GOODWILL IMPAIRMENT
CAUSES AND IMPACT

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Milena Brütting

Abstract

Goodwill has been in the focus of interest of academics and practitioners for many years now. Research interest has been fuelled by its discretionary nature, the large amounts of its write-downs combined with adverse impact potential on financial statements and loopholes in accounting regulations.

This thesis includes three empirical essays on the causes and impact of goodwill impairment write-downs. Its overall objective is to provide a more insightful and comprehensive understanding of the goodwill impairment process.

The first empirical essay explores the role of goodwill write-downs in the rating assessment process. It aims to uncover rating agencies' perception of goodwill using an accounting predictive model on *ex post* basis and comparing accounting treatments of goodwill as currently or recently applicable under UK GAAP. Results suggest that raters ignore goodwill and its write-downs in their annual rating analyses. While this evidence is consistent with pre-FRS 10 business reality in the UK, it raises questions about the efficiency of impairment regulations on national and international level.

The second empirical essay investigates managerial choices related to goodwill impairment in the UK. Findings suggest that while managers are likely to base the decision whether to impair goodwill on financial performance indicators, they might adjust the amount of the impairment charge at their discretion for reporting purposes.

The third empirical essay investigates two of the drivers of financial performance (industrial regulation and competition) and their relation to goodwill using a case study approach. The evidence suggests that these two phenomena could provide an early warning indicator to regulators, auditors and financial statement users about goodwill impairment potential of the individual firm or an industry sector. Furthermore, the room for managerial discretion provided by the discount rates in the impairment calculation is explored. Results show that discount rates can be adjusted using commonly accepted parameters in practice to justify a wide range of discount rates and, consequently, a variety of impairment opportunities at the discretion of management.

1 INTRODUCTION

1.1 BACKGROUND INFORMATION

Intangible assets have been in the centre of attention of the academic and non-academic communities for quite some years now. The reason for this considerable interest lies in their increasing importance in world economy ever since the 1980s as a result of the rapid development of information technologies combined with the phenomena of globalisation and deregulation (Lev, 2001).

Intangible assets create value without possessing physical substance. Their key characteristics distinguishing them from tangible assets – non-rivalry and (positive) network effects – present investors with natural opportunities to outperform the competition. However, it is that very nature that also makes them difficult to protect in the new environment and to ensure that benefits flowing from them are being exclusively used by their owners. Due to non-excludability (or, at best, partial excludability), spillovers through imitation, lack of active markets and higher risk compared to other assets, the benefits from intangible assets are far from being transparent and unambiguous (Lev, 2001). These unique double-sided characteristics motivate increasingly research in this area.

1.2 FOCUS OF THESIS AND EMPIRICAL STUDIES

This PhD-thesis concentrates on one specific aspect of intangible asset accounting: goodwill impairment. Goodwill accounting has been a very difficult and controversial topic for a long time now (even compared to accounting for other intangibles which have also been largely discussed in research and in practice) and has constantly been altered, at least for the last 15-20 years. Goodwill has been and remains a major discussion topic among standard setters, academics and practitioners. Numerous studies have already been undertaken in this area over the years in an attempt to explain the nature of goodwill (for example Walker, 1938; Emery, 1951; Miller, 1973; Barlev, 1973; Ma & Hopkins, 1988), its components (for example Chauvin & Hirschey, 1994; Johnson & Petrone, 1998; Henning et al, 2000; Churyk, 2001), its measurement (for example Emery, 1951; Miller, 1973; Barlev, 1973), how investors react to it (for example Hirschey & Richardson, 2002, 2003; Long, 2005, etc.) and whether it is value-relevant (for example Chauvin & Hirschey, 1994; McCarthy &

Schneider, 1995; Jennings et al, 1996; Wang, 2003; Li & Meeks, 2006). However, despite all the research, there are still problems to be solved, or new questions to be answered: for instance although investor reaction to goodwill write-downs is well researched, the importance of goodwill for other market participants such as lenders or information providers such as rating agencies has been scarcely investigated so far.

Another reason why goodwill accounting is of considerable interest to the public is because goodwill regulations traditionally involve a substantial amount of flexibility which provides ample opportunities for managerial discretion (for example Francis et al, 1996; Segal, 2003; Sellhorn, 2004). Standard setters have continuously been trying to eliminate or at least reduce this flexibility: in the UK the Accounting Standards Board (hereafter referred to as 'ASB') introduced in 1997 Financial Reporting Standard 10 'Goodwill and Intangible Assets' (hereafter referred to as 'FRS 10') requiring capitalisation of goodwill (previously the Statement of Standard Accounting Practice No. 22 'Accounting for Goodwill' (hereafter referred to as 'SSAP 22') had offered a choice between capitalising goodwill and writing it off directly against equity but very few firms chose to capitalise it); in the US the Financial Accounting Standards Board (hereafter referred to as 'FASB') eliminated goodwill amortisation in 2001 and introduced the annual impairment test in the Statement of Financial Accounting Standards No. 142 'Goodwill and Other Intangible Assets' (hereafter referred to as 'SFAS 142') in the hope that it will reflect better the economic depletion of goodwill; and the International Accounting Standards Board (hereafter referred to as 'IASB') followed FASB's lead and adopted IFRS 3 'Business Combinations' (hereafter referred to as 'IFRS 3'), IAS 38 'Intangible Assets' (hereafter referred to as 'IAS 38') and IAS 36 'Impairment of Assets' (hereafter referred to as 'IAS 36') in 2004 (IFRS 3 was revisited and further adjusted in 2008). Since some of these regulations are still relatively new and, more importantly, have a different impact in different countries depending on what prior local Generally Accepted Accounting Practice (hereafter referred to as 'GAAP') standards required, many issues arise concentrating on the regulatory efficiency and managerial choices concerning goodwill accounting. Some of these are discussed in this research.

This thesis includes three empirical essays on various aspects of goodwill impairment: the role of goodwill write-downs in the credit rating decision process; managerial choices on goodwill accounting in the UK; and, drivers of economic performance and their relation to goodwill impairment as well as potential sources of managerial

manipulation in the goodwill impairment calculation. These issues are briefly outlined in the following paragraphs.

The first empirical essay (chapter 4) explores the impact of goodwill write-downs. Unlike most of prior research (see literature review in chapter 2), the influence of goodwill write-downs on investors is not investigated. Instead, the study concentrates on the debt side of the market exploring the importance of goodwill write-downs for information providers such as rating agencies. In times when information is a valuable and expensive commodity rating agencies reduce costs for capital market participants by providing information on a timely basis and at (comparatively) low cost and, therefore, allowing efficient worldwide comparison between companies. However, the process of reaching a credit rating is to a great extent publicly unavailable, although it is clear that accounting information plays an important role in the credit rating calculation (S&P, 2005). In this context, considering their sometimes substantial amounts, goodwill write-downs are particularly interesting. Intuitively, since goodwill write-downs affect the income statement and the balance sheet, their amounts are usually large, and might provide signals about the financial welfare of the company or the quality of management, it seems logical that they might be incorporated at least to some extent in the rating decision making process. Additionally, under current UK GAAP (FRS 10 and FRS 11 'Impairment of Fixed Assets and Goodwill' (hereafter referred to as 'FRS 11')) different accounting treatments for goodwill are permitted, each of which might lead to a different perception by rating agencies of goodwill write-down amounts in the accounts. Therefore, the study investigates whether goodwill write-downs are taken into consideration in the rating decision making process. Furthermore, the researcher tests whether different accounting treatments for goodwill – impairment, amortisation or immediate write-off against equity – lead to different degrees of accuracy in the prediction of the rating calculation. For this purpose a predictive accounting model based on financial ratios is used. However, the actual prediction of credit ratings is not the purpose of the study but rather a test on an *ex post* basis of the importance of differing goodwill accounting treatments for the credit rating calculation.

The second part of this research (chapter 5) is motivated by the UK regulatory framework for goodwill accounting available until 2005 for listed companies and presently for non-listed companies in the UK. FRS 10 prescribes systematic amortisation over the expected useful life as treatment after initial recognition for

intangible assets with definite useful lives and annual impairment testing if the useful life of the intangible asset is deemed to be indefinite (FRS 10, paras. 15 and 17). In the case of goodwill this regulation leads to a *de facto* choice between systematic amortisation and impairment testing since both definite and indefinite useful life can be argued for. Therefore, it is possible that managers choose the accounting treatment for the subsequent valuation of goodwill depending on their own reporting incentives rather than based on the wish to reflect the economic depletion of goodwill correctly. Additionally, since it is possible to change between amortisation and impairment in the course of time (FRS 10, para. 33), or to conduct additional impairment beyond regular amortisation charges when needed (FRS 10, para. 34 (b)), room for managerial discretion and opportunistic behaviour increases even further. In this context chapter 5 investigates the managerial motivation behind goodwill impairment losses undertaken additionally to the regular amortisation charge. The purpose of the study is not only to investigate causes for goodwill write-downs under UK GAAP but also to provide an initial indication of the likely influences on goodwill impairment under IFRS 3 and IAS 36. At a time when the data for a direct investigation of IFRS 3 and IAS 36 are still limited, it is hoped to bring some insight into the likely efficiency of these standards in restricting managerial discretion by providing evidence from UK goodwill accounting which operates under a regime with a comparatively lax regulatory environment. Finally, in an attempt to improve understanding of the causes of goodwill impairment further the research question is split into an investigation of the reasons behind the decision to impair goodwill (the 'If' question) and of the parameters influencing the amount of the goodwill impairment charge (the 'How Much' question).

The third part of the thesis (chapter 6) elaborates on and extends the results of the second empirical study (chapter 5). The first two empirical essays produce results based on purely quantitative measures and methodology. The final study represents an exploratory attempt to look behind these numbers and uncover new aspects of the goodwill accounting impairment process (the 'Why' and the 'How' questions). For this purpose, the study is split into two sections: first, it concentrates on the some of the drivers of economic performance and their impact on goodwill impairment. While previous research has focused on outcomes of economic performance as appropriate regressors for goodwill impairment research, this study looks at two of the underlying drivers of economic performance – industrial regulation and competition. The investigation is based on qualitative techniques including extensive document research.

The analysis uses a case study approach. The second part of the study concentrates on potential sources for managerial discretion in the goodwill impairment calculation which might influence the amount of the goodwill impairment charge. More specifically, the discount rates used in the impairment calculation are analysed to illustrate and research the discretionary opportunities available to management. In this context, the quality of impairment disclosures is also discussed.

1.3 MAIN CONTRIBUTIONS

The main contributions of each study are summarised as follows:

The impact of goodwill write-downs on credit ratings (chapter 4)

- This study targets the role of goodwill accounting in the rating decision process which has mostly been ignored in prior academic investigations. While research has mainly concentrated on the implications of goodwill impairment for shareholders, this study focuses on the debt side of the market and, in particular, the rating agencies' view of goodwill impairment.

- The research question is tested using a methodology (an accounting predictive model on an *ex post* basis) that has not been used in relation to goodwill in prior research.

Causes of the managerial choice of impairment in addition to or in place of systematic amortisation of goodwill (chapter 5)

- Existing research is extended by differentiating between 'If' and 'How Much' questions of goodwill impairment outside of a transitional regulatory setting. Thus, the influence of economic performance variables and reporting incentive measures on the decision to conduct goodwill impairment and on the decision regarding the amount of the impairment charge is investigated separately.

- UK GAAP provides a unique framework for this study by allowing both systematic amortisation and annual impairment testing. Such regulatory environment provides a different basis for the exploration of managerial incentives than the stricter regulations under US GAAP and IFRS and might allow a deeper insight into goodwill write-down motivation.

- By focusing on UK companies and on goodwill write-downs, this study differs from prior research, which largely investigates US companies and more broadly defined asset write-downs, or, when it does specifically investigate goodwill, write-downs conducted under the transitional requirements of a new accounting standard (SFAS 142).

Sources of goodwill impairment (chapter 6)

- The research questions in this chapter are explored using a methodology which – while being a well established method of research – is relatively new to goodwill impairment research. The exploratory study approach aims to look behind the numbers and individualise the analysis of two companies in the form of case studies. This qualitative methodology allows the collection of information which is usually overlooked in data samples for purely quantitative studies. Furthermore, the combination of quantitative and qualitative techniques for the investigation of the discount rates allows the illustration of manipulation opportunities for management in the goodwill impairment calculation.

- This study explores the drivers of economic performance rather than their outcomes which are usually tested in relation to goodwill impairment in previous research. By shifting the focus of the investigation this study attempts to uncover new drivers that can affect the goodwill impairment decision which could be of interest to parties such as financial statement users, auditors and standard setters, and to provide impulses for future research in the area of goodwill impairment. This purpose is highlighted by the case study approach used for the investigation.

- Concentrating on the impairment calculation the study explores sources which can be used for managerial discretion purposes and illustrates the room for discretionary behaviour made available to managers by the lack regulatory detail on impairment disclosures and, more specifically, on discount rates.

1.4 CHAPTER OVERVIEW

The PhD-thesis is organised as follows: Chapter 1 provides background information, an overview of the focus of the thesis, the areas of research and the main contributions. Chapter 2 includes information on the relevant financial reporting regulations on goodwill and a literature review on the causes and impact of goodwill write-downs.

The purpose of the literature review is to provide a broad overview on existing research, illustrate gaps in the literature, locate the need for future research, and, finally, highlight the areas of research in the focus of the thesis and specify the research questions. Chapter 3 concentrates on the research design and the methodology for the separate empirical studies. Additionally, the sample set is specified as well as the database sources for the data needed in the models. Chapters 4 to 6 include the results of the three empirical studies and their interpretation. Chapter 7 concludes.

2 THEORETICAL AND EMPIRICAL BACKGROUND: REGULATORY FRAMEWORK AND LITERATURE REVIEW

The purpose of financial statements is to provide information about the economic state of an asset (or liability, or equity, or a company as a whole) to the users of the financial statements in a timely manner.[1] In this context empirical research aims to discover whether accounting regulations live up to expectations and succeed in achieving this goal. Researchers explore this issue mostly in two ways: they test different aspects of the efficiency of current, past or newly introduced regulations such as their transparency or their impact on users. Alternatively, researchers investigate the 'true' economic phenomena underlying a particular item in the financial statements aiming to discover whether these are well grasped by accounting regulations including whether the latter allow room for manipulatory action.

This chapter provides a summary of key national and international accounting regulations of goodwill first, thus delivering the regulatory setting for the proposed empirical investigations of goodwill impairment (chapters 4 to 6). This is followed by a literature review outlining areas for research on goodwill impairment and highlighting the focus of interest of this thesis in the form of specific research questions.

2.1 REGULATORY FRAMEWORK: FINANCIAL REPORTING FOR GOODWILL

The overview of key financial reporting regulations concentrates on UK GAAP[2] since they build the regulatory framework for the empirical investigations in this thesis. The relevant accounting ruling for goodwill under UK GAAP is found in FRS 10 and FRS 11.

Additionally, the relevant regulations of the International Financial Reporting Standards (hereafter referred to as 'IFRS') are discussed. According to regulation (EC) No. 1606/2002 of the European Parliament and of the Council of 19 July 2002,

[1] See for example the objectives of the International Accounting Standards Committee Foundation (hereafter referred to as 'IASC Foundation') as specified in Constitution 2.

[2] The term 'GAAP' is not so strictly defined in the United Kingdom as for example in the US: for a discussion on its scope see Ernst & Young (2003), pp. 66-70. In the United States the same abbreviation is used, meaning Generally Accepted Accounting Principles – thus possibly accentuating the importance of a rule-based compliance (ibid.).

companies with securities traded on regulated markets in the European Union must prepare their consolidated accounts on the basis of IFRS for accounting periods starting on 1 January 2005 or later (Article 4). The purpose of this regulation is to (ultimately) support international harmonisation of accounting standards eventually leading to the implementation of 'a single set of global accounting standards'. Thus, the presentation of financial information can be largely standardised ensuring transparency and competitiveness of capital markets (Article 1).

The standards relevant for goodwill accounting under IFRS are IFRS 3, IAS 38 and IAS 36.

Finally, the financial reporting rules for goodwill in the US GAAP are summarised, mainly for comparative purposes. These are Statement of Financial Accounting Standards No. 141 'Business Combinations' (hereafter referred to as 'SFAS 141') and SFAS 142. There are several reasons for including US GAAP regulations in this thesis, although its empirical part is not primarily concerned with this framework. Most importantly, an overwhelming part of the research reviewed in the area of goodwill and intangibles accounting concentrates on US companies implementing US GAAP. Therefore, a brief overview provides the regulatory background necessary for interpreting this research. Furthermore, where goodwill is concerned the accounting ruling under IFRS is quite similar to that under US GAAP[3], in particular, as regards the elimination of goodwill amortisation and the introduction of impairment as the only alternative for writing goodwill down.[4] Finally, a comparison between all three more or less differing accounting systems provides a useful source for further developing and justifying the research questions.

2.1.1 Initial recognition

2.1.1.1 National regulations (UK GAAP)

The significance of goodwill and, consequently, of the corresponding accounting standards increased dramatically in the UK after the takeover wave of the 1970s (Seetharaman et al, 2006). The history of goodwill accounting in the UK is marked by

[3] The accounting regulations IFRS and US GAAP are, in general, intended to move closer to each other with the utmost aim of becoming identical in the long run. This aim is being pursued by special convergence projects jointly supervised by the respective standard setters (http://www.iasb.org).

[4] It should be noted that, though, that the ASB introduced goodwill impairment before the FASB and the IASB and may be, therefore, considered the original source of current international goodwill accounting in this respect.

a simultaneous use of various treatments. Nobes (1992) has documented this phenomenon during the 1970s and the 1980s: surveys of the practices used by UK companies showed that although most of the companies preferred to write-off goodwill immediately after acquisition against equity reserves, there were quite a few cases of other accounting treatments.[5]

More dependent on public views than its American and Australian counterparts the Accounting Standards Committee (hereafter referred to as 'ASC') was influenced substantially by the opinions of various political groups such as auditors, management, government, etc. (Nobes, 1992). Throughout the years it was reluctant to settle on a particular accounting for goodwill for fear of too much criticism by any of these groups.[6] The first document on goodwill by the ASC was published in 1980: a discussion paper on goodwill accounting. It was largely motivated by the 4th Directive of EC and recommended a treatment similar to the applicable US practice at the time: capitalisation of goodwill and subsequent amortisation over up to 40 years. However, public opinion remained in favour of immediate writing-off of goodwill charges and, therefore, in 1982 the ASC proposed allowing both the immediate writing-off against reserves, and capitalisation and amortisation over up to 20 years (Exposure Draft (hereafter referred to as 'ED') No. 30, 1983).

The next regulatory step in goodwill accounting was taken in 1984 when SSAP 22 was issued based among other things on the public debate following ED 30. Holgate (1983) follows this debate, providing evidence that public opinion was split between writing-off against reserves, amortisation and an option to use any of these two treatments. Therefore, not surprisingly, SSAP 22 allowed the use of either of these treatments (with no limitation of the useful life of goodwill). Furthermore, companies were not compelled to use one accounting treatment consistently, but were allowed to switch between the options allowed (SSAP 22, para. 42). In the years after the issuance of SSAP 22 discussion around goodwill regulations became even more intense. The lack of explicit mandatory recommendation in many areas of the Statement raised a variety of technical and political questions (Nobes, 1992). This lead to the issuance of another

[5] The author recognises, however, that some of these accounting treatments, which diverged from the main stream (immediate deduction of goodwill from reserves), might have resulted from companies' lack of adequate reserves which could carry the goodwill charge. Therefore, the variety of accounting treatments of goodwill might have been prompted by necessity rather than by political intention or managerial choice.

[6] For an extensive discussion of the political process surrounding goodwill accounting in the UK, see Nobes (1992).

exposure draft concerning goodwill, ED 47 'Accounting for Goodwill' in 1989 recommending capitalisation of goodwill and subsequent amortisation over up to 20 years or, if plausibly justified, up to 40 years.[7] The systematic amortisation suggestion in ED 47 – similar to reactions in previous years – met a very strong opposition (Stacy & Tweedie, 1989; Hastie, 1990; Higson, 1998) and therefore, the exposure draft was not pursued further. Instead, a consultation process was started in 1993 and after two discussion papers in 1993 and 1994, a working paper in 1996, a lot of interaction with the public, finally, in 1997, FRS 10 was issued which is the current regulation for UK companies that do not have securities traded on any regulated financial market in the European Union.[8]

The regulations in FRS 10 are based on the Companies Act 1985, which includes guidelines for fixed asset reporting (Companies Act, 1985).

The objectives of FRS 10 are:

> '…to ensure that:
>
> (a) capitalised goodwill and intangible assets are charged in the profit and loss account in the periods in which they are depleted; and
>
> (b) sufficient information is disclosed in the financial statements to enable users to determine the impact of goodwill and intangible assets on the financial position and performance of the reporting equity.' (FRS 10, para. 1)

Thus, the ASB aimed to enhance the regulations for goodwill and intangible assets by narrowing down and specifying the accounting treatments (as opposed to the choice offered by previous rules), by increasing the transparency of their impact on the company and, in particular, by setting out the same principles for goodwill as for other intangibles.

Goodwill is defined as the result of the following calculation:

> 'The difference between the cost of an acquired entity and the aggregate of the fair values of that entity's identifiable assets and liabilities. Positive goodwill arises when the acquisition cost exceeds the aggregate fair values of the identifiable assets and liabilities. Negative goodwill arises when the aggregate fair values of the identifiable assets and liabilities of the entity exceed the acquisition cost.' (FRS 10, para. 2).

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[7] Similar accounting treatment was proposed also for other intangible fixed assets (ED 52 'Accounting for Intangible Fixed Assets').

[8] For a discussion of the consultation process and its social implications, see Tollington (2006). Apart from aiming to finally establish an accounting treatment for goodwill, the ASB was prompted to act on clarifying the regulations concerning another category of intangibles, which grew at an alarming speed during the 1980s and the early 1990s: brands, in particular, were appearing increasingly on company balance sheets. In the absence of specific ruling, management often capitalised brands but did not amortise them (Ernst & Young, 2003, p. 884-889; Nobes (1992) provides some examples). For example, the capitalisation of brands and other intangible assets could be used to diminish the amount of goodwill to be written off in cases where it exceeded the available equity resources.

Following the purpose of financial statements goodwill accounting regulations are aimed at providing a 'true and fair view of a reporting entity's financial position and profit or loss (or income and expenditure) for a period' (FRS 10, para. 4).

Positive purchased goodwill is to be recognised as an asset on the balance sheet and capitalised. Internally developed goodwill, however, is not considered to be an asset and is, therefore, not to be capitalised (FRS 10, paras. 7-8).

In order to provide a consistent treatment, when negative goodwill is generated as a result of an acquisition, it should – after verifying the acquired assets and liabilities – be recognised on the balance sheet 'immediately below the goodwill heading and followed by a subtotal showing the net amount of the positive and negative goodwill' (FRS 10, para. 48, Ernst & Young, 2003, p. 899). Goodwill acquired in a single transaction cannot be separated into a negative and a positive part (FRS 10, para. 51). Goodwill acquired before the entry into force of FRS 10 may be reinstated (implementation of FRS 10) or, alternatively, SSAP 22 may be applied: in the latter case the amount of this 'old' goodwill should be disclosed in the notes to the accounts (FRS 10, para. 71).

2.1.1.2 International Financial Reporting Standards (IFRS)

The IASB is responsible for setting and amending the International Accounting Standards (hereafter referred to as 'IAS') and the IFRSs. The IASB succeeded its predecessor, the International Accounting Standards Committee (hereafter referred to as 'IASC') in April 2001 in its role of a standard setter for the IASC Foundation. Its objective is:

> 'to develop, in the public interest, a single set of high quality, understandable, enforceable and globally accepted financial reporting standards based on clearly articulated principles . These standards should require high quality, transparent and comparable information in financial statements and other financial reporting to help investors, other participants in the various capital markets of the world and other users of financial information make economic decisions.' (IASB, 2011, Preface, para. 6(a)).

The IASB is supported in its activities by the IFRS Advisory Council (formerly, the Standards Advisory Council) which gives advice to the IASB and provides information about the implications of proposed standards or standard setting projects. Additionally, the IFRS Interpretations Committee (which is the successor of the Standing Interpretations Committee (hereafter referred to as 'SIC') and, later, of the International Financial Reporting Interpretations Committee (hereafter referred to as

'IFRIC')) provides 'timely guidance on financial reporting issues' (IASB, 2011, Preface, para. 2).

The International Financial Reporting Standards are issued by the IASB and include, apart from the IFRSs, also IASs (issued by IASB's predecessor, IASC), IFRIC and SIC interpretations (IASB, 2011, Preface, paras. 7f.). The standards relevant to goodwill and intangible asset reporting are: IFRS 3, IAS 36 and IAS 38.

The definition of goodwill acquired in a business combination is found in IFRS 3, para. 32, where it is referred to as:

> 'the excess of (a) over (b) below:
>
> (a) the aggregate of:
>
> (i) the consideration transferred measured in accordance with this IFRS, which generally requires acquisition-date fair value…;
>
> (ii) the amount of any non-controlling interest in the acquiree measured in accordance with this IFRS; and
>
> (iii) in a business combination achieved in stages (…) the acquisition-date fair value of the acquirer's previously held *equity interest* in the acquiree.
>
> (b) The net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed measured in accordance with this IFRS.'

Goodwill acquired in a business combination is initially recognised at cost.

The term 'negative goodwill' is not used anymore in IFRS 3. However, whenever it factually occurs, the acquired items should be reassessed and, if any excess remains after that, it should be recognised immediately in the profit or loss account (IFRS 3, paras. 34-36).

Internally generated goodwill cannot be recognised as an asset because it does not meet the criteria required for intangible assets to be capitalised (IAS 38, paras. 48-50).

2.1.1.3 US GAAP

US GAAP regulations concerning goodwill are not in the main focus of this thesis (see p. 20 for reasons to include an outline of US GAAP) and therefore, only a very short overview of relevant regulations is included here. In July 2001 the FASB issued SFAS 141 (revised in 2007) and SFAS 142 which regulate accounting for goodwill and other intangible assets under US GAAP and represent the result of a long and extensive discussion (Long, 2005).

The definition of goodwill under US GAAP is the same as under IFRS (SFAS 141, paras. 34-39).

Goodwill resulting from business combinations is recognised as an asset as of the acquisition date (SFAS 141, para. 34).

2.1.2 Subsequent measurement and valuation

A variety of methods have been used over the years to measure goodwill after initial recognition in cases where it was considered an asset rather than written off against reserves immediately after acquisition. These methods include systematic amortisation over a limited period of time, such as 20 or 40 years, annual impairment, or impairment whenever certain indicators were present. The following section offers a concise review of the currently relevant regulations under UK GAAP, IFRS and US GAAP.

2.1.2.1 National regulations (UK GAAP)

FRS 10 proposes a combination of an amortisation and an impairment approach in order to ensure correct measurement of goodwill and intangible assets after capitalisation which complies with the objectives set in the standard. FRS 10, para. 19 states that 'there is a rebuttable presumption that the useful economic lives of purchased goodwill and intangible assets are limited to 20 years or less'. Accordingly, goodwill and other intangible assets that were initially recognised should be amortised over the length of their useful economic lives (FRS 10, para. 15) and the amortisation charges must be recognised in the profit and loss account. The useful economic life is defined as the period over which benefits from the purchased goodwill or intangible asset are expected to flow to the entity (FRS 10, para. 2). The useful economic life of acquired goodwill and intangible assets may be considered indefinite if two conditions are fulfilled. The first condition requires a plausible explanation justifying the claim that the useful economic life of goodwill is estimated to be longer than 20 years. Additionally, the asset in question should be 'capable of continued measurement' (FRS 10, para. 19). This second condition ensures that the impairment calculation can be performed. If this requirement is not fulfilled but the useful economic life of the purchased goodwill is proven to be longer than 20 years or indefinite, amortisation still remains as the relevant accounting treatment since impairment testing is not considered

to be feasible. When amortised, the straight line method is the preferred treatment although other methods might be accepted where appropriate (FRS 10, para. 30).

For purchased goodwill with definite useful life less than 20 years (or where amortisation is the relevant accounting treatment), an impairment test is nevertheless required at the end of the first full financial year after the acquisition and, additionally, in following years should there be indicators of impairment (FRS 10, para. 34), examples of which are specified in FRS 11, para. 10. In cases of purchased goodwill with an indefinite useful life the impairment test is to be conducted annually at the end of each reporting period (FRS 10, para. 37).

The requirement of an impairment review at the end of the first financial year after the acquisition is motivated by the need to ensure an accurate measurement and presentation of the acquisition on the balance sheet (Ernst & Young, 2003, p. 1052f.). Specifically, FRS 10, para. 35 (a) raises the issue of overpayment as a possible reason for an impairment loss in this period[9]:

> 'If an impairment is identified at the time of the first year review, this impairment reflects:
>
> (a) an overpayment;
>
> (b) an event that occurred between the acquisition and the first year review; or
>
> (c) depletion of the acquired goodwill or intangible asset between the acquisition and the first year review that exceeds the amount recognised through amortisation.' (FRS 10, para. 35)

The impairment review at the end of the first financial year after acquisition includes a comparison between the pre-acquisition estimates used to calculate the acquisition price and post-acquisition performance. Should the latter fail to reach the forecasts, a full impairment review is triggered which – similar to impairment reviews in all other cases – has to be performed according to the regulations of FRS 11 (FRS 10, paras. 39-40).

When an impairment review is triggered, the carrying amount of purchased goodwill is compared to its recoverable amount in order to establish whether the goodwill is impaired. The recoverable amount is defined as 'the higher of net realisable value and value in use'. If the carrying amount is bigger than the recoverable amount, an impairment loss is to be reported in the profit and loss account[10] (FRS 11, para. 14).

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[9] Appendix III, para. 39 of FRS 10 additionally implies that a possible impairment loss during the first year after acquisition is mainly due to overpayment.

[10] An exception from this rule exists in the case of impairment of previously revalued fixed assets (FRS 11, para. 63) which are, however, not in the focus of interest of this thesis.

The net realisable value is '[t]he amount at which an asset could be disposed of, less any direct selling costs'. Value in use is '[t]he present value of future cash flows obtainable as a result of an asset's continued use, including those resulting from its ultimate disposal' (FRS 11, para. 2).[11] Additionally, some guidance is provided concerning direct selling costs in FRS 11, para. 23. When it is not possible to determine the net realisable value, the recoverable amount must be established based on value in use (FRS 11, paras. 16 and 24). Ernst & Young (2003) have identified 5 stages of the impairment review under FRS 11:

1. The company is divided into income-generating units (IGUs). This is done by segmenting the total income of the company into 'as many largely independent income streams as is reasonably practicable' (FRS 11, para. 27). The aim is to create as many IGUs as possible.

2. All assets and liabilities of the entity (including capitalised goodwill, FRS 11, para. 34) have to be allocated to the different IGUs, except for financing or tax items. These items are not included because the cash flows used to calculate the value in use are cash flows before interest and dividends.

3. The cash flows of the IGUs due for impairment review are forecasted, based on plausible assumptions. Cash flows relating to financing and tax items are not taken into account, consistent with step 2. 'The cash flows should be consistent with the most up-to-date budgets and plans that have been formally approved by the management (FRS 11, para. 36).

4. The estimated future cash flows are discounted using an appropriate discount rate. The discount rate is calculated as 'an estimate of the rate that the market would expect on an equally risky investment' (FRS 11, para. 41) assuming that long-term interest rates are stable and would not influence the occurrence or amount of the write-down (FRS 11, para. 11).[12] After establishing the discount rate, the forecasted cash flows can be discounted and the value in use is calculated.

5. Finally, the so calculated value in use is compared to the carrying amount and if it measures less than this carrying amount, an impairment is allocated, first to the

[11] It should be noted, that in the case of goodwill the net realisable value would be hard to calculate as goodwill cannot be sold separately from the rest of the business.

[12] The standard also discusses methods for estimating the market rate of the equally risky investment in paras. 42-43 and in Appendix 1.

goodwill of the IGU, then to capitalised intangibles attributed to the IGU and, if there is still an impairment loss to be allocated, to the tangible assets of the IGU on a pro-rata basis (FRS 11, para. 48). The reasoning behind this regulation is to write-down the assets with 'the most subjective valuations first' (FRS 11, para. 49).

If the value in use is used as basis for the impairment review the cash flows have to be monitored for five years after the impairment review. Where the forecasted cash flows significantly exceed the actual cash flows, the impairment review has to be conducted again using the actual cash flows. If an impairment is detected, it is then to be recognised in the current period (FRS 11, paras. 54-55).

Past impairment losses can be reversed for goodwill and intangible assets only if one of two conditions is met:

> '(a) an external event caused the recognition of the impairment loss in previous periods, and subsequent external events clearly and demonstrably reverse the effects of that event in a way that was not foreseen in the original impairment calculations; or
>
> (b) the impairment loss arose on an intangible asset with a readily ascertainable market value and the net realisable value based on that market value has increased to above the intangible asset's impaired carrying amount.' (FRS 11, para. 60)

There are two possibilities to transfer negative goodwill to the profit and loss account after its initial recognition on the balance sheet. Goodwill exceeding the fair values of the non-monetary assets acquired, is to be 'recognised in the profit and loss account in the periods in which the non-monetary assets are recovered, whether through depreciation or through sale' (FRS 10, para. 49). The part of negative goodwill exceeding the above-mentioned fair values 'should be recognised in the profit and loss account in the periods expected to be benefited' (FRS 10, para. 50) and, additionally, should be disclosed and explained (FRS 10, para. 64).[13]

2.1.2.2 International Financial Reporting Standards (IFRS)

IFRS 3 supersedes IAS 22 'Business Combinations' and among other things introduces a new accounting treatment for the subsequent valuation of goodwill (IFRS 3, B63) which is similar to the one under SFAS 142 (see next section). After initial recognition, goodwill acquired in business combinations is not amortised but is annually tested for impairment (or more often should indicators suggesting possible impairment be present) (IFRS 3, paras. B63, B69; IAS 36, paras. 9f.).

[13] According to Ernst & Young (2003), p. 899, '[t]he exact meaning of this wording is not completely clear, but any reasonable interpretation is likely to be acceptable'.

IAS 36 prescribes that already at acquisition the goodwill is to be assigned to cash-generating units, which can be defined as 'the lowest level within the entity at which goodwill is monitored for internal management purposes' (IAS 36, IN11 (b)). The impairment test under IAS 36 is very similar to the one under FRS 10: an impairment is said to exist if the carrying amount of an asset exceeds its recoverable amount measured as the higher of the fair value less costs to sell (similar to the net realisable value under UK GAAP) and the value in use (IAS 36, paras. 18-57). The procedure of calculation of the value in use corresponds with the respective procedure under UK GAAP (see pp. 27–28).

Should an impairment loss exist, it must be recognised immediately in the profit or loss account (IAS 36, para. 60). Goodwill impairment losses cannot be reversed in later periods (IAS 36, para. 124).

2.1.2.3 US GAAP

According to the SFAS 142 goodwill amortisation is replaced by an annual impairment test which must be performed additionally when a certain set of factors, described in SFAS 142, para. 28, suggests possible impairment (SFAS 142, para. 26).

Goodwill is to be tested for impairment at the level of a reporting unit (SFAS 142, para. 18). A reporting unit is defined as an operating segment (or one level below) in the sense of SFAS 131 'Disclosures about Segments of an Enterprise and Related Information': separate financial information has to be available for a unit so that it can be described as an operating segment and the management of the unit should be reviewing its operating results on a regular basis (SFAS 142, para. 30).

Once goodwill is allocated to the respective reporting unit, it can undergo the impairment test which – unlike the goodwill impairment test under IFRS and under UK GAAP – consists of two steps (SFAS 142, paras. 19–22):

1. A comparison between the fair value of the reporting unit with its carrying amount including goodwill is undertaken to determine whether goodwill is impaired. If the fair value exceeds the carrying amount, then goodwill is not impaired and the impairment test can be stopped. If the opposite case occurs, the second step of the impairment test has to be conducted.

2. In order to determine the amount of the goodwill impairment loss, the difference between the carrying amount of the goodwill and its implied fair value in the reporting unit is calculated. The implied fair value of goodwill is defined as the residual of the fair value of the reporting unit after allocating fair values to all its assets, liabilities, including unrecognised intangible assets.

An impairment loss once recognised cannot be reversed. The impairment loss cannot exceed the carrying value of the goodwill.

2.2 LITERATURE REVIEW: RESEARCH ON GOODWILL IMPAIRMENT

The focus of this thesis, and thus of the literature review, lies on write-downs (write-offs) resulting from the subsequent valuation of goodwill after initial recognition.[14] More specifically, the researcher concentrates on goodwill impairment write-downs (as opposed to write-downs generated from systematic amortisation of goodwill). Therefore, the importance of and motivation for research in this area is discussed in this section and is then followed by a literature review and evaluation of antecedent empirical research.

There are several reasons highlighting the importance of academic research on goodwill impairment write-downs. First, the magnitude of goodwill write-downs is usually substantial, thus rendering any effects resulting from changes in goodwill value significant for the key performance indicators of a firm. For example, the studies reviewed in Alciatore et al (1998) discuss asset write-downs of up to 19.4% of total assets on average. Francis et al (1996)[15] find that goodwill write-downs constitute the largest item of reported asset write-downs. Examples of significant amounts of goodwill write-downs measured on a billion dollar scale is presented by Segal (2003), Zang (2003), Duangploy et al (2005) and Li & Meeks (2006).[16] Hueffner & Largay III (2004), for example, explore a sample of 100 companies with cumulative reported goodwill impairment loss amounting to $ 135 bln in 2002 (on average $ 1.35 bln per sample company). This accounted for approximately 14.5% of recorded goodwill.

[14] For purposes of this thesis, write-downs are defined as diminutions in value when a residual remains (i.e. impairment and amortisation generally, especially when they do not lead to complete disappearance of the asset from the balance sheet). Write-offs describe the complete removal of the asset from the balance sheet.

[15] Francis et al (1996) is one of the (few) studies reviewed by Alciatore et al (1998) which includes goodwill write-downs.

[16] Chambers (2007) also focuses on the magnitude of goodwill write-downs and their impact on financial reporting as motivation for (his own) research.

