in order to eventually create a relevant and reliable measure of earnings quality. But still, once the instrument of earnings quality is worked out it will apparently be one of the most important decision factors for the valuation of a company.

[140] Cf. Cornell & Landsman, 2003, pp. 20

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Appendix

A. Complete Cash Flow Examples from Section 4.1

The setting and considerations for these examples are described in Section 4.1. The calculation of the earnings attributes' measures is additionally described in the table below. The examples, where six of eight earnings attributes are perfectly fulfilled (as shown in Table 4), are those three with neutral accounting. If Beta equals "#DIV/0" but D(X) is zero, persistence and predictability are still perfect. The best outcome for each earnings attribute for one form of depreciation and an interest rate of 0.1 is highlighted.

Earnings Attribute	Measure	Description	Perfect Outcome
Persistence & Predictability	$Beta = \frac{X_3 - X_2}{X_2 - X_1}$	Slope of the equation $X_{t+1} = \alpha + \beta \cdot X_t$	Beta = 1
Volatility/ Smoothness	$D(X) = \lvert X_3 - X_2 \rvert + \lvert X_2 - X_1 \rvert$	Deviation of earnings along the time series	D(X) = 0
Quality of Accruals	$D(ED, D) = \lvert ED_3 - D_3 \rvert + \lvert ED_2 - D_2 \rvert + \lvert ED_1 - D_1 \rvert$	Deviation between "normal" and economic depreciation	D(ED,D) = 0
Timeliness & Value Relevance	$D(EI, X) = \lvert EI_3 - X_3 \rvert + \lvert EI_2 - X_2 \rvert + \lvert EI_1 - X_1 \rvert$	Deviation between economic income and earnings	D(EI,X) = 0
Conservatism	$Accounting = \begin{cases} conservative : B_t \leq PV_t, \forall t \\ neutral : B_t = PV_t, \forall t \\ liberal : B_t \geq PV_t, \forall t \end{cases}$	Accounting is neutral when book values equal the present value of the project.	-

a. Straight Line Depreciation

i=	0

t	0	1	2	3
CF_t	-300	100	100	100
D_t	0	-100	-100	-100
ED_t	0	-100	-100	-100
B_t	300	200	100	0
PV_t	300	200	100	0
X_t	0	0	0	0
EI_t	0	0	0	0

Beta	#DIV/0!
D(X)	0
D(ED,D)	0
D(EI,X)	0
Accounting	neutral

t	0	1	2	3
CF_t	-300	50	100	150
D_t	0	-100	-100	-100
ED_t	0	-50	-100	-150
B_t	300	200	100	0
PV_t	300	250	150	0
X_t	0	-50	0	50
EI_t	0	0	0	0

Beta	1
D(X)	100
D(ED,D)	100
D(EI,X)	100
Accounting	conservative

t	0	1	2	3
CF_t	-300	150	100	50
D_t	0	-100	-100	-100
ED_t	0	-150	-100	-50
B_t	300	200	100	0
PV_t	300	150	50	0
X_t	0	50	0	-50
EI_t	0	0	0	0

Beta	1
D(X)	100
D(ED,D)	100
D(EI,X)	100
Accounting	liberal

i=	0.1

t	0	1	2	3
CF_t	-300	110	121	133.1
D_t	0	-100	-100	-100
ED_t	0	-80	-99	-121
B_t	300	200	100	0
PV_t	300	220	121	0
X_t	0	10	21	33.1
EI_t	0	30	22	12.1

Beta	1.10
D(X)	23.1
D(ED,D)	42
D(EI,X)	42
Accounting	conservative

t	0	1	2	3
CF_t	-300	55	121	199.65
D_t	0	-100	-100	-100
ED_t	0	-25	-93.5	-181.5
B_t	300	200	100	0
PV_t	300	275	181.5	0
X_t	0	-45	21	99.65
EI_t	0	30	27.5	18.15

Beta	1.19
D(X)	144.65
D(ED,D)	163
D(EI,X)	163
Accounting	conservative

t	0	1	2	3
CF_t	-300	165	121	66.55
D_t	0	-100	-100	-100
ED_t	0	-135	-104.5	-60.5
B_t	300	200	100	0
PV_t	300	165	60.5	0
X_t	0	65	21	-33.45
EI_t	0	30	16.5	6.05

Beta	1.24
D(X)	98.45
D(ED,D)	79
D(EI,X)	79
Accounting	liberal

b. Progressive Depreciation

i=	0

t	0	1	2	3
CF_t	-300	100	100	100
D_t	0	-50	-100	-150
ED_t	0	-100	-100	-100
B_t	300	250	150	0
PV_t	300	200	100	0
X_t	0	50	0	-50
EI_t	0	0	0	0