Since all of these studies were published around the introduction of SFAS 141 and 142 in the US the large goodwill impairments of the early 2000s which were included in them might well have been a reaction to the implementation of the new regulations and, therefore, a non-recurring event. However, moving on to much more recent reporting periods, it is still obvious that the scale of goodwill impairment charges has not decreased. In 2009 about 20% of S&P 500 companies reported a goodwill impairment write-down (Lynch & Gandhi, 2010). Research on the S&P 1500 reported that the number of companies with market capitalisations below the book value of their assets rose to 25% in 2009 (Latham & Watkins, 2009). On 12th January, 2009, the Nation's Restaurant News start with a top-headline: 'Goodwill Shrinking: Restaurants bite impairment bullet' reporting goodwill impairment losses for many US restaurant chains as high as $ 161.6 mln (Lockyer, 2009). Additionally, Dharan (2009) argues that the amount of goodwill in corporate balance sheets has increased significantly since the M&A activities in the late 1990s. The author uses these results to suggest that large impairments are likely to occur in the imminent future.

Of course, goodwill impairment losses might have probably increased again in recent years due to the latest global financial crisis and might well decrease again in amount and frequency once the economic world is back on track. Nevertheless, financial crises are cyclical events and they tend to occur on a regular basis. For this reason it seems safe to assume that goodwill impairment will stay with us for the foreseeable future and that its magnitude is not likely to change much.

Second, although goodwill impairment is a non-cash expenditure, it does influence net income as well as the balance sheet.[17] For this reason its presence in the financial statements and its amount (which in many cases is significant) are bound to attract the attention of investors, lenders, standard setters and other users of the financial statements which management is well aware of. On the other side, since goodwill is a residual item of intangible nature, it offers per definition significant room for interpretation and discretion. Depending on the understanding of this nature and of the underlying impairment process and on the application of the relevant regulations the amount of the impairment charge can be significantly influenced by management. It is, therefore, essential to understand the causes and impact of goodwill impairment write-downs in order to provide correct and accurate information to investors, rating

[17] Wines & Ferguson (1993) find that companies tend to recognise identifiable intangibles (with indefinite lives) in the balance sheet in order to decrease the burden put on net income by goodwill amortisation. The authors test a sample of 150 Australian companies fort he period 1985-1989.

agencies, and other users of financial statements as intended by national and international standard setters.[18]

Third, goodwill impairment losses may also have serious adverse consequences for companies possibly even leading to negative cash effects[19] as illustrated by recent events at Vodafone Group Plc. A court suit was filed against Vodafone in the early 2000s and - following initial dismissal - was reopened in November 2009 claiming that Vodafone failed to recognise material goodwill impairment losses following the acquisition of Mannesmann in 2000. The complaint was filed and reopened despite the fact that Vodafone had until this point in time already recorded $ 49 bln write-downs (Business Valuation Update, April 2010)[20]. While this claim was dismissed on the grounds that the plaintiff had failed to present accurate information regarding the timing and the appropriate amount the write-downs should have had, it does show two things: first, goodwill impairment write-downs can well have material (adverse) consequences for companies and, second, goodwill impairment is not easy to determine. It is, therefore, obvious that research on goodwill impairment issues is not only welcome but vital to academics and practitioners.

Finally, research on the subsequent valuation of goodwill has also been motivated by the development of goodwill accounting regulations on worldwide level during the last few decades. As already discussed in chapter 2.1, goodwill is nowadays largely seen by standard setters as an asset. Academic research in this area supports this view with empirical evidence presented in numerous studies (for example Emery, 1951; Barlev, 1973; Johnson & Petrone, 1998 and many others). However, the subsequent treatment of goodwill, although gradually converging to a single accounting treatment on international level (IFRS, US GAAP)[21] is still differing on national level. While IFRS and US GAAP regulations impose an impairment test as the sole accounting treatment for goodwill (being an intangible with indefinite useful life), UK GAAP allows alternative use of either amortisation or impairment, depending on whether goodwill is seen to have a definite or indefinite useful life. Such regulatory differences naturally

[18] Moehrle & Reynolds-Moehrle (2001) find evidence that auditors as well as management and accountants consider understanding the goodwill impairment process important. Wayman (2002) argues that investors would be interested in goodwill impairment as they would benefit most if it is conducted precisely and provides true signals about the welfare of the company (see also Martinson, 2002).

[19] Massoud & Raiborn (2003) also highlight this potential cash effect of goodwill impairment.

[20] Another lawsuit was filed in December 2008 against CBS Corporation alleging failure to record intangible and goodwill write-downs in a timely manner (Dharan, 2009).

[21] For a detailed discussion of the differences between the impairment test under IAS 36 and SFAS 142 see Shoaf & Zaldivar (2005).

set a framework for academic investigation and – together with the magnitude of write-offs – highlight the importance of research concerning the subsequent valuation of goodwill.

IFRS is mandatory for group accounts of companies listed on EU stock markets for periods starting on 1 January 2005 or later. Due to the recent adoption of IFRS the relevance of UK GAAP (which leads to the largest regulatory differences concerning the subsequent valuation of goodwill where this thesis is concerned) might appear questionable at first. However, until IFRS regulations finally entered into force (which lasted until 2007 in some cases[22]) UK GAAP ruling was still relevant. Additionally, these regulations remain mandatory for companies that are not listed on a regulated market in the EU, so differences between the international standards and local GAAP can hardly be ignored. With two different accounting treatments for goodwill (amortisation and impairment) and FRS 10 and FRS 11 still in use, the motivation for and the impact of goodwill write-downs is highly relevant. Considering the economic rationale behind IASB's elimination of amortisation it becomes essential to understand the reasoning behind goodwill impairment since it is the only method remaining to depict the economic depletion of goodwill in financial statements on international level. Of course, the effect of IFRS regulations is best tested using data already applying the IFRS standards. However, due to the transitional regulations of IFRS 3[23] (see p. 70) as well as the still relatively recent beginning of IFRS application in the UK it will take some time before extensive data are available for a direct investigation of goodwill impairment regulations under 'standard conditions' of IFRS (as opposed to transitional requirements). Such data are, however, available under UK GAAP.

The following sections provide an overview of relevant research on goodwill impairment concentrating on findings relating to the impact and causes of write-downs as well as on the drivers of the impairment calculation. The overview provided in section 2.2.1 relates to the study in chapter 4; research discussed in section 2.2.2 refers to the study in chapter 5; finally, topics reviewed in section 2.2.3 relate to the investigation in chapter 6.

[22] Many FTSE 100 companies adopted IFRS during 2006. For example The BOC Group Plc as well as The Sage Group Plc and Compass Group Plc provided their first IFRS financial statements at 30/09/2006. Other companies went even further setting the date for the first IFRS financial statements in 2007: Gus Plc (31/03/2007) and Wolseley Plc (31/07/2007).

[23] IFRS 3 was revised in 2008 and the new regulations are to be applied for reporting periods starting on or after July 1st 2009 (IFRS 3, Appendix C), thus extending the transitional period even further.

2.2.1 Impact of goodwill write-downs

ASB's Statement of Principles for Financial Reporting (1999) defines the purpose of financial statements as follows:

> '…to provide information about the reporting entity's financial performance and financial position that is useful to a wide range of users … for making economic decisions.' (Chapter 1, Principles)

One of the general considerations underlying this objective is that financial statements should ensure a 'true and fair view' of the company (Statement of Principles, 1999, Introduction).[24] This means that all assets, liabilities, transactions and other events related to the company should be presented in a faithful and truthful way. The concept of 'true and fair view' is so fundamental and essential that international standard setters have seen fit to recommend additional disclosures beyond the requirements of IFRS, should this be needed, in order to depict the financial situation of the company correctly (IAS 1, para. 17(c)). Thus, the 'true and fair view' concept secures the basis needed by financial statement users in their decision making process by ensuring that the information provided is as complete as needed. In order for this process to be successful, user information needs must first be analysed. One way to achieve this is to understand better their reaction to and evaluation of accounting numbers. Financial statement users' reactions provide evidence about how they process and use information about the company and thus give important feedback to standard setters and regulators.

The ASB has provided some guidance concerning the main groups of financial statements' users and their information needs. Groups interested in company information are classified in seven categories for this purpose: investors, employees, lenders, suppliers and other trade creditors, customers, governments and their agencies and the public (Statement of Principles for Financial Reporting, Chapter 1, para. 1.3).[25] This thesis focuses on two of the categories specified by the ASB – investors and lenders – as well as on their information agents (rating agencies). In a broader context, rating agencies can be defined as financial intermediaries, since they fulfil one of the

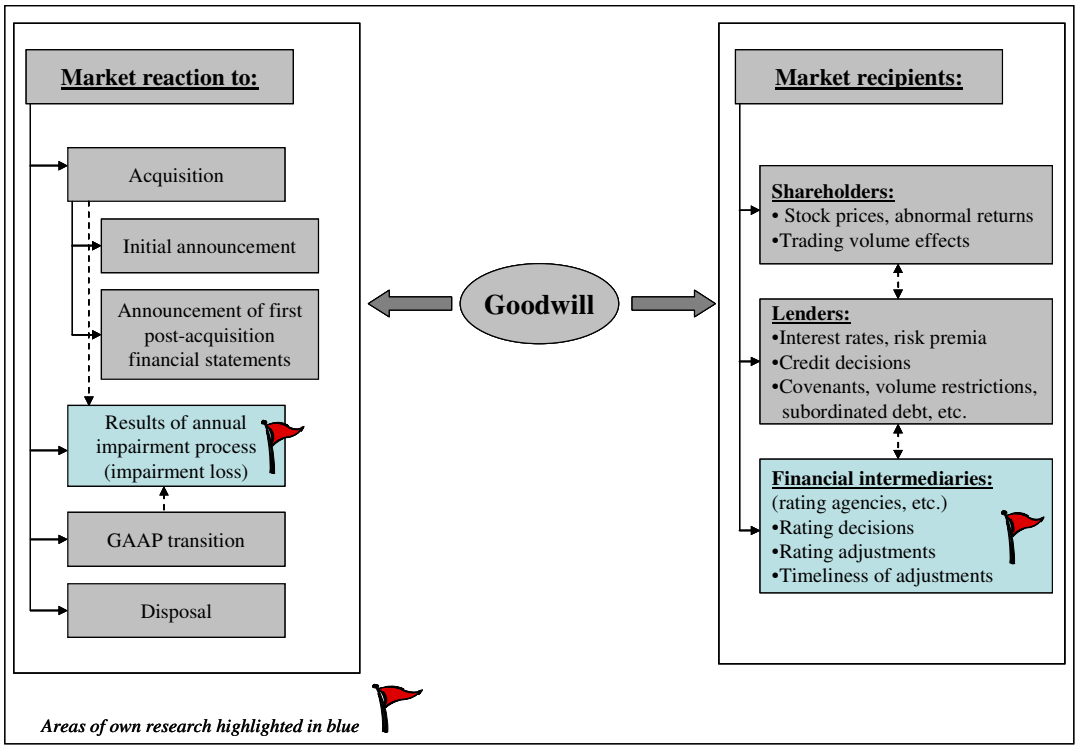
[24] This objective can also be found in the IFRS Framework (QC4, QC12-16) where it is defined as the concept of 'faithful representation'.

[25] A similar list (albeit concentrating on investors, lenders and other creditors) can be found in the IFRS Framework (OB2f.). However, the ASB defines the investor view of an entity, in general, as representative for the interests of all other users (Statement of Principles for Financial Reporting, Chapter 1, para. 1.11).

important functions of the financial intermediary: they reduce 'agency costs' by providing information and monitoring services.[26]

Illustration 2.1 summarises some aspects of the market reaction to goodwill-related events and market valuation of goodwill. Goodwill-related reactions of market participants can include responses to a number of different events: for example to the announcement of an acquisition, to the first post-acquisition financial statements, to an announcement of goodwill write-downs as a consequence of impairment, or to regulatory changes. Additionally, there are various participants in the capital markets, whose reaction could be examined on a stand-alone basis or jointly, for purposes of comparison. This thesis primarily focuses on rating agencies and their relation to goodwill write-downs (marked as area of own research in illustration 2.1).

Illustration 2.1: Market reaction to goodwill



An overview of the existing literature and empirical evidence related to shareholders, lenders and rating agencies is provided in the following sections. Additionally, a wider range of literature is reviewed where applicable investigating similar issues to goodwill write-downs (for example other assets or liabilities), since some conclusions from

[26] For more details on the definition and functions of financial intermediaries see Baltensperger (1990), Vives (1991), Crane et al (1995), Greenbaum & Thakor (1997) and Cecchetti (1999). Sellhorn (2004) defines rating agencies as 'information intermediaries between firms and investors'.

these areas could be also relevant to goodwill write-downs and are often used in goodwill-centred research.

2.2.1.1 Shareholders' reaction to (goodwill) write-downs

Shareholders' reaction to asset write-downs is – compared to other groups of financial statement users – a thoroughly investigated area in academic literature. The magnitude[27] of write-downs as well as their more or less discretionary nature can – depending on circumstances – have crucial importance for the company's earnings and financial performance measures. Since goodwill write-downs often account for the biggest part of these amounts (Francis et al, 1996; Henning et al, 2002; Segal, 2003; Li & Meeks, 2006; Dharan, 2009) and provide (per definition of goodwill and of the impairment process) sufficient room for managerial discretion, it should be expected that research in this particular area is particularly ample. Initially, however, academic research concentrated on capital market reactions to asset impairments altogether and numerous studies were published in the 1980s and 1990s[28] but not many of these studies focused on or included goodwill (Francis et al, 1996; and later, Hirschey & Richardson, 2002; Hirschey & Richardson, 2003 are among the few). The adoption of SFAS 141 and SFAS 142 in the US in 2001, however, caused an increase in goodwill-related studies, at least the ones based on US companies (Henning et al, 2000; Henning et al, 2002; Segal, 2003; Zang, 2003; Sellhorn, 2004; Long, 2005).

Based on existing research the main issues related to the shareholders' reaction can be summarised under the following research question groups:

(1) What is the **direction** of the shareholders' reaction? Is the **size** of the write-downs related to the market reaction? (see section 2.2.1.1.1)

(2) Does the market react to the announcement of write-downs in a **timely** manner or is the reaction delayed? Does the market **anticipate** the write-downs? Is it possible to separate the fraction of write-downs that is anticipated by the market from the unexpected one? When does the market completely adjust to the write-down announcement? (see section 2.2.1.1.2)

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[27] Information on research of the amounts of goodwill write-downs is provided on p. 30.

[28] An overview of the main studies between 1987 and 1998 is provided in Alciatore et al, 1998. The assets investigated include (negative) special items exceeding 1% of total assets, inventory, restructuring charges, PP&E, severance payments, R&D-in-process (write-offs) and other. However, most of the studies do not discriminate between types of asset but rather use a broader definition including several types of assets.

Question (2) has a close connection to the issue of managerial reporting incentives and write-downs which is discussed in section 2.2.2.3.

According to Alciatore et al (1998) studies investigating the link between asset write-downs and the market can be typically organised into two broad types: (1) information content studies, exploring the market reaction to the announcement of the write-downs and covering a relatively short time period, and (2) association studies, which cover a longer period of time before and after the announcement and investigate issues of value relevance of the write-down. The information content studies are used whenever the focus of interest lies on isolating the reaction to a particular event and interpreting its effects. A longer time period is recommended in order to capture potential anticipation of the event by the market or to test the rapidity of the market adjustment to the write-down. However, a long window could also include effects from other events, thus obscuring or creating noise in the findings (Alciatore et al, 1998; Sellhorn, 2004).

2.2.1.1.1 Direction and size of the capital market reaction to asset write-downs

The majority of the studies related to asset write-downs are information content studies concentrating on the immediate announcement effect of the write-downs (see overview in Alciatore et al, 1998; specifically for goodwill write-downs, see Hirshey & Richardson, 2002; Segal, 2003; Zang, 2003; Long, 2005; Bens et al, 2007; Lapointe-Antunes et al, 2009). Although caution must be taken when comparing the studies due to differing investigation time periods, varying samples and conditions, most of the studies report a negative market reaction to asset write-downs (for example Elliott & Shaw, 1988; Rees et al, 1996). These findings persist also if only studies investigating goodwill write-downs are considered: the results provide information about a negative reaction (Hirschey & Richardson, 2002, Hirschey & Richardson, 2003; Segal, 2003; Long, 2005; Bens et al, 2007; Lapointe-Antunes et al, 2009) with one exception: Francis et al (1996) find no evidence of significant market reaction at all.

Although a general trend in studies on the market reaction to asset write-downs can be clearly highlighted, some results provide contradicting or additional new information to the general drift.[29]

An interesting investigation is carried out by Strong & Meyer (1987) whose results partly support and partly contradict the general trend in research on the direction of the market reaction to asset write-downs. The authors conducted a study following and analysing asset write-offs that occurred in the period 1981-1985. Similarly to other studies at the time (see fn. 28), they do not discriminate between types of assets; the sample is based on a search including several criteria such as 'write-off', 'write-down', 'restructuring', etc. The authors note that a substantial part of their sample includes write-downs that were conducted as a part of restructuring activities. The findings show a positive reaction before and after the write-down suggesting that it might be correctly perceived by investors, at least for a large fraction of the data, as part of a bigger restructuring plan. However, during the announcement period investors' reaction was negative, thus supporting results from other studies (see above).

Aiming to focus on different aspects of and find patterns in the market reaction to asset write-downs, Bunsis (1997) examines their relationship with company cash flows and shareholders' response. The sample is constructed by using the terms 'write-off' and 'write-down' in the period between 1983-1989. Firms that had announced write-offs in the previous year were excluded in order to isolate market reactions to a new event and to minimise anticipation to the event by the market. Bunsis finds that the expected cash flow impact of a write-down is responsible for the direction of the capital market reaction. For asset write-downs that were expected to increase future cash flows (such as for example disinvestment in unprofitable divisions) investors' reaction was positive and vice versa. For write-downs that did not lead to expectations for a change in future cash flows, the response was ambiguous: negative in the two days after the announcement, but positive when three-day returns were considered. Bartov et al (1998) provide results which can be interpreted similarly to the findings of Bunsis (1997). They categorise asset write-downs either as pure accounting changes or as based on managerial strategic considerations. The empirical evidence shows a weak negative reaction in the overall sample. When differentiated, however, the response

[29] Where studies separate types of assets or use differing definitions of write-downs, these are discussed below in the context of the focus of interest of this thesis.

was more negative for the write-downs classified as pure accounting changes. Also similar to Bunsis (1997), this study does not specifically concentrate on goodwill.[30]

Moving closer to goodwill-related research was a study concentrating on a particular type of intangible write-offs conducted by Deng & Lev (1998). They focus on investors' reaction to write-offs of acquired R&D-in-process and find - contrary to the mainstream trend for asset write-downs - a positive relation between the write-off amount and returns. This finding can be explained in the context of the debate concerning this particular type of intangible, which, under the purchase method in the US, was being immediately expensed after the acquisition and not capitalised. The results showed that R&D-in-process were considered as an asset by the investors, which accounts for the positive reaction. A similar discussion referring to goodwill has been largely present in academic research and has been resolved in favour of goodwill capitalisation, at least where UK GAAP, IFRS and US GAAP are concerned.[31]

One of the first studies to specifically investigate the market reaction to goodwill write-downs is conducted by Francis et al (1996). The authors examine different types of write-downs including inventory, restructuring and goodwill write-downs disclosed between 1989 and 1992. Goodwill write-downs represent the biggest amounts of the sample. The market reaction measured for the overall sample is negative, supporting the idea that investors interpret write-downs as a signal for deterioration in the financial welfare of the firm. However, after examining the different classes of write-downs, findings showed no significant response in the case of goodwill write-downs. A similar result had been provided before, by Zucca & Campbell (1992) who, however, did not concentrate on goodwill but examined 'discretionary write-downs'.

Following up on goodwill write-down research Hirschey & Richardson (2002) published a study specifically focusing on goodwill impairment write-downs. The authors investigate goodwill impairments between1992 and 1996 aiming to understand whether there is an economic rationale behind them. They find a negative stock price reaction during the announcement period, which they interpret as a signal for negative company development and 'loss of economic goodwill'. Additionally, the authors compare the reactions to 'messy' versus singular goodwill write-down announce-

[30] Other studies which do not discriminate between different types of assets or concentrate on assets other than goodwill include Elliott & Shaw (1988), Zucca & Campbell (1992), Elliott & Hanna (1996).

[31] For an overview of the milestones of this discussion in the UK, see section 2.1.1.1.

ments[32]: 66.3% of the write-downs in the sample were disclosed together with other important information and categorised as 'messy'. However, the messiness of goodwill write-down announcements did not essentially interfere with the initial direction of the market reaction. Although Hirschey & Richardson (2002) discuss the – at that time – new US GAAP regulations for goodwill accounting (SFAS 141 and 142), they use older data for their study (1992 – 1996) reasoning that they aim to exclude the transitional effects and influence of the new standards. The results from a second study (Hirschey & Richardson, 2003) confirm the findings from the first one concerning the negative market reaction to goodwill write-downs during the announcement period and extend it by investigating a longer window – this (association) study is discussed in detail in the next section. Finally, the authors test the possibility that announcements of goodwill impairments might trigger a contagious stock price reaction where the price reaction of the company stock leads to other stock price reactions and could spread uncontrollably. However, the findings reject this hypothesis. Thus, the impact of goodwill write-downs appears to be restricted to the specific company and its immediate environment.

In contrast to prior research which concentrated mostly on US companies Li & Meeks (2006) explore the value relevance of goodwill impairment referring specifically to the UK market. The study period (1997-2002) is selected to allow an investigation of goodwill impairment at a time when US GAAP had not yet introduced the impairment approach and to set the study in an impairment-intensive M&A environment (based on the increased M&A activity of the late 1990s followed by a bear market in the early 2000s). The findings are consistent with results of prior research providing evidence of a significant negative market reaction to impairment charges and leading to the conclusion that goodwill impairment is value relevant and conveys new information to investors.

One possibility to examine goodwill write-downs is to contrast the impact of new accounting standards against the effect of old ones in order to test for improvement of the regulatory framework. Although studies examining goodwill in this area are discussed in detail in section 2.2.2.4, some results concerning the capital market

[32] Messiness of goodwill write-down announcements is a substantial problem in academic research, especially in the case of event studies which concentrate on a short time period around the announcement. Since information on goodwill write-downs is often disclosed together with other events (for example other restructuring activities, see Strong & Meyer, 1987; also Elliott & Shaw, 1988), it is often hard to isolate and investigate.

reaction are shortly mentioned here. Segal (2003) compares goodwill write-downs under two different accounting regulations (SFAS 121 and SFAS 142) in a study aiming to examine the effects of the adoption of SFAS 142. The author provides evidence of negative reactions for write-downs under both regulatory regimes and does not find any significant variation in the response. A similar result for transitional goodwill write-downs is found by Long (2005) who examines investor reaction to the adoption of SFAS 142. The author proceeds to differentiate between the causes for the write-downs and finds differing investor responses: negative reaction if the goodwill write-down was caused by economic events, and no reaction if it was the result of a 'cosmetic' accounting change. Similarly, Lapointe-Antunes et al (2009) find a negative relationship between share prices and transitional impairment losses for Canadian firms applying a combination of SFAS 142 and Section 3062 of the Canadian Institute of Chartered Accountants' Handbook. Due to the specifics of the regulations for the transitional period, however, these studies concentrate on a particular set of questions and cannot be further generalised.

Findings concerning the relation between the size of asset write-downs and market reaction vary considerably. Elliott & Shaw (1988) and Strong & Meyer (1987) examine substantially the same time period (1981-1985). Their results, however, provide differing evidence: while Strong & Meyer (1987) support the hypothesis that 'the bigger the bath, the better', Elliott & Shaw (1988) find, in contrast, that returns decrease with the increase in the amount of the asset write-down. This could be due to differences in sample profiles: Strong & Meyer (1987) include items in their sample that are described as a write-off or a write-down by the company and a large part of their sample includes restructuring activities. They do not elaborate on the accounting treatment of these write-downs. Elliott & Shaw (1988) include significant nonrecurring items, write-downs or write-offs of receivables, intangible assets, capitalised computer costs, etc. Although their definition of asset write-downs probably includes goodwill, this type of asset is not examined separately. Bunsis (1997) reaches conclusions similar to the results of Elliott & Shaw (1998), which however change for large write-downs (more than 5% of the assets) that were thought to increase future cash flows. In this case the author finds that the relationship between write-down size and returns reverses and is positive. Still another result is provided by Hirschey & Richardson (2003), who specifically concentrate on goodwill impairments and do not find evidence of relation between size of the goodwill write-offs and abnormal returns.

They interpret this result as evidence that investors are interested in the existence of the goodwill write-down, but not in its size.

In conclusion, findings show that investors do react to goodwill write-down announcements. However, despite a general trend indicating a negative market reaction, there are still differences in the evidence provided by studies so far, in particular in studies investigating the size of write-downs. These differences could be due to varying time periods examined, differing sample and/or variable profiles (for example different definitions for asset write-downs), or a different investors' interpretation of the information content of the particular write-down.

Furthermore, the studies reviewed in this section explore samples consisting exclusively of US companies with the exception of Li & Meeks (2006). If an assumption is made that the UK market is similar to the US, this limitation might be waved aside.[33] Another limitation which cannot be ignored, however, is that these studies use either older datasets (Francis et al, 1996; Hirschey & Richardson, 2002) or focus on transitional write-downs (Segal, 2003; Long, 2005).[34]

2.2.1.1.2 Timeliness of the market reaction to asset write-down announcements

Association studies cover typically a longer time period around the announcement of a write-down and investigate the market response during that time. Apart from exploring the market reaction to write-downs, this research approach has an advantage over event studies when the focus of interest lies on the investigation of anticipation of the announcement by the market, or market adjustment to the write-down disclosure, i.e. whether the write-down announcement was timely. According to Alciatore et al (1998) the objective of association studies can be best described with the following research question: 'Does the inclusion of the amount of the write-down in earnings result in an income number which provides a better *summary* of the information that investors have used in setting security prices over the fiscal period?' (emphasis in original).

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[33] The results of the study of Li & Meeks (2006) are in line with the findings of research on US companies which also supports the suggestion above.

[34] Lapointe-Antunes et al (2008, 2009) represent a partial exception as regards the limitations described above: the authors use more recent data (2002) for their investigations and, test their hypotheses on a sample of Canadian companies. However, similarly to other studies reviewed in this section, they explore transitional goodwill impairment losses.

As the impact of write-downs is reflected in net income (or other earnings-based numbers) association studies on write-downs usually explore the correlation between stock prices and various performance measures such as earnings (Sellhorn, 2004). However, this type of study does not assume that the only factors influencing stock prices are performance measures and does not impose any strict causality between these figures. The purpose of association studies is rather to 'test whether and how quickly accounting measures capture changes in the information set that is reflected in security returns' (Kothari, 2001). In the case of asset write-downs, most of the studies reviewed provide evidence of a negative long-term relation between asset write-downs and returns (for example Bartov et al, 1998; Hirschey & Richardson, 2003, Duangploy et al, 2005). Additionally, there is some evidence that the market anticipated the write-down, at least to some extent (Elliott & Hanna, 1996; Bartov et al, 1998; Comprix, 2000; Alciatore et al, 2003; Hirschey & Richardson, 2003). This result is supported by the evidence that many of the write-down firms performed poorly compared to their industry peers in the years prior to the write-down announcements (Elliott & Shaw, 1988; Zucca & Campbell, 1992; Rees et al, 1996). Heflin & Warfield (1997) find that while the returns of the write-down firms were lower compared to similar firms from the same industry, their earnings were higher during the three years preceding the write-down. The earnings only declined in the year of the write-down. A hypothesis providing a potential explanation for this phenomenon is that write-downs might be strategically timed in order to coincide with low earnings. Additionally, the authors present further evidence of the lack of timeliness of asset write-downs: a negative correlation between write-downs and returns for the three years prior to the write-down, which supports the general trend.

Empirical research of the timeliness of asset write-downs is not necessarily restricted to the methodology of association studies. In their information content study Bartov et al (1998) report, as discussed in the previous section, a very weak negative market reaction to asset write-down announcements. They propose two explanations for this result: first, that the market might be anticipating the write-down, or, second, that the market might need more time to adjust to the effects of the write-down. The authors investigate these hypotheses in a further association study covering two years before and two years after the announcement. Their findings are in line with previous research: market anticipation for the whole pre-announcement period and adjustment at least for one year after the write-down announcement. Additionally, Hayn & Hughes

(2006) report in their study that goodwill write-downs tend to be reported by management three to four years after the economic depletion of goodwill.[35] If this finding is combined with previous research, it suggests that the market possibly reacts to the economic depletion of goodwill (with a certain time-lag) rather than to the actual announcement of goodwill write-downs in the financial statements.

Hirschey & Richardson (2003) extend their 2002 study by exploring longer time intervals of one year before and one year after the announcement of goodwill impairment write-downs. The results show significant negative abnormal returns for both the pre- and post-announcement periods. The authors interpret the pre-announcement results as supporting the hypothesis that goodwill write-downs are the result of company underperformance. Furthermore, considering the timeliness of the write-downs, it appears that to some extent the market anticipates goodwill impairments. Based on the post-announcement negative reaction, the authors offer the explanation that investors underreact to goodwill write-downs during the announcement period and the market takes considerable amount of time to adjust fully to their negative effect. However, Hirschey & Richardson (2003) do not further investigate the causes for this underreaction. The results of both Hirshey & Richardson's studies (2002, see previous section, and 2003) were later confirmed by Duangploy et al (2005) who also found in an association study concentrating on US companies that the market reacts negatively to goodwill impairment losses.[36]

Segal (2003) investigates the timeliness of goodwill write-downs under SFAS 142 and SFAS 121 but finds no difference between the two regulatory regimes. This, together with his findings of lack of market reaction differences leads him to the conclusion that SFAS 142 has not substantially improved the accounting for goodwill impairment as compared to the previous systematic amortisation regulation, at least, based on analysis of the adoption period. In a similar study, however not examining goodwill but long-lived assets, Riedl (2004) investigates the timeliness of write-downs before and under SFAS 121. The author also fails to find a significant difference concerning this asset write-down characteristic.

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[35] Jarva (2009) also finds a time lag between the economic impairment of goodwill and the reporting of goodwill write-downs.

[36] The results from this study contradict a suggestion made by Seetharaman et al (2006) that Hirschey & Richardon's findings (2003) might not be valid since their sample was situated in the mid-nineties. Seetharaman et al (2006) suggest that shareholders had changed their response to impairment after having the opportunity to apply SFAS 142 for some time and, thus, to get used to it.

Segal's investigation could also be viewed as a comparison between goodwill amortisation and goodwill impairment write-downs, since SFAS 142 eliminated amortisation as accounting treatment for goodwill and made impairment mandatory. Therefore, where timeliness of goodwill write-downs is concerned, there was no difference between the two accounting treatments. Thus, his study contributes to a whole set of research questions concerning the usefulness of amortisation and the information it provides to investors. The motivation behind this trend in academic research lies in the question whether amortisation numbers build up an appropriate pattern to reflect the economic impairment of assets. The importance of this topic has been underlined not only by academics but also by the attention it has received by standard setters, culminating in the elimination of amortisation under US GAAP in 2001 and IFRS in 2005.[37] Some of the studies concentrating on amortisation usefulness are briefly outlined below since – although not primarily relating to the focus of interest of this thesis – they constitute an important part of research on goodwill write-downs. The relationship between asset write-down frequency and investors' response has been investigated by Elliott & Hanna (1996) who examine the market reaction to asset write-downs based on the number of write-downs the company conducted in the relevant period. The authors find that the more write-downs a firm had, the more the market reaction diminished. Therefore, it seems likely that repeated write-downs increase noise and hinder investors to grasp earnings properly. This conclusion could be taken one step further and included in the academic discussion around the usefulness of goodwill amortisation: if repetitive write-downs (the result of amortisation and depreciation) increase noise, then systematic amortisation/depreciation accounting treatment is likely to depict economic impairment of the assets in question inadequately.

Zang (2003) investigates the market response to increase in earnings due to the elimination of goodwill amortisation under SFAS 142 and also to the announcement of the initial goodwill impairment loss. Consistent with his predictions he finds that goodwill amortisation was considered to be anticipated rather than conveying new information about earnings and there was no significant reaction to its elimination. This result is consistent with the empirical evidence presented from Jennings et al (2001) stating that goodwill amortisation is a noise for investors and provides no new information about the firm. Additionally, Moehrle et al (2001) conduct an information

[37] See section 2.1 for more details on goodwill regulations.

content study investigating the usefulness of goodwill amortisation for investors based on the relations between goodwill write-downs and market-adjusted returns. Their sample includes S&P 1500 firms in the period 1988-1998. Consistent with the findings of Jennings et al (2001) and, later, of Zang (2003), the results provide evidence that goodwill amortisation was not informative or decision-useful for investors and were, therefore, supportive of FASB's proposal to eliminate amortisation. In contrast to the results concerning goodwill amortisation, Zang (2003) finds a significant negative market reaction to unanticipated initial impairment losses, particularly for highly leveraged firms, suggesting that the impairment test might present a more consistent way to depict the economic depletion of goodwill (at least as far as investors are concerned). In a further study of the UK market Li & Meeks (2006) test the value relevance of goodwill impairment versus that of goodwill amortisation. Confirming results from prior research they find that goodwill amortisation is seen by investors as noise while impairment seems to reflect relevant information.

Possibly motivated by the significant amount of research on SFAS 142 and the rather vociferal discussion on goodwill impairment at the time, Baker & Wearing (2001) test the potential impact of the US GAAP standard on British companies (the authors concentrated on Return-on-Assets (ROA) and Return-on-Equity (ROE) effects). Their results suggest that intangible-intensive companies would be more affected by the application of such an accounting standard in the UK compared to 'old economy' companies. Finally, Chambers (2007) investigates the value relevance of goodwill impairment under SFAS 142 as well as the value relevance of the elimination of goodwill amortisation on a sample of US companies for the period 2003-2005. Performing the investigation on the basis of a combination of reported numbers (for goodwill impairment losses) and 'as if' numbers (calculations of goodwill amortisation based on various assumptions of the useful life) the author finds that the most value relevant goodwill accounting system would include both impairment and amortisation methods (which is *de facto* the case under UK GAAP).

In conclusion, the findings of studies reviewed in this section show a greater level of consistency than those of information content studies. A negative market reaction to asset write-downs over longer periods of time prevails in most of the studies considered. Together with the evidence that many write-down companies preformed poorly before the write-down, this suggests that investors might have expected at least partly the write-down. This conclusion might also offer one explanation for the

varying market reactions found in information content studies: depending on whether the market had anticipated the write-down, it might have reacted differently to its announcement. Another common feature showing in the studies reviewed here is that the market apparently cannot fully adjust to the effect of the write-downs in the announcement period. The write-down impact has been found to linger for up to two years after the announcement. The same comparability restrictions already discussed for information content studies apply here. Additionally, further caution is recommended since, due to the longer time intervals, noise in the data might increase due to overlapping with other announcements of new information. In this context goodwill write-downs are particularly vulnerable since announcements referring to them often include other information which interferes with investors' response.

2.2.1.2 Lenders' response to asset write-downs

While research concerning shareholders' response to asset write downs is relatively abundant, the same cannot be said about other users of financial statements. This was already noted by Alciatore et al (1998) who, in their conclusion section, recommend that future research concentrates on other user groups such as lenders, since until then they have been rather neglected. The authors illustrate their recommendation by highlighting a study by Bernard & Frost (1989) as an example of research on lenders' response to accounting information.

Bernard & Frost (1989) examine the impact of a SEC rule restricting capitalisation of exploration costs for oil and gas companies. They hypothesise that the impact of write-offs on loan agreements should be significant since the rule was unexpected and entered into force after the relevant period, so that companies would have little possibility to adjust. Therefore, violations of loan covenants were expected or at least a decrease in loan covenant slack. However, results showed no significant link between the write-offs and a decrease in loan covenant slack. Additionally, where there were violations, this did not seem to lead to alterations of the loan agreements or real costs for investors.

The above example leads to the conclusion that loan covenants might provide a good opportunity to detect indirectly lenders' response to asset write-downs. As loan covenants additionally offer a particularly good possibility to examine opportunistic managerial behaviour, they have already been intensely discussed in this specific

context both in the US and the UK. Section 2.2.2.3.1 concentrates on this discussion in detail.[38]

Another study investigates a further topic close to the focus of interest here. Catasús & Gröjer (2003) examine the relevance of intangibles for credit decisions. The motivation of the study is based on the fact that some companies (especially small and medium-sized firms) are dependent on banks for acquiring capital, since they do not have access to the stock market. The authors rely on qualitative data (interview with loan officers, etc.) and their main finding suggests that intangibles are only relevant for credit decisions when they are considered to represent reliable information. Thus, it is actually the bank officers' beliefs and personal assessment that appear to be responsible for the inclusion of intangibles in the credit decision-making process of banks.

It seems logical that lenders should be interested in goodwill write-downs, since research indicates that these might provide a signal for the economic development of a company or for opportunistic managerial behaviour[39] and, therefore, play a role in credit decision making processes. However, apart from numerous studies concerning the issue of debt covenants, research in this area has so far been limited.[40]

2.2.1.3 Financial intermediaries' response: Goodwill write-downs and credit ratings

Financial intermediaries, here in particular rating agencies, represent another area where research concerning the response to goodwill write-downs is surprisingly scarce.

A rating agency's primary function is to 'assist investors in making investment decisions. Through research, analysis, and information the nationally recognised credit rating agencies protect investors against unknowingly taking credit risk' (Baron, 2000). The role of a rating agency lies in providing valuable information to investors at low cost, thus decreasing the costs of obtaining new information and monitoring

[38] It should be noted, however, that research on debt covenants mostly tests the effect of regulatory changes on covenants, or the general inclusion of intangibles in the covenant calculation. Only very few studies address the role of goodwill for covenants and none test the direct response of lenders to goodwill impairment (such as for example restrictions of lending, change in covenants or penalties).

[39] For an overview of relevant research see sections 2.2.2.2 and 2.2.2.3.

[40] The findings on the shareholders' reaction to goodwill write-downs cannot be applied to lenders without adjustments as lenders' interest in goodwill impairment differs from shareholders' view. While investors require complete information about a company at best, lenders are more likely to be concerned about conservatism and timeliness of numbers which would secure their investment in the company in question (Ball et al 2008).

company performance in a market where rapidity provides valuable advantages. The importance of its activities and products (the credit ratings) is strongly interlinked with its reputation, which can be seen when the market capitalisation of established rating agencies such as Moody's are traced (Partnoy, 2002; Baron, 2000).[41] Despite substantial criticism by academics and the public concerning the rate of adjustment of their ratings to new events, rating objectivity, lack of informational value or other issues[42], rating agencies still play a major role in the investors' decision making process. Furthermore, their place in the market is firmly secured by a number of regulators including ratings in laws and rulings. Among these are for example the Basle Committee on Banking Regulations and Supervisory Practices, the Securities & Exchange Commission (SEC), the Federal Reserve Board and the Federal Home Loan Bank (S&P, 2005; Baron, 2000).

A credit rating represents the opinion of a rating agency about the 'overall creditworthiness' of a company (Churyk, 2001). It is the result of extensive analysis including quantitative and qualitative information about the firm and its environment. Additionally, industry specifics as well as macroeconomic events are evaluated. There are two categories of rating analysis: short-term, or 'point-in-time' analysis, where more weight is placed on the company's current situation; the second way to conduct a credit rating assessment is long-term, or 'through-the cycle' analysis which is often used when capital supply is the objective. (Crouhy et al, 2001). A good rating allows easier access to loans and enhances possibilities to issue debt obligations. A bad rating (or a decrease in the rating status), on the other hand can cause difficulties to raise capital or/and stock price declines (Sellhorn, 2004). Thus, ratings affect companies' cost of debt and of equity and are, therefore, an issue of considerable importance and concern to the company (Martin & Henderson, 1983).

The quantitative information included in the rating analysis is normally based on data available in the company's financial reports (S&P, 2005). Therefore, accounting information is expected to play an important role in the decision process of credit ratings. In this context, considering their sometimes substantial amounts, goodwill write-downs might possibly be relevant. Issues within this area of research can be categorised as follows:

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[41] The importance of this link was heavily underlined during the recent financial crisis, when a lot of criticism and calls for greater transparency of the rating process were aimed at rating agencies (SEC, 2008; Utzig, 2010).

[42] An overview of this discussion is provided in Partnoy (2000).

(1) What is the **effect of the announcement** of new accounting information - and, in particular, of goodwill write-downs - on ratings? What is the speed of adjustment of credit ratings to such new information?

(2) What is the **role** of accounting information **in the decision making process** of credit ratings? How are differing (goodwill) accounting treatments perceived by rating agencies and how are they incorporated in the assessment process?

These two issues are dealt with in turn in the next two subsections.

2.2.1.3.1 Announcement effect of accounting data

Rating agencies issue their opinions of the creditworthiness or credit quality of a company based on either the current condition of the company or on a long-term company cycle, where the worst point in the cycle is evaluated in order to achieve stability of the rating (Crouhy et al, 2001). In the process of monitoring the credit quality of the company, rating agencies adjust the rating as new information is available.

Following several surveys of reported slowness in the reaction of rating agencies to information affecting credit quality (Baker & Mansi, 2002), Altman & Rijken (2004) investigate the reasons for the apparently slow adjustment of credit ratings to changes in credit quality. Their findings suggest that rating agencies use more often the long-term 'through-the-cycle' methodology and therefore, often do not heed short-term indicators. In other words, a rating is changed only when the new information is likely to cause permanent changes in creditworthiness.

A possible way to compensate, at least partially, for the slowness of ratings' adjustments under the 'through-the-cycle' methodology is the credit watch, used by rating agencies. According to Moody's and S&P, a company is placed under credit watch whenever it is likely that its rating will be changed due to impending events including regulatory changes or operating events (Löffler, 2005). Thus, for example, it might be possible that announcements of goodwill write-downs lead to a placement of the company on the watchlist rather than to a direct downgrade.

Direct empirical evidence that rating agencies react to accounting information and particularly asset write-downs, with adjustments to company ratings is presented by Elliott & Shaw (1988) in their study of asset write-downs between 1980 and 1987.

They find that bond ratings two years before and two years after the write-down were downgraded more often than for industrial firms on average, with the strongest effect occurring during the year of the write-down. The authors counted the number of increases and decreases of the bond ratings in the relevant period and also found that decreases occurred more often for write-down firms than increases. Based on these results, the authors perceive a relation between the poor performance of write-down firms and their bond rating. Elliott & Hanna (1996) take this investigation one step further and examine the link between the frequency of the write-downs and bond ratings. Their results show that an increase in the number of write-downs that a company conducts leads to a decrease in the bond rating. The findings of these two studies suggest that where the write-down is perceived to be the result of economic deterioration of the financial situation of the firm, it is likely that it is followed by a change in rating (downgrade) or a placement on the credit watch. Neither Elliott & Shaw (1988) nor Elliott & Hanna (1996) concentrate on goodwill write-downs; they use a broader definition of write-downs in their studies[43].

2.2.1.3.2 The role of accounting data in the rating decision making process

The correlation between goodwill impairment announcements and changes in the rating of a company can be examined by looking at the role of this accounting information in the rating assessment process in the first place. Through the 1960s, 1970s and 1980s there has been ample research concerning the role of accounting data in the credit rating decision making process. Most of the studies investigate the predictability of ratings by using models including publicly available accounting numbers. Since rating agencies themselves do not elaborate on their exact decision-making process (Chattopadhyay et al, 1997; SEC, 2008), the aim of these studies is to explain how the rating decision was reached (Horrigan, 1966; West, 1970; Pinches & Mingo, 1975; Kaplan & Urwitz, 1979; Belkaoui, 1980; Molinero et al, 1996); or, alternatively, to predict firm bankruptcy (Beaver, 1966; Altman, 1968; Altman et al, 1977; Ohlson, 1980).[44]

[43] Elliott & Shaw (1988) include significant nonrecurring items, write-downs or write-offs of receivables, intangible assets, capitalised computer software, etc. in their sample. Elliott & Hanna (1996) concentrate on special items that are larger than 1% of total assets.

[44] Although research on firm bankruptcy is not relevant here, it is mentioned for the sake of completeness and is not further discussed.

Altman and Saunders (1998) provide an overview of the main research approaches used to predict ratings based on accounting information. Typically, either univariate credit-scoring models are used, where the researcher 'compares various key accounting ratios of potential borrowers with industry or group norms'; or multivariate credit-scoring systems, where the accounting ratios are weighted and combined in a more sophisticated system. These methodologies are used either to predict the default probability of the companies, or to assess and explain the credit rating issued by rating agencies. The findings of most studies explain between 56-75% of the ratings (Horrigan, 1966; West, 1970; Pinches & Mingo, 1975; Kaplan & Urwitz, 1979; Belkaoui, 1980; Gentry & Whitford, 1988). These studies, however, do not concentrate on the implication of a particular accounting number for the rating decision process. They investigate the aggregate influence of several accounting variables.

Concerning the impact of separate accounting positions, research has so far included investigations on the effect of pension obligations and of deferred taxes. Martin & Henderson (1983) investigate the effect that the Employee Retirement Income Security Act (ERISA) had on bond ratings. ERISA changed the priority of claim of pension liabilities, which was expected to have an impact on bond ratings. The results suggested that inclusion of ERISA variables in the prediction model (compared to a model using only traditional ratios) increased the predictive ability from 27% to 56% with greater accuracy for lower ratings. The authors note the small size of their sample and recommend revisiting the study when further data are available.[45]

A couple of decades later Hann et al (2007) investigated the value and credit relevance of alternative pension accounting models (fair value approach versus the so-called 'smoothing' model) using a sample of US companies between 1991 and 2002. They find that the credit relevance (but not the value relevance) of the balance sheet is improved under the fair value approach but not when using the 'smoothing' model. The income statement usefulness (both value and credit relevance), however, was diminished when applying fair value accounting for pensions. The authors interpret this result as an illustration of the different needs of investors and creditors (also a question raised by Holthausen & Watts, 2001).

[45] The link between pension obligations and ratings has also been seen in practice, for example when S&P downgraded ThyssenKrupp due to a change of consideration of pension provisions. For a discussion of this issue, see Sellhorn, 2004, pp. 141-144.

Another issue was discussed in two studies by Huss & Zhao (1991) and by Chattopadhyay et al (1997). Both studies investigate the usefulness of alternative accounting treatments for deferred tax for the rating decision on an ex post basis.

Huss & Zhao (1991) use a US sample of Moody's bond ratings for 1981 including ratings of B or higher. They calculate financial ratios on 'as if' basis using three alternative user treatments linked to the accounting treatments for deferred taxes specified by APB opinion No. 11. The results show no difference in rater preferences related to any of the different accounting treatments. The authors interpret these findings either as lack of relevance of deferred taxes for the rating decision or as a signal that rating agencies assign an equal importance to all accounting treatments.

Similarly, Chattopadhyay et al (1997) concentrate on the usefulness of alternative deferred tax accounting treatments for bond rating decisions. They choose a sample of Canadian firms, rated by the CBRS between 1973 and 1990. The authors use the same methodology as Huss & Zhao (1991) and reach a similar conclusion. They conclude that deferred tax accounting might not play a role in the bond rating decision process.

Moving a step closer to goodwill, Amir et al (2003) focus on intangibles and their relevance for analysts. They discuss whether inadequate reporting of R&D is balanced by analysts' use of information available outside of the financial report. Although, the authors report that their results are mixed to a certain extent, the findings seem to support the above hypothesis. Therefore, where intangibles-intensive industries are concerned, it might be advisable to also include additional information available outside the financial report.

Specifically concerning goodwill write-downs, there is some empirical evidence that managers do worry about the effect these write-downs might have on the credit rating of the company (Gore et al, 2000; Sellhorn (2004) however does not find a significant relation).

Additionally, Hopkins et al (2000) analyse analysts' sell/buy recommendations in relation to goodwill amortisation. Their findings show that analysts are more likely to assign a higher value to companies which immediately write off the excess of the acquisition price over the identifiable assets and liabilities of the target as IPR&D as opposed to companies capitalising and amortising goodwill.

2.2.2 Causes for goodwill write-downs

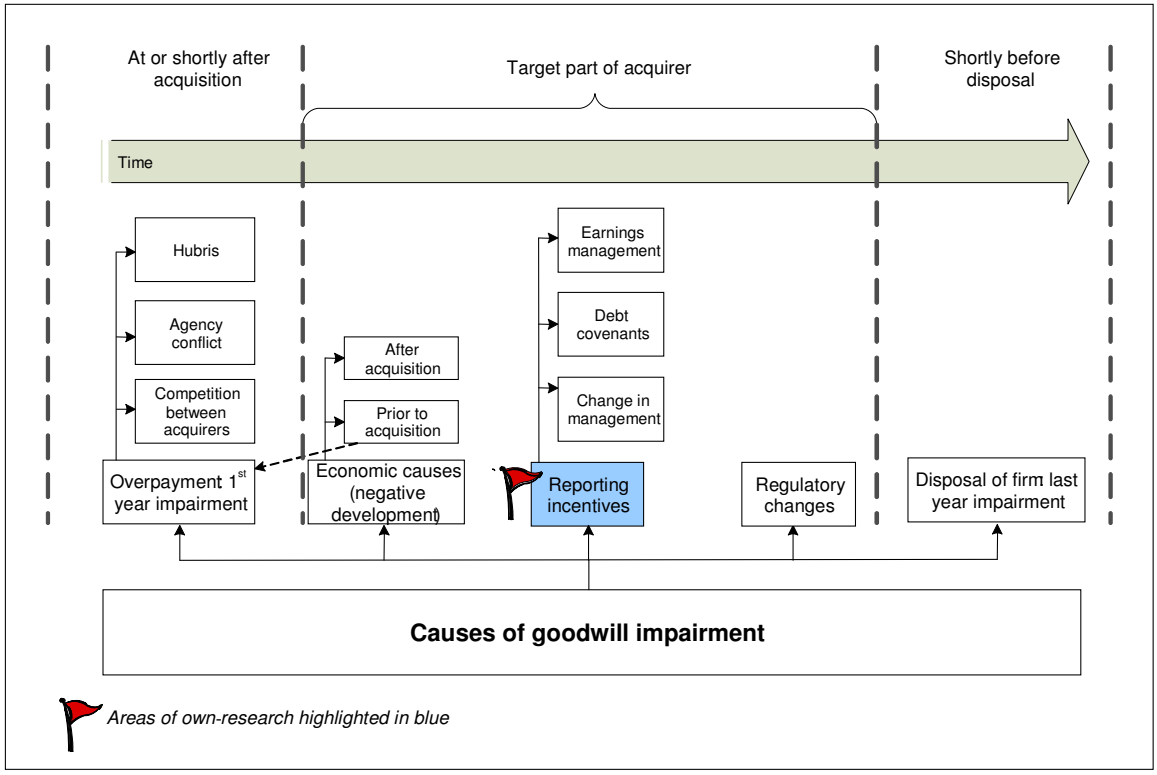
The impact of goodwill write-downs on company numbers and key performance indicators as well as the response of financial statement users to this information is not only a valid research question on its own. It also provides the motivation for and acts as a 'prelude' to another, much larger, goodwill-related research area. If users of financial statements react in some way to goodwill write-downs and if this effect is material (and, especially if it is material and negative), then it becomes essential to understand not only the impact of goodwill write-downs but also the causes ultimately leading to these write-downs.

Additionally, compliance with IFRS eliminates UK managers' choice between amortisation and impairment as accounting treatments for the subsequent valuation of goodwill. This regulatory change alone has a substantial impact on companies currently and previously applying UK GAAP: despite the accounting choice offered in FRS 11, an overwhelming majority (94%) of listed UK companies applied goodwill amortisation (Sproul & Higson, 2005). Therefore, beside the assessment of the response of financial statement users, it is also important to understand managers' motivation behind their accounting choices.

For purposes of this thesis the review of prior research related to causes of goodwill (and more generally asset) write-downs is structured according to the life span of an acquisition. First, overpayment aspects potentially leading to increased goodwill write-downs are discussed since this event usually occurs at and can be detected shortly after an acquisition. Next, the period during which the target is part of the acquirer is reviewed and respective research on goodwill write-down causes in this environment is addressed. The issues discussed include economic causes for goodwill write-downs, reporting incentives inducing the management to carry out the write-down (such as for example debt covenants, earnings stability, etc.) or regulatory changes which might create a temporary environment dis-/encouraging goodwill write-downs (for example the transitional period of the adoption of SFAS 142). Finally, an issue is tentatively mentioned concerning possible characteristics of goodwill write-downs shortly before the disposal of a firm. This discussion is motivated by UITF abstract 3 'Treatment of Goodwill on Disposal of a Business' (UK GAAP).

An overview of this structure is presented in illustration 2.2 below including some suggestions and/or examples of goodwill-related causes, which are discussed in depth in the following sections.

Illustration 2.2: Causes of goodwill write-downs: an overview



2.2.2.1 Overpayment at acquisition

According to the definition in FRS 10, para. 2, goodwill is the residual amount remaining after accounting for all identifiable assets and liabilities of the entity. Previous research has investigated the characteristics of this residual amount and evidence for several elements contained in goodwill is available (for example Johnson & Petrone, 1998; Henning et al, 2000). However, it is not necessarily clear what characteristics the amount of recorded goodwill accounts for (Churyk, 2001). In fact, it is possible, at least in some cases, that goodwill or part of it reflects overpayment for the target firm at acquisition and is already impaired at this early point in time. A problem might arise for UK companies using amortisation in the sense that the goodwill write-downs do not correctly reflect an economic decrease in value which might be different in the first year after acquisition than in later years. ASB's solution to this problem is contained in FRS 10, para. 34 requiring all companies to conduct an

impairment test at the end of the first financial year after acquisition (hereafter called the 'initial impairment test'). The initial impairment test is required in order to capture a possible overpayment for the target, or other events leading to the depletion of goodwill. There is no study, however, to knowledge of the researcher which investigates whether the initial impairment test reflects overpayment in UK firms, as opposed to write-downs in subsequent years. Therefore, in this section relevant literature under international GAAP is reviewed.

An interesting question worth asking when looking at overpayment for targets at acquisition is why companies might be willing to overpay in the first place. Merger and acquisition motives some of which might lead to overpayment have been well investigated in previous research and support for several causes has been found.[46] For example an agency conflict could represent a motive for an acquisition leading to overpayment: this is the case when management is prompted to conduct an acquisition based on their own interest and acts knowingly to the disadvantage of shareholders. Support for the existence of agency conflict as a motive for acquisition has been found in several studies (Malatesta, 1983; Walkling & Long, 1984; Lewellen et al, 1985; Lang et al, 1989; Schleifer & Vishny, 1989; Berkovitch & Narayanan, 1993; Chyruk, 2001, 2005). However, there is also the possibility that managers act unintentionally to the detriment of shareholders when they mistakenly overestimate their ability to (better) manage the target which might lead to an overpayment at acquisition. This phenomenon is called hubris and is introduced by Roll (1986) and supported with further empirical evidence by Berkovitch & Narayanan (1993) and Zhang (1998). The results of Churyk (2001, 2005) support the existence of both hubris and agency conflict in the context of goodwill write-downs. However, the author is unable to separate the two phenomena and uses the same variable to describe them. Berkovitch & Narayanan (1993) have managed to separate these events in their study of motives for takeovers by using the relationship between target and total gains.

Having identified potential causes leading to overpayment researchers could proceed to testing whether the write-downs reflect overpayment at acquisition. The few studies investigating this link concentrate on US companies during the transitional regulations of SFAS 142 (Li et al, 2004; Long, 2005) or during non-transitional periods under US GAAP (Henning et al, 2000; Churyk, 2001, 2005). The transitional regulatory setting is specific and write-downs conducted under such regulations might be motivated by

[46] Churyk (2001) provides an overview of the literature concerning motives for mergers.

causes other than overpayment.[47] Admittedly, a lot of these other possible causes are controlled for in the study conducted by Long (2005). The author examines two issues related to overpayment. First, the relation between goodwill impairment charges caused by the adoption of SFAS 142 and overpayment in the initial acquisition is investigated. The results provide evidence that these two variables are positively related after controlling for other economic events and incentives. Furthermore, the author finds that the market does not view the overpayment element of goodwill differently for companies conducting write-downs and for companies who do not. The data used in the studies cover the transitional period of the adoption of SFAS 142 (2002-2003) and initial acquisitions are traced back for the period of 1997-2002. Similar results are provided by Li et al (2004) who use the same setting as Long (2005), but do not control for some of the economic and incentive variables that Long (2005) does account for.[48]

Another possible way to investigate the relation between goodwill write-downs and overpayment is to establish reliable indicators of overpayment and to test a potential link between them and the amount of the goodwill write-down. Since regulators often provide guidance to reporting firms using such indicators, it is important to understand whether these indicators in fact lead to overpayment and whether other important indicators need to be added to that guidance. Researchers have already provided some evidence concerning these questions by testing indicators provided by standard setters (Churyk, 2001; El-Gazzar et al, 2004; Li et al, 2004; Churyk, 2005; Hayn & Hughes, 2006). Li et al (2004) find that the market reaction following an acquisition was negative for acquirers and positive for target firms, suggesting possible overpayment and that the amount of impairment write-downs is positively correlated with some indicators of overpayment. The indicators investigated are: '(i) the percentage of purchase price paid in excess of the pre-acquisition per share book value of the target, (ii) percentage purchase premium paid relative to the pre-acquisition price of the target, (iii) percentage of the firm price paid in the form of shares, (iv) whether multiple bidders competed for the target firm, and (v) whether the acquisition is unrelated to the acquirer's main business'. Concerning indicator (iii) the authors find,

[47] See chapter 2.2.2.4 for more details concerning the characteristics of write-downs conducted around regulatory changes.

[48] Long (2005) also uses a more refined variable to measure overpayment than Li et al (2004) who use the difference between the purchase price and the book value of the firm. Long (2005) uses the residual of goodwill that remains after accounting for other components of goodwill such as the going-concern value of the target and synergies between target and acquirer (see also Johnson & Petrone, 1998; Henning et al, 2000).

contrary to expectations that the control sample including industry-matched firms that did not conduct impairment write-downs had a higher coefficient than impairment firms. Similarly, Churyk (2001, 2005) tests initial overpayment of goodwill after acquisition with the help of five indicators proposed by the Exposure Draft released prior to the issuance of SFAS 142, which are similar to the indicators used by Li et al (2004) with the exception of condition (v). The author finds, however, very weak evidence for initial overpayment when the payment for the target was in the form of shares and no such evidence for the other indicators. A possible explanation for this result, as the author mentions herself, is the small size of the sample (144-153 companies investigated in the period 1996-1998). Churyk's study is one of the two not investigating the framework of SFAS 142 adoption and transitional regulations (the other one is Henning et al (2000)).

El-Gazzar et al (2004) test these same indicators and find that goodwill is more likely to be impaired if it was a significant part of the purchase price and, additionally, if the purchase price was paid in shares of the acquiree. Finally, Hayn & Hughes (2006) find that acquisition characteristics based on these indicators provide more precise predictors of future impairment losses than performance measures of the acquiree.

In conclusion, it can be said that the relation of overpayment at acquisition and goodwill impairment is relatively well investigated. However, almost all studies existing on this topic are constructed using the regulatory framework of US GAAP and /or the transitional phase of SFAS 142.

2.2.2.2 Economic causes

If financial reporting regulations are followed, write-offs should ideally reflect a loss in the value of the asset. However, regulations for some assets, among them especially goodwill, allowed in the past or still allow considerable managerial discretion concerning issues such as example the timing or amount of the write-downs (for a review of regulations see chapter 2.1). Therefore, it is hardly surprising that research has often (at least indirectly) concentrated on questions related to the extent to which asset write-downs reflect economic reasons (Strong & Meyer, 1987; Elliott & Shaw, 1988; Francis et al, 1996; Rees et al, 1996; Heflin & Warfield, 1997; Cotter et al, 1998; Hirschey & Richardson, 2003; Segal, 2003; Zang, 2003; Riedl, 2004, Sellhorn, 2004). A major reason for monitoring the relationship between economic factors and goodwill write-downs is the concern (of investors, regulatory bodies, etc.) that write-

downs might reflect managerial incentives rather than the economic impairment of the asset.[49] Since the aim of financial statements is to provide economically relevant information about the firm situation, this concern leads to the question whether there is empirical support showing that write-downs are driven by loss in asset value rather than by other causes.

Generally, empirical results show that asset write-downs actually do reflect economic impairment, at least partially. However, findings differ as to the extent of economic impairment captured by write-downs (as opposed to other causes). Since economic impairment has proven to be hard to model, studies usually use variables describing the financial and economic performance of the company prior to the occurrence of the write-down (Sellhorn, 2004). Such variables could be stock price movements, market-to-book (MTB) and return-on-assets (ROA) ratios (Francis et al, 1996; Elliott & Shaw, 1988; Sellhorn, 2004), company sales (Segal, 2003; Riedl, 2004), company-specific or industry factors. Elliott & Shaw (1988) find that asset write-downs are likely to 'occur during a period of sustained economic difficulty' when the write-down firm substantially underperformed its industry peers. Further results concerning firm underperformance of write-down firms compared with their industry benchmarks is provided by Strong & Meyer (1987), Rees et al (1996) and Heflin & Warfiled (1997). Similarly to Elliott & Shaw (1988), however, none of these studies differentiates between categories of write-downs. Francis et al (1996) extend prior academic research by differentiating between several types of write-downs including inventory and goodwill write-downs. Their findings show that the extent to which write-downs reflect economic factors (as opposed to reporting incentives) depends on whether the asset is discretionary[50] or not. In the case of discretionary assets such as goodwill, write-downs seemed to be caused more often by reporting incentives than economic reasons. Another issue is explored by Riedl (2004) who provides a comparison between asset write-downs (for long-lived assets) before and after SFAS 121 in order to test the efficiency of the then new standard. The author finds that write-downs before SFAS 121 reflected economic factors to a higher extent than write-downs

[49] The numerous studies on managerial incentives usually also include variables aiming to model the economic depletion of goodwill. Therefore, they also provide some information regarding the relation of goodwill write-downs to economic causes. Managerial reporting incentives for conducting a goodwill write-down are discussed in detail in section 2.2.2.3.

[50] The authors define an asset as discretionary when financial reporting regulations are sufficiently flexible for managers to pursue their financial reporting objectives at their own discretion. Goodwill write-downs are also considered to be discretionary in later research (Segal, 2003). Sellhorn (2004) provides an extensive analysis of the discretionary nature of goodwill write-downs under SFAS 142.

conducted after the adoption of SFAS 121. He uses these results as evidence against the usefulness and efficiency of the standard.

In conclusion, it can be said that a number of studies exist that investigate the relation between write-downs and economic factors. However, there are several noticeable gaps in and limitations of this literature. First, most of the studies do not concentrate on specific categories of write-downs but rather investigate a more generally defined group, such as discretionary write-downs or negative special items. The only study directly referring to goodwill write-downs is Francis et al (1996) which covers data from the period 1989-1992. This limitation is, however, only a formality as the numerous studies on reporting incentives, managerial opportunism and asset write-downs (see section 2.2.2.3) also include variables capturing financial performance, and, therefore, also test economic causes. Furthermore, the studies reviewed in this section all refer to US companies and the US GAAP framework. Finally, previous research uses variables measuring the economic performance of companies (i.e. the outcomes of economic performance) and links them to goodwill impairment. However, the phenomena underlying these economic factors (i.e. what leads to the deterioration of financials of a company) are not investigated in relation to goodwill impairment.[51]

2.2.2.3 Reporting incentives

The issue whether managers use asset write-downs to manipulate earnings, i.e. whether reporting incentives motivate the occurrence, timing and amount of write-downs is by far the most investigated problem in asset write-down literature. This area of research can be seen as a part of the much bigger debate on earnings management or disclosure management, which is not discussed here. Research interest in this area is based, on the one hand, on the fear of investors that management might - in a principal-agent context - misuse their trust and the information asymmetry to its own benefit. On the other hand, standard setters continuously endeavour to limit potential opportunistic behaviour of the management which might hinder a 'fair presentation' of the financial situation of the firm (as required for example in ASB Principles, Chapter 1, and in IFRS, QC4, QC12-16).[52] Therefore, the motivation of empirical research is to expose

[51] Research on this topic is partly reviewed within the discussion of triggering events, see section 2.2.3.1.

[52] It is important to note that managerial behaviour is not necessarily aimed to detriment shareholders' wealth. It is also possible that managers use asset write-downs to signal new information (Rees et al, 1996; Li et al, 2004).

the influence (or lack thereof) of reporting incentives on asset write-downs and thus stimulate discussions and provide support for standard setting action.

An overview of the relevant findings in the research area of reporting incentives and their influence on asset write-downs is provided in the following sections. This literature review is categorised according to the main issues found in the academic discussion.

2.2.2.3.1 Debt covenants

The debt covenant discussion is based on the theory of agency conflicts existing in the contracts between different parties related to the company such as shareholders, lenders and managers. According to Watts & Zimmermann (1986), a number of contracts exist in the firm between these parties that can generally be categorised as 'principals' (shareholders, lenders) and 'agents' (management). In a simplified setting, it can be said that the principals carry the major part of the costs to monitor agents' performance and to ensure agents' compliance with their own interests. In the relevant literature concerning contracts between principals and agents two mechanisms have been discussed to achieve the above: compensation plans designed to provide an incentive for the management to act towards shareholders' interests and debt covenants securing a prioritised ranking of lenders' interests (Watts & Zimmermann, 1986; Sellhorn, 2004). Compensation plans in this context are, however, not discussed here: although there has been some research concerning their relation with asset write-downs (Francis et al, 1996; Heflin & Warfield, 1997; Segal, 2003; Riedl, 2004; Beatty & Weber, 2005; Dorata, 2008), the general conclusion so far is that asset write-downs are hardly used to influence management compensation when based on accounting numbers.[53]

The purpose of accounting-based debt covenants is to establish means of control and monitoring of agents' activities for the sake of lenders interested in securing the repayment of the company's debt. With the help of debt covenants company risk can be regulated, kept at a low level and management hindered to accumulate additional debts for further investments (Watts & Zimmerman, 1986). Trespassing on the limitations set in these contracts will usually trigger an 'event of default' for the

[53] Beatty (2007) notes that, contrary to debt contracts, executive compensation contracts are more flexible, particularly so, as regards the determination of the basis for bonus calculations. This explanation could account for the apparent lack of relation between managerial compensation and asset write-downs.

company's debt leading to an obligation of immediate repayment. Research on lenders' interests provides several interesting insights. While Watts (2003) postulates that accounting conservatism will improve the efficiency of debt contracts, Gigler et al (2009) find that lenders will benefit more from an early loss recognition (as opposed to timely) and, therefore, earlier loan covenant violations.[54] Nevertheless, in spite of this finding, research seems to agree that lenders will profit by timely (as opposed to late) information about deterioration of the loan repayment ability of the firm and even reward such company behaviour by lowering the interest rates on loans to conservative borrowers (Zhang, 2008). This behaviour of lenders, however, also seems to affect the accounting precision of company information. Feltham et al (2007) report that companies will produce less accurate accounts if - post-poor financial performance - they fear loan covenant violations. And, in fact, there is a lot to fear: Gârleanu & Zwiebel (2009) find that covenant violations tend to occur shortly after contract inception (on average one year) and that - due to tight calculation of the loan covenants (also researched by Chava & Roberts, 2005) about 30% of loans are in violation at some point over their duration if net worth covenants are considered (42% if current ratio covenants are regarded). Frequent covenant violation leads to more frequent renegotiations of debt contracts, relaxations, waivers and record-keeping and thus increases significantly the respective costs.

Considering these rather significant implications of debt covenant violations and the fact that their occurrence does not seem to be the exception to the rule managers might be induced to a certain extent to apply accounting methods that would avoid a breach of the restrictions of the covenant: the so-called debt-covenant hypothesis (Dichev & Skinner, 2002)[55]. Academic research has already undertaken the task of empirically investigating this issue. More specifically, in the context of this thesis, managers' discretion concerning asset (goodwill) write-downs might be used to avoid possible breaches of the company debt covenants. In fact, Hall & Swinney (2004) find that firms tailor their accounting policies to avoid debt covenant violation. Additionally, Beatty et al (2002) report that companies will even pay higher interest rates on loans if this will allow them higher accounting flexibility.

[54] In support of Watts' findings Nikolaev (2010) finds that accounting conservatism increases reliance on covenants for public debt contracts, however, only when there are no previous private debt contracts.

[55] See also Feltham et al (2007).

A closer look at the accounting ratios used in debt covenants reveals that debt ratios are usually preferred, such as the debt-to-equity ratio (DTE ratio, also called gearing) or interest coverage (Watts & Zimmerman, 1986; Citron, 1992a; Dichev & Skinner, 2002). Since access to actual debt covenant data is not readily available, especially for private debt agreements, earlier research in this area relies largely on the DTE ratio as a proxy in empirical studies (Collins et al, 1981; Daley & Vigeland, 1983; Leftwich, 1983). Although later studies shift their methodology in favour of actual debt covenant details[56] (Press & Weintrop, 1990; Beneish & Press, 1993; Mohrman, 1993; Smith, 1993; Sweeney, 1994; Dichev & Skinner, 2002; Beatty et al, 2008; Frankel et al, 2008), there is also evidence of the appropriateness of the DTE ratio as a proxy leading researchers to recommend its use (Duke & Hunt, 1990; Press & Weintrop, 1990). Beneish & Press (1993) for example also support the use of DTE ratio but recommend actual covenant information as the more appropriate method. Dichev & Skinner (2002), however, find only an insignificant link between DTE ratio and covenant slack (defined as the proximity to the loan covenant limits). They interpret this result as providing evidence of the noisiness of DTE ratio as a proxy.[57] The authors explore a large database of US private lending agreements and include in their sample not only firms that violated debt covenant restrictions but also companies that managed to avoid breaches. Their results show that debt covenant violations are not necessarily caused by financial distress. In the UK, Citron (1995) finds that, for a sample of 108 UK public debt contracts, the DTE ratio (gearing variable) is not related to accounting-based debt covenants.

The fact that debt covenants are often based on accounting information together with Dichev & Skinner's evidence of lack of connection between debt covenant breaches and company financial problems means that some of the violations might be due to the adoption of a new accounting standard or to a change in accounting choice under current regulations. Therefore, research concerning accounting-based debt covenants is directly related to research of the determinants of management's accounting choices (Citron, 1992a). The information in accounting-based covenants is often presented according to local GAAP[58] which can be either 'frozen' (the GAAP ruling that was

[56] Financial ratios used in debt covenants may vary across countries (Citron 1992a).

[57] Georgiou (2005) also rejects the use of DTE as a proxy for debt covenant costs. Nevertheless, research on goodwill-related issues, indirectly related to debt covenant research, still uses the DTE ratio as a proxy for the debt covenant hypothesis (see among others Zang, 2003; Segal, 2003; Sellhorn, 2004).

[58] There is also evidence, however, of the use of some GAAP modifications for purposes of accounting-based debt covenant calculation (for example Leftwich, 1983).

mandatory when the debt in question was issued) or 'rolling' where the current regulations at the time of calculation of the covenants are relevant (Leftwich, 1983; Citron, 1992a; Ormrod & Taylor, 2004; Sellhorn, 2004). According to Leftwich (1983), Citron (1992a) and Ormrod & Taylor (2004) debt covenants in private debt contracts in the US and the UK are more likely to be based on 'rolling' GAAP than on 'frozen' GAAP. Citron (1992a) draws the conclusion that in these cases newly issued accounting regulations might lead to violations of the restrictions of the debt covenant. This is particularly important for the UK debt market where accounting-based covenants are mostly affirmative, meaning that 'they apply at all times while the debt is outstanding' (Citron, 1992a).[59] The above results are confirmed in a study by Citron (1992b) in which a predominant view of bankers was to adjust the debt covenants following the issuance of a new accounting standard that might lead to violation of the restrictions. Ormrod & Taylor (2004) discuss debt covenants in the context of the introduction of IFRS in the UK and conclude that IFRS regulations are bound to have a significant impact on covenant violations.

Research in the area of asset write-downs has already provided some useful findings related to accounting-based debt covenants. Discretionary write-downs are particularly interesting in this context, since they offer a choice between different accounting treatments which might be used in relation to covenant slack. Apart from some theoretical discussions (Heflin & Warfield, 1997), there are also empirical results showing little or no connection between write-downs and debt covenants under US GAAP (pre-SFAS 121, SFAS 121 and SFAS 142; see Segal, 2003; Riedl, 2004) while others find opposite evidence (Zang, 2003; Beatty & Weber, 2005). However, these studies compare write-downs under different regulatory regimes or investigate transitional write-downs. Another issue to discuss would be the question whether debt covenants influence management's choice of alternative accounting methods under the same accounting regime. This issue has been discussed in the UK in the context of SSAP 22, which offered companies a choice between capitalisation of goodwill and immediate write-off against equity. Gore et al (2000) investigate whether management's choices under SSAP 22 were motivated by debt covenants or compensation schemes. Since most companies actually chose the option to write goodwill directly against equity (thus modifying the DTE ratio), the authors were interested in the reasons behind the managerial decisions of the few firms that

[59] The author finds a similar trend in Australia, while US public debt contracts are mostly negative, i.e. apply only before a decision over issuance of new debt is made.

capitalised and amortised goodwill. The findings show that companies with covenants based on balance sheet ratios (DTE ratio) prefer to capitalise goodwill and amortise it in order to prevent equity decrease. In the case of debt covenants based on interest coverage, it is income statement effects that might lead to a violation of the restrictions, therefore managers are hypothesised to choose direct write-off of goodwill against equity. The latter hypothesis was also confirmed, although to a lesser extent.

The study of Gore et al (2000) makes it clear that UK managers consider accounting-based debt covenants when choosing an accounting treatment for goodwill. Furthermore, their study provides an insight into the motivation of companies to choose a particular accounting treatment (capitalisation) that was ignored by the majority of their peers. Some years later, FRS 10 provides a similar regulatory setting which can be explored: UK companies (94%, see Sproul & Higson, 2005) largely rely on amortisation of goodwill instead of impairment and a possible research question would be whether accounting-based debt covenants play a role in this choice[60]. The adoption year of FRS 10 is investigated by Wang (2003) who explores the characteristics of early adopters of the standard. The results provide evidence in support of the DTE hypothesis: firms with high gearing tended to take the accounting choice of early adoption.

Two more recent studies also look at the effect of goodwill impairment losses on the efficiency of loan covenants. Frankel et al (2008) and Beatty et al (2008) argue that goodwill will only have an impact on covenants if a debt contract has net worth covenants and there is goodwill on the balance sheet. The impact of the goodwill (and its write-downs) can be eliminated by using the tangible net worth for covenant specifications. Frankel et al (2008) find that although lenders tend to use net worth covenants for companies with large amounts of goodwill (i.e. lenders recognise the significance of goodwill), this trend has decreased after the introduction of SFAS 141 and SFAS 142. Finally, the authors report that the use of tangible net worth covenants (as opposed to covenants including intangibles as well) does not seem to impact covenant slack.

Beatty et al (2008) find - similarly to Frankel et al (2008) - evidence showing that net worth covenants are more likely to be assigned to companies with substantial

[60] Although according to FRS 10 the accounting treatment of goodwill after initial recognition is determined by its expected useful life – definite or indefinite, in practice both definite or indefinite useful life can be justified in the case of goodwill.

intangibles in their balance sheets (or if the loan maturity is longer, or the loan is rather sizable). On the other hand, exclusion of intangibles from debt covenants is very likely when the danger of default is high for the company. The authors also find that, for conventional net worth covenants, goodwill impairment will decrease covenant slack, i.e. will have a conservative effect. Guay (2008) comments on these results: the author notes that when lenders exclude intangibles from the covenants of non-intangible-intensive companies, they most likely try to capture possible future risks stemming from the purchase of further intangibles and from their increase in the balance sheet.[61] The author reasons that in the case of intangible-intensive companies lenders are aware of the importance of goodwill and attempt to gain at least some control over the possibility of future impairments by applying the conventional net worth covenant.