Beta	1
D(X)	100
D(ED,D)	100
D(EI,X)	100
Accounting	liberal

t	0	1	2	3
CF_t	-300	50	100	150
D_t	0	-50	-100	-150
ED_t	0	-50	-100	-150
B_t	300	250	150	0
PV_t	300	250	150	0
X_t	0	0	0	0
EI_t	0	0	0	0

Beta	#DIV/0!
D(X)	0
D(ED,D)	0
D(EI,X)	0
Accounting	neutral

t	0	1	2	3
CF_t	-300	150	100	50
D_t	0	-50	-100	-150
ED_t	0	-150	-100	-50
B_t	300	250	150	0
PV_t	300	150	50	0
X_t	0	100	0	-100
EI_t	0	0	0	0

Beta	1
D(X)	200
D(ED,D)	200
D(EI,X)	200
Accounting	liberal

i=	0.1

t	0	1	2	3
CF_t	-300	110	121	133.1
D_t	0	-50	-100	-150
ED_t	0	-80	-99	-121
B_t	300	250	150	0
PV_t	300	220	121	0
X_t	0	60	21	-16.9
EI_t	0	30	22	12.1

Beta	0.97
D(X)	76.9
D(ED,D)	60
D(EI,X)	60
Accounting	liberal

t	0	1	2	3
CF_t	-300	55	121	199.65
D_t	0	-50	-100	-150
ED_t	0	-25	-93.5	-181.5
B_t	300	250	150	0
PV_t	300	275	181.5	0
X_t	0	5	21	49.65
EI_t	0	30	27.5	18.15

Beta	1.79
D(X)	44.65
D(ED,D)	63
D(EI,X)	63
Accounting	conservative

t	0	1	2	3
CF_t	-300	165	121	66.55
D_t	0	-50	-100	-150
ED_t	0	-135	-104.5	-60.5
B_t	300	250	150	0
PV_t	300	165	60.5	0
X_t	0	115	21	-83.45
EI_t	0	30	16.5	6.05

Beta	1.11
D(X)	198.45
D(ED,D)	179
D(EI,X)	179
Accounting	liberal

c. Degressive Depreciation

i=	0

t	0	1	2	3
CF_t	-300	100	100	100
D_t	0	-150	-100	-50
ED_t	0	-100	-100	-100
B_t	300	150	50	0
PV_t	300	200	100	0
X_t	0	-50	0	50
EI_t	0	0	0	0

Beta	1
D(X)	100
D(ED,D)	100
D(EI,X)	100
Accounting	conservative

t	0	1	2	3
CF_t	-300	50	100	150
D_t	0	-150	-100	-50
ED_t	0	-50	-100	-150
B_t	300	150	50	0
PV_t	300	250	150	0
X_t	0	-100	0	100
EI_t	0	0	0	0

Beta	1
D(X)	200
D(ED,D)	200
D(EI,X)	200
Accounting	conservative

t	0	1	2	3
CF_t	-300	150	100	50
D_t	0	-150	-100	-50
ED_t	0	-150	-100	-50
B_t	300	150	50	0
PV_t	300	150	50	0
X_t	0	0	0	0
EI_t	0	0	0	0

Beta	#DIV/0!
D(X)	0
D(ED,D)	0
D(EI,X)	0
Accounting	neutral

i=	0.1

t	0	1	2	3
CF_t	-300	110	121	133.1
D_t	0	-150	-100	-50
ED_t	0	-80	-99	-121
B_t	300	150	50	0
PV_t	300	220	121	0
X_t	0	-40	21	83.1
EI_t	0	30	22	12.1

Beta	1.02
D(X)	123.1
D(ED,D)	142
D(EI,X)	142
Accounting	conservative

t	0	1	2	3
CF_t	-300	55	121	199.65
D_t	0	-150	-100	-50
ED_t	0	-25	-93.5	-181.5
B_t	300	150	50	0
PV_t	300	275	181.5	0
X_t	0	-95	21	149.65
EI_t	0	30	27.5	18.15

Beta	1.11
D(X)	244.65
D(ED,D)	263
D(EI,X)	263
Accounting	conservative

t	0	1	2	3
CF_t	-300	165	121	66.55
D_t	0	-150	-100	-50
ED_t	0	-135	-104.5	-60.5
B_t	300	150	50	0
PV_t	300	165	60.5	0
X_t	0	15	21	16.55
EI_t	0	30	16.5	6.05