In conclusion, it is noted that the role of debt covenants for managerial accounting choices has been well researched. Furthermore, debt covenant issues have been discussed not only based on US samples (as common for many other research areas) but also within the UK accounting environment. Overall, evidence of prior research shows that violations of loan covenants are not necessarily linked to financial distress and that companies are likely to manage their accounts in order to avoid covenant breaches. More specifically, as regards the relation between (asset) write-downs and debt covenants, US based research has provided conflicting evidence. This may be due to the different frameworks (different accounting standards, transitional periods etc) used in the investigations. More recent research shows that lenders recognise the importance of goodwill for intangible-intensive companies but are likely to ignore goodwill impairment in cases of companies with few intangibles or companies with a high default probability.

In the UK prior research shows that the definition of loan covenants (on balance sheet basis or on income statement basis) was likely to influence managerial choices of goodwill accounting under SSAP 22 (Gore et al, 2000). Similarly, managers' choices of early adoption of FRS 10 seemed to be motivated by the balance sheet characteristics of the specific company (Wang, 2003).

[61] Of course, lenders' behaviour in such cases might simply mean that they consider a small amount of intangibles in the balance sheet as insignificant for the calculation of debt covenants and, therefore, inclusion in such cases would mean more cost than benefit.

2.2.2.3.2 Income smoothing

A major issue in academic research on discretionary write-downs is the discussion of earnings management, i.e. managerial strategies used within the boundaries of relevant GAAP to achieve certain earnings' level.[62] While this description of earnings management can certainly imply managerial manipulation, this is not necessarily the case: earnings management might be not only used as part of opportunistic behaviour but also to signal new information to shareholders (Rees et al, 1996; Beneish, 2001; Sellhorn, 2004).

Intuition suggests that management will usually try to achieve the highest level of earnings possible (Bernstein, 1993). However, academic research has shown that maximisation of earnings might not always be preferred. Under the assumption that investors interpret and welcome a steady unchanging flow of earnings as a signal for low risk, managers could expect a rise in their reputation, compensation and job security as long as they ensure that the earnings level remains even (Moses, 1987; Fudenberg & Tirole, 1995). Such managerial strategy is called 'income smoothing' (for example Zucca & Campbell, 1992) and discretionary asset write-downs are one way to achieve it. Earnings can be theoretically shifted from one period to another leading to intertemporal smoothing or within the income statement (between continuing operations and extraordinary items) – classificatory smoothing (Sellhorn, 2004).

Existing research on asset write-downs and their relation to reporting incentives includes several studies on income smoothing behaviour (Zucca & Campbell, 1992; Francis et al, 1996; Heflin & Warfield, 1997; Segal, 2003; Riedl, 2004; Jarva, 2009). However, the findings do not allow a consistent conclusion. Zucca & Campbell (1992) find some evidence for income smoothing in 28% of the sample, but the results were even more strongly in favour of 'big bath' behaviour (58%, see section 2.2.2.3.3). Their sample consists of negative special items found in the income statement which account for more than 1% of total assets. More specifically, Francis et al (1996) investigate among other items goodwill write-downs and categorise them as discretionary write-downs in their sample. Although they find that goodwill write-downs are more likely to be influenced by reporting incentives than categories offering

[62] Although there is a very large body of literature in the area of earnings management, it is not discussed here as the focus of interest lies on the role of goodwill write-downs as means of earnings management.

less room for discretion, such as inventories, their evidence does not support the income smoothing hypothesis in particular. Jarva (2009) tests companies which did not report goodwill impairment although various signals indicated that goodwill might have been impaired. His results, however, do not suggest that managerial discretion was used to avoid impairments. Further two studies comparing asset write-downs under different regulatory regimes (Segal, 2003; Riedl, 2004) yield conflicting results. While Riedl (2004) does not find empirical support for the income smoothing argumentation before and under SFAS 121, Segal (2003) does so under SFAS 121 and later under SFAS 142.[63]

Thus, a unanimous conclusion regarding the use of asset write-downs for income smoothing purposes cannot be made based on the above empirical results concerning asset write-downs. When the focus of interest is narrowed and only studies investigating goodwill are taken into account (Francis et al, 1996; Segal, 2003; Jarva, 2009) the findings still remain inconsistent. Additionally, academic research in this area is mainly based on US companies, thus leaving the UK market uncovered.

2.2.2.3.3 'Big bath'

As already discussed in section 2.2.2.2 a number of studies have shown that asset write-downs are often the result of economic difficulties of the company. However, the economic causes leading to goodwill or asset write-downs can often additionally provoke a particular type of managerial behaviour called 'big bath' behaviour. This phenomenon occurs when managers use the financial distress of the company to 'take a bath' and conduct – sometimes overstated – asset write-downs in the hope of improving future earnings expectations (White et al, 2003). This implies an attempt to present the asset write-down as good news to investors and is intended to signal enhancement in the financial situation of the firm. The 'big bath' phenomenon is particularly suitable as an explanation in cases of change in top management. In these cases the new manager might have an incentive to take a write-down, blaming it on his/her predecessor and their performance and thus 'clean the house' (Alciatore et al, 1998; Sellhorn, 2004).

[63] The write-downs included in their samples differ though, which might serve as an explanation for the differing results: Riedl (2004) examines any reported long-lived asset write-downs, while Segal (2003) concentrates on goodwill.

There are numerous studies investigating the 'big bath' phenomenon and its relation to asset (goodwill) write-downs (Strong & Meyer, 1987; Zucca & Campbell, 1992; Elliott & Hanna, 1996; Francis et al, 1996; Rees et al, 1996; Heflin & Warfield, 1997; Segal, 2003; Riedl, 2004; Lapointe-Antunes et al, 2008). These studies concentrate on the US market. The findings, however, similar to research on income smoothing behaviour (see previous section) are not consistent. While some results provide evidence that 'big bath' behaviour might have motivated write-downs (Zucca & Campbell, 1992; Riedl, 2004; Lapointe-Antunes et al, 2008), there are quite a few studies that report no significant connection (Rees et al, 1996, for discretionary accruals; Heflin & Warfield, 1997; Segal, 2003; Sellhorn, 2004). Where asset write-downs occur at times of bad company performance, they might well be a result of economic causes and not of 'big bath' behaviour. Elliott & Shaw (1988) find that many write-downs occur in the fourth quarter of the year: one possible explanation for this phenomenon which is also consistent with the 'big bath' hypothesis is that managers delay write-downs until the range of earnings is foreseeable and an adjustment can be made.

A change in senior management is considered to be a clearer indication for 'big bath' behaviour by many researchers and empirical evidence supports this hypothesis (Strong & Meyer, 1987; Elliott & Shaw, 1988; Cotter et al, 1998; Zang, 2003; Beatty & Weber, 2005). Francis et al (1996) find a positive relationship between management changes and the size of the write-down. However, their results suggest also that the history of write-downs is positively connected with their size meaning that the write-downs (of previous years) were underestimated. This contradicts the 'big bath' hypothesis. On the other hand, Lapointe-Antunes et al (2008) find that firms tend to report higher (transitional) goodwill impairment write-downs after a change of the CEO and when the goodwill write-down was expected. Segal (2003), however, fails to find evidence supporting the 'big bath' hypothesis.

Overall, the empirical evidence suggests that research results concerning 'big bath' behaviour are mixed and are not necessarily a motivation for asset write-downs. Additionally, research concentrates mostly on US companies (Cotter et al (1998) explore Australian firms).

Finally, an interesting aspect of the earnings management hypothesis is presented by Kirschenheiter & Melumad (2002) who develop an equilibrium model including both

income smoothing and 'big bath' phenomena. The authors show that both types of behaviour are the result of managerial effort to maximise company value when discretion is possible, depending on good or bad news signals.

2.2.2.4 Regulatory changes

A substantial amount of research on asset write-downs is motivated by regulatory changes of the relevant GAAP. Since the purpose of introducing a new accounting standard or an alteration of an old one is to improve financial reporting, such a change naturally raises issues of the adequacy of the new standard and whether it has managed or will manage to meet its objectives. Thus, investigations set during the adoption period provide a first insight into the usefulness of the standard. The transitional items offer a first chance to identify problems of the new regulation and respective reactions based on actual data instead of theoretical discussions prior to issuance. Additionally, what makes regulatory changes so interesting for academic research is the often discretionary nature of the transitory requirements. Most new standards allow for an adjustment period which companies can use to transfer their current reporting to the new regulations. The adjustment period often includes certain optional accounting treatments aimed to allow an easier reconciliation of old and new reporting. From an academic point of view, these can, under circumstances, provide an almost ideal setting to investigate company behaviour. Recent examples where goodwill is concerned are supplied by SFAS 142 and by IFRS 3. Under the transitional regulations of SFAS 142 managers had a choice to classify the transitional goodwill write-down in the adoption year either as a part of continuing operations or as a change in accounting principle ('below-the-line'). Assuming that investors concentrate on items 'above-the-line' this opportunity could be used to manage earnings. IFRS 3 offers a different transitional requirement: intangible assets that do not meet the new recognition criteria should be reclassified to goodwill at the first date when the new standard applies. However, intangibles previously reported as part of goodwill that can be recognised separately according to the new regulation, are not to be re-classified. This means, that goodwill in the adoption and first years after introduction of the new standard might well include different elements, than in later years.

Many of the studies discussed in the previous sections concentrate on regulatory changes (for example Segal, 2003; Zang, 2003; Chen et al, 2004; Riedl, 2004; Sellhorn, 2004; Beatty & Weber, 2005; Long, 2005; Lapointe-Antunes et al, 2008,

2009) and derive conclusions from their results which might be useful to standard setters. These studies concentrate on the adoption of SFAS 142 (with the exception of Riedl (2004) who concentrates on SFAS 121) and test aspects of its adequacy in and around the adoption year (2002). Their results are mixed; however, a general trend can be spotted suggesting a presence of reporting incentives during the transitional period of SFAS 142 (Segal, 2003; Zang, 2003; Bens & Heltzer, 2005; Beatty & Weber, 2005; Long, 2005; Lapointe-Antunes et al, 2008, for Canadian companies).The magnitude of write-downs means that often results could be influenced by large firms – Bens & Heltzer (2005) and Sellhorn (2004) find evidence for this in their samples. Sellhorn (2004) shows that while transitional goodwill write-downs in small firms seem to be driven mainly by economic factors, management in large 'visible' companies seems to be influenced by reporting incentives. Chen et al (2004) investigate a sample of firms during 2001 and despite drawbacks report a 'net benefit' of the new standard. However, Beatty & Weber (2005) explore the same period and find a significant association between reporting incentives and accounting choices as does Zang (2003).

Another finding concerning the timeliness of goodwill write-downs shows that during the transitional year of SFAS 142 companies used the requirements to 'catch up' with earlier impairments that had not been yet reported (Chen et al, 2004; Sellhorn, 2004).

Long (2005) concentrates on issues influencing early vs. late adoption of SFAS 142. The author finds that with increasing complexity of the impairment test implementation firms tended to apply SFAS 142 earlier.

Discussion around goodwill issues in the UK has concentrated on slightly different aspects. A very controversial issue was the adoption of FRS 10 which obliged companies to capitalise goodwill instead of writing off it directly against equity reserves (see section 2.1.1.1 for details). A major point in research on that issue is whether goodwill is seen as an asset at all. Using pre-FRS 10 data as well as data from the adoption year and up to one subsequent year (1993-1999) Wang (2003) investigates several issues related to goodwill. The results provide evidence that goodwill is seen as an asset but no significant evidence as to whether it is a wasting asset, i.e. should be amortised or whether it should be left on the balance sheet and tested for impairment. There is some evidence that goodwill is not depleted during several years after acquisition but no distinct pattern in this depletion could be found. The author points out several limitations of her study: due to the time period not many

companies were available that capitalised and amortised goodwill, since writing off against equity was recommended and preferred by companies prior to FRS 10. The study includes up to one year of FRS 10 data and can be extended with more recent data. Furthermore, Wang (2003) investigates the characteristics of early adopters of FRS 10 and finds a positive relation with debt covenants and a negative one with earnings. Finally, the characteristics of companies are investigated that reinstated 'old' pre-FRS 10 goodwill. One of the transitional requirements of FRS 10 included an option for companies to reinstate previously written-off goodwill on the balance sheet. Again, although the small sample size renders generalisation difficult to make, the findings show that firms close to a potential violation of their debt covenants chose to reinstate goodwill and firms with lower earnings didn't.

2.2.2.5 Impairment prior to disposal

An interesting question, so far uncovered by academic research is whether managers use goodwill write-downs to manipulate gains from the disposal of the target. Intuitively, impairment charges (or the lack thereof) shortly before disposal of the company might be used to 'clean the house' so that for example in cases where the target has financial difficulties, its deteriorated situation is presented truthfully. On the other hand, management might also wish to avoid impairment prior to disposal in order to maximise the purchase price. A possible investigation in this area could be motivated by the existence of certain data abnormalities such as an increased number of goodwill impairment charges in the year prior to disposal.

2.2.3 The Impairment calculation: Drivers of goodwill impairment and sources for managerial discretion

A separate category of research on goodwill impairment concentrates on the impairment process and the impairment calculation. The impairment process - as structured by standard setters (see section 2.1.2) - provides several opportunities, if not necessities, for managerial judgement. For example, excellent chances for active management of the impairment process are supplied by the interpretation of what constitutes a triggering event, the definition of IGUs and the components of the impairment calculation (expected cash flows and the appropriate discount rates).

2.2.3.1 Triggering events

According to standard setters goodwill must be subjected to impairment testing at least annually (under UK GAAP: if it is defined as an intangible asset with indefinite life) and, additionally, if a specific so-called 'triggering event' indicates risk of impairment. In order to illustrate what constitutes a triggering event standard setters have included lists in the respective accounting standards providing some guidance and examples of such phenomena (IAS 36, para. 12, SFAS 142, para. 28, FRS 11, para. 10). Research indicates, however, that these guidelines have so far been quite loosely interpreted by companies. A recent exploratory study by Comiskey & Mulford (2010) investigates the triggering events disclosed by companies in their 10-K-filings and finds a multitude of different examples. Research prior to this study also comments on the difficulty of categorising triggering events and on the necessity of some kind of system to capture their appearance (Conigliaro & Rudman, 2002; Glazer, 2002; Davidson & Vella, 2003; these studies discuss the list of triggering events published in SFAS 142). Seetharaman et al (2006) conduct a large survey of prior research to yield a comprehensive categorisation of triggering events both as a practical guideline for companies and as a basis for future research in this area. The authors define the following categories of triggering events[64]:

- External indicators:
  - A significant change in business climate
  - Unanticipated competition
  - Adverse action or assessment by a regulator
  - Chance of business contract with major suppliers and distributors
- Internal indicators:
  - Failure in budget forecasting
  - Loss of key personnel
  - Change in the company's name
  - Failure in managing acquisition

Clearly, this ongoing discussion shows that the definition and categorisation of triggering events is yet unfinished. Furthermore, initial empirical analysis and data collection (Comiskey & Mulford, 2010) report an even more diversified interpretation

[64] Additionally, Lynch & Gandhi (2010) note that triggering events can result from actions which are not primarily resulting from the quality of the financial performance of an individual firm, for example the global economic crisis in 2008 and 2009.

of this list in practice. Together, this evidence reveals significant potential for further research on managerial opportunism in the impairment process.

2.2.3.2 The definition of the IGU structure

The impairment process requires the structuring and organisation of the company into specific IGUs (FRS 11, para. 27). The defining of IGUs for impairment testing purposes is performed and coordinated by management itself. Therefore, this mainly internal process might offer some room for discretion.[65] FRS 11 defines an IGU very broadly as a 'largely independent income stream' (see FRS 11, para. 27) which invites interpretation due to this vague wording. Nevertheless, in the case of IGUs it should be noted that any manipulation would most likely be a one-time event with primarily short-term effects. Once set, the IGU structure can only be altered on substantial grounds and requires an extensive justification on the part of management. Furthermore, in practice the segment structure often provides the framework for the IGUs, thus considerably limiting ongoing opportunities for manipulation. Moreover, in some companies, possible combinations for the IGU structure might be additionally reduced simply due to the lack of availability of financial reporting figures for any other combination than the broad, pre-set company division structure.

Prior research on IGUs is available for US and for Australian companies. The results show some variety in the interpretation of the definition of a reporting unit. Carlin & Finch (2010a) find that companies in their sample mostly tend to settle on 1, 3 or more than 5 reporting units[66]. In an exploratory study preceding this one the authors had already highlighted the level of reporting unit aggregation as significant for goodwill impairment (Carlin & Finch, 2007a). In this paper they find that only about 35% of the investigated companies had the same number of reporting units as their business segments. Based on this evidence it appears that companies choose more often than not to deviate from the pre-set segment structure for purposes of the impairment test. Of course, the reason for such differences might not stem from managerial opportunism. As the IGU (or reporting unit) is roughly defined as the smallest level able to independently generate income (see section 2.1.2 for details under different accounting standards) companies might have been doing just that. Alternatively, the possibility

[65] The definitions and the criteria for the specification of IGUs must be discussed extensively and agreed upon with the auditors of the company. Therefore, the setting of IGUs cannot be described as an entirely internally based process.

[66] It must be noted, though, that quite a large number of companies chose still another numbers of reporting units, therefore, the above result should not be overemphasised.

remains that various other difficulties in the implementation of the relevant standards have influenced the complicated structuring of the IGUs. In this context Hayn & Hughes (2006) comment on a KPMG survey from 2002 interviewing finance executives on their impressions of SFAS 142. About 2/3 of survey participants stated that implementation of SFAS 142 would be 'complicated'. Hayn & Hughes (2006) interpret this result as a signal (among other things) about the difficulty of implementing an adequate reporting unit structure.

2.2.3.3 The impairment calculation

Beside the importance of IGU definition and structuring as well as the identification and the effect of triggering events, the core impairment process, i.e. the actual impairment calculation, must be considered when discussing the room for managerial discretion in goodwill impairment.[67] According to UK GAAP regulations (and US GAAP, and IFRS, for that matter) one possibility to calculate a possible impairment loss is to compare the value in use of the IGU to its carrying amount.[68] One possibility to determine the value in use is based on the discounted cash flow approach (DCF) which is the most widely used method for company valuation on international level (also for intangible-intensive companies, see Uzma et al, 2010):

$$ViU = \frac{\sum_{1}^{\infty} CF_t}{(1+i)^t}$$

ViU	Value in use
CF_t	Net (pre-tax) cash flows in reporting period t
i	Company-specific (pre-tax) discount rate

According to this formula goodwill impairment is directly influenced by the projected pre-tax cash flows before interest and dividends and by the discount rate used in the calculation. More specifically, Gynther (1969) summarises the effects of the mathematical impairment calculation on goodwill value between any two measurement dates as follows:

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[67] The issues of the correct allocation of assets and liabilities to the IGU as well as the identification and valuation of intangibles other than goodwill are not discussed here.

[68] Alternatively, the net realisable value can be used which is defined as the selling price of an IGU less costs to sell. However, this is a value which is often hard to determine in practice as markets for IGU disposal or similar transactions, are not always available. Cash flow forecasts which can be used for the calculation of the value in use are, on the other hand, part of the budgeting process of most companies. Therefore, the value in use is used here as a basis for the discussion of managerial opportunism in the impairment calculation.

- A decrease of goodwill value due to the fact that the first cash flow projection in the previous year's calculation is no longer taken into account for the calculation in the current period
- An increase of goodwill value because all cash flow projections 'move' one year closer to the present in the current calculation, i.e. the discounting effect of last year's calculation is reduced
- An increase of goodwill value because one more year of cash flow projections is added at the 'far end' of the forecast period for the current calculation
- Changes based on alterations of the cash flow estimates
- Changes based on alterations of the discount rates

While the effect of the first three issues in the above list can be described as the technical impact of 'rolling the forecast', the last two issues summarise the main points where managerial actions might result in a change of the goodwill impairment decision or amount. Referring to SFAS 142 Massound & Raiborn (2003) also discuss this issue and criticise the standard as being subjective in this respect and providing opportunities for managerial manipulation.

2.2.3.3.1 Cash flows

Since cash flows are independent of accounting regulations, there is not much room for manipulation based on accounting loopholes. However, where there are forecasts involved, there is also opportunity for discretion.[69] According to FRS 11 forecasts and estimates have to be reasonable and based on the most up-to-date budget plans formally approved by management (FRS 11, para. 36). Nevertheless, the quantification of future expectations still involves a large amount of subjective judgement. In order to predict future cash flows, management has to consider various trends in the economic development on global, country, industry and company level. In particular, the company level could include aspects such as past and current performance of the firm, customer structure, work in progress, expansion plans, R&D expenditures and product development, restructuring plans, etc, in fact, anything potentially influencing the financial performance of and cash flows to the firm. On industry level, the current phase of the business cycle for the respective industry (for example market saturation)

[69] The body of literature on the uncertainty of future estimates and other forecast characteristics is substantial (among many Penman & Sougiannis, 1998; Sol & Ghemawat, 1999; Damodaran, 2006; Schumann, 2006). However, it is not discussed here on the grounds that it would exceed the scope of this thesis and is not primarily relevant to the research questions.

is relevant as well as the performance of the industry as a whole, competition and regulatory pressures. On global level, trends such as post 9/11-fear of terrorist attacks or the globalisation phenomenon might impact the future economic development of a particular firm. Depending on the motivation of management to achieve a particular result in the impairment process any of these aspects might be used as an argument behind a specific projection of the company key drivers and cash flows.

Uzma et al (2010) discuss in their paper the advantages and shortfalls of the DCF approach specifically in the context of intangible valuations. The authors identify four issues which are raised by the influence of future discounted cash flow forecasts on intangible valuation (based on Cohen, 2005, pp. 82-84):

- the unbiased expected future cash flow
- the measurement of intangible risk (which might or might not be identical to the overall risk measure of the company)
- issues related to the measurement of the beta factor based on CAPM theory
- time-related riskiness changes.[70]

FRS 11 additionally specifies that detailed cash-flow forecasts should not exceed a period of five years except in exceptional circumstances (FRS 11, para. 37). Furthermore, growth rates in the period beyond the detailed cash flow forecasts should not exceed the long-term average for the countries where the business operates (2.3% for the UK, see Ernst & Young, 2003 p. 1039).

Furthermore, if the value in use is used as basis for the impairment review, the cash flows have to be monitored for five years after the impairment review. Where the forecasted cash flows significantly exceed the actual cash flows, the impairment review has to be conducted again using the actual cash flows. If an impairment is detected, it is then recognised in the current period (FRS 11, paras.54-55). This particular rule clearly represents an attempt to reduce (if not remove completely) the opportunity for manipulation at least when forecasting the cash flows. However, it still does not eliminate the possibility of manipulating the timing of the write-down since a

[70] The issues referring to risks are discussed in the next section as they are captured in the discount rate.

correction of a previous overstatement of the cash flows would result in a write-down which is conducted in the 'wrong' period.[71]

2.2.3.3.2 Discount rates

The value in use is calculated by discounting the sum of expected cash flows with the appropriate discount rate. This discount rate is the cost of capital defined as the opportunity cost investors have to bear for not investing in the next best alternative (see Pratt/Grabowski, 2008, p. 3f.). As the impairment decision is based on forward-looking data, the cost of capital is also a forward-looking item and, ideally, an estimation of future costs of capital will be needed. In practice future estimations are based on projections of historical capital market data. Both UK GAAP and IFRS recommend various methods for the calculation of the appropriate discount rate (for example entity WACC, entity's incremental borrowing rate, etc.). In practice, the WACC approach is most widely used (KPMG, 2010, p. 664).

Although discount rates represent a material part of the impairment process, surprisingly few academic studies have concentrated on their role in the goodwill impairment process. It is essential for discount rates to be estimated as precisely as possible since they have an impact on both the goodwill impairment decision as well as on the write-down amount (similar to expected cash flows). For example, low discount rates will, *ceteris paribus*, lead to a higher value in use, and therefore, to a lower write-down amount or avoidance of goodwill impairment altogether. In fact, Carlin et al (2007a) show in two case studies that a 100 basis point increase in the discount rate will reduce the value in use by 8.5%, or 14.5% respectively, depending on the investigated company. Depending on the goodwill amount on the balance sheet (high) and the amount of the net profit of the company (low), such evidence implies that changes in the discount rate could, under certain circumstances, even overturn profit into a loss.

Recognising the significance of these issues Stegink et al (2007) discuss and model in their paper the 'appropriate' discount rate. They, however, do not extend their study to include empirical investigations of their model or to test what practices are applied by companies. Accounting for this shortfall and also highlighting the importance of transparency of disclosures on goodwill impairment Carlin and various co-authors

[71] Furthermore, the wording of this regulation ('significantly exceeding') is also subject to individual interpretation.

(Carlin & Finch, 2007a; Carlin & Finch, 2007b; Carlin et al, 2007a; Carlin et al, 2007b; Carlin & Finch, 2008; Carlin & Finch, 2009; Carlin et al, 2009; Carlin & Finch, 2010a; Carlin & Finch, 2010b; Carlin & Finch, 2010c; Carlin et al, 2010) have recently published a series of working papers on the quality of goodwill impairment disclosures under the Australian version of IFRS (hereafter referred to as 'A-IFRS'). The studies explore different aspects of the disclosures of the impairment calculation including the number of cash generating units (CGUs), the discount and the growth rates used in the impairment assessment. The studies investigate A-IFRS disclosures starting from 2006 until up to 2008 in the form of case studies and analyses of samples between 50 and 200 firms (Australian and New Zealand companies). The authors conduct independent calculations of discount rates based on the Capital Asset Pricing Model (CAPM, see also chapter 3.1.3) and compare them to the discount rates disclosed by the companies. The main conclusions show that the disclosures made by companies are often inadequate and do not provide sufficient details for financial statements users in order to understand the impairment calculation, thus implying insufficient regulatory enforcement (Carlin et al, 2007a; Carlin & Finch, 2010).[72] Furthermore, the rates disclosed were significantly lower than the independently calculated rates (sometimes barely higher than the risk-free rate, see Carlin & Finch, 2009; Carlin & Finch, 2010b), thus suggesting opportunistic managerial behaviour. Over time, however, it was noticeable that fewer companies disclosed discount rates lower than the independently calculated ones, while the companies disclosing significantly higher rates increased (Carlin & Finch, 2008). These findings imply the use of more aggressive discount rates compliant with a 'big bath' phenomenon. The independent calculation in these studies relies either on beta factors behaving exactly like the reference index (i.e. ß=1, see Carlin et al, 2009; Carlin et al, 2010) or on beta factors which were calculated as the average of betas from three sources: capital market data providers Aspect Huntley FinAnalysis and *Datastream* and a regression based on weekly observations (Carlin & Finch, 2009).[73] In all studies, however, only one value for beta was derived and used in the independent calculation. While the authors make some very significant conclusions on the quality of impairment

[72] Another recent study on the effects of SFAS 142 and IAS 36 also discusses discount rate disclosures. Comiskey & Mulford (2010) find that most companies in their sample did not disclose the actual discount rates used in the impairment calculation. Where such disclosures were available, the range of discount rates (cross-sectional) was between 10.5 and 32%. The authors recommend that future research investigate whether management is using discount rates to influence the goodwill impairment loss.

[73] Carlin & Finch (2010a) calculate beta as an average monthly value over a period of 60 months.

disclosures and the discount rates used in the impairment calculations, they do not look at the reasons why the discount rates disclosed by the companies were so different than the ones calculated independently. They discuss possible managerial opportunistic behaviour but do not look at the manner in which such behaviour might be expressed. The papers discussed here make it clear, however, that discount rates are likely to be the target of managerial manipulation. One way this can be done is by varying (but not disclosing) the parameters of the derivation of the beta factor within the discretionary room available to practitioners in order to adjust the discount rate as needed by management. The beta factor can provide substantial opportunities to manipulate the discount rate and, through it, the goodwill write-down. This is due to several parameters, the alteration of which will lead to highly sensitive reactions of the beta factor. Moreover, most of the variation of such parameters is commonly used in practice and can, under circumstances be justified using underlying theory. Previous research shows that, most notably, the choice of the reference index to which the rates of return of the shares of the investigated company are compared, the length of period over which the rates of return are determined and the intervals used in the beta factor derivation have been discussed as the drivers of the beta factor calculation (Bartholdy & Peare, 2001; Dörschell et al, 2009).

Following the assumptions of the CAPM[74] the beta factor is derived based on the behaviour of the investigated share compared to the market portfolio as a benchmark. The market portfolio encompasses all classes of risky assets worldwide. In practice, it is not possible to find the theoretically defined market portfolio. Instead, there are various indices which can be used as a proxy. A central question discussed by practitioners and academic research concentrates on the best choice for such a proxy. Following the CAPM specifications, a worldwide index including as many different securities as possible could be chosen (see Bartholdy & Peare, 2001). However, Tobin's capital market theory specifies that the market portfolio is defined by the personal preferences of the investors (i.e. by the so-called investment-opportunity-set). Lewis (1999) finds evidence suggesting that, despite the higher level of diversification in internationally spread portfolios, private investors tend to concentrate their investments in national securities (home bias). For institutional investors, there are often (company) regulations requiring investments in the home jurisdiction of the

[74] For a detailed description of the CAPM concept and its assumptions see Sharpe (1964) and Lintner (1965). The description of the deduction of the discount rate based on this approach is provided in (text)books narrating on the subject of cost of capital (for example Pratt & Grabowski, 2008) and also by many capital market information providers for example *Bloomberg* or *Datastream*.

company. Therefore, considering the investment-opportunity-set it might be wise to use a national reference index such as the FTSE 100 for the derivation of beta factors. These two aspects of the argument about the appropriate reference index provide management with opportunities for manipulation using argumentation which is backed by underlying theory or empirical research on each side.

Furthermore, the weighting of the reference index (value-weighted or equally weighted) also provides room for discretion: although value-weighted indices are often recommended in practice, Bartholdy & Peare (2001) suggest that the application of an equally weighted index produces better results as it removes instability in the index resulting from changing weights of the index securities over time. The authors compare seven indices as reference indices for the beta derivation and find significant differences in the beta factors. Finally, the chosen index will be available as a price index or a total return index, where dividend effects on the share price have been included, thus, providing even more room for judgement.

The length of the period over which the beta factor is determined is another substantial factor influencing the calculation. Since very long periods might include developments which are not current anymore and will lead to biased estimates of the beta factor, shorter time periods could be argued for. However, the shorter the time period, the fewer observations on rates of return can be made to derive the beta factor. Thus, the length of period applied is closely related to the intervals for the share price data collection. For example, while 1-year-data collection based on monthly intervals will yield only 12 observations, the same time period including daily intervals will provide 250 observations. Still another difficulty arises from the fact that the more frequent the observations, the more noise the data include. In fact, beta factors have been found to differ materially depending on the interval used for the derivation (monthly, weekly or daily). This so-called intervalling effect has been researched empirically and showed in several studies (Bartholdy & Peare, 2001; Hawawini, 1980; Dimson, 1979; Rudolph & Zimmermann, 1998).

In conclusion, it seems likely that management might use discount rates to influence the goodwill impairment loss. Discount rates appear particularly attractive as a source for manipulation since they do not have to be derived from pre-determined company numbers (which would be the case for cash flows derived from company budgets, see FRS 11, para. 36). Previous research (mostly on Australian companies so far) shows

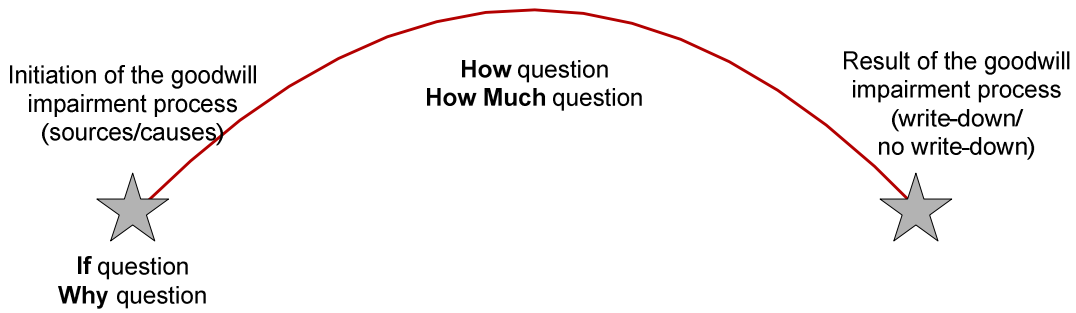
significant discrepancies between discount rates calculated independently by researchers and the ones disclosed by companies. A reliable comparison is rendered difficult by the lack of detailed information available on the parameters of the discount rate calculation and, additionally by the discretionary nature of the beta factor (one of the components of this calculation). The determination of the beta factor provides virtually endless opportunities for managerial manipulation of the goodwill write-down. Prior research, however, has not yet concentrated on these particulars of the beta factor and their relation to goodwill impairment.

2.3 RESEARCH QUESTIONS

Section 2.2 provided a literature review of topics related to the causes and impact of goodwill impairment. Based on this review and the gaps identified in existing literature on goodwill impairment the research questions of this thesis are specified in the following paragraphs.

Altogether, the questions of goodwill impairment can be organised into four broad categories. The 'If' question targets the decision to impair goodwill or not. The 'How Much' question handles the amount of the impairment write-down resulting from the impairment calculation. The 'Why' question looks into the underlying drivers of the 'If' and the 'How Much' questions. It does not, however, explain the means used to achieve the final result, i.e. which part of the calculation process primarily influenced the write-down (the 'How' question)[75]. While the causes of goodwill impairment need to be investigated, so do the means which allow managers to achieve their goals:

Illustration 2.3: Questioning the goodwill impairment process



[75] This question can be raised in particular when the origins of managerial manipulation are investigated, i.e. whether the numerator or the denominator of the value in use equation was used to influence the impairment loss.

These broad categories are used to identify the research questions of this thesis.

The literature review shows that the subsequent valuation of goodwill is an area offering abundant opportunities for academic research where regulations in different countries are mainly new or still do not entirely converge. While the IASB and FASB agree that annual impairment testing should be the only alternative regarding the subsequent valuation of goodwill, UK firms still enjoy a more lax regulatory environment that permits a *de facto* choice between amortisation and impairment. Accounting regulations for goodwill have been intensely discussed in recent years and many questions have been raised concerning the importance of goodwill, its meaning for companies and investors, proper presentation, valuation, etc. Due to this enormous variety of issues, it is only natural that academic research should focus on goodwill. However, while numerous studies have already explored problems related to goodwill, there are still noticeable gaps in the literature or even whole areas that have been left uncovered. First, as regards the impact of goodwill write-downs, while investor reaction has been well investigated, the debt market has remained almost entirely outside the scope of prior research. Additionally, it can be said that academic research covers almost exclusively the US market and that the transitional requirements of SFAS 142 have been investigated thoroughly. In the UK, major issues include the discussion (prior to the adoption of FRS 10 in 1997) whether goodwill should be capitalised or written off against equity and a possible relation to debt covenant slack. Furthermore, the value-relevance of goodwill impairment (Li & Meeks, 2006) as well as the transitional requirements of FRS 10 (Wang, 2003) have been addressed. However, although FRS 10 provides a unique regulatory framework, by installing the initial impairment test to capture overpayment and allowing alternative or even simultaneous use of amortisation and annual impairment testing, these issues have not been extensively investigated. Furthermore, while an impressive amount of literature exists on opportunistic managerial behaviour and asset write-downs, motivation for UK managerial choices in the area of goodwill accounting remains uncovered. Additionally, another issue – causes for goodwill write-downs undertaken prior to disposal of the target – has not been previously discussed in academic research.

Finally, it is noticeable that where economic causes of goodwill write-downs are investigated, studies have concentrated on measures of the outcomes of economic performance while its drivers remain unexplored. Moreover, previous research has exclusively used quantitative methodology to test these issues.

As regards the impairment process and the impairment calculation, researchers have only recently started to produce empirical results. In particular, the issues of the identification and effect of triggering events, the structure of IGUs and the impact of discount rates used in the impairment calculation and their importance for discretionary tactics of management have been only just initiated in academic research. In this context there are still numerous questions waiting for answers.

This thesis includes three empirical studies addressing gaps in literature on goodwill impairment as outlined below:

The first empirical study (chapter 4) focuses on the impact of goodwill write-downs. This study is motivated by the lack of research on the role of goodwill impairment in the rating assessment process. While numerous studies discuss different aspects of the investor reaction to goodwill write-downs, only a few mention a possible relation to credit ratings and there is no study that entirely concentrates on such an investigation. This is surprising, considering the differing accounting treatments for goodwill under FRS 10, the sometimes substantial amounts of the write-downs/-offs and their impact on the balance sheet and on the income statement, the unavailability of details on the actual rating decision making process as well as the economic importance of rating agency decisions.

Intuitively, since goodwill write-downs directly affect current profit figures, the balance sheet, and also provide signals about the quality of management, it seems likely that they might be incorporated at least to some extent in the rating decision making process. Additionally, since the write-downs might be considered as supplying information about the financial welfare of the company or as a signal about future developments, rating agencies might be interested in including them in their analysis of the firm. On the other hand, if impairment losses are seen as noise, rating agencies might disregard them altogether.

An additional question raised in this context refers to the effects, not only of the introduction of FRS 10 and FRS 11 in 1997/8, but also of SFAS 141 and SFAS 142, and, later, of IAS 36. If rating agencies and analysts have disregarded goodwill amortisation prior to the introduction of these accounting regulations, would they change their policies following the trend in accounting? Are the new numbers more informative and useful for the rating assessment? Highlighting this issue, Massoud & Raiborn (2003) quote Meeting et al (2001): ‘When calculating ratios of comparable

companies, or comparing companies for investment, the old remedy remains the best remedy: remove goodwill from the balance sheet and the goodwill effect from the income statement.'

In this context **chapter 4 explores whether goodwill write-downs are taken into consideration in the rating decision making process and whether different accounting treatments for goodwill – impairment, amortisation or immediate write-off against equity – are relevant for the rating calculation.**

One way, to explore this research question would require interviewing rating agencies about their policies and their motivation as regards goodwill impairment. However, since this information is not explicitly available to the public, direct answers might not be easily forthcoming, might be biased or related to specific circumstances. An alternative possibility would include an independent investigation of this issue. Such research would reflect implicitly the need of financial statement users (other than rating agencies) not only to understand goodwill impairment better but also its importance in the rating assessment and, ultimately, the company rating grade better. It also reflects the concern of regulators that such an independent deduction and understanding should be possible (Hayn & Hughes, 2006). Therefore, the research question is explored in an independent empirical investigation of rating agencies' assessment process and the role of goodwill impairment in this process. Ultimately, it aims to provide a better insight into the impact of goodwill write-downs and thus to contribute to antecedent research in this area.

The general motivation for the second empirical essay (chapter 5) which concentrates on causes for goodwill write-downs is provided by the regulations of FRS 10 in the UK. FRS 10 provides a very interesting setting for research on managerial choices and opportunistic behaviour related to goodwill, since it is the only framework (at least when UK GAAP, IFRS and US GAAP are considered) that allows simultaneous amortisation and impairment and thus offers additional possibilities for managerial discretion.

Therefore, in this context, **chapter 5 investigates the causes behind the managerial decision to conduct impairment additionally to systematic amortisation**.

Issues related to this research question are: is this accounting choice influenced by economic causes rather than reporting incentives?

The contribution of this investigation to prior research in this area is threefold. First, the investigation is split to explore the reasons behind the decision to impair goodwill (the 'If' question) and the reasoning behind the amount of the impairment charge (the 'How Much' question). In this way the study attempts to provide more differentiated answers to the quest after the causes of goodwill impairment. So far prior research has concentrated either on the amounts of goodwill impairment charges (for example Francis et al, 1996; Segal, 2003; Zang, 2003), or, on probability predictions of goodwill impairment decisions (Hayn & Hughes, 2006), or, on a larger group of asset write-downs (Strong & Meyer, 1987; Loh & Tan, 2002; Kim & Kwon, 2001), or, on transitional write-downs (Sellhorn, 2004). Second, the above research question is investigated under UK GAAP regulatory framework. This regulatory setting allows considerable discretion among managers concerning their accounting choices for goodwill and thus provides unique opportunities for academic research. The results from the study can be also discussed in the context of the new IFRS which disqualifies systematic amortisation as accounting treatment of goodwill. Finally, by concentrating on the UK market, this study differs from prior research, which largely investigates US companies, more broadly defined asset write-downs, or write-downs conducted under the transitional requirements of a new accounting standard (SFAS 142, FRS 10).

The third empirical essay (chapter 6) addresses gaps in the academic literature by exploring the underlying drivers of economic performance and their link to goodwill impairment. While a complete investigation of all such drivers would clearly represent a task beyond the scope of this thesis, the study concentrates on two variables – industrial regulation and competition – and their role for goodwill impairment. In this context the following research question is investigated:

Why do companies impair goodwill (the 'Why' question): do drivers of the measures for economic performance provide better understanding of the managerial decision to impair goodwill?[76]

The study benefits from a change in methodology and uses a qualitative approach to explore the research question (similar to recent studies testing other issues relating to the impairment process)[77]. In this context the focus of the study is extended:

[76] The research question can also be interpreted in the context of standard setters' definition of triggering events (both investigated variables are discussed as triggering events by standard setters and prior research).

Does a change of methodology (case study approach) help to raise issues for future research?[78]

Almost all studies to date in this area[79] have been statistical by nature either investigating quantified outcomes of economic performance or collecting statistical information about (triggering) events related to goodwill impairment. Therefore, this study adds to existing research by providing further in-depth analysis of the relevance of economic performance drivers for the goodwill impairment decision. Additionally, the case study approach and the number of companies analysed (two) allow the extension of document analysis by means of further data sources (external to the company) such as analyst reviews. This is a feature which is also missing from prior research. In this context, the study is undertaking first steps to fill these gaps.

The second objective of the study (chapter 6) is based on evidence gathered in previous research suggesting managerial opportunistic behaviour related to discount rates used in the goodwill impairment process. This study adds to prior research by illustrating some of the opportunities managers have at their disposal to adjust goodwill write-downs according to their specifications and needs. It explores the impairment disclosures of companies and compares them to an independently conducted calculation of the discount rates used in the impairment process. In this context, it also discusses the quality of the impairment disclosures and the information provided to an external user of the financial statements. The research question relating to the second objective of the study states as follows:

How do companies impair goodwill (the 'How' question): are company impairment disclosures sufficiently transparent to allow a financial statement user to understand goodwill impairment? Do managers behave opportunistically when impairing goodwill by using the discretionary room available in the derivation of discount rates?

As regards research on discount rates chapter 6 extends previous work on Australian and New Zealand companies (see section 2.2.3.3.2) by providing an in-depth analysis of the calculation of discount rates. While prior studies have calculated discount rates

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[77] For example Carlin et al (2010) use the case study approach to explore the quality of disclosures of Transpacific Industries Group Ltd. However, the authors are not interested in the drivers of financial performance; they focus on simulating the impairment process of the company and comparing their results with disclosed numbers.

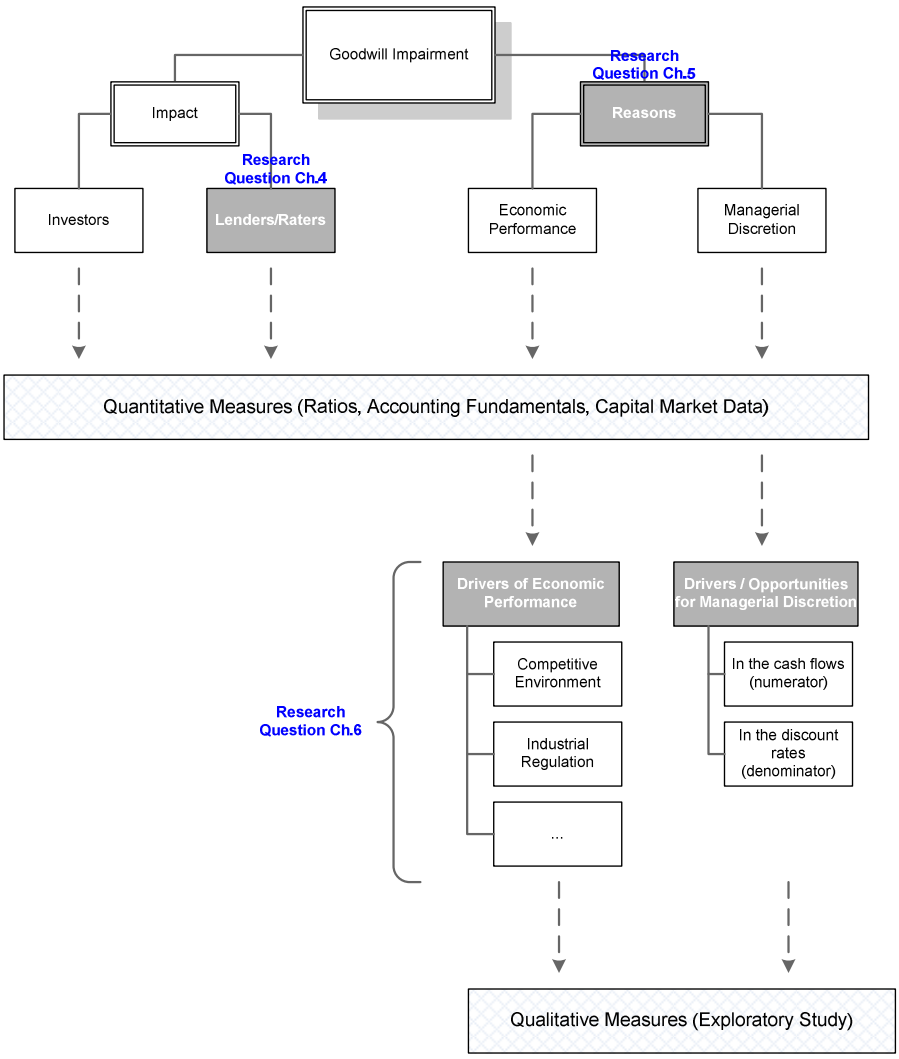
[78] More details on the methodology used for this study are provided in chapter 3.1.3.

[79] See section 2.2.3.

by fixing the calculation assumptions based on certain parameters used in practice, this study relaxes the assumptions by testing several commonly accepted and widely used parameters in practice. In this way the investigation aims to reduce the possibility that the companies analysed might have used a different calculation constellation than the one used in the independent discount rate derivation. Additionally, this empirical design also serves to illustrate the numerous opportunities to influence the discount rate and, through it, the impairment write-down, which is yet another contribution to existing research.

All three studies aim to increase the understanding of goodwill impairment, its calculation, causes and the effect it has on companies, standard setters, and users of the financial statements. The research questions are summarised in the following illustration:

Illustration 2.4: Summary of research questions



3 RESEARCH DESIGN, METHODOLOGY AND DATA SAMPLE

3.1 RESEARCH DESIGN AND METHODOLOGY

3.1.1 The impact of goodwill write-downs on credit ratings

There is little information on the way goodwill write-downs are considered by rating agencies in the company monitoring process. While S&P (2002) suggests that goodwill impairment be excluded from core earnings for purposes of rating, it is not clear exactly what adjustments are made on the balance sheet or whether S&P's recommendation is followed by other rating agencies as well. There is some indication that rating agencies remain conservative when considering goodwill (S&P, 2005), although there are also statements by credit rating agencies that the impact of goodwill write-downs is the result of a complex assessment of numerous factors (Sellhorn, 2004). Therefore, this study investigates the impact of goodwill write-downs on credit ratings.

To explore the impact of goodwill write-downs on credit ratings an accounting predictive model on 'as if' basis is used with the purpose of estimating the role of goodwill write-downs/write-offs in the rating decision making process.

Rating agencies use quantitative as well as qualitative information for their credit rating decisions but do not necessarily elaborate on the actual process of reaching the rating decision (although there is some information about the criteria that are important for the agency, see S&P, 2005). It is publicly known, however, that the quantitative part of their analysis relies heavily on information from the company financial statements (S&P, 2005). Therefore, accounting information might be expected to play an important role in the decision process of credit ratings.

Since write-downs might be considered as supplying information about the financial welfare of the company or as a signal about future developments, rating agencies might be interested in including them in their analysis of the firm. Previous research provides some contradicting evidence as to whether managers perceive a link between goodwill write-downs and credit ratings (Gore et al, 2000; Sellhorn, 2004). Additionally, under current UK GAAP (FRS 10, 11) different accounting treatments

for goodwill are permitted each of which might be perceived differently by rating agencies. Therefore, the impact of goodwill write-downs on credit ratings can be investigated by raising the following research question:

How do rating agencies view goodwill in their risk evaluation of companies, as reflected in the relevant accounting treatment of goodwill?

Based on previous research (see section 2.2.1.3) the model for this investigation includes several variables calculated using publicly available accounting information. This information is used to categorise the company into a certain rating group (i.e. determine the rating). The rating predicted in the analysis is then compared to the actual rating of the company assigned by the rating agency.

There are two methodology design issues which were further developed for purposes of this study. First, as rating agencies do not publish the exact models used to reach the credit rating decision, the model described in this chapter is tested using different combinations of variables in an attempt to approximate reality.

Second, as UK GAAP allows differing accounting treatments of goodwill and, moreover, as rating agencies do not have to comply with GAAP for purposes of their rating calculations, the model is tested in different (goodwill accounting) scenarios, at one extreme ignoring goodwill completely and, in other versions using different accounting treatments of goodwill.

Finally, the forecasting accuracy of the so generated model versions with different goodwill accounting treatments is compared between scenarios and variable combinations. The accounting treatment scenario with the highest percentage of correctly classified ratings (i.e. where the classifications produced by the model coincide best with actual ratings) and the variable combination with the highest explanatory power (i.e. which is most likely to mirror rating agency modelling) are considered to reflect best the raters' view of goodwill and its write-downs.

Based on these considerations the following hypothesis can be tested for this research question:

H1: The correct classification and misclassification distribution of company credit ratings is the same whatever the way rating agencies view goodwill as reflected in its accounting treatment

This research differs from prior studies in two ways. First, the rating agencies' decision-making process is simulated to test the importance of goodwill accounting treatments in this process, rather than looking at management's understanding or expectations of rating agencies' perception of goodwill. Furthermore, the methodology used has not been employed previously in relation to goodwill write-downs.

The relation between goodwill write-downs and credit ratings (H1) is tested by investigating the role that goodwill write-downs might play in the rating decision making process. Since the exact proceedings towards reaching a credit rating decision are not open to the public but a lot of – sometimes – contradictory information is available, an important contribution of this study is to provide some insight into the mechanism of the credit rating decision and throw a light on its aspects related to goodwill write-downs. For this purpose, an accounting predictive model is used as common in prior research on the determinants of credit ratings (for example Horrigan, 1966; Kaplan & Urwitz, 1979; Belkaoui, 1980; Molinero et al, 1996). However, instead of trying to predict the credit rating, the model is used to describe and categorise the credit rating decision on an *ex post* basis following the methodology used in connection with deferred tax accounting by Huss & Zhao (1991) and by Chattopadhyay et al (1997)[80]. Thus, the purpose of the study is to test whether different accounting treatments of goodwill change the predictive accuracy of the model measured as the correct ex post classification of credit ratings (model on 'as if' basis).

Altman & Saunders (1998) provide an overview of the main research approaches used in predictive models for ratings based on accounting information. Typically, either univariate credit-scoring models are used, where the researcher 'compares various key accounting ratios of potential borrowers with industry or group norms' (see Altman & Saunders, 1998, p. 1723); or multivariate credit-scoring systems, where the accounting ratios are weighted and linked to be included in a more sophisticated system. According to the authors the multivariate credit-scoring system can be applied in the following ways: (1) the linear probability model, which is based on a linear regression using accounting variables; (2) the logit model, which includes an assumption of a logistical distribution of the probabilities; (3) the probit model; (4) the multiple discriminant analysis (MDA) which includes accounting and market-based variables. Based on the methodologies of Huss & Zhao (1991) and by Chattopadhyay et al

[80] Hann et al (2007) use a similar methodology calculating alternative models on as if basis to test value and credit relevance of fair-value vs smoothing pension accounting under US GAAP. The authors, however, do not use MDA for their investigation.

(1997) hypothesis H1 is tested here by using the methodology of multiple discriminant analysis (MDA). The basic idea of MDA is that the dependent variables are classified into groups based on significant differences in respect to several characteristics (Backhaus et al, 2003). Since MDA is not used to actually predict credit ratings but rather to compare different accounting treatments for goodwill using the same sample and same methodology, possible disadvantages of using this particular methodology against others can be ignored (Chattopadhyay et al, 1997).

Following Chattopadhyay et al (1997) and Huss & Zhao (1991) the model simulates the credit rating decision on an *ex post* basis and includes 19 financial ratios primarily used in prior research in this area[81]. Since goodwill and its write-down charges affect directly the income statement and the balance sheet, ratios including these figures will change as a consequence of different accounting treatments for goodwill. Such ratios are marked with * (14 ratios):

Table 3.1: Goodwill write-downs and credit ratings: financial ratios (explanatory variables)

Financial ratios (explanatory variables)	**Variable**
cash ratio = (cash + short term investments)/current liabilities	CaR
income before tax and exceptional items/net assets*	$\frac{IBTE}{NA}$
operating cash flow/total long term debt	$\frac{CF}{TLTD}$
income before tax and exceptional items/sales*	$\frac{IBTE}{S}$
income before tax and exceptional items/total assets*	$\frac{IBTE}{TA}$
income before tax and exceptional items/total long term debt*	$\frac{IBTE}{TLTD}$
income before tax and exceptional items/total liabilities*	$\frac{IBTE}{TL}$
net assets/total long term debt*	$\frac{NA}{TLTD}$

[81] Rating agencies do not publish detailed information regarding their ratio analysis of companies but only key ratios indicating the direction of the analysis (S&P, 2005; Moody's, 2003). Therefore, it would not be feasible to rely solely on such scarce information for the construction of the model. The ratios used here have been selected based on prior academic research in the area. However, information available from rating agencies has also been incorporated in the model (for example variables, definitions, etc.).

total long term debt/total assets*	$\frac{TLTD}{TA}$
current ratio = current assets/current liabilities	CR
operating cash flow/total liabilities	$\frac{CF}{TL}$
operating cash flow/total assets*	$\frac{CF}{TA}$
working capital/sales	$\frac{WC}{S}$
operating cash flow/net assets*	$\frac{CF}{NA}$
total liabilities/total assets*	$\frac{TL}{TA}$
net assets/total liabilities*	$\frac{NA}{TL}$
total asset turnover = sales/total assets*	TAT
sales/net assets*	$\frac{S}{NA}$
interest coverage = EBIT/gross interest expense*	$\frac{EBIT}{GIE}$

The financial ratios reflect the activity, liquidity, solvency and profitability of the company and can be used to depict an overall image of the company's present situation and give an indication of its future development (White et al, 2003).

The accounting predictive model is defined as follows:

$$CRAT_{j,y} = \beta_0 + (\beta_1 CaR + \beta_2 \frac{IBTE}{NA} + \beta_3 \frac{CF}{TLTD} + \beta_4 \frac{IBTE}{S} + \beta_5 \frac{IBTE}{TA} + \beta_6 \frac{IBTE}{TLTD} + \beta_7 \frac{IBTE}{TL} +$$
$$\beta_8 \frac{NA}{TLTD} + \beta_9 \frac{TLTD}{TA} + \beta_{10} CR + \beta_{11} \frac{CF}{TL} + \beta_{12} \frac{CF}{TA} + \beta_{13} \frac{WC}{S} + \beta_{14} \frac{CF}{NA} + \beta_{15} \frac{TL}{TA} + \beta_{16} \frac{NA}{TL} +$$
$$\beta_{17} TAT + \beta_{18} \frac{S}{NA} + \beta_{19} \frac{EBIT}{GIE} + \beta_{20} SIZE)_{j,y}$$

$CRAT_{y,j}$ describes the rating category of the company j at a point in time y. The company ratios are calculated based on the annual accounts immediately preceding the

issuance of the credit rating, thus representing the financial situation of the company used in the rating assessment process.[82]

To investigate the role of goodwill write-downs in this process the financial ratios are calculated for five different scenarios:

- Scenario 1: on the basis that the company uses capitalisation and annual impairment as an accounting technique for goodwill; or
- Scenario 2: based on capitalisation and goodwill amortisation data; or
- Scenario 3: in the case that neither amortisation nor impairment based goodwill write-downs are taken into account for the credit rating assessment (i.e. while goodwill write-downs are ignored, goodwill itself is recognised as an asset in the rating calculation); or
- Scenario 4: as if the goodwill has been written-off against equity (i.e. goodwill is not recognised as an asset for purposes of the rating calculation); or
- Scenario 5: using the actual capitalisation and impairment and amortisation data, i.e. not undertaking any adjustments to the income statement or the balance sheet (i.e. 'numbers as they are').

The different accounting treatments of goodwill lead to changes in both the income statement and the balance sheet. They result in adjusted financial ratios as the total assets, the income before tax and exceptional items (IBTE), the earnings before interest and tax (EBIT) and the net assets are altered:

Table 3.2: Goodwill write-downs and credit ratings: adjustments for companies amortising goodwill and additionally conducting impairment

Adjustments / **Scenarios**	**Income Statement** (IBTE, EBIT)	**Balance Sheet** (total assets, net assets)
Scenario 1: Impairment, no amortisation	Add back amortisation charge for the current year (i.e. IBTE , EBIT include only the impairment charge for the current year)	Add back amortisation charge for the current year to the net book value (NBV) of goodwill[83]

[82] A control variable *SIZE* (number of employees in the company) is used to account for the inclusion of big and small companies in the sample.

Scenario 2: **Amortisation, no impairment**	Add back impairment charge for the current year (i.e. IBTE , EBIT include only the amortisation charge for the year)	Add back impairment charge for the current year to the NBV of goodwill
Scenario 3: **No impairment, no amortisation**	Add back impairment and amortisation charges for the current year (i.e. IBTE, EBIT include neither impairment nor amortisation)	Add back impairment and amortisation charges for the current year to the NBV of goodwill
Scenario 4: **Goodwill written-off against equity**	Add back impairment and amortisation charges for the current year (i.e. IBTE, EBIT include neither impairment nor amortisation)	Deduct goodwill from total assets (and from shareholder's equity)
Scenario 5: **'Numbers as they are'**	No changes	No changes

Virtually all companies in the data sample have conducted both goodwill impairment and amortisation in the relevant period. Therefore, actual data are used for the calculation of the ratios where available (see procedure in supplement B to chapter 4 for companies which did not have amortisation).[84]

In each of the five scenarios the credit rating is categorised as a function of the financial ratios by using the multiple discriminant analysis (MDA) technique. Finally, the percentage of correctly categorised ratings is compared across the different scenarios. The accuracy of these categorisations serves to analyse the role of the different accounting treatments in the rating decision making process.

The ratings in the dataset were split into two groups: (1) cases with a rating of A or higher were placed in the first group, and (2) all other rating categories were placed in the second group. This was done as there were too few cases in some of the rating categories in order to form a separate group in the study. The procedure of combining smaller groups into bigger ones is a standard one in MDA and is recommended particularly for small samples (Backhaus et al, 2003; Tabachnick & Fidell, 2007).

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[83] Accumulated amortisation is not added back due to two reasons. First, such a procedure would involve too many judgements (for example if there were no amortisation, impairments might have occurred more often in the past); second, it is unlikely that a rating agency would proceed to reverse amortisation to such great extent.

[84] In the rare cases where goodwill amortisation data is not available, the notional amortisation charge for the year is calculated on *as if* basis. A detailed explanation of this calculation is provided in the supplement to this chapter.

All quantitative data (i.e. the financial ratios) are recalculated for the five different scenarios according to the procedure described in Table 3.2. As the exact combination of ratios used by the rating agencies is not publicly known, several combinations of variables are used. This procedure is based on the method used by Chattopadhyay et al (1997) and Huss & Zhao (1991). The variable combinations differ regarding (1) the method of MDA (direct or stepwise) and (2) the predictors included. In 2002 S&P issued a recommendation that goodwill impairment should be excluded from core earnings for purposes of rating (S&P, 2002). However, it is not entirely clear whether or to what extent this recommendation has been followed for the balance sheet. This recommendation is accounted for by testing predictor combinations where ratios based on earnings/income statement data are excluded (V2, V8, V11). Further tests concentrate on predictors with essential importance for the model (V10, V11 and V12).[85] In order to account for possible critique that different predictors might be included in the stepwise method (V1-V3) or in V10-V12 and possibly result in differences across scenarios which are not due to alternative goodwill accounting treatments, more analyses were conducted where all the variables chosen in the different scenarios were combined and tested uniformly (V4, V5, V6 and V13, V14, V15). An overview of all variable combinations used in the study is provided below:

Table 3.3: Goodwill write-downs and credit ratings: overview of variable combinations

Variable comb.	Predictors / Variables	MDA-Method
V1	All variables	Stepwise
V2	Balance sheet variables (predictors containing earnings numbers excluded)	Stepwise
V3	Income statement variables (predictors containing only balance sheet numbers excluded)	Stepwise
V4	All variables selected in V1 in the different scenarios	Direct
V5	All variables selected in V2 in the different scenarios	Direct
V6	All variables selected in V3 in the different scenarios	Direct
V7	All variables	Direct
V8	Balance sheet variables (predictors containing earnings numbers are excluded)	Direct
V9	Predictors containing only balance sheet numbers are excluded	Direct
V10	All variables over 0.3 in the structure matrix in V7	Direct
V11	All variables over 0.3 in the structure matrix in V8	Direct
V12	All variables over 0.3 in the structure matrix in V9	Direct

[85] The cut-off point for these predictor combinations was set at 0.3 of the structure matrix coefficients.

V13	All variables selected in V10 in the different scenarios	Direct
V14	All variables selected in V11 in the different scenarios	Direct
V15	All variables selected in V12 in the different scenarios	Direct

The above combinations allow for the research question to be explored in altogether 75 settings (15 variable combination and five scenarios per variable combination) to which the appropriate MDA procedure is applied. The use of this large number of settings has three purposes: first, the possibility that rating agencies might use a different set of financial ratios for their annual analyses than modelled in V1 is accounted for and a number of variable combinations were built to reflect this possibility. Second, the impact of S&P's recommendation is assessed by splitting the predictors into combinations excluding income statement variables and, alternatively, in combinations based exclusively on them.[86] Finally, the settings were used for purposes of robustness testing.[87]

3.1.2 Causes of the managerial choice to conduct an impairment charge additional to systematic amortisation

If financial reporting regulations are followed, write-downs should ideally reflect a loss in the value of the asset. However, regulations for some assets, among them especially goodwill, allow considerable managerial discretion concerning issues such as the timing or amount of the write-downs. Since in the case of goodwill it is often possible to argue for the use of either definite or indefinite useful life, managers could under certain circumstances be motivated to choose between amortisation and impairment for reasons unrelated to the economic depletion of the asset.

This study investigates the causes behind the managerial choice to recognise an additional impairment charge besides systematic amortisation of goodwill at a specific point in time rather than another.

The research question is further specified within the following hypotheses:

H2: The goodwill impairment loss additionally charged to the systematic amortisation of goodwill is:

[86] A still better way to test the S&P's recommendation would have been to additionally limit the sample to observations only after 2002. However, this would have resulted in an extremely small estimation sample (and no validation sample) including only 25 cases. Such estimation sample would have been inadequate for testing a model including up to 20 predictors (minimum 14 variables would have been included).

[87] For this purpose also different versions of the dataset were tested, see chapter 4.

H2a: negatively related to variables for the financial performance of the company.

H2b: positively related to variables reflecting managerial reporting incentives (with the exception of the 'big bath' variable where a negative relation is expected).

The research question is additionally split into the following settings:

The **'If' question** targets companies' decision to conduct goodwill impairment. It looks at this issue without taking into account the amount of the goodwill write-down. The question asked here is what events would induce a company to impair goodwill (as opposed to what events would induce a company to conduct a goodwill impairment of that particular amount).

The **'How much' question** concentrates on the question about the amount of goodwill impairment and the underlying reasons to write-down this particular amount. This setting is explored using the complete sample available and, again, using only companies which had impairment in the relevant period (the **'How Much' question revisited**).

Based on prior research (Francis et al, 1996; Segal, 2003; Zang, 2003; Sellhorn, 2004) a linear regression is used to test the hypotheses of the research question. The explained variable is $GWIMP_{j,t_1}$ representing the goodwill impairment write-down in the current reporting period. Depending on the particular setting (see above) this is either the amount of the goodwill impairment loss before tax (a positive number) deflated by the company's total assets at the end of the prior year ($GWIMPTA_{j,t_1}$, for the 'How Much' and the 'How Much' revisited questions); or, a dichotomous variable indicating the presence of an impairment write-down in a particular year (= 1) or its absence (= 0) ($GWIMP\_Dummy_{j,t_1}$, for the 'If' question).

The literature review shows that prior research has detected a relation between asset write-downs and indicators of the financial performance of the firm, as originally intended by standard setters. Therefore, the following measures of company-level financial performance are included which were also used in prior research (for example Segal, 2003; Zang, 2003; Sellhorn, 2004; Long, 2005): $\Delta MB5_j$, the change in the market-to-book ratio of the company over the five years prior to the impairment

write-down; the cumulative stock return over the same period, $RET5_j$; and the change in return on assets over the five years prior to the relevant write-down year, $\Delta ROA5_j$. In order to test how long the lag between the deterioration of financial performance and its impact on goodwill is, these variables were also calculated over a three-year and a one-year period and tested separately.

The correlation between the goodwill impairment write-down and the firm performance measures is expected to be negative, since the greater the deterioration in the company performance, the greater the likelihood that this company will report or increase a goodwill impairment loss. Additionally, this expectation is supported by the fact that annual impairment testing is assumed by standard setters to reflect the economic depletion of goodwill and amortisation is seen as noise by previous research (for example Moehrle et al, 2001; Jennings et al, 2001).

Furthermore, variables are included to account for trends in industry performance, since declining performance within the industry of the specific firm is likely to influence the managerial decision to undertake impairment and its amount as well. Here, again, as impairment testing regulations are aimed at providing a more truthful image of goodwill value than systematic amortisation, it is expected that the coefficients of industry-specific variables will be negative. The particular industry variables used in this model are – based on Long (2005) – the medians of firms within the same industry as the goodwill write-down firm for the following: $\Delta MB5\_Ind$, $RET5\_Ind$, $\Delta ROA5\_Ind$ which are the same variables selected as proxies for the financial performance of the individual sample companies but calculated on industry basis for the five years prior to the write-down year. Additionally, the variables were calculated over a three- and a one-year period to correspond to the respective variables for financial performance of the individual firm.

Apart from relation between goodwill write-downs and company performance prior research also provides evidence that goodwill write-downs might be due to managerial reporting incentives and not to financial distress. This is especially true in the case of goodwill compared to other asset write-downs, since goodwill accounting is perceived to allow greater amount of managerial discretion than in other cases, for example inventory (Francis et al, 1996). Therefore, it is possible that an impairment charge is motivated not by the wish of the management to better reflect changes in the financial performance of the firm, but by other incentives, such as earnings management, and

the avoidance of an impairment write-down may be motivated by the intention to create a bigger covenant 'slack'. For this reason, several variables for managerial reporting incentives are included in the model to test sub-hypothesis H2b. Evidence shows that managerial opportunistic behaviour has been linked to asset or specifically goodwill write-downs in the following situations: the presence of debt covenants for the specific firm, earnings management (income smoothing and 'big bath' behaviour), and change in top management. Therefore, variables are included to reflect these phenomena. The debt-to-equity (DTE) ratio of the company for the year prior to the write-down year is used as a variable for debt covenants in a particular company based on the methodology in prior research (for example Gore et al, 2000; Wang, 2003; Sellhorn, 2004; Long, 2005): DTE_{j,t_0}. The earnings management variables are calculated according to the methodology of Francis et al (1996), who separate the phenomena of income smoothing and 'big bath' based on unexpected operating return-on-assets, $UOROA_j$ calculated as follows:

$$UOROA_{j,t_1} = \frac{(\text{operating income before taxes and before write}-\text{down}_{j,t_1} - \text{operating income before taxes}_{j,t_0})}{\text{total assets at end of } t_0}$$

The income smoothing hypothesis states that managers will undertake impairment in years of exceptionally good earnings in order to keep earnings levels steady (for example Zucca & Campbell, 1992).Therefore, a relation between unexpectedly good earnings (i.e. $UOROA_j > 0$) and goodwill impairment loss might be an indication for income smoothing behaviour of the management: this effect is captured by the variable IS_j which is equal to $UOROA_j$ if $UOROA_j > 0$, and zero otherwise.

'Big bath' behaviour on the other hand is found to occur in year of unexpectedly bad earnings. According to the explanation provided in the literature (for example White et al, 2003), managers take this opportunity to record (sometimes overstated) write-downs in order to improve future earnings. Therefore, the variable BB_j is used to capture the influence of 'big bath' behaviour on goodwill impairment losses: BB_j is equal to $UOROA_j$ if $UOROA_j < 0$, and zero otherwise[88].

[88] The 'big bath' variable will be negative per definition when operating income before taxes and excluding the write-down has decreased as compared with the previous reporting period.

Additionally, changes in top management are accounted for, based on the methodology of Long (2005) by including two dichotomous variables: ΔMGT_j which is equal to 1 if there was a change in the top three executive positions of firm j during the reporting period prior to the write-down (t_0), and zero otherwise; and ΔCFO_j which is equal to 1 if there was a change of the chief financial officer of firm j during t_0, and zero otherwise. These variables are included since prior research suggests a positive relation between change in top management and goodwill write-downs: incentives might exist for the new management to undertake write-downs in their first year which could potentially be 'blamed' on actions of the previous management and thus 'clean the house' and improve artificially future earnings.

For all managerial reporting incentive variables a positive and significant relation to goodwill impairment charge is expected based on evidence in prior research (Francis et al, 1996; Segal, 2003; Zang, 2003; Sellhorn, 2004; Long, 2005) and on the assumption that the decision for this particular managerial choice is motivated by the above incentives. Per definition the 'big bath' variable, however, is expected to be negatively related to goodwill impairment write-down.

Finally, control variables for goodwill amortisation $Gwam_{j,t_1}$ and the lagged impact of goodwill impairment $Gwimp_{j,t_0}$ were added. This was done, in particular, to test whether a goodwill impairment write-down would trigger a further impairment during the following reporting period. Both of these variables are defined as dichotomous variables: the presence of goodwill impairment in the period directly preceding the investigated year leads to a recording of 1 for $Gwimp_{j,t_0}$ and 0 otherwise. Similarly, $Gwam_{j,t_1}$ equals 1 if goodwill amortisation was reported in the current period and 0 otherwise.

The model used to estimate the relation between the goodwill impairment loss and the above predictors can be thus described as follows[89]:

$$GWIMP_{j,t_1} = \beta_0 + \beta_1 \Delta MBX_j + \beta_2 RETX_j + \beta_3 \Delta ROAX_j + \beta_4 \Delta MBX\_Ind + \beta_5 RETX\_Ind + \beta_6 \Delta ROAX\_Ind + \beta_7 DTE_{j,t_0} + \beta_8 IS_j + \beta_9 BB_j + \beta_{10} \Delta MGT_j + \beta_{11} \Delta CFO_j + \beta_{12} Gwimp_{j,t_0} + \beta_{13} Gwam_{j,t_1} + \varepsilon_j$$

[89] The term '*X*' in the financial performance variables stands for the period of time over which these variables were calculated: five, three or one years.

3.1.3 Sources of goodwill impairment

Research related to the impairment calculation has been scarce with only a few authors discussing the different milestones of the impairment calculation and their effect on the final result of this calculation (the impairment loss). Nevertheless, the few recent studies available have identified the importance of several issues in the impairment process (see literature overview in chapter 2.2.3). In particular, the identification and interpretation of triggering events, the level of aggregation into IGUs and the importance of discount rates is highlighted as significant for the goodwill write-down. However, empirical tests of these issues are still rare and previously mostly concentrating on Australian (IFRS) or US (US GAAP) companies. Additionally, as regards investigations of discount rates and their role in the impairment process, research so far has not concentrated on the discretionary room provided by the characteristics of the beta factor and its importance for goodwill impairment.

Therefore, this study raises the following research questions:

Why do companies impair goodwill (the 'Why' question): do drivers of the measures for economic performance provide better understanding of the managerial decision to impair goodwill? Does a change of methodology (case study approach) help to raise issues for future research?

How do companies go about making the goodwill impairment calculation (the 'How' question): are company impairment disclosures sufficiently transparent to allow a financial statement user to understand goodwill impairment? Do managers behave opportunistically when impairing goodwill by using the discretionary room available in the derivation of discount rates?

This study is exploratory by nature. Exploratory research methodology is regularly used in social sciences whenever new problems must be investigated, where the underlying theory is not yet developed or the available literature and empirical research are not extensive. Alternatively, the exploratory framework can be used whenever previously researched issues are challenged and addressed from a new point of view. Whatever the problem being investigated, exploratory research offers the fundamental advantage of open-end methodology: whether new research questions or new aspects of 'old' research questions, this method is likely to result in more questions than the ones raised at the start (Fry et al, 1999). Therefore, this research

method is often used to uncover new paths in academic research. The flexibility of the exploratory approach helps to address 'Why' questions and supports the analysis of preliminary data leading to the formulation of more precise research questions and hypotheses (descriptive and causal research, Babbie, 1989).

Due to its flexibility exploratory research is not clearly defined and often relies on the support of secondary research methods. This study uses case the study approach in order to conduct the analysis and present the results in an adequate manner. The case study approach is often used to categorise and present information about a certain topic and can be applied to new topics or new aspects of already researched topics (Cooper & Morgan, 2008; Stake, 2000). It is a complementary method of research which usually combines a number of data collection methods (such as research of documents, interviews, observations) and research methods (qualitative and quantitative, Stake, 2000). According to Yin (1989) this approach is particularly appropriate to answer 'Why' and 'How' questions in empirical research. The case study approach aims to provide paths for new research. Therefore, generalisation of the results obtained through case studies is usually not the concern or primary aim of the studies themselves but is rather seen as the task of future research expanding on said case studies' results.

Considering the research questions of this exploratory study ('How' and 'Why' questions) the case study approach is applied for the investigation of two companies. The case studies are built based on a combination of qualitative and quantitative methods. Qualitative methodology is used to explore the effect of specific economic factors (industrial regulation and competition) on goodwill impairment. It includes document review of different sources, internal and external to the companies (qualitative methodology) and analysis of the reviewed information for both companies.[90]

The methodology for the analysis of the discount factors relies on quantitative and qualitative techniques. It is used to provide an independent investigation based on publicly available information (linear regression) and comparison to the discount rates

[90] Lys & Vincent (1995) have used similar data collection and analysis methods in their study on the acquisition of NCR by AT&T. Case studies have often been used in financial accounting studies, see Merino & Neimark (1982), Neimark (1992) and Xiang (1998). For an overview on case study research in accounting see Cooper & Morgan (2008).

disclosed by the companies (case studies). This combined methodology serves the purpose of illustration of the discretionary opportunities of management.

The aim of the investigation is not to determine a specific value or a range of values for the discount rates of the companies but to compare independently calculated discount rates to the ones disclosed by the companies. If the information disclosed is transparent and sufficient for the understanding of end users, there should be no material discrepancies between the independently calculated and the disclosed discount rates. The independent discount rates are calculated using publicly available company information as well as commonly applied parameters to derive beta factors (either discussed in previous research or used by widely accepted financial information providers such as *Bloomberg,* see also section 3.2).