Beta	-0.74
D(X)	10.45
D(ED,D)	30
D(EI,X)	30
Accounting	conservative

B. Abstracts

a. English Abstract

This thesis deals with the often quoted but ill-defined topic of earnings quality and gives an overview of the topic. At first the term is defined, the usage of earnings in contrast to pro-forma-earnings, residual income, and cash flows is explained, and the different perspectives and influential factors on it are described. The main part consists of the description of eight earnings attributes – persistence, predictability, volatility & smoothness, quality of accruals, earnings management, timeliness, conservatism, and value relevance –, the way they are being measured, and their international differences. Subsequently, these attributes are analyzed in a setting of certainty and perfect markets through cash flow examples and some further critical points are considered for these characteristics of earnings. The examples show that even in a very basic setting earnings attributes already tend to be controversial. Thereafter, the possibilities and attempts to measure aggregated earnings quality in two ways – theory- and practice-based – are discussed. A summary and conclusion form the end of this paper.

b. German Abstract

Diese Diplomarbeit befasst sich mit dem häufig genannten aber schlecht definierten Thema der Ergebnisqualität und gibt einen Überblick darüber. Zuerst wird der Begriff definiert, die Verwendung von Ergebnissen im Vergleich zu Pro-Forma-Ergebnissen, Residualeinkommen und Cashflows wird erklärt und die verschiedenen Sichten darüber sowie beeinflussenden Faktoren werden beschrieben. Im Hauptteil werden acht Ergebniseigenschaften – Beständigkeit, Prognosefähigkeit, Volatilität & Glättung, Qualität der Periodenabgrenzungen, Bilanzpolitik, Zeitnähe, Vorsicht und Wertrelevanz –, deren Messung und internationale Unterschiede behandelt. Anschließend werden diese Eigenschaften im Rahmen der Annahmen von Sicherheit und perfekten Märkten anhand von Cashflow-Beispielen analysiert und weitere kritische Punkte dieser Ergebnischarakteristika aufgezeigt. Die Bespiele zeigen, dass auch in einem sehr einfachen Szenario die Ergebniseigenschaften bereits zu kontroversen Resultaten führen. Schließlich werden die Möglichkeiten und Versuche diskutiert Ergebnisqualität aggregiert in zwei Formen – auf Basis der Theorie und der Praxis - zu messen. Eine Zusammenfassung mit Fazit beendet die Arbeit.

C. Curriculum Vitae

a. English CV

Personal information

Name	**Daniela Monika STEINWENDER**
Nationality	Austrian
Date of birth	June 24, 1985

Education

• Dates	October 2003 (fall term 2003/04) onwards
• University	**University of Vienna** Faculty of Business, Economics and Statistics Vienna, Austria
• Field of study	**International Business Administration**
• Majors	➢ *Logistical Management* ➢ *Managerial Accounting*
• Term abroad	**Singapore Management University** August – December 2005 (fall term 2005/06) Singapore
• University-organized language programs	Pushkin Institute Russian language course, 2 weeks April 2006 Moscow, Russia Academy of Labor and Social Relations Russian-Austrian language program „Tandem“, 3 weeks July 2004 Moscow, Russia

• Dates	September 1995 - June 2003
• Middle- and High-School	**Private School St. Ursula Salzburg** Salzburg-Glasenbach, Austria
• Qualification awarded	Matura (equivalent e.g. to British A-levels) Graduation with distinction
• School attendance abroad	Lycée Jean-Piaget May – June 2002 Neuchâtel, (French-speaking) Switzerland

Mother tongue	**German**
Other languages	**English** (C2) French (B2/B1) Russian (B1) Italian (B1)

b. German CV

Persönliches

Name	**Daniela Monika STEINWENDER**
Staatsangehörigkeit	Österreich
Geburtsdatum	24. Juni 1985

Ausbildung

• Datum (von – bis)	Seit Oktober 2003 (WS 2003/04)
• Universität	**Universität Wien** Fakultät für Wirtschaftswissenschaften Wien, Österreich
• Studienrichtung	**Internationale Betriebswirtschaft** (IBW)
• Spezialisierungen	➢ *Controlling* ➢ *Logistikmanagement*
• Auslandssemester	**Singapore Management University** August – Dezember 2005 (WS 2005/06) Singapur
• Universitär organisierte Sprachprogramme	Puschkininstitut 2-wöchiger Russisch-Sprachkurs April 2006 Moskau, Russland Akademie für Arbeit und soziale Beziehungen 3-wöchiges russisch-österreichisches Sprachprogramm „Tandem“ Juli 2004 Moskau, Russland
• Datum (von – bis)	September 1995 - Juni 2003
• Mittelschule	**Privatgymnasium St. Ursula Salzburg** Salzburg-Glasenbach, Österreich
• Art der (Aus-)Bildung	8 Klassen Gymnasium
• Abschluss	Matura mit ausgezeichnetem Erfolg
• Schulbesuch im Ausland	Lycée Jean-Piaget Mai – Juni 2002 (4 Wochen) Neuchâtel, (französische) Schweiz

Muttersprache	**Deutsch**
Sonstige Sprachen	**Englisch** (C2) Französisch (B2/B1) Russisch (B1) Italienisch (B1)