Since capital can be provided to the firm in the form of equity or debt, the discount rate (i.e. the cost of capital) includes two components accounting for the corresponding return requirements of shareholders and lenders. The cost of capital is calculated by weighing these return requirements with the percentage of the respective capital (equity or debt) to total capital – this calculation of the cost of capital is known as the Weighted Average Cost of Capital (WACC):

$$WACC = r_E * \left(\frac{E}{E+D}\right) + r_D * (1-t) * \left(\frac{D}{E+D}\right)$$

r_E: *Cost of equity*

r_D: *Cost of debt*

E : *Equity*

D : *(Interest − bearing) debt*

t : *Corporate tax rate*

The most widely used model to determine the cost of equity is the Capital Asset Pricing Model (CAPM) which is based on the Capital Market Theory (CMT).[91] According to this model the cost of equity is the sum of a risk-free rate and a certain premium which investors would require for a risky investment (a risk premium):

[91] For a detailed discussion of the CAPM and its adequacy for cost of equity calculations see Pratt & Grabowski (2008). Since the aim of this study is to illustrate discretionary opportunities for goodwill impairment calculations a more detailed investigation of the theoretical background of CAPM is not included. Additionally, alternative methods are not discussed here, as, assuming the same company environment and conditions, all methods for the derivation of the cost of equity should yield the same results (see Pratt & Grabowski, 2008, p. 80).

$$r_E = r_f + \beta * (r_m - r_f)$$

r_E : *Cost of equity*

r_f : *Risk − free rate*

$(r_m - r_f)$: *Equity risk premium*

β : *Beta*

The risk-free rate represents the return requirement for an investment with a certain maturity which is free of default and reinvestment risk. Per definition this rate can best be derived from zero bond[92] (no reinvestment risk) spot rates for government securities (virtually no default risk assumed) with the same maturity as the individual investment being analysed (see Damodaran, 2006). Ideally, zero bonds of every possible maturity would be listed so that the relationship between the maturities and the respective interest rates is described by a (continuous) interest rate curve which serves as the basis for the estimation of the risk-free rate for valuation or impairment purposes. However, in practice, zero bonds are rarely traded in European markets. Therefore, for a direct derivation of the risk-free rate one must resort to the so-called stripping of coupon bonds.[93] Since these, however, also lack in liquidity compared to other bonds and, more importantly, such STRIPS are not available for every maturity, the estimation of a (hypothetical) interest rate curve as a basis for the derivation of risk-free rates yields the best compromise between theory and practice.

There are several methods for the estimation of the interest rate curve which are used in different countries. More generally, the methods used can be split into parametric and non-parametric methods.[94] The most widely used parametric method is the estimation method developed by Svensson (Svensson 1994, 1995)[95]. It includes several parameters describing the short-term and the long-term behaviour of the (hypothetic) interest rate curve. A number of European Banks make use of this method including the European Central Bank and the German Bundesbank. In the UK, the Bank of

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92 Zero-bonds do not include coupon payments per definition. Therefore, investments in zero-bonds are not considered to be subject to reinvestment risk.

93 Stripping was introduced in 1997, see Anderson & Sleath (1999).

94 Methods for estimating the risk-free rate using swaps or strips (Separate Trading of Registered Interest and Principal Securities) are not discussed here as this study does not concentrate on the advantages and disadvantages of different methods for the derivation of the risk-free rate. For further details on the methodology of the estimation of the risk-free rate see Brennan (1997), p. 81f.; Copeland et al (2004), p. 259f; Dörschell et al (2009).

95 This method was originated by Nelson and Siegel and was further developed by Svensson (Nelson & Siegel, 1987; Svensson, 1994, 1995)).

England applied the Svensson method in the 1990s as well (Anderson & Sleath, 1999 and 2001).[96] However, in November 1999, Anderson & Sleath proposed for the UK market a non-parametric method which claimed to rectify some of the shortcomings of the Svensson method. The variable roughness penalty (VRP) method introduced previously by Waggoner in the US is a non-parametric approach using a cubic spline-procedure to estimate the interest rate curve (Anderson & Sleath, 1999, Waggoner, 1997). The method claimed to deal better than the Svensson method with issues such as the short-term end of the interest rate curve and the stability of the curve regarding changes at its long-term end.[97] The three criteria according to which the merits of the VRP method are evaluated refer to the smoothness of the projected interest rate curves, their flexibility to accommodate changes of the term structure and their robustness to changes in individual maturities (Anderson & Sleath, 1999; Waggoner, 1997).

One of the essential issues to be solved when considering the interest rate curve refers to the maturity equivalence of the observed spot rates and the investment (in this case, the income generating unit) to be analysed. Since companies generally operate under going concern assumption, a risk-free rate would be needed which incorporates this assumption. However, the available maturities which can be observed in capital markets do not abide by this assumption; they have finite maturities.[98] The question how to model the long-term end of the curve can be solved by using several methods. First, if the Svensson method is used, the estimated curve can be extrapolated to reach beyond the longest observable maturity. However, due to volatility of the individual parameters of the Svensson equation this method has been found to be unreliable (Anderson & Sleath, 1999). Another method is based on the extension of the interest rate curve by using implied forward rates derived by the spot rates of the last two maturities available. Caution is, however, advised in cases where these two last available spot rates differ from each other substantially to avoid volatility in the extension of the curve. In practice, the spot rate of the longest maturity available is also often used to describe the run of the curve after that (Dörschell et al, 2009).

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[96] Prior to using the Svensson method, the Bank of England had applied the non-parametric method of Mastronikola (Mastronikola, 1991).

[97] There are several other proposed solution paths claiming to solve the shortcomings of the Svensson model. For example the German Bundesbank resolves the issues at the short-term end of the curve by excluding spot rates under 3 months (Deutsche Bundesbank, 2006).

[98] Maturities usually range up to 30 years (for a more detailed discussion see also Dörschell et al, 2009).

When estimating the risk-free rate by referring to government bonds the issue of the riskiness of the basis arises. In other words, government bonds of different countries do not qualify as risk-free in the same way. Their (lack of) riskiness is closely related to the credit standing of the respective country instead. Thus, differences in inflation expectations, economic difficulties or the political risk of different countries are bound to influence the level of the rates required for their bonds issued. The cash flows of the IGU being analysed or a company being valued should be matched to a risk-free rate in the same currency so that some of these effects are accounted for (Damodaran, 2006). Additionally, Damodaran proposes to account for variations in political risk in the risk-free rate by using default spreads related to the ratings of the respective countries (see www.damodaran.com).

The next component of the cost of equity refers to shareholders' requirement s for investing in a risky asset (as opposed to investing in a risk-free asset). This requirement is quantified in the equity risk premium, (r_m-r_f), which represents the difference between the rate of return on a market portfolio and the risk-free rate (Armitage, 2005). There are two approaches to determining the equity risk premium. The first one uses directly the expectations of investors and analysts regarding the equity risk premium. Ilmanen (2003) reported a relationship between past and expected returns in a survey on private investors' opinions. However, the information collected in questionnaires and surveys can sometimes offer serious challenges in terms of data collection and analysis (Dimson et al, 2003; Welch, 2001). Another way to estimate future equity risk premiums is based on the dividend discount model. However, such estimation would include assumptions of constant dividend growth and would depend on the reliability of analysts forecasted dividends (Armitage, 2005). Best & Byrne (2001) provided information on the expected equity risk premium in the US and the UK by using the dividend discount model and then comparing the predicted premiums with the ones that were actually observed. For the UK, the estimations were based on GDP forecasts from Consensus Economics' Consensus Forecasts as long-term dividend growth was assumed to behave as ten-year GDP growth. While the values of the expected (2.1% per half-year) and the realised (2.5% per half-year) premium for the period 1982 to 1999 were close to each other, the volatility of the realised premium was significantly higher (20.0% standard deviation of the realised mean vs. 1.2% for the expected).

The second approach concentrates on estimation of future equity risk premiums based on the mean (arithmetic or geometric) of historical data. There are a number of academic studies concentrating on the identification of past equity risk premiums and their adequacy for forecasting purposes (for the UK: for example Armitage, 2005; Dimson et al, 2002, 2003, 2008; Barclays Capital, 1999, updated on an annual basis; Credit Suisse First Boston, 1999; for the US: Siegel, 1992, 1998, 1999; Schwert, 1990; Ibbotson Associates, SBBI Yearbook 2000, updated on an yearly basis; Bimberg, 1993; Stein & Uhlir, 1994). The estimation of future equity risk premiums on the basis of historical data includes the following aspects: choice of the market portfolio which will provide the returns to measure the premium; the length of the period over which the historical data are collected; choice of the risk-free reference assets to measure the risk-free rate; bias of the data collected (such as survivorship bias)[99]; choice of the mean (arithmetic vs. geometric). In the CAPM world the ideal market portfolio is composed of all kinds and categories of risky assets (Sharpe, 1964; Damodaran, 2006). In practice, however, some kind of approximation must be made in order to find a representative portfolio for the whole market. Prior research has mostly concentrated on national indices as a representative for the respective equity market, or, researchers have constructed their own indices for investigation periods when data were not available from databases (see Dimson et al 2003). Most of the studies aim for a long-term perspective arguing that short periods of time (even a decade) cannot be always representative for future development due to specific phases of the markets. Thus, Dimson et al (2003) note that while the 1990s have been a time of high equity returns (in the US market, returns amounted to as much as 36% in 1995), the early 2000s saw a massive downturn of stock prices after the burst of the technology bubble. The authors argue that to base future estimations on each of these phases might introduce a bias in forecasts. Furthermore, they point out that government bonds performed well in the same time that share prices fell which would have led to a derivation and prediction of a negative equity risk premium – a number with no financial sense as – if investors are assumed to act rationally – they would simply invest in the risk-free asset at this point. Dimson at al (2002, 2003, 2008) calculate equity risk premiums for 16 countries evaluating data over a period which is longer than a century[100]. While recognising that long time periods can also cause problems for the estimation of future equity risk

[99] Although, according to Dimson et al, 2003, this is not a major concern where equity risk premium studies are concerned. The authors consider the length of the investigation period to be a much more important criterion.

[100] The authors have been regularly updating their study starting in the early 2000s.

premiums, especially since the development of stock prices has evolved enormously in the 20th century, the authors maintain that a longer time period is still bound to eliminate or at least mitigate short-term effects of stock price movements. This is a view generally supported by other studies as reported in table 3.4 below:

Table 3.4: Overview of some studies reviewing the equity risk premium based on UK data (based on Dörschell et al, 2009)

Authors	Investigation Period	Nr of years	(G)eometric / (A)rithmetic Mean	ERP (G)	ERP (A)
Dimson/Paul/Staunton	1900-2003	103	A/G	4.20%	5.90%
Credit Suisse	1925-2002	77	A	n.a.	3.30%
Barclays Capital	1899-2003	104	A/G	4.17%	5.44%
Credit Suisse First Boston	1869-2003	134	A/G	4.63%	5.75%

For purposes of the calculation of the cost of equity in this study the arithmetic mean according to Dimson et al (2003) is used.[101]

The final component of the cost of equity is the beta factor.[102] According to the CAPM the cost of capital is determined based on the opportunity cost of the next best alternative investment. In an ideal market a well-diversified investor would be able to eliminate all idiosyncratic (or diversifiable) risk from his/her portfolio and will bear only systematic (or non-diversifiable) risk. This systematic risk is reflected by the beta factor of a company (Sharpe, 1964; Fama, 1970).[103] The beta factor is determined based on historical return data. The observed returns of the individual investment are matched in a regression to the returns of a reference index. The slope of the regression line is the beta factor.

The CAPM assumes a linear relationship between the rate of return of the market r_m and the rate of return of the individual security r_i. Therefore, a linear regression is used to describe the model and to derive the beta factors:

$$r_{i,t} = \alpha_i + \beta_i * r_m + \varepsilon_{i,t}$$

r_m: *Rate of return of the market portfolio in time period t*
α_i: *Constant part of the return, independent of market development*
β_i: *Beta factor which needs to be determined*

[101] See argumentation of Armitage (2005), p. 88f. At the time when this study was conducted, the results of the Dimson et al (2003) study were available and were applied. Further updates yield similar equity risk premiums.

[102] For a detailed discussion of the derivation of the beta factor in practice see Dörschell et al (2009).

[103] Academic research discusses several shortcomings of the CAPM related to the assumption of the complete diversification of idiosyncratic risk and the application of a total beta approach instead (Camp & Eubank, 1981; Butler & Pinkerton, 2006; Tofallis, 2008). However, this discussion is not relevant to this study and is, therefore, not incorporated here. The aim of this study (chapter 6) requires calculation of discount rates based on the most widely accepted models and parameters used by companies in practice. This requirement suggests that the CAPM approach is used.

$\varepsilon_{i,t}$: *Error term in time period t*

The returns for the linear regression are determined based on spot prices for the individual company and the selected stock index (here: FTSE 100, MSCI and Mexbold). As the distribution of the discrete rates of return tends to be skewed to the right a transformation into continuous rates of return is used, following Fama (1965), to ensure a normal distribution (Dörschell et al, 2009).

The parameter β_i (the beta factor) represents the systematic risk of the company under investigation. No specific expectations can be made regarding the direction or the range of the beta factors since a beta factor can have both a positive or a negative sign (or be equal to zero) depending on the way the rates of return of the stock price of the company are behaving compared to the rates of return of the reference index.

FRS 11 requires that discount rates used in the impairment calculation are pre-tax (FRS 11, para. 44). Therefore, the independently calculated discount rates are grossed up to reflect this requirement. Ideally, an iterative process would be used to calculate the pre-tax discount rate based on the assumption that discounting post-tax cash flows with the post-tax discount rate and discounting pre-tax cash flows with the pre-tax rate will yield the same result. Since, however, the pre-tax cash flows of the IGUs are not disclosed by the companies, the grossing up calculation is used as an approximation for the pre-tax discount rate. This is a method which has been used in previous research (Carlin & Finch, see chapter 2.2.3.3.2 for various papers), is recommended by practitioners (Ernst & Young, 2003, p. 1044) and also by some regulators (see IFRS, Appendix to IAS 36).

3.2 SAMPLE SELECTION AND DATA SOURCES

The data sample includes all non-financial UK companies listed in the FTSE 350 as at 16th March 2006 which have recorded goodwill and a goodwill impairment write-down under UK GAAP between 1999 and 2005. This time frame was chosen since this was the period when FRS 10 and FRS 11 were applied by listed firms in the UK. Information on listings of UK companies is collected from the London Share Price Database (LSPD) and from the Financial Analysis Made Easy (FAME) database.

The final sample which was used as a basis for all three studies included 97 companies. Goodwill impairment and amortisation data are collected from *Datastream* and *Worldscope*. Since such data were available in *Worldscope* only back to 2001, data

for 2000 and 1999 were hand-collected from the annual reports of the companies. Company annual reports were obtained from the Perfect Filings database. All balance sheet, income statement and cash flow items for the studies were downloaded from *Worldscope*. A portion of the downloaded numbers (ca. 20%) was verified manually by using the annual reports and no significant deviations were identified. Data on management changes used in the study of causes of goodwill impairment in chapter 5 were hand-collected from company annual reports. Industry variables were downloaded from *Worldscope* and the categorisation of industries follows the definitions in this database.

For purposes of the credit rating study (chapter 4) credit rating information is provided by S&P's historical database (URL: http://www.standardandpoors.com). Since not all companies from the basis sample were rated the final sample for chapter 4 included 97 observations for 46 companies in the relevant period. Credit rating reviews at S&P are undertaken every three months and a summary report is issued annually. Additionally, various event-driven rating actions may be undertaken (S&P, 2005). For purposes of this study, the credit ratings were collected from the annual summary reports which were produced around the end of the accounting year (one month before to three months after the year-end). The reason for using these credit ratings was that they were most likely to be directly influenced by the accounting-year-end results (i.e. the financial ratios basing on these results).[104] The model used in this study to simulate the rating decision making process may not apply in cases of event-driven rating actions where other forms of information (additionally to quantitative financial ratios) are likely to impact the rating decision.

For purposes of the study of the managerial reasoning behind impairment additional to goodwill amortisation (chapter 5) the original data sample was tested as follows: the samples used for the 'If', the 'How much', and the 'How Much' revisited questions include the following numbers in the investigation period:

[104] While the audited annual reports are not usually available to the public until several months after the financial year end, the rating process is not limited by public availability of these data. The researcher's own experience of a rating process in 2007 (on the side of the company being rated) as well as an informal interview with a S&P employee in July 2006 revealed that rating analysts have access to company information long before the audited financial statements are published. As a matter of fact, S&P also briefly comments on this, stating that it 'does not perform an audit in connection with any credit rating and may, on occasion, rely on unaudited financial information' (S&P, 2005). Therefore, although the majority of the credit ratings for the sample in chapter 4 were issued well after the financial year end of the respective company, where a credit rating was issued shortly before year end, it was included in the sample as, in practice, the analysts would have already had access to at least an unaudited version of the company's accounts.

Table 3.5: Sample size according to investigation setting and year

Nr. Companies	2005	2004	2003	2002	2001	2000	1999
'If'	97	97	97	97	97	97	97
'How Much'	97	97	97	97	97	97	97
'How Much' revisited	24	49	54	56	38	26	16

The sample used for the 'How much' question revisited is based on the same 97 companies per year as the other questions but has been further reduced to include only companies which had goodwill write-downs in the respective years. Therefore, the sample size for this question differs from year to year as companies did not conduct goodwill impairment in every year of the investigation period.

For purposes of the exploratory study on sources of goodwill impairment (chapter 6) two companies of the general data sample were chosen according to the following criteria. The relevant companies had to be operating in a fast moving industry sector as this would increase the possibility that the investigation period includes different life phases of the companies analysed as well as of the industry sector itself. Furthermore, the selected industry sector had to be strongly competitive and heavily regulated in order to provide background information on the selected drivers of economic performance (competition and industry regulation). These criteria led to the choice of the telecommunications sector which was subject to changing industry regulations in numerous geographic locations, especially during the second part of the investigation (2002-2005).[105] Further criteria for the selection of the industry sector were the importance of intangible assets (relative to other sectors). More specifically, the industry sector chosen offered ample opportunity for goodwill creation, partly due to intensive acquisition activity in the relevant period and, partly, as a substantial number of the purchased assets was of intangible nature (due to the nature of the telecommunications' business). Finally, an attempt has been made to select companies which have impaired goodwill in more than one year during the study period. The selected companies had substantial amounts of goodwill on their balance sheets (over 50% and over 20% of total assets respectively, at a certain point within the investigation period). They were also sufficiently large so that it could be assumed that

[105] Both companies which were analysed belong to the same industry sector in order to ensure that they were subject to similar regulatory actions and competitive environment. This allows a more in-depth analysis as well as cross-investigation of both company disclosures and external information.

management would have access to the data and resources necessary for a precise determination of the write-down.

The two companies selected for this study are Vodafone Plc. and Cable & Wireless Plc.

Financial information about the two selected companies as well as information about the development of their goodwill and M&A activities during the investigation period was hand-collected from their respective annual reports. Furthermore, these reports provided information about the development of business activities, market development, economic and financial well-being, competition, regulatory events and risks as perceived and presented by the companies. To substantiate and complement this data external information was also collected: analyst reports on the companies issued by various sources (S&P, Moody's, CreditInsights, Fitch Ratings, etc) were downloaded from the *Bloomberg* and S&P historical databases.[106]

Discount rates used for goodwill impairment were (partially) disclosed by the companies in their annual reports and also calculated independently using information provided in the *Bloomberg* database as well as by the Bank of England and KPMG's Corporate and Indirect Tax Survey (2010).

Since no information was disclosed by the companies regarding the specific parameters of the beta factor derivation, the parameter constellation for the calculation of the discount rates is varied using parameters which have been discussed in previous research and are commonly used in practice.

As reference indices the MSCI All Country World Index (international index) is used and, alternatively, the FTSE 100 Total Return index and Mexbold index (both national). All three indices are total return indices meaning that dividend payments are accounted for in the total value of the index. The MSCI All Country World Index includes 48 indices in industrial and developing countries. The choice of the indices was motivated by several requirements: the MSCI index was chosen to include as many securities as possible in order to approximate the requirements of the CAPM as

[106] Of course, analyst reports should not be considered as the only external sources of information available. Further opportunities to be considered include an analysis of media sources possibly combined with interviews of management and / or financial journalists (see also section 7.2.2 and fn. 133). However, a search of the *Factiva* database using several combinations of key words yielded over 20.000 media sources of information on Vodafone. Considering that the analysis of this information would clearly exceed the scope of the thesis, such analysis is suggested as an opportunity for further research.

best as possible. Alternatively, the FTSE 100 and the Mexbold[107] were selected to reflect the perspective of the investment opportunity set corresponding to private and institutional investors. Another requirement for the choice of reference index was that as few non liquid shares are included as possible so that a possible intervalling effect is reduced.

The length of period during which the rates of return for the derivation of the beta factors were collected was set at 1, 2, 3 or 5 years. The intervals for the data collection for the rates of return were daily, weekly and monthly. These parameters are commonly used in empirical research as well as in practice.[108]

[107] The Mexbold index was selected for the investigation of a Mexican subsidiary of Vodafone, see section 6.5.2.1.

[108] For example Bartholdy & Peare, 2001, p. 4, Armitage, 2005, p. 292; Dörschell et al, 2009. Ibbotson Assoviates, Chicago / USA, London Business School Risk Measurement Service use for example 5-year-monthly beta factors. The standard constellation for the derivation of beta factors in *Bloomberg* is 2-year-weekly betas but also daily and weekly-based derivations are available.

4 THE IMPACT OF GOODWILL WRITE-DOWNS ON CREDIT RATINGS

4.1 INTRODUCTION

The discretionary nature of goodwill, the large amounts of its write-downs and potential adverse effects on balance sheet, net income, key performance indicators and even (indirectly) cash flows motivate research on goodwill impairment (see section 2.2). Additionally, significant regulatory changes on worldwide level in the past decade have brought on a wave of goodwill-related studies. However, while there has been ample research on various aspects of goodwill accounting and their relevance for shareholders, investors and managers[109], the 'debt side' of the market has been so far somewhat neglected regarding these issues. Such neglect is hardly justified especially considering that while a substantial portion of managers have no choice but to report goodwill under the new IFRS, lenders' analyses and decisions are not necessarily bound to regulatory standards and hence might offer a quite different insight into goodwill perception. Evidence in academic studies suggests for example that violations of debt covenants are not necessarily linked to financial distress (Dichev & Skinner, 2002) but might be due to changes in accounting treatments. In the case of (discretionary) write-downs, studies show a possible link between debt covenants and the choice of the accounting treatment on the managers' side (Beatty & Weber, 2005, and Zang, 2003, in the US; Gore et al, 2000, and Wang, 2003, in the UK). More recent studies show that lenders recognise the importance of goodwill impairment, at least for intangible-intensive companies (Beatty et al, 2008; Frankel et al, 2008).

Another big group of users of financial statements in the debt market – rating agencies – has so far remained unexplored regarding the role and perception of goodwill accounting. The role of a rating agency lies in providing valuable information to investors at low cost, thus decreasing the costs of obtaining new information and monitoring company performance in a market where rapidity provides valuable advantages.

Although rating agencies themselves do not elaborate on their exact decision making process (Chattopadhyay et al, 1997), it is common knowledge that the quantitative

[109] See section 2.2.1.1 for details.

information included in the rating analysis is normally based on the data available in the company's financial reports (S&P, 2005). Therefore, accounting information is expected to play an important role in the decision process of credit ratings. Although previous academic research shows that rating agencies react to accounting information and to the announcement of asset write-downs (Elliott & Shaw, 1988; Elliott & Hanna, 1996) and that accounting information is used in the rating calculation[110] the implication of goodwill and its write-downs in the credit rating assessment has not been explored yet.

Therefore, the following research question is raised in this study:

> **How do rating agencies view goodwill in their risk evaluation of companies, as reflected in the relevant accounting treatment of goodwill?**

Related to this research question the following hypothesis is tested:

> **H1**: The correct classification and misclassification distribution of company credit ratings is the same whatever the way rating agencies view goodwill as reflected in its accounting treatment.

This study is conducted in the form of an independent investigation. Rather than interviewing rating agencies about their best practice an independent test of their treatment of goodwill in the rating assessment process provides information about this process as well as about their response to goodwill impairment. An independent study is thus not influenced by corporate disclosure policies or personal opinions. In this manner, this investigation reflects the concern of regulators, investors and the public in general that rating grades be transparent and understandable to external users.

4.2 DESCRIPTIVE STATISTICS

Descriptive statistics for the sample are provided Table 4.7 in supplement A to this chapter. There were 4 cases in the sample (4.1%) where the companies did not have amortisation charges (only impairment). A notional amortisation charge was calculated according to the procedure described in Table 4.8 in supplement B to this chapter.

[110] See section 2.2.1.3.

Descriptive statistics – which are based on a total of 97 impairment observations for 46 companies in the investigation period[111] - show that goodwill per balance sheet represented on average 29.3% of total assets. However, considering a median of goodwill at £ 476 mln, most companies had a lower percentage of goodwill at 10.3% of total assets. The mean impairment write-down amounted to £ 215 mln and represented 60.7% of EBIT while annual amortisation was £ 48 mln on average.

To account for the influence of severe outliers on the analysis, between 0 and 10% of the sample was winsorized by removing outliers beyond the limits of $[x \pm 3\sigma]$, i.e. the threefold distance of the standard deviation from the mean. Robustness checks were also made for the limits of $[x \pm 4\sigma]$ and $[x \pm 2\sigma]$. The improvement of the outlier influence, while substantial when compared to the original sample, was not qualitatively different between the robustness checks.

The dataset was split into an estimation and a holdout (validation) sample. The estimation sample is used to estimate the model simulating the rating decision. The model is then tested on the holdout sample (see also Chattopadhyay et al, 1997). The estimation sample included data from the earlier years in the relevant period (1999 – 2003, 66 observations). The validation sample comprised cases from the end of the relevant period (2004 – 2005, 31 observations).

4.3 EMPIRICAL RESULTS

The explanatory power of the discriminant functions is assessed using a χ^2 transformation of Wilks' Lambda.[112] The results of this evaluation are provided in the table below:

[111] For more details on data collection, see section 3.2.

[112] Wilks' lambda represents the proportion of the total variance of the discriminant scores not explained by differences between the two categories. Its χ^2 transformation provides information about the statistical significance of the model.

Table 4.1: Goodwill write-downs and credit ratings: explanatory power of the discriminant function

	Scenario									
	1		2		3		4		5	
	χ^2	Sig.	χ^2	Sig.	χ^2	Sig.	χ^2	Sig.	χ^2	Sig.
V1	25.602	0.000	26.745	0.000	26.734	0.002	31.462	0.000	34.735	0.000
V2	26.844	0.001	26.571	0.000	26.458	0.000	30.687	0.000	25.953	0.000
V3	32.419	0.000	31.403	0.000	27.638	0.000	31.083	0.000	35.698	0.000
V4	33.487	0.004	35.665	0.002	34.009	0.003	34.163	0.003	34.423	0.003
V5	28.930	0.001	28.859	0.001	28.736	0.001	30.686	0.001	28.957	0.001
V6	34.653	0.001	32.761	0.003	29.155	0.010	32.158	0.004	34.577	0.002
V7	40.530	0.003	35.811	0.016	37.382	0.011	40.294	0.005	36.132	0.010
V8	28.754	0.002	28.681	0.003	28.554	0.003	30.477	0.001	28.771	0.002
V9	34.653	0.001	32.761	0.003	29.155	0.010	32.158	0.004	34.577	0.002
V10	25.776	0.007	26.370	0.006	24.506	0.027	26.606	0.005	30.667	0.001
V11	26.255	0.002	25.774	0.001	25.752	0.001	29.033	0.001	26.063	0.002
V12	17.425	0.065	20.018	0.045	18.749	0.066	21.719	0.010	27.475	0.001
V13	23.143	0.002	21.243	0.003	21.255	0.003	23.961	0.001	21.647	0.003
V14	24.337	0.001	24.345	0.001	24.153	0.000	26.088	0.000	24.462	0.001
V15	16.148	0.013	14.138	0.028	12.945	0.044	15.412	0.017	18.560	0.005

Overall, an overwhelming majority of the discriminant functions (97.3%) have high explanatory power at the 0.05 level. Only 2 settings (2.67%, V12, S1 and S3) are not significant and both are in a variable combination based on income statement figures. This evidence suggests that rating agencies might not rely solely on profit and loss figures for their annual analyses but are more likely to include both figures from the balance sheet and the income statement.[113]

In order to examine differences between the scenarios due to goodwill accounting specifics the classification results of the MDA analysis are discussed next. In particular due to the variety of scenarios and variable combinations used to test the research questions (overall 75 settings without the robustness analysis) a few considerations about the possible outcome of the analysis are in order. The investigation in this chapter includes three aspects: first, the question about the role of goodwill accounting in the rating process (presented in the five different scenarios described in section 3.1.1). Second, different variable combinations are tested (V1 to V15, also set out in section 3.1.1) in an attempt to approximate statistically the rating assessment process. Finally, the model is tested on different samples (estimation and holdout samples) in order to strengthen the findings.

[113] This suggestion was supported in the robustness analysis. Although the results of the robustness checks were qualitatively similar and provided an overall of 4.29% insignificant models in tests of overall 350 settings (see section 4.4), most of these were found in variable combinations based on income statements figures.

As regards the first of these issues, intuitively, if standard setters are correctly interpreting goodwill and successfully translating its nature into accounting regulations, then – based on recent developments in accounting (IFRS) – rating agencies could well be expected to include goodwill and its impairment write-downs in the rating calculation. Additionally, amortisation should be ignored for purposes of the assessment process, in particular, if agencies are following results of academic research (see chapter 2) suggesting that amortisation numbers do not provide new information to financial statement users. On the other hand, however, considering the accounting history of goodwill in the UK and the fact that, before the introduction of amortisation and impairment, most companies preferred to immediately deduct goodwill from equity, raters may well decide that goodwill and its write-downs are irrelevant for their assessment purposes. This expectation is also supported by the fact that prior research which is used to discuss expectations for this study is largely based on the interests and reactions of investors who have a differing set of interests than lenders.

Second, it is expected that models based on both income statement and balance sheet variables are most likely to provide the highest statistical significance as – in particular, where long-term ratings are concerned – analysts are likely to take into account as much information as possible and, also, as concentrating on income statement variables only will ignore cash flow effects (including balance sheet based variables, on the other hand, would account for such effects).

Finally, the results of the holdout vs the estimation sample are discussed in section 4.4.

The classification results indicate the percentage of the sample that was classified in the correct rating category within the discriminant analysis. Five alternative goodwill treatment scenarios were tested using fifteen model variations including balance sheet and / or income statement ratios (for details and categorisation, see section 3.1.1):

Table 4.2: Goodwill write-downs and credit ratings: classification results[114]

	Estimation Sample					Holdout Sample				
	Scenario					Scenario				
	1	2	3	4	5	1	2	3	4	5
V1	77.3%	77.3%	78.8%	81.8%	77.3%	83.9%	83.9%	80.6%	100.0%	80.6%
V2	78.8%	77.3%	77.3%	81.8%	78.8%	74.2%	74.2%	74.2%	87.1%	74.2%
V3	81.8%	78.8%	74.2%	78.8%	81.8%	77.4%	77.4%	77.4%	93.5%	77.4%
V4	77.3%	77.3%	80.3%	77.3%	77.3%	90.3%	93.5%	83.9%	96.8%	93.5%
V5	75.8%	77.3%	75.8%	81.8%	77.3%	80.6%	77.4%	80.6%	80.6%	77.4%
V6	83.3%	81.8%	78.8%	83.3%	80.3%	77.4%	77.4%	80.6%	90.3%	80.6%
V7	80.3%	80.3%	81.8%	87.9%	81.8%	90.3%	90.3%	83.9%	100.0%	90.3%
V8	77.3%	80.3%	77.3%	81.8%	77.3%	77.4%	77.4%	77.4%	90.3%	77.4%
V9	83.3%	81.8%	78.8%	83.3%	80.3%	83.9%	77.4%	80.6%	90.3%	80.6%
V10	74.2%	71.2%	77.3%	77.3%	74.2%	83.9%	83.9%	83.9%	87.1%	83.9%
V11	75.8%	77.3%	77.3%	81.8%	77.3%	80.6%	89.6%	87.1%	87.1%	77.4%
V12	68.2%	75.8%	68.2%	75.8%	72.7%	80.6%	80.6%	77.4%	80.6%	77.4%
V13	74.2%	74.2%	74.2%	74.2%	72.7%	74.2%	77.4%	74.2%	77.4%	71.0%
V14	75.8%	74.2%	74.2%	81.8%	75.8%	71.0%	71.0%	71.0%	71.0%	71.0%
V15	74.2%	68.2%	71.2%	68.2%	74.2%	80.6%	77.4%	74.2%	77.4%	80.6%

Settings of the estimation samples provide classification results in the range of 68.2% to 87.9% (i.e. depending on scenario and variable combination this is the percentage of companies classified in the correct rating category).[115] The lowest classification results are found in V12 and V15 (based on income statement figures and with certain variables excluded). These findings are consistent with the smaller explanatory power of the settings including income statement predictors. The highest value is 87.9% and is found in V7, S4 where both variables from the income statement and the balance sheet are included and goodwill is written off immediately against equity.

It should be noted that similar classification results across scenarios in variable combinations based on stepwise MDA analysis (V1-V3) might not be due to irrelevance of goodwill accounting in the rating decision making process as in these models the predictors are chosen individually for each scenario according to their

[114] The table shows classification results for the five explored scenarios (columns) in the 15 different variable combinations (rows). The scenarios reflect differing accounting treatments for goodwill and its write-downs (S1: capitalisation of goodwill and impairment-only approach; S2: capitalisation of goodwill and amortisation-only approach; S3: capitalisation of goodwill but exclusion of all write-downs; S4: deduction of goodwill from equity reserves (i.e. also exclusion of write-downs); S5: inclusion of all numbers as reported by companies, see also table 3.2). Variable combinations are discussed in detail in table 3.3: they include combinations based only on balance sheet variables (V2,V5, V8, V11, V14), on income statement variables only (V3, V6, V9, V12, V15) and models including both kinds of variables (V1, V4, V7, V10, V13). In addition, in V1, V2 and V3 a stepwise MDA is performed while all other models rely on direct MDA analysis. Combinations V10, V11 and V12 include only predictors with statistical significance for the model. Finally, in order to account for the concern that in some variable combinations (V1-V3 and V10-V12) different scenarios may lead to the inclusion of different variables in the model, V4-V6 and V12-V15 include the statistically significant variables from all scenarios in V1-V3 and V10-V12 respectively.

[115] The results of the holdout samples are discussed in section 4.4.

statistical meaning for the model. A similar argumentation can be applied for the predictor combinations where variables are excluded according to their (lack of) importance in the structure matrix (V10 to V12). However, a possible repeated occurrence of similarities across scenarios of the same class in other predictor combinations could suggest lack of differences based on goodwill accounting. Based on this consideration as well as on previous evidence suggesting that models based only on income statement variables are not used by rating agencies (see p. 118) variable combinations V7 (based on both balance sheet and income statement variables and direct MDA method) and V8 (based on balance sheet variables and direct MDA method) are subjected to further analysis. For purposes of this more detailed analysis both settings are presented separately below[116]:

Table 4.3: Goodwill write-downs and credit ratings: classification results for V7 and V8

	Estimation Sample					Holdout Sample				
	Scenario					Scenario				
	1	2	3	4	5	1	2	3	4	5
V7	80.3%	80.3%	81.8%	87.9%	81.8%	90.3%	90.3%	83.9%	100.0%	90.3%
V8	77.3%	80.3%	77.3%	81.8%	77.3%	77.4%	77.4%	77.4%	90.3%	77.4%

The classification results suggest that that scenario 4 (goodwill immediately written-off against equity) produces the strongest results in both of these variable combinations.[117] In fact, scenario 4 seems to produce highly correct classification results in 12 out of 15 variable combinations[118] as Table 4.4 (a summary of table 4.2) below suggests:

[116] Table 4.3 represents and extract from table 4.2 and is presented separately for clarification purposes. It does not convey additional information to table 4.2.

[117] Actually, scenario 4 provides the highest classification results in 7 of the variable combinations, all of which are either based on all variables or on balance sheet variables (see table 4.2). There is no clear trend as to which scenario performs well in variable combinations including only income statement figures.

[118] Scenario 4 produces classification results with higher accuracy than all other scenarios in nearly half of the variable combinations (7 combinations). If V12 and V15 are excluded (due to lower statistical significance) this percentage increases to 54%.

Table 4.4: Goodwill write-downs and credit ratings: a summary of classification results

Variable Combination	Highest % of correct classifications (scenario)
V1	S4
V2	S4
V3	S1/S5
V4	S3
V5	S1/S4
V6	S4
V7	S4
V8	S1/S4
V9	S3/S4
V10	S4
V11	S2/S4
V12	S1/S2/S3/S4
V13	S4
V14	S4
V15	S1/S5

In other words, scenario 4 seems to reflect best the rating prediction as it produces the highest percentage of correctly classified ratings.[119] These findings can be interpreted that raters ignore goodwill altogether not including either goodwill or its write-downs (amortisation or impairment) in their regular annual analyses.[120]

The findings are in accordance with UK business reality for three reasons. First, before FRS 10 and FRS 11 entered into force in 1997/1998, the preferred treatment of goodwill in the UK was a direct write-off against equity even though under SSAP 22 companies were offered an accounting choice between an immediate write-off against equity and amortisation. Many UK companies at the time chose to deduct goodwill from equity and their number rose to impressive 93.4% in the late 1980s and early 1990s (Nobes, 1992). Considering the heated discussion around and the opposition to the introduction of FRS 10 and FRS 11 (see section 2.1.1.1), it is well possible that this preferred treatment, although prohibited after 1998, still persists where the rating decision process in the UK is concerned. Furthermore, according to their own statement rating agencies aim to produce long-term ratings (S&P, 2005). Therefore, it is conceivable that they choose not to evaluate goodwill in the annual company analyses in order to avoid unnecessary volatility of results in the rating. Finally,

[119] Also, even in the holdout samples with the smaller number of cases distorting the predictive accuracy of the models, scenario 4 outperforms the other scenarios (see section 4.4)

[120] Of course, in the case of event-driven analyses the perception of goodwill and amortisation or impairment write-downs may be quite different. However, event-driven rating analyses are not discussed in this study.

research evidence on loan covenants showing that banks deduct goodwill from equity in the definition of loan covenants is in line with the findings of this study.[121]

Considering the fact that one of the main reasons quoted for the introduction of the IFRS regulations is to increase the transparency of financial statements this evidence certainly provokes questions. It appears that rating agencies who should be among those in favour of the concept of a transparent company are not likely to benefit from the intended improvement in goodwill accounting (under IFRS). As far as annual rating assessments of UK companies are concerned these aspects of IFRS 3 and IAS 36 do not seem to be quality enhancing but rather pointless. These new accounting regulations might not be successful in changing rating agencies' attitude towards goodwill. Instead, the results of the data analysis point to irrelevance of goodwill write-downs and – for that matter – of goodwill accounting for the UK debt market.

4.3.1 Chi-square tests

So far this study provides evidence suggesting that rating agencies are likely to discard goodwill and its write-downs and ignore them in their annual analysis. However, it remains to be seen whether the differences observed between scenario 4 and the rest of the scenarios are statistically significant in order to make a conclusive statement. For this purpose chi-square tests were performed on the estimation sample at a significance level of 0.05 comparing the probability of distribution for correctly and incorrectly classified rating cases for scenario 4 and the other scenarios:[122]

[121] The results contradict evidence in more recent studies showing that lenders do care about goodwill when they consider intangible-intensive companies (Beatty et al, 2008; Frankel et al, 2008). These studies, however, do not cover the UK debt market which – considering the peculiarities of UK goodwill accounting – might explain this inconsistency.

[122] Since the dataset was not large enough to allow for five-category comparison, two category-tests were performed where scenario 4 was compared to each of the other scenarios. Furthermore, since the dataset is small, Fisher's exact test was also performed as it is suitable for small samples. The results were equivalent.

Table 4.5: Goodwill write-downs and credit ratings: statistical significance of differences in goodwill accounting treatments

	S4*S1		S4*S2		S4*S3		S4*S5	
	χ^2	Sig.	χ^2	Sig.	χ^2	Sig.	χ^2	Sig.
V1	30.675	0.000	39.691	0.000	33.866	0.000	30.675	0.000
V2	33.866	0.000	30.675	0.000	30.675	0.000	33.866	0.000
V3	25.390	0.000	26.811	0.000	25.918	0.000	18.132	0.000
V4	21.34	0.000	28.307	0.000	19.935	0.000	28.307	0.000
V5	27.885	0.000	30.675	0.000	27.885	0.000	30.675	0.000
V6	20.767	0.000	18.333	0.000	20.960	0.000	23.469	0.000
V7	5.285	0.042	10.544	0.006	6.195	0.031	12.019	0.003
V8	30.675	0.000	28.359	0.000	30.675	0.000	30.675	0.000
V9	20.967	0.000	18.333	0.000	20.960	0.000	23.469	0.000
V10	22.976	0.000	24.834	0.000	45.189	0.000	29.867	0.000
V11	27.885	0.000	30.675	0.000	30.675	0.000	30.675	0.000
V12	5.811	0.020	4.376	0.043	18.153	0.000	5.500	0.024
V13	24.065	0.000	24.065	0.000	30.795	0.000	21.660	0.000
V14	45.833	0.000	42.275	0.000	45.833	0.000	45.833	0.000
V15	21.557	0.000	34.275	0.000	31.429	0.000	15.865	0.000

The results provided in table 4.5 above indicate independence of the probability of distribution for scenario 4 vs the other scenarios. Therefore, differences between scenario 4 and the rest of the scenarios can be considered statistically significant at a level of 0.05 which confirms the basis for the interpretation and conclusions of the data analysis (see sections 4.3 and 4.5).

4.4 ROBUSTNESS ANALYSIS

For purposes of robustness analysis the data sample was reorganised into 7 classes, differing regarding (1) the F-cut-off point in the stepwise analyses and (2) the distribution of the cases into the estimation and the holdout sample. An overview of these classes is given below:

Table 4.6: Goodwill write-downs and credit ratings: overview of classes of the sample[123]

Class	F-cut-off point	Estimation sample	Holdout sample	
C1	1.0	1999-2003	2004-2005	
C2	2.0	1999-2003	2004-2005	
C3	0.5	1999-2003	2004-2005	← Original split used in the study
C4	0.5	1999-2004	2005	
C5	0.5	1999-2005	---	

[123] The different F-cut-off points allow for more variables to be included in the stepwise discriminant analysis (see Chattopadhyay et al, 1997, and Huss and Zhao, 1991). In C6 and C7 the end years (1999 and 2005) of the sample period are excluded to account for possible deviations around the application start of FRS 10 and 11 and the application start of IFRS in 2005.

C6	0.5	2000-2003	2004-2005
C7	0.5	1999-2003	2004

Classification results are qualitatively similar across the different classes of the same scenario and can be therefore considered as robust to variations in the sample.

Furthermore, classification results in holdout samples and cross-validation results of the estimation samples are used for purposes of robustness analysis.

The results in the holdout samples are based on very few (13 – 31) observations. Due to the small number of sample companies that are rated and, additionally, had goodwill impairment charges in the relevant period, larger holdout samples were not obtainable. Therefore, the holdout samples cannot be considered for purposes of scenario comparison as they have diminished reliability. Rather than that they are used to provide general tendency of the model validation. Their classification results are in the range 67% to 100% which is a nearly identical span with the one of the estimation sample results. Therefore, the classification results of the estimation samples are considered to be robust and reliable.

Cross-validation classification results are used to indicate whether the number of predictors used in the model is too large. The cross-validation classification results were considered in combination with the indicators of the explanatory power of the model. They are qualitatively equivalent to the estimation sample classification results.

4.5 CONCLUSION AND FUTURE RESEARCH

The findings suggest that rating agencies ignore both goodwill as an asset and goodwill write-downs for purposes of their rating calculations. This is consistent with the preferred treatment of goodwill prior to the introduction of FRS 10 and FRS 11 in the UK and with the aim of rating agencies to achieve long-term stability in the rating assessment.

With regard to the new IFRS regulations it seems that the struggle to improve the transparency of goodwill accounting might not be as beneficial to raters as intended. Of course, it should be noted that the results of this study are limited to annual rating assessments and to UK companies only. It is possible that goodwill and goodwill impairment are reviewed separately from these annual analyses. For example, a goodwill impairment charge might lead to a placement on the credit watch list or

provoke an event-driven rating analysis possibly leading to a downgrade of the rating. These possibilities can be tested by analysing goodwill accounting choices and their role in event-driven analyses or in placements on the credit watchlist. As regards the usefulness of IFRS goodwill regulations research should be extended to cover companies in other countries applying IFRS in order to generalise the findings of this study. Furthermore, it should be noted that it is possible that the models used in this study do not render exactly the rating calculation as conducted by rating agencies.

This study does not consider the reasons why rating agencies disregard goodwill and its write-downs in their calculations. Intuitively, a possible argumentation could be based on their belief that goodwill write-downs express managerial incentives rather than the financial situation of a company.[124] In this context the results of this study are further discussed in combination with the findings presented in chapter 5 which investigates the managerial choices related to goodwill accounting.

[124] Such argumentation would find support in the findings of prior research, see also section 2.2.2.3.

Table 4.7: Goodwill write-downs and credit ratings: descriptive statistics

Descriptive Statistics of the Sample

k£	Mean	Median	Variance	Std Deviation	Min	Max
Goodwill Impairment	214,575.51	23,400.00	375,328,524,973.05	612,640.62	1,000.00	4,353,000.00
Goodwill Amortisation	47,610.51	38,500.00	4,261,283,928,444,57	2,064,287.75	0.00	12,929,000.00
Goodwill per Balance Sheet	3,955,125.03	475,700.00	217,845,827,406,688.00	14,759,601.19	0.00	92,833,000.00
Total Assets	13,337,700.70	4,631,200.00	838,444,692,317,563.00	28,955,909.45	218,700.00	162,226,000.00
Total Liabilities	6,499,040.73	2,736,000.00	91,105,545,804,403.50	9,544,922.51	454,500.00	58,929,789.00
Net Assets	9,890,594.23	3,456,300.00	634,292,278,321,204.00	25,185,159.88	84,400.00	148,547,000.00
Total Long Term Debt	2,055,120.96	1,021,000.00	9,232,948,144,560.43	3,038,576.66	97,500.00	16,245,000.00
Operating Cash Flow	803,497.10	321,300.00	6,113,785,421,334.01	2,472,607.01	-5,696,000.00	14,441,456.25
Income before Tax & Extr.	168,612.15	144,000.00	6,494,367,342,572.97	2,548,404.86	-13,539,000.00	11,391,562.50
EBIT	353,472.77	251,800.00	6,407,910,203,921.84	2,531,385.04	-12,568,000.00	11,822,756.25

Descriptive Statistics of the Predictor Variables

	Mean		Median		Variance		Std Deviation		Min		Max	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Cash+STI)/CL	0.3151781	0.420232442	0.245599152	0.247807149	0.080159763	0.203683761	0.283124995	0.451313373	0.003987189	0.048576214	1.272460873	2.118753652
IBTE/NA	0.105089046	-0.030627786	0.100079851	0.031991891	0.038361709	0.072098943	0.195861453	0.268512463	-0.396170597	-1.138744031	0.648977395	0.434981685
CF/TLTD	0.813390748	0.095692135	0.433505575	0.259024922	1.57271033	0.534339394	1.254077482	0.730985221	-1.788822948	-4.397710446	5.220358968	1.032388664
IBTE/S	0.050426115	-0.045208453	0.082436815	0.022143812	0.037977666	0.04869823	0.194878593	0.220676756	-0.715316285	-1.046613145	0.333480834	0.152123995
IBTE/TA	0.061584073	-0.02362667	0.070443088	0.021342536	0.011928627	0.026063818	0.109218252	0.161442926	-0.297868397	-0.668488364	0.328126701	0.209991158
IBTE/TLTD	0.615329578	-0.06491362	0.330382852	0.068679639	2.028878018	0.612288751	1.424386892	0.782488818	-2.384272997	-5.006602972	5.660718627	0.715249663
IBTE/TL	0.087857027	-0.023565931	0.107007336	0.02770707	0.046052202	0.040643328	0.214597768	0.201601904	-0.671402676	-0.911694532	0.513281117	0.236712818
NA/TLTD	5.752014296	2.795770736	3.940463458	2.449039726	31.68785509	2.454166579	5.629196665	1.566577984	1.114558326	0.277631579	31.06343546	7.854443456
TLTD/TA	0.183468834	0.319442594	0.146201703	0.275119397	0.013534315	0.035176433	0.116337076	0.187553813	0.017785314	0.08657134	0.517169507	1.068336594
CA/CL	1.045834884	1.255685766	1.013377142	1.057282478	0.124244274	0.308224212	0.352483013	0.555179441	0.468996063	0.451701018	1.972360558	3.106106655
CF/TL	0.153792522	0.036931039	0.169070853	0.092137829	0.024850566	0.038451813	0.157640623	0.196091338	-0.429914666	-0.808405065	0.480899321	0.341670389
CF/TA	0.090392241	0.018781853	0.101718114	0.055825998	0.007999961	0.026391012	0.089442501	0.162453107	-0.220569591	-0.615189789	0.271198433	0.23872679
WC/S	0.0263659	0.08342324	0.006393001	0.01597822	0.07684368	0.049716912	0.277206927	0.222972896	-0.349568035	-0.318533894	1.414941012	0.806877263
CF/NA	0.151244336	0.033312737	0.155381188	0.078228107	0.025837661	0.07597833	0.160740976	0.275641669	-0.297230668	-1.059934662	0.536383208	0.494505495
TL/TA	0.617567999	0.742935184	0.634600145	0.696534037	0.031040724	0.051701776	0.176183778	0.227380245	0.17658424	0.381021369	1.016838813	1.596095951
NA/TL	1.282854822	0.970901872	1.023505048	0.929303667	0.842737130	0.124633002	0.918007151	0.353033996	0.417238422	0.18569857	4.543184256	2.118821293
S/TA	0.809888324	0.959686468	0.874967371	1.012589263	0.201220415	0.150097134	0.448575986	0.387423713	0.091307563	0.371785585	2.29577548	2.064014632
S/NA	1.386585717	1.534398157	1.374397335	1.491444209	0.880120731	0.641948158	0.9381475	0.801216674	0.117674408	0.459403123	4.493285947	4.366591535
EBIT/IE	6.264310984	0.509643078	4.488017429	2.002303495	191.7863277	54.25054652	13.84869408	7.365497031	-29.01242236	-40.59332106	72.18152707	9.75
SIZE	58,280	39,599	43,383	29,693	2,452,249,232	2,352,194,498	49,520	48,499	2,890	2,787	226,208	329,886

Notes:

1. Number of companies n=46 (impairing companies with credit ratings, number of impairments: 97)

2. Definition of Groups: Group 1 includes companies rated A or higher, Group 2 includes all other companies.

3. For variable definitions see table 3.1 in chapter 3

4.7 SUPPLEMENT B (CHAPTER 4)

Adjustments for companies which reported only impairment charges during the investigation period

In the 4 cases where goodwill amortisation data are not available[125], the amortisation charge for the year is calculated on *as if* basis. This adjustment only affects scenario 2 where the following changes have been performed:

Table 4.8: Adjustments for companies which reported only impairment charges (no amortisation)

Adjustments / **Scenario 2**	**Income Statement** (IBTE, EBIT)	**Balance Sheet** (total assets, net assets)
Scenario 2: Amortisation, no impairment	• Add back impairment charge for the current year • Deduct notional amortisation charge for the current year (= NBV of goodwill at start of the current year / 20 years) from IBTE, EBIT (the rationale for this calculation is set out below)	• Add back impairment charge for the current year to the NBV of goodwill • Deduct notional amortisation charge for the current year from the NBV of goodwill (the rationale for this calculation is set out below)

The amortisation calculation is based on three assumptions:

1. **useful life**: the useful life of goodwill is assumed to be 20 years for purposes of this calculation which is the longest period allowed by FRS 10 without requirement to conduct annual impairment tests. The reason for this assumption lies in the fact that the actual data used are based on annual impairment testing of goodwill which implies indefinite useful life. Therefore, in order to ensure that re-calculation of the financial ratios on the basis of systematic amortisation is plausible, the maximum duration possible is used.[126]

2. **method of amortisation**: the straight-line method of amortisation is assumed as it is the most commonly used method in the UK and is recommended in FRS 10, para. 30.

[125] There are no similar cases where notional goodwill impairment had to be calculated as the data sample includes only companies that have conducted impairment during the relevant period.

[126] Additionally, this is the most commonly used duration of useful life for goodwill and it would be easy to undertake alternative calculations using shorter useful life (for example 5 or 10 years).

3. **calculation basis of amortisation charge for the year:** ideally, every acquisition should be traced back to its origin in order to calculate the appropriate goodwill amortisation charge for the current year. However, the data are not available for this. Therefore, the goodwill figure of the previous year is used as the basis for amortisation calculation.

5 CAUSES OF THE MANAGERIAL CHOICE TO CONDUCT GOODWILL IMPAIRMENT ADDITIONAL TO SYSTEMATIC AMORTISATION

5.1 INTRODUCTION

A large portion of research on goodwill impairment has been fuelled by two main questions: what is the effect of - or the reaction to - goodwill impairment write-downs (discussed for example in the substantial body of research on shareholders' reaction to goodwill write-downs, see section 2.2.1.1), and also, what causes goodwill impairment write-downs (see section 2.2.2). The latter aims, in particular, to discover whether goodwill impairment is recorded to, in fact, reflect the economic situation of a company, or, whether it incorporates the efforts of management to meet a certain reporting target. In this context, questioning the causes of goodwill impairment inquires into the efficiency of financial reporting regulations.

Accordingly, prior research has mostly concentrated on the issue whether write-downs reflect managerial actions more than the economic depletion of goodwill. These issues have been well investigated in the context of the introduction of SFAS 141 and SFAS 142 in the US in 2001. Therefore, previous studies have mostly deducted their findings on the basis of samples consisting of US companies, thus leaving the UK market largely uncovered.[127].

Of course, the question might arise, why it is important to test causes for goodwill impairment under UK GAAP at all. Given the problematical nature of goodwill accounting standard setters are making every effort to restrict managerial discretion by increasing GAAP rigidity (elimination of writing-off-against-equity option in the UK or of amortisation in the US and under IFRS). Nevertheless, there are still opportunities for discretion when reporting goodwill write-downs. UK GAAP provides a very useful framework for goodwill research as it still offers a *de facto* choice between amortisation and impairment or, even simultaneous application in cases where goodwill impairment is judged to be needed beyond the already used systematic amortisation. One implication of this dual system could be that impairment amounts

[127] A significant exception is research on accounting-based debt covenants which have in general been intensely discussed in the UK, see section 2.2.2.3.1. However, also in this area there has been little research specifically related to goodwill impairment (Wang (2003)).

are smaller than in regulatory systems where amortisation has been dispensed with, thus also decreasing the magnitude, and, therefore, the efficiency of (and motivation for) managerial manipulations. Additionally, if amortisation includes 'noise' as suggested by previous research (see section 2.2.1.1.2), the additional impairment loss might have a higher chance (being a residual or an 'exceptional' goodwill write-down besides the repetitive annual charge) of providing useful information about the financial situation of a company in such a dual system. This suggestion is also supported by Chambers (2007) who shows that a system combining both goodwill amortisation and impairment would provide the most value-relevant goodwill accounting by testing his hypothesis on 'as if' basis.

Additionally, although UK GAAP is no longer relevant for listed firms for accounting periods starting on 1 January 2005 or later due to substitution through IFRS, research under this framework will remain highly relevant in the near future in order to provide empirical evidence for discussion of the respective IFRS regulations (IFRS 3, IAS 36). In fact, data availability under UK GAAP at times when extensive data under IFRS cannot yet be collected and avoidance of transitional IFRS regulations which could reduce the level of generalisation of the results provide further arguments for transferring research on goodwill impairment to the UK GAAP framework (Hirschey & Richardson (2002) and Hirschey & Richardson (2003) reason in a similar manner as regards their research of the then new SFAS 142).

In this context the research question in this study is specified as follows:

What are the causes behind the managerial decision to recognise an additional impairment charge besides systematic amortisation of goodwill at a specific point in time rather than another?

Previous research shows that while asset write-downs in general seem to reflect the economic impairment of the asset, in the case of goodwill write-downs, managerial incentives also play an important role as a cause for the write-down (see sections 2.2.2.2 and 2.2.2.3). Therefore, the following hypotheses are tested:

H2: The goodwill impairment loss additionally charged to the systematic amortisation of goodwill is:

H2a: negatively related to variables for the financial performance of the company.

H2b: positively related to variables reflecting managerial reporting incentives (with the exception of the 'big bath' variable where a negative relation is expected).

The research question is further split into the following sub-questions:

The 'If' question explores the decision to conduct goodwill impairment. It looks at this issue without taking into account the amount of the goodwill write-down. The question asked here is what events would induce a company to impair goodwill (as opposed to what events would induce a company to conduct a goodwill impairment of that particular amount).

The 'How Much' question concentrates on the underlying reasons explaining the amount of goodwill impairment. This setting is explored using the complete sample available and, again, using only companies which reported impairment in the relevant period (**the 'How Much' question revisited**).

5.2 DESCRIPTIVE STATISTICS

Descriptive statistics for the sample are provided in tables 5.4 and 5.5 in the supplement to this chapter. The descriptive statistics are based on the whole sample including 97 companies which exhibited impairment charges at least once during the investigation period (see also section 3.2).

Descriptive statistics show that, on average, goodwill was a substantial part of total assets in the investigation period, ranging between 23% and 27% (with the exception of 1999-2000). Thus the sample reflects information from prior research pointing out that goodwill constitutes a significant part of firm assets. It appears that while goodwill was increasing until 2001, it was significantly reduced between 2002 and 2004 following substantial impairments, amortisation and – possibly – divestures and / or sales.

Goodwill impairment in sample companies ranges on average between 2.8% of balance sheet goodwill in 2004 and 24.8% of balance sheet goodwill in 1999 with higher percentages found in the years 1999 to 2003.

Total assets of sample companies were generally increasing with the exception of 2004. The EBIT numbers decrease until 2002 before improving in later years again.

Overall, the sample structure reflects the economical development in the early 2000s including macroeconomic effects such as the merger wave in the late 1990s as well as the impact of the crash of the internet bubble in the early 2000s.

5.3 EMPIRICAL RESULTS

5.3.1 The 'If' question

The empirical results including financial performance variables calculated over a five-, a three- and a one-year period[128] are presented in table 5.1 below:

[128] The samples including financial performance variables calculated over a five-, a three- and a one-year period are referred to as five-, three- and one-year samples respectively.

Table 5.1: Empirical Results for the 'If' question: linear regression with a dummy variable for goodwill impairment (dependent variable)

Model	ΔMBX, RETX, ΔROAX, ΔMBX_ind, RETX_ind, ΔROAX_ind, DTE_{to}, IS, BB, ΔMGT, ΔCFO, $Gwimp_{to}$, $Gwam_{t1}$

5-year sample			2005		2004		2003		2002		2001		2000		1999	
Dependent Variable	Predictors	Exp. sign	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.
GWIMP Dummy	(Constant)			0,173		0,409		0,825		0,545		0,760		0,780		0,577
	ΔMB5	(-)	-0,077	0,542	-0,098	0,319	0,089	0,513	-0,040	0,711	0,075	0,508	0,034	0,730	-0,033	0,827
	RET5	(-)	-0,092	0,408	-0,197	0,100	0,017	0,899	-0,102	0,475	0,080	0,634	-0,018	0,869	0,111	0,342
	ΔROA5	(-)	-0,150	0,257	0,404	0,036	-0,210	0,314	-0,291	0,014	0,180	0,125	-0,182	0,083	-0,127	0,271
	ΔMB5_ind	(-)	0,206	0,149	0,302	0,003	0,118	0,296	-0,119	0,249	0,009	0,931	-0,216	0,051	0,156	0,183
	RET5_Ind	(-)	0,111	0,400	0,080	0,420	-0,239	0,048	-0,026	0,854	-0,231	0,157	0,004	0,977	-0,128	0,267
	ΔROA5_ind	(-)	-0,263	0,112	-0,189	0,087	0,085	0,466	-0,173	0,102	0,068	0,535	-0,014	0,905	0,068	0,554
	DTE_{to}	(+)	0,099	0,362	0,170	0,105	0,038	0,696	0,129	0,219	0,005	0,962	0,059	0,530	0,090	0,543
	IS	(+)	-0,085	0,459	0,352	0,048	-0,396	0,052	-0,056	0,617	0,041	0,695	0,118	0,240	0,298	0,006
	BB	(-)	-0,041	0,724	-0,039	0,719	-0,254	0,118	-0,104	0,305	-0,091	0,458	-0,099	0,314	-0,046	0,699
	ΔMGT	(+)	0,084	0,473	0,044	0,657	-0,092	0,369	0,066	0,501	-0,186	0,084	0,023	0,823	-0,028	0,792
	ΔCFO	(+)	-0,029	0,805	0,153	0,175	-0,034	0,739	0,055	0,605	0,072	0,485	-0,083	0,378	-0,006	0,955
	$Gwimp_{to}$	(?)	-0,107	0,346	0,039	0,706	0,284	0,011	0,218	0,032	0,156	0,142	0,290	0,002	n.a.	n.a.
	$Gwam_{t1}$	(?)	0,091	0,426	0,225	0,046	0,226	0,032	0,054	0,610	0,254	0,016	0,375	0,000	0,103	0,341

R^2	2005	2004	2003	2002	2001	2000	1999
	0,1234	0,2698	0,2451	0,2709	0,2110	0,3316	0,1946

F-test	2005	2004	2003	2002	2001	2000	1999
	,558	,010	,024	,009	,074	,001	,083

Sample Size	2005	2004	2003	2002	2001	2000	1999
	97	97	97	97	97	97	97

Table 5.1 (cont'd): Empirical Results for the 'If' question: linear regression with a dummy variable for goodwill impairment (dependent variable)

3-year sample			2005		2004		2003		2002		2001		2000		1999	
Dependent Variable	Predictors	Exp. sign	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.
GWIMP Dummy	(Constant)			0,008		0,620		0,374		0,628		0,625		0,258		0,267
	ΔMB3	(-)	0,083	0,479	-0,028	0,794	0,080	0,557	-0,049	0,644	0,077	0,477	-0,156	0,095	-0,032	0,832
	RET3	(-)	-0,146	0,205	-0,265	0,041	0,073	0,597	0,093	0,449	0,192	0,279	-0,027	0,818	0,096	0,419
	ΔROA3	(-)	0,030	0,813	0,321	0,086	-0,070	0,722	-0,437	0,003	0,248	0,023	0,033	0,748	-0,071	0,513
	ΔMB3_ind	(-)	0,009	0,945	0,124	0,347	-0,121	0,312	0,027	0,785	-0,100	0,315	-0,139	0,229	-0,005	0,967
	RET3_Ind	(-)	-0,021	0,878	0,070	0,568	0,093	0,522	-0,082	0,556	-0,342	0,052	0,039	0,772	-0,141	0,234
	ΔROA3_ind	(-)	0,069	0,581	-0,127	0,355	-0,173	0,212	-0,024	0,833	-0,002	0,985	0,025	0,829	-0,049	0,674
	DTE_{to}	(+)	0,048	0,661	0,182	0,095	0,041	0,672	0,142	0,170	0,004	0,971	0,085	0,366	0,096	0,519
	IS	(+)	-0,171	0,143	0,196	0,235	-0,244	0,213	-0,139	0,289	0,075	0,456	0,161	0,117	0,306	0,006
	BB	(-)	0,008	0,947	0,032	0,832	-0,291	0,086	-0,144	0,158	-0,076	0,475	-0,065	0,512	0,016	0,884
	ΔMGT	(+)	0,110	0,385	-0,008	0,939	-0,069	0,513	0,045	0,648	-0,168	0,108	0,117	0,235	-0,038	0,732
	ΔCFO	(+)	-0,001	0,994	0,126	0,298	-0,034	0,735	0,077	0,457	0,058	0,563	-0,043	0,646	-0,011	0,920
	$Gwimp_{to}$	(?)	-0,107	0,376	0,060	0,589	0,300	0,009	0,191	0,061	0,173	0,086	0,263	0,007	n.a.	n.a.
	$Gwam_{t1}$	(?)	0,162	0,159	0,213	0,076	0,222	0,029	0,083	0,473	0,235	0,022	0,363	0,000	0,120	0,278

R^2	2005	2004	2003	2002	2001	2000	1999
	0,0896	0,1767	0,2416	0,2541	0,2447	0,3148	0,1662

F-test	2005	2004	2003	2002	2001	2000	1999
	,824	,192	,028	,018	,025	,002	,184

Sample Size	2005	2004	2003	2002	2001	2000	1999
	97	97	97	97	97	97	97

Table 5.1 (cont'd): Empirical Results for the 'If' question: linear regression with a dummy variable for goodwill impairment (dependent variable)

1-year sample			2005		2004		2003		2002		2001		2000		1999	
Dependent Variable	Predictors	Exp. sign	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.
GWIMP Dummy	(Constant)			0,068		0,807		0,198		0,316		0,883		0,462		0,672
	ΔMB1	(-)	0,111	0,312	-0,016	0,909	0,149	0,260	-0,028	0,779	0,021	0,851	0,047	0,636	-0,027	0,796
	RET1	(-)	0,020	0,870	-0,100	0,413	0,148	0,259	-0,018	0,923	0,063	0,709	0,047	0,792	-0,006	0,959
	ΔROA1	(-)	0,077	0,475	-0,040	0,737	-0,210	0,196	-0,285	0,027	0,013	0,919	-0,083	0,456	-0,158	0,143
	ΔMB1_ind	(-)	0,028	0,853	-0,249	0,044	-0,397	0,002	-0,310	0,150	0,102	0,360	-0,149	0,150	-0,132	0,311
	RET1_Ind	(-)	-0,025	0,871	0,130	0,262	0,314	0,022	-0,182	0,428	-0,299	0,070	-0,087	0,636	0,047	0,700
	ΔROA1_ind	(-)	0,124	0,309	0,028	0,796	-0,212	0,079	0,191	0,311	-0,070	0,537	0,062	0,548	-0,121	0,370
	DTE_{to}	(+)	0,065	0,552	0,190	0,184	-0,020	0,836	0,078	0,451	0,024	0,811	0,052	0,586	0,080	0,457
	IS	(+)	-0,147	0,210	0,135	0,301	-0,278	0,084	-0,132	0,326	0,052	0,628	0,147	0,158	0,280	0,012
	BB	(-)	0,026	0,824	-0,177	0,112	-0,376	0,015	-0,026	0,825	-0,165	0,189	-0,072	0,459	0,063	0,574
	ΔMGT	(+)	0,148	0,235	0,014	0,891	-0,077	0,447	0,048	0,636	-0,137	0,212	0,060	0,551	-0,004	0,972
	ΔCFO	(+)	-0,008	0,947	0,128	0,292	-0,071	0,463	0,047	0,660	0,046	0,661	-0,051	0,593	-0,001	0,989
	$Gwimp_{to}$	(?)	-0,067	0,554	0,137	0,247	0,299	0,004	0,152	0,147	0,196	0,060	0,271	0,006	n.a.	n.a.
	$Gwam_{t1}$	(?)	0,146	0,205	0,237	0,062	0,191	0,048	0,030	0,777	0,222	0,039	0,377	0,000	0,094	0,383

R^2	2005	2004	2003	2002	2001	2000	1999
	0,0972	0,1609	0,3058	0,2235	0,1946	0,3051	0,1764

F-test	2005	2004	2003	2002	2001	2000	1999
	,770	,277	,002	,050	,120	,002	,141

Sample Size	2005	2004	2003	2002	2001	2000	1999
	97	97	97	97	97	97	97

The findings show that F-tests are mostly significant at the 95% confidence level for the 5- and 3-year samples with the exception of the so-called 'border years' (mainly 1999 and 2005).[129] This suggests that especially around the time of initial adoption of FRS 10 and FRS 11 as well as around the time of the transfer to IFRS additional factors might have been present which were influencing the managerial decision to impair goodwill. Intuitively, in times of regulatory change it might not be unusual to base the impairment decision on factors other than financial performance or managerial incentives. For example an increased rigidity (real or perceived) of new regulations or lack of understanding of and/or experience with the new regulations could prompt a premature (or delayed) write-down (see also results from KPMG survey on the understanding of the newly introduced SFAS 142 in 2002, p. 75).[130]

Significant predictors at the 95% confidence level (2-tailed test) included mostly variables for financial performance. These findings suggest that when managers make the decision whether to conduct a goodwill impairment write-down or not they are likely guided by the financial situation of the firm. Significant predictors are found among the financial performance variables of all samples (with variables depicting financial performance calculated on 1-, 3- or 5-year basis). Therefore, no clear conclusion can be made as to how long the lag between financial performance indicators and their impact on goodwill is. Both industry and individual financial performance indicators are found to be material and the coefficients of the significant predictors are mostly following the expected direction specified in the hypothesis (with minor exceptions, most notably in the 5-year sample for 2004).

Furthermore, evidence of income smoothing is found in 1999 for all three samples suggesting that at least at some point in time managerial incentives also had an effect on the question whether to impair goodwill or not. Interestingly, 1999 is the first year of joint application of FRS 10 and FRS 11 (FRS 10 was introduced in 1997 and FRS 11 in 1998). Thus, if the opposition of UK practitioners to the new FRS standards was derived from a fear of more volatile profits after their implementation this evidence of income smoothing in the year 1999 might possibly imply an attempt to resolve or, at best, postpone the problem by smoothing net income.

[129] The regressions performed on data from 1999 did not include the goodwill impairment lag variable as FRS 11 was only introduced in 1998.

[130] However, these questions are not part of this research question and are, therefore, suggested as a possibility for future research.

Finally, the lag effect of goodwill impairment write-downs was continuously present through all years of the investigation period. This evidence leads to the conclusion that companies which have once impaired goodwill are likely to conduct another impairment write-down in subsequent years. It is consistent with the other findings: when a company is in financial trouble it might take several years to recover and, hence, if goodwill impairment decisions are taken for financial performance reasons, several subsequent impairments might occur.

5.3.2 The 'How Much' question

The investigation of the 'If' question suggests that when facing the decision whether to impair goodwill or not managers might be guided by the financial situation of the company. This evidence follows the aim of standard setters where goodwill accounting is concerned: the write-down of goodwill should reflect the economic depletion of the asset. However, the 'If' question only provides the answer to one of two questions. The goodwill impairment decision includes not only the question whether to impair goodwill or not. It also contains the question regarding the amount of the goodwill write-down: the 'How Much' question. Empirical results for all three samples for the 'How Much' question are provided in table 5.2:

Table 5.2: Empirical Results for the 'How Much' question

Model	ΔMBX, RETX, ΔROAX, ΔMBX_ind, RETX_ind, ΔROAX_ind, DTE_{to}, IS, BB, ΔMGT, ΔCFO, $Gwimp_{to}$, $Gwam_{t1}$

5-year sample			2005		2004		2003		2002		2001		2000		1999	
Dependent Variable	Predictors	Exp. sign	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.
GWIMPTA	(Constant)			0,156		0,832		0,944		0,586		0,763		0,808		0,134
	ΔMB5	(-)	-0,019	0,877	-0,102	0,343	-0,079	0,564	-0,079	0,401	-0,024	0,748	-0,058	0,595	-0,080	0,610
	RET5	(-)	0,044	0,691	0,141	0,280	0,046	0,740	0,111	0,375	0,123	0,267	-0,126	0,303	0,010	0,936
	ΔROA5	(-)	-0,036	0,784	0,028	0,892	-0,218	0,302	-0,347	0,001	0,121	0,119	-0,192	0,099	-0,059	0,625
	ΔMB5_ind	(-)	0,043	0,759	0,022	0,837	-0,016	0,890	-0,016	0,858	0,032	0,654	-0,142	0,244	-0,152	0,218
	RET5_Ind	(-)	-0,137	0,296	-0,035	0,749	-0,086	0,478	-0,032	0,794	-0,120	0,263	0,106	0,468	-0,113	0,350
	ΔROA5_ind	(-)	-0,132	0,418	-0,138	0,251	0,041	0,728	0,079	0,389	-0,023	0,747	0,021	0,870	-0,094	0,438
	DTE_{to}	(+)	0,010	0,928	0,182	0,114	0,068	0,486	-0,002	0,983	-0,022	0,744	0,056	0,588	0,051	0,742
	IS	(+)	-0,059	0,606	0,306	0,114	0,044	0,828	0,397	0,000	0,757	0,000	0,191	0,087	0,249	0,027
	BB	(-)	-0,124	0,288	0,037	0,755	-0,328	0,046	-0,307	0,001	-0,046	0,566	-0,045	0,676	0,039	0,755
	ΔMGT	(+)	0,146	0,207	-0,138	0,204	0,084	0,417	-0,008	0,926	-0,036	0,613	-0,022	0,843	-0,030	0,792
	ΔCFO	(+)	0,019	0,872	0,082	0,504	-0,105	0,308	-0,053	0,569	0,178	0,010	0,078	0,455	-0,016	0,887
	$Gwimp_{to}$	(?)	-0,214	0,058	0,087	0,475	0,033	0,766	0,018	0,834	-0,055	0,433	-0,001	0,996	n.a.	n.a.
	$Gwam_{t1}$	(?)	-0,060	0,594	-0,005	0,966	0,044	0,679	0,035	0,704	0,035	0,606	0,268	0,016	-0,041	0,717

R^2	2005	2004	2003	2002	2001	2000	1999
	0,1351	0,1273	0,2283	0,4446	0,6585	0,1831	0,1057

F-test	2005	2004	2003	2002	2001	2000	1999
	,461	,525	,043	,000	,000	,163	,622

Sample Size	2005	2004	2003	2002	2001	2000	1999
	97	97	97	97	97	97	97

Table 5.2 (cont'd): Empirical Results for the 'How Much' question

3-year sample			2005		2004		2003		2002		2001		2000		1999	
Dependent Variable	Predictors	Exp. sign	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.
GWIMPTA	(Constant)			0,186		0,486		0,676		0,814		0,905		0,298		0,273
	ΔMB3	(-)	0,088	0,433	-0,019	0,865	-0,126	0,344	-0,023	0,799	-0,027	0,704	0,041	0,691	-0,046	0,766
	RET3	(-)	-0,062	0,577	0,164	0,209	-0,042	0,757	0,148	0,163	0,133	0,251	-0,135	0,306	-0,017	0,888
	ΔROA3	(-)	0,275	0,027	0,006	0,974	-0,383	0,050	-0,487	0,000	0,189	0,008	0,031	0,784	-0,083	0,461
	ΔMB3_ind	(-)	0,084	0,524	0,016	0,906	0,006	0,956	-0,050	0,561	-0,022	0,727	-0,031	0,808	0,038	0,754
	RET3_Ind	(-)	-0,071	0,592	0,192	0,124	0,176	0,221	-0,097	0,416	-0,118	0,299	0,109	0,473	-0,088	0,472
	ΔROA3_ind	(-)	-0,094	0,437	-0,198	0,157	-0,105	0,436	0,189	0,059	-0,104	0,114	0,006	0,964	0,143	0,244
	DTE_{to}	(+)	-0,006	0,957	0,189	0,088	0,051	0,597	0,007	0,934	-0,022	0,729	0,052	0,620	0,040	0,796
	IS	(+)	-0,126	0,263	0,361	0,032	-0,040	0,836	0,249	0,028	0,785	0,000	0,242	0,036	0,235	0,039
	BB	(-)	-0,044	0,708	-0,013	0,934	-0,230	0,165	-0,297	0,001	-0,030	0,668	0,001	0,993	0,031	0,790
	ΔMGT	(+)	0,170	0,167	-0,125	0,240	0,043	0,675	-0,008	0,926	-0,015	0,823	0,037	0,735	-0,027	0,811
	ΔCFO	(+)	0,050	0,655	0,046	0,705	-0,092	0,352	-0,079	0,375	0,167	0,013	0,103	0,324	-0,034	0,760
	$Gwimp_{to}$	(?)	-0,155	0,184	-0,033	0,767	0,017	0,877	0,015	0,865	-0,042	0,515	-0,026	0,804	n.a.	n.a.
	$Gwam_{t1}$	(?)	-0,014	0,901	0,144	0,236	0,062	0,526	-0,029	0,772	0,001	0,991	0,266	0,017	-0,052	0,653

R^2	2005	2004	2003	2002	2001	2000	1999
	0,1513	0,1517	0,2727	0,4546	0,6803	0,1475	0,0981

F-test	2005	2004	2003	2002	2001	2000	1999
	,340	,337	,009	,000	,000	,367	,688

Sample Size	2005	2004	2003	2002	2001	2000	1999
	97	97	97	97	97	97	97

Table 5.2 (cont'd): Empirical Results for the 'How Much' question

1-year sample			2005		2004		2003		2002		2001		2000		1999	
Dependent Variable	Predictors	Exp. sign	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.
GWIMPTA	(Constant)			0,027		0,446		0,717		0,671		0,977		0,381		0,284
	ΔMB1	(-)	0,050	0,641	-0,150	0,307	-0,103	0,435	-0,091	0,314	-0,037	0,600	0,104	0,339	-0,016	0,884
	RET1	(-)	0,066	0,578	0,120	0,336	0,037	0,779	-0,133	0,436	0,061	0,567	-0,066	0,735	-0,046	0,703
	ΔROA1	(-)	-0,050	0,639	0,022	0,854	-0,451	0,007	-0,114	0,317	0,168	0,043	-0,142	0,242	-0,048	0,671
	ΔMB1_ind	(-)	0,053	0,717	-0,102	0,411	-0,120	0,345	-0,366	0,058	-0,099	0,162	-0,077	0,491	-0,029	0,833
	RET1_Ind	(-)	-0,200	0,185	0,027	0,816	0,120	0,376	0,199	0,332	-0,062	0,549	0,047	0,815	-0,055	0,671
	ΔROA1_ind	(-)	0,088	0,463	-0,147	0,181	-0,132	0,274	0,122	0,470	-0,128	0,081	0,151	0,185	0,064	0,652
	DTE_{to}	(+)	-0,010	0,922	0,077	0,596	-0,002	0,981	-0,031	0,740	-0,006	0,929	0,022	0,833	0,011	0,919
	IS	(+)	-0,100	0,388	0,322	0,017	-0,092	0,568	0,382	0,002	0,717	0,000	0,228	0,046	0,238	0,041
	BB	(-)	-0,105	0,368	-0,005	0,966	-0,320	0,038	-0,214	0,041	0,009	0,906	-0,043	0,682	0,048	0,687
	ΔMGT	(+)	0,204	0,100	-0,115	0,286	0,039	0,701	-0,024	0,786	-0,004	0,950	-0,003	0,977	-0,028	0,805
	ΔCFO	(+)	0,033	0,774	0,054	0,661	-0,132	0,178	-0,066	0,489	0,195	0,004	0,090	0,389	-0,031	0,781
	$Gwimp_{to}$	(?)	-0,210	0,064	0,038	0,753	0,044	0,670	-0,003	0,976	-0,037	0,576	0,009	0,933	n.a.	n.a.
	$Gwam_{t1}$	(?)	-0,020	0,860	0,190	0,140	0,022	0,820	0,035	0,704	-0,018	0,789	0,279	0,011	-0,052	0,646

R^2	2005	2004	2003	2002	2001	2000	1999
	0,1207	0,1317	0,2981	0,3811	0,6747	0,1747	0,0838

F-test	2005	2004	2003	2002	2001	2000	1999
	,580	,489	,003	,000	,000	,201	,802

Sample Size	2005	2004	2003	2002	2001	2000	1999
	97	97	97	97	97	97	97

Similar to the findings for the 'If' question, the F-tests are significant at the 95% confidence level for the period 2001-2003 in all samples (which is consistent with the results summarised in the previous section, see p. 134).

Evidence shows a presence of significant variables reflecting managerial incentives, most notably income smoothing and, to some extent, 'big bath'. The income statement variable is statistically significant at the 95% confidence level for all samples and for most years of the investigation period (for the 'big bath' variable this is the case in 2002 and 2003). Additionally, the findings show some evidence of financial performance influence which is, however, substantially weaker than in the tests for the 'If' question. The signs of the estimates of the significant predictors predominantly follow expectations.

This evidence implies that, once the fundamental decision whether to record a goodwill impairment write-down has been made (reflecting the financial situation of the firm), managers might also consider reporting incentives when looking at the amount of the goodwill write-down.

Finally, contrary to the results of the 'If' question, goodwill impairment write-downs in previous years are not found to be linked to write-downs in subsequent periods. It seems that while the presence of an impairment loss in the previous year might affect the decision to repeat it next year, it does not have an impact when the amount is considered.

5.3.3 The 'How Much' question revisited

Finally, in order to further substantiate the investigation of the research question, the sample was revised to include only companies with goodwill impairment write-downs in the relevant year. This procedure led to a smaller sample size which was different in every year as companies did not report goodwill impairment every year. The main findings for the five-, three- and one-year samples are presented in table 5.3:

Table 5.3: Empirical Results for the 'How Much' question revisited

Model	ΔMBX, RETX, ΔROAX, ΔMBX_ind, RETX_ind, ΔROAX_ind, DTE_{to}, IS, BB, ΔMGT, ΔCFO, $Gwimp_{to}$, $Gwam_{t1}$

5-year sample			2005		2004		2003		2002		2001		2000		1999	
Dependent Variable	Predictors	Exp. sign	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.
GWIMPTA	(Constant)			0,589		0,346		0,068		0,837		0,813		0,428		0,002
	ΔMB5	(-)	0,039	0,906	-0,048	0,770	-0,157	0,327	-0,077	0,550	-0,030	0,732	-0,318	0,300	0,408	0,060
	RET5	(-)	-0,351	0,429	0,687	0,237	0,044	0,776	0,156	0,240	0,040	0,665	-0,456	0,224	-0,047	0,581
	ΔROA5	(-)	0,311	0,444	-0,386	0,375	0,395	0,083	-0,367	0,024	-0,167	0,076	-0,062	0,905	0,935	0,038
	ΔMB5_ind	(-)	0,021	0,973	-0,180	0,346	0,223	0,174	0,037	0,773	0,147	0,061	0,163	0,765	-0,913	0,012
	RET5_Ind	(-)	0,143	0,758	-0,119	0,498	-0,300	0,091	-0,010	0,936	0,036	0,702	-0,082	0,892	-1,070	0,013
	ΔROA5_ind	(-)	-0,649	0,377	-0,139	0,453	-0,091	0,475	0,160	0,242	-0,087	0,214	-0,410	0,318	0,423	0,029
	DTE_{to}	(+)	0,252	0,528	0,023	0,888	0,126	0,196	-0,117	0,379	0,025	0,778	0,426	0,128	-0,400	0,065
	IS	(+)	-0,465	0,505	0,080	0,824	1,030	0,000	0,387	0,014	0,828	0,000	0,065	0,885	0,503	0,017
	BB	(-)	0,198	0,667	0,006	0,977	-0,298	0,138	-0,275	0,043	-0,240	0,012	0,184	0,548	0,748	0,050
	ΔMGT	(+)	0,101	0,842	-0,210	0,218	0,101	0,335	-0,056	0,662	-0,051	0,511	0,148	0,679	-0,538	0,022
	ΔCFO	(+)	-0,140	0,778	-0,047	0,804	-0,069	0,495	-0,096	0,469	0,125	0,123	0,114	0,749	1,690	0,004
	$Gwimp_{to}$	(?)	-0,295	0,367	-0,108	0,577	-0,070	0,521	0,034	0,801	0,050	0,447	-0,042	0,885	-0,998	0,007
	$Gwam_{t1}$	(?)	-0,204	0,639	-0,383	0,479	n.a.	n.a.	0,057	0,632	n.a.	n.a.	n.a.	n.a.	0,275	0,100

R^2	2005	2004	2003	2002	2001	2000	1999
	0,4539	0,2244	0,6348	0,4776	0,9183	0,5527	0,9983

F-test	2005	2004	2003	2002	2001	2000	1999
	,778	,676	,000	,004	,000	,304	,011

Sample Size	2005	2004	2003	2002	2001	2000	1999
	24	49	54	56	38	26	16

Table 5.3 (cont'd): Empirical Results for the 'How Much' question revisited

3-year sample			2005		2004		2003		2002		2001		2000		1999	
Dependent Variable	Predictors	Exp. sign	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.
GWIMPTA	(Constant)			0,216		0,300		0,966		0,683		0,075		0,304		0,009
	ΔMB3	(-)	0,054	0,880	0,057	0,742	-0,016	0,911	0,007	0,953	-0,056	0,470	0,018	0,927	0,427	0,298
	RET3	(-)	-0,400	0,378	0,689	0,076	0,092	0,516	0,162	0,188	-0,018	0,853	-0,939	0,012	0,237	0,257
	ΔROA3	(-)	-0,098	0,761	-0,244	0,526	-0,582	0,001	-0,460	0,013	-0,251	0,006	0,503	0,108	-0,335	0,429
	ΔMB3_ind	(-)	-0,182	0,683	0,045	0,825	-0,015	0,907	-0,069	0,587	-0,009	0,885	-0,035	0,924	0,859	0,040
	RET3_Ind	(-)	-0,323	0,381	0,339	0,068	0,097	0,468	-0,048	0,706	0,193	0,056	0,195	0,485	-1,151	0,019
	ΔROA3_ind	(-)	-0,094	0,785	-0,401	0,082	-0,044	0,751	0,195	0,180	-0,094	0,195	-0,407	0,260	0,732	0,020
	DTE_{to}	(+)	0,410	0,360	-0,017	0,909	0,118	0,206	-0,111	0,420	0,068	0,371	0,292	0,127	-0,733	0,141
	IS	(+)	-0,696	0,290	0,404	0,176	0,209	0,196	0,270	0,102	0,853	0,000	0,112	0,718	0,297	0,110
	BB	(-)	0,172	0,726	-0,185	0,526	-0,354	0,059	-0,282	0,030	-0,228	0,006	0,398	0,122	0,131	0,622
	ΔMGT	(+)	0,180	0,773	-0,168	0,290	0,107	0,261	-0,015	0,905	-0,037	0,577	0,129	0,492	-0,682	0,037
	ΔCFO	(+)	-0,053	0,914	-0,083	0,633	-0,018	0,852	-0,137	0,282	0,124	0,063	0,283	0,245	1,125	0,043
	$Gwimp_{to}$	(?)	-0,062	0,880	-0,101	0,537	-0,061	0,559	-0,005	0,970	0,064	0,242	0,046	0,831	-0,974	0,010
	$Gwam_{t1}$	(?)	-0,303	0,476	-0,273	0,435	n.a.	n.a.	0,087	0,459	n.a.	n.a.	n.a.	n.a.	-0,561	0,061

R^2	2005	2004	2003	2002	2001	2000	1999
	0,3826	0,3241	0,6792	0,4784	0,9415	0,6838	0,9938

F-test	2005	2004	2003	2002	2001	2000	1999
	,895	,264	,000	,004	,000	,071	,039

Sample Size	2005	2004	2003	2002	2001	2000	1999
	24	49	54	56	38	26	16

Table 5.3 (cont'd): Empirical Results for the 'How Much' question revisited

1-year sample			2005		2004		2003		2002		2001		2000		1999	
Dependent Variable	Predictors	Exp. sign	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.	Estimates	sig.
GWIMPTA	(Constant)			0,481		0,054		0,325		0,535		0,090		0,661		0,133
	ΔMB1	(-)	0,155	0,725	-0,204	0,351	-0,107	0,490	-0,134	0,278	-0,005	0,913	-0,557	0,246	-1,479	0,333
	RET1	(-)	-0,311	0,284	0,165	0,422	0,076	0,612	0,132	0,330	-0,034	0,577	0,001	0,996	-1,086	0,117
	ΔROA1	(-)	-0,104	0,866	0,258	0,309	-0,191	0,274	0,138	0,472	-0,058	0,427	-0,482	0,135	-0,835	0,288
	ΔMB1_ind	(-)	0,269	0,432	0,000	1,000	0,126	0,339	-0,441	0,169	-0,205	0,010	-0,643	0,199	0,911	0,481
	RET1_Ind	(-)	-0,275	0,492	0,059	0,723	-0,131	0,245	0,810	0,062	0,159	0,023	0,378	0,308	-0,799	0,587
	ΔROA1_ind	(-)	0,352	0,332	-0,277	0,130	-0,080	0,536	-0,565	0,195	-0,113	0,134	0,631	0,150	-0,061	0,935
	DTE_{to}	(+)	0,100	0,822	0,054	0,733	0,064	0,509	-0,122	0,359	-0,001	0,990	1,006	0,063	-0,327	0,821
	IS	(+)	-0,434	0,537	0,372	0,058	0,545	0,002	0,579	0,002	0,792	0,000	0,119	0,725	0,659	0,349
	BB	(-)	0,377	0,260	0,115	0,538	-0,303	0,121	-0,190	0,176	-0,149	0,053	-0,431	0,178	-1,017	0,251
	ΔMGT	(+)	0,464	0,341	-0,214	0,174	0,057	0,586	-0,162	0,250	0,003	0,963	-0,111	0,663	-0,740	0,331
	ΔCFO	(+)	-0,183	0,691	-0,051	0,782	-0,084	0,400	-0,082	0,554	0,082	0,153	0,399	0,247	0,704	0,540
	$Gwimp_{to}$	(?)	-0,162	0,586	-0,046	0,788	-0,071	0,526	0,029	0,831	0,064	0,186	0,004	0,988	-1,351	0,089
	$Gwam_{t1}$	(?)	-0,093	0,860	n.a.	n.a.	n.a.	n.a.	0,101	0,402	n.a.	n.a.	n.a.	n.a.	-0,848	0,286

R^2	2005	2004	2003	2002	2001	2000	1999
	0,4989	0,2409	0,6490	0,4541	0,9609	0,5153	0,8879

F-test	2005	2004	2003	2002	2001	2000	1999
	,680	,509	,000	,008	,000	,400	,538

Sample Size	2005	2004	2003	2002	2001	2000	1999
	24	49	54	56	38	26	16

Altogether, a similar trend regarding R^2 and F-test results is noted as in the tests for the 'If' and the 'How Much' questions. The F-tests for the years 2000-2003 were statistically significant at the 95% confidence level while results based on the 'border' years diverge from expectations and are not significant. Furthermore, the 3-year sample seems to provide a better fit for the model while the 1-year sample yields insignificant F-tests and relatively low R^2 results. If supported by further evidence of relevant significant predictors this finding could be interpreted as evidence that financial performance indicators do not lead immediately to an impairment write-down but that the influence is rather lagged over a certain period of time (three years).

The signs of the significant estimates are found to mostly follow predictions. Consistent with the results of the 'How Much' question the findings here show continuous presence of managerial incentives in the period between 2001 and 2003, in particular, income smoothing and 'big bath' behaviour. Furthermore, the 3-year sample shows a continuous influence of return-on-assets of the individual company on goodwill impairment. Such influence is absent from both the 5- and the 1-year samples providing at least partial support for the results of the F-tests, namely that there is likely to be a three-year lag between financial performance indicators and a goodwill write-down.

If the findings for all questions are linked together a possible explanation suggests that, in the big picture, managers are guided by the financial situation of their companies (the 'If' question) but they might also manage the goodwill write-down following reporting incentives (the 'How Much' questions). Considering the aim of the new IFRS to ensure higher transparency of financial statements and to secure the causality between the financial situation of the firm and goodwill impairment these findings show that, while an important part of the work has been done (the 'If' question), standard setters still have a lot to do.

Due to the relatively small size of the samples in different years the results of the regressions for the 'How Much' question revisited should be considered and interpreted with caution. The number of cases in 1999 (16) and in 2005 (24) is particularly small. Considering the large number of predictors included in the model (thirteen) the results in these years might not be entirely reliable.

5.4 ROBUSTNESS ANALYSIS

In order to increase the data basis for robustness analysis purposes the annual cross-sections were pulled into a panel sample for the whole investigation period (1999-2005). The results of the panel regression were qualitatively similar to the results of the cross-section analysis.[131]

The dependent variable for the 'How Much' and 'How Much' revisited questions was goodwill impairment deflated by total assets (GWIMPTA). Results based on alternative deflators (goodwill, equity) yielded only immaterial differences.

As some of the predictors were not distributed normally they were transformed to test the stability of the model and the results. Transformations, however, led only to immaterial changes of the regression results.

Multicollinerarity tables for predictor variables are provided in tables 5.6 and 5.7 in the Supplement to this chapter. Overall, statistical tests indicate that the variables are not highly intercorrelated suggesting that findings are robust.[132]

5.5 CONCLUSION AND FUTURE RESEARCH

This study investigates the reasons behind goodwill impairment under UK GAAP. The aim of this research is an attempt to locate the causes of goodwill impairment in a regulatory environment allowing alternative accounting models. The research question was split into three investigations in order to test the decision whether to conduct goodwill impairment or not (the 'If' question) and how much to impair once the decision to impair has been made (the 'How Much' question and the 'How Much' question revisited). The findings provide some evidence to suggest that while managers are likely be guided by the financial situation of the firm when deciding whether goodwill needs to be impaired or not, they might also consider reporting incentives when determining the impairment amount, most notably income smoothing and 'big bath'. Furthermore, they are also likely to include in their 'If' decision the

[131] As the results of the panel analysis did not provide any additional information (besides information for robustness purposes) relevant to this chapter, and, in order to avoid potential confusion stemming from the presentation of too many analyses in the chapter, the researcher has excluded this analysis.

[132] Condition indices exceeding a value of 15 (30) suggest potential (material) problems with collinearity. Therefore, the statement in the text above is only partially correct where the goodwill amortisation variable is concerned. Consequently, goodwill amortisation was excluded from some of the regressions (mainly from regression for the 'How Much' question revisited, see tables 5.1, 5.2 and 5.3). The remaining regressions show no material change of findings in tests including or omitting this variable.

consideration of previous goodwill impairment write-downs although, however, not of their amounts. As financial underperformance often stretches over a longer period of time this result is also consistent with the finding that the basic decision to impair goodwill is prompted by the financial situation of the company.

Considering standard setters' efforts to streamline goodwill accounting the evidence suggests that while regulators are on the road to success their aim has not ultimately been reached just yet. The groundwork for improvement of financial statements and their ability to reflect the company situation in a true and fair manner has been laid. However, loopholes still provide managers with the opportunity to use accounting regulations to their individual advantage and at their discretion. Considering that under IFRS impairment is the only option for subsequent measurement of goodwill after initial recognition standard setters would be well advised to look carefully at the events or circumstances which it reflects.

One of the main motives for placing this study within the UK accounting framework was that goodwill impairment is an accounting option besides goodwill amortisation. In previous research goodwill amortisation has been discussed as noise for investors having little information content. On that note impairment was introduced in several countries to replace amortisation and thus increase the information content of financial statements. However, under UK GAAP both accounting treatments were allowed implying that even where amortisation might fail, impairment should succeed. While amortisation might capture noise, impairment should provide most valuable signals for the users of financial statements. According to results, the answer to this attempt is: not quite.

On the other hand 'not quite' also means 'to some extent'. According to the results of chapter 4 the debt side of the market has made a decision to ignore goodwill altogether when assessing the credit ratings of companies. Rating agencies tend to deduct goodwill immediately from equity and dispense with goodwill write-downs for purposes of their calculations. Combined with the results of the study above the conclusion can be made that their actions are only partly correct. Although the amount of the impairment write-down seems to also reflect reporting incentives, the presence of such a write-down in the income statement is likely to genuinely depict a deterioration of the financial prosperity of the company.

This study provides the groundwork for future research. Beside limitations such as the small sample available for the 'How Much' question revisited which can be extended in future research, an interesting question is raised by the results (or lack thereof) for the so-called 'border years'. None of the factors which are significant or present in the core investigation period are influential during the 'border years'. Additionally, statistical tests for the overall goodness of the model (R^2 and F-test) yield substantially lower (mostly insignificant at the 95% confidence level) results in these years. These findings suggest that other factors might have been influential during the times of adoption of FRS 10, 11 and, later, IFRS 3 and IAS 36.

5.6 SUPPLEMENT (CHAPTER 5)

Table 5.4: Managerial choices in goodwill accounting in the UK: descriptive statistics of the sample

	2005		2004		2003	
k£	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Goodwill Impairment	52	172	42	107	102	369
as % of goodwill	*3.8%*		*2.8%*		*6.7%*	
Goodwill Amortisation	6	13	11	12	15	29
Goodwill per Balance Sheet	1,630	9,075	1,350	7,739	1,510	9,154
as % of Total Assets	*26.2%*		*23.1%*		*24.8%*	
Total Assets	6,221	18,365	5,848	17,560	6,087	18,960
Net Assets	4,400	13,468	4,300	13,627	4,507	15,359
Cash Flow	672	2,192	571	1,775	426	1,709
EBIT	493	1,844	381	1,437	227	1,525
Sample size (no. companies)	97		97		97	

	2002		2001		2000		1999	
k£	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Goodwill Impairment	273	727	184	545	42	105	16	18
as % of goodwill	*15.5%*		*18.2%*		*17.0%*		*24.8%*	
Goodwill Amortisation	21	65	20	57	11	39	3	7
Goodwill per Balance Sheet	1,508	9,007	1,756	9,403	1,008	2,950	247	733
as % of Total Assets	*24.4%*		*26.7%*		*16.0%*		*6.7%*	
Total Assets	6,183	18,894	6,579	20,058	6,311	18,463	3,684	7,109
Net Assets	4,566	15,235	4,810	16,193	4,651	14,886	2,450	4,869
Cash Flow	171	1,418	415	1,319	555	1,512	415	940
EBIT	11	1,763	268	1,354	511	1,396	406	872
Sample size (no. companies)	97		97		97		97	

Table 5.5: Managerial choices in goodwill accounting in the UK: descriptive statistics of the predictor variables

	2005		2004		2003	
	Mean	Std Deviation	Mean	Std Deviation	Mean	Std Deviation
ΔMB5	-5,34	37,13	4,19	26,34	-5,70	59,70
ΔMB3	-3,13	29,17	2,80	20,93	-9,07	55,76
ΔMB1	-7,23	50,08	10,67	60,75	-6,73	52,45
RET5	-2,18	11,97	-1,73	10,02	-0,75	7,76
RET3	-0,72	5,92	-2,12	6,70	-2,47	9,23
RET1	0,39	3,07	-0,11	2,62	-1,02	2,87
ΔROA5	-2,86	10,28	-8,38	15,96	-11,85	23,14
ΔROA_3	1,57	10,91	-5,95	17,97	-9,14	21,71
ΔROA1	2,76	11,54	2,72	18,76	-4,46	15,80
ΔMB5_ind	-0,08	0,84	0,05	1,51	-1,28	1,65
ΔMB3_ind	0,21	0,47	-0,12	0,58	-0,85	0,78
ΔMB1_ind	0,14	0,23	0,42	0,25	-0,71	0,50
RET5_ind	0,57	1,45	0,58	0,92	0,69	0,85
RET3_ind	0,29	0,94	-0,77	1,79	-0,55	1,54
RET1_ind	0,60	0,34	0,37	0,52	-0,42	0,90
ΔROA5_ind	-2,03	2,67	-3,45	4,18	-3,53	3,34
ΔROA3_ind	-0,39	1,99	-2,31	2,53	-3,25	3,66
ΔROA1_ind	0,42	0,91	0,00	0,95	-1,01	1,11
DTE_{to}	0,13	6,81	0,66	15,98	0,55	6,36
IS	0,04	0,06	0,07	0,14	0,10	0,29
BB	-0,01	0,02	-0,01	0,05	-0,02	0,05
ΔMGT (Y/N)	0,38	0,49	0,37	0,49	0,42	0,50
ΔCFO (Y/N)	0,14	0,35	0,16	0,37	0,16	0,37
$Gwimp_{to}$ (Y/N)	0,47	0,50	0,54	0,50	0,54	0,50
$Gwam_{t1}$ (Y/N)	0,53	0,50	0,96	0,20	0,96	0,20
Sample Size	97		97		97	

	2002		2001		2000		1999	
	Mean	Std Deviation	Mean	Std Deviation	Mean	Std Deviation	Mean	Std Deviation
ΔMB5	0,82	12,31	-3,07	39,78	2,56	14,73	-0,04	11,76
ΔMB3	0,10	15,69	-1,34	47,39	-0,61	38,95	-0,24	12,80
ΔMB1	-1,03	13,49	-4,67	39,76	2,43	19,12	1,09	31,88
RET5	1,76	5,34	4,87	9,58	4,58	10,11	4,58	9,79
RET3	-0,14	7,16	3,02	9,51	3,28	8,64	3,82	9,74
RET1	-0,52	5,06	1,54	10,17	1,36	6,07	1,96	5,98
ΔROA5	-5,70	14,43	-0,70	10,06	0,33	7,76	2,33	8,07
ΔROA_3	-6,69	12,41	-3,13	11,72	-1,00	11,58	1,95	7,21
ΔROA1	-4,26	12,26	-0,31	9,74	-2,00	9,13	-0,68	5,50
ΔMB5_ind	-0,73	0,96	-0,02	0,83	1,16	1,14	0,37	1,76
ΔMB3_ind	-0,28	0,98	-0,39	2,70	-0,05	1,26	-0,11	1,36
ΔMB1_ind	-0,44	0,76	-0,43	0,77	0,21	1,02	-0,74	1,54
RET5_ind	1,83	2,09	4,22	5,76	2,60	2,51	2,79	3,67
RET3_ind	0,87	1,84	3,27	5,92	1,67	2,30	2,27	3,77
RET1_ind	-0,46	2,15	2,04	5,99	0,82	2,39	1,39	3,96
ΔROA5_ind	-3,10	4,91	-0,35	2,12	0,88	2,94	2,49	2,83
ΔROA3_ind	-3,12	4,65	-0,96	2,54	-0,22	2,00	0,77	2,23
ΔROA1_ind	-1,86	2,26	-0,23	2,71	-1,40	2,58	-0,16	1,96
DTE_{to}	0,82	3,82	0,94	5,11	0,04	8,27	0,31	2,91
IS	0,03	0,06	0,03	0,13	0,05	0,11	0,02	0,04
BB	-0,03	0,06	-0,04	0,08	-0,02	0,04	-0,03	0,09
ΔMGT (Y/N)	0,32	0,47	0,40	0,49	0,40	0,49	0,23	0,42
ΔCFO (Y/N)	0,13	0,34	0,22	0,41	0,16	0,37	0,11	0,32
$Gwimp_{to}$ (Y/N)	0,36	0,48	0,26	0,44	0,16	0,37	0,10	0,31
$Gwam_{t1}$ (Y/N)	0,95	0,22	0,91	0,29	0,67	0,47	0,57	0,50
Sample Size	97		97		97		97	

Table 5.6: "If" and "How Much" questions: Multicollinearity table for regression variables

5-year-sample	2005		2004		2003		2002		2001		2000		1999	
Dimension	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index
1	4,066	1,000	5,000	1,000	5,324	1,000	4,988	1,000	4,318	1,000	4,496	1,000	3,853	1,000
2	1,827	1,492	1,795	1,669	1,733	1,753	1,585	1,774	1,570	1,659	1,673	1,639	2,096	1,356
3	1,519	1,636	1,220	2,025	1,449	1,917	1,236	2,009	1,450	1,726	1,366	1,814	1,322	1,707
4	1,164	1,869	1,117	2,116	1,129	2,172	1,171	2,064	1,133	1,952	1,070	2,050	1,201	1,791
5	1,024	1,992	0,984	2,254	1,024	2,280	1,032	2,199	1,046	2,032	0,971	2,152	1,056	1,910
6	0,924	2,098	0,919	2,333	0,968	2,345	0,801	2,496	0,950	2,132	0,900	2,235	0,763	2,247
7	0,757	2,318	0,812	2,482	0,735	2,692	0,713	2,645	0,855	2,247	0,799	2,372	0,638	2,457
8	0,704	2,403	0,524	3,090	0,503	3,254	0,610	2,861	0,736	2,423	0,656	2,619	0,502	2,769
9	0,566	2,680	0,472	3,256	0,379	3,750	0,549	3,014	0,619	2,642	0,597	2,744	0,492	2,799
10	0,477	2,920	0,432	3,401	0,318	4,093	0,532	3,063	0,449	3,101	0,477	3,071	0,417	3,041
11	0,369	3,322	0,339	3,843	0,180	5,437	0,319	3,954	0,364	3,442	0,456	3,141	0,298	3,594
12	0,312	3,608	0,253	4,443	0,147	6,025	0,283	4,201	0,327	3,635	0,291	3,933	0,254	3,898
13	0,194	4,584	0,120	6,459	0,096	7,460	0,163	5,532	0,139	5,577	0,169	5,156	0,108	5,978
14	0,099	6,405	0,015	18,230	0,016	18,097	0,019	16,078	0,044	9,931	0,079	7,527	n.a.	n.a.

3-year-sample	2005		2004		2003		2002		2001		2000		1999	
Dimension	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index
1	3,851	1,000	5,040	1,000	5,604	1,000	4,455	1,000	4,227	1,000	3,758	1,000	3,397	1,000
2	1,831	1,450	1,880	1,637	1,813	1,758	1,598	1,669	1,642	1,605	1,617	1,525	2,061	1,284
3	1,472	1,618	1,426	1,880	1,353	2,035	1,363	1,808	1,398	1,739	1,398	1,639	1,417	1,548
4	1,181	1,806	1,174	2,072	1,085	2,272	1,250	1,888	1,080	1,978	1,243	1,739	1,188	1,691
5	1,089	1,881	0,999	2,246	0,989	2,380	0,977	2,135	1,011	2,045	1,071	1,873	1,087	1,768
6	0,961	2,002	0,867	2,412	0,926	2,460	0,917	2,204	0,911	2,155	0,963	1,976	0,883	1,961
7	0,813	2,176	0,633	2,822	0,644	2,950	0,736	2,461	0,838	2,246	0,795	2,174	0,674	2,246
8	0,659	2,418	0,526	3,096	0,472	3,446	0,700	2,523	0,756	2,365	0,749	2,239	0,604	2,371
9	0,556	2,631	0,432	3,416	0,378	3,849	0,563	2,814	0,651	2,548	0,655	2,395	0,510	2,582
10	0,469	2,867	0,336	3,871	0,249	4,745	0,521	2,923	0,521	2,848	0,540	2,639	0,407	2,889
11	0,377	3,197	0,315	4,001	0,225	4,996	0,402	3,330	0,431	3,130	0,492	2,763	0,322	3,250
12	0,325	3,444	0,216	4,832	0,139	6,353	0,289	3,925	0,347	3,489	0,405	3,047	0,310	3,310
13	0,281	3,703	0,143	5,947	0,106	7,273	0,213	4,578	0,147	5,362	0,196	4,374	n.a.	n.a.
14	0,136	5,315	0,015	18,148	0,017	17,938	0,016	16,949	0,041	10,110	0,117	5,664	0,140	4,929

1-year-sample	2005		2004		2003		2002		2001		2000		1999	
Dimension	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index
1	4,863	1,000	4,910	1,000	5,456	1,000	5,067	1,000	4,058	1,000	4,027	1,000	3,175	1,000
2	1,401	1,863	2,153	1,510	1,689	1,798	1,877	1,643	1,862	1,476	1,756	1,514	1,747	1,348
3	1,254	1,970	1,364	1,897	1,386	1,984	1,313	1,964	1,719	1,536	1,369	1,715	1,474	1,468
4	1,029	2,174	1,127	2,087	1,114	2,214	1,204	2,051	1,092	1,928	1,170	1,855	1,250	1,594
5	0,968	2,241	0,942	2,283	1,016	2,318	0,983	2,270	0,991	2,024	1,094	1,919	1,083	1,712
6	0,913	2,308	0,739	2,577	0,850	2,533	0,848	2,445	0,885	2,141	0,950	2,059	0,954	1,824
7	0,777	2,502	0,673	2,701	0,664	2,867	0,720	2,653	0,833	2,207	0,785	2,265	0,768	2,033
8	0,675	2,683	0,568	2,941	0,618	2,971	0,616	2,867	0,623	2,551	0,729	2,350	0,650	2,210
9	0,612	2,819	0,445	3,322	0,418	3,615	0,508	3,158	0,568	2,673	0,542	2,727	0,586	2,328
10	0,541	2,998	0,373	3,626	0,339	4,012	0,336	3,884	0,458	2,975	0,519	2,784	0,504	2,509
11	0,407	3,458	0,300	4,047	0,215	5,040	0,316	4,005	0,359	3,362	0,467	2,935	0,366	2,946
12	0,325	3,866	0,249	4,444	0,129	6,501	0,114	6,675	0,316	3,585	0,323	3,529	0,294	3,288
13	0,170	5,352	0,143	5,867	0,089	7,836	0,085	7,707	0,199	4,516	0,148	5,215	0,150	4,605
14	0,065	8,645	0,014	18,668	0,018	17,237	0,013	19,538	0,036	10,552	0,120	5,800	n.a.	n.a.

Table 5.7: "How much" question revisited: Multicollinearity table for regression variables

5-year-sample	2005		2004		2003		2002		2001		2000		1999	
Dimension	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index
1	5.537	1.000	5.588	1.000	4.584	1.000	5.937	1.000	4.184	1.000	5.029	1.000	5.706	1.000
2	2.179	1.594	1.946	1.695	1.796	1.598	1.450	2.023	1.796	1.526	2.418	1.442	2.274	1.584
3	1.944	1.688	1.347	2.037	1.459	1.773	1.269	2.163	1.689	1.574	1.390	1.902	1.829	1.766
4	1.183	2.163	1.088	2.266	1.367	1.831	1.248	2.181	1.277	1.810	1.155	2.086	1.284	2.108
5	0.803	2.627	0.945	2.432	1.014	2.126	0.871	2.611	1.119	1.934	0.864	2.412	1.123	2.255
6	0.669	2.876	0.663	2.903	0.901	2.256	0.754	2.806	0.755	2.354	0.647	2.788	0.587	3.118
7	0.493	3.350	0.632	2.973	0.657	2.641	0.638	3.050	0.609	2.620	0.499	3.174	0.555	3.207
8	0.435	3.567	0.535	3.233	0.510	2.999	0.488	3.487	0.486	2.935	0.389	3.598	0.272	4.580
9	0.309	4.233	0.417	3.661	0.265	4.156	0.326	4.270	0.298	3.746	0.250	4.482	0.141	6.353
10	0.191	5.383	0.371	3.881	0.210	4.677	0.321	4.302	0.292	3.788	0.205	4.957	0.115	7.029
11	0.160	5.890	0.236	4.864	0.105	6.597	0.291	4.518	0.225	4.310	0.104	6.947	0.068	9.169
12	0.056	9.988	0.172	5.692	0.087	7.273	0.229	5.096	0.173	4.924	0.038	11.552	0.025	15.034
13	0.025	14.922	0.059	9.695	0.045	10.058	0.164	6.019	0.097	6.566	0.013	20.018	0.015	19.228
14	0.017	18.013	0.001	84.596	n.a.	n.a.	0.015	20.062	n.a.	n.a.	n.a.	n.a.	0.005	33.420

3-year-sample	2005		2004		2003		2002		2001		2000		1999	
Dimension	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index
1	4.954	1.000	5.231	1.000	5.041	1.000	5.316	1.000	4.412	1.000	4.674	1.000	5.253	1.000
2	2.273	1.476	1.971	1.629	1.791	1.677	1.471	1.901	1.757	1.585	2.172	1.467	2.557	1.433
3	1.702	1.706	1.424	1.917	1.399	1.899	1.358	1.979	1.588	1.667	1.864	1.583	1.979	1.629
4	1.226	2.010	1.277	2.024	1.163	2.082	1.101	2.198	1.390	1.782	1.109	2.053	1.343	1.977
5	0.885	2.367	1.136	2.146	1.028	2.214	1.020	2.283	1.055	2.045	0.826	2.379	0.961	2.337
6	0.790	2.505	0.676	2.781	0.892	2.377	0.838	2.518	0.796	2.354	0.722	2.544	0.724	2.693
7	0.648	2.765	0.627	2.887	0.564	2.989	0.685	2.787	0.532	2.879	0.532	2.965	0.408	3.586
8	0.477	3.222	0.525	3.156	0.384	3.625	0.600	2.977	0.431	3.198	0.368	3.566	0.296	4.212
9	0.343	3.799	0.378	3.721	0.297	4.117	0.548	3.115	0.322	3.699	0.244	4.373	0.197	5.158
10	0.337	3.836	0.305	4.140	0.159	5.624	0.465	3.380	0.289	3.910	0.232	4.488	0.154	5.837
11	0.171	5.377	0.249	4.580	0.142	5.964	0.238	4.727	0.241	4.276	0.142	5.745	0.074	8.415
12	0.125	6.289	0.134	6.247	0.081	7.910	0.188	5.321	0.109	6.357	0.073	8.029	0.030	13.296
13	0.048	10.148	0.064	9.037	0.059	9.220	0.156	5.828	0.077	7.557	0.042	10.534	0.018	17.102
14	0.020	15.637	0.002	56.745	n.a.	n.a.	0.016	18.109	n.a.	n.a.	n.a.	n.a.	0.004	34.325

1-year-sample	2005		2004		2003		2002		2001		2000		1999	
Dimension	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index	Eigenvalue	Condition index
1	6.434	1.000	4.578	1.000	4.824	1.000	6.471	1.000	3.634	1.000	4.518	1.000	5.297	1.000
2	2.121	1.742	2.085	1.482	1.732	1.669	1.599	2.012	2.149	1.300	1.701	1.630	2.799	1.376
3	1.190	2.325	1.270	1.898	1.452	1.822	1.275	2.253	1.520	1.546	1.584	1.689	1.765	1.732
4	1.025	2.505	1.153	1.992	1.052	2.142	1.118	2.406	1.369	1.629	1.440	1.771	1.452	1.910
5	0.918	2.648	1.017	2.122	0.988	2.210	0.927	2.642	1.181	1.754	1.073	2.052	0.747	2.664
6	0.695	3.042	0.778	2.426	0.859	2.369	0.735	2.967	0.981	1.924	0.882	2.264	0.600	2.971
7	0.538	3.457	0.566	2.843	0.711	2.604	0.540	3.463	0.593	2.475	0.602	2.740	0.417	3.566
8	0.392	4.051	0.432	3.256	0.449	3.277	0.497	3.610	0.470	2.780	0.402	3.353	0.334	3.982
9	0.287	4.732	0.355	3.592	0.362	3.649	0.312	4.555	0.353	3.208	0.304	3.858	0.239	4.705
10	0.193	5.768	0.291	3.963	0.270	4.225	0.259	4.999	0.313	3.407	0.248	4.266	0.152	5.895
11	0.105	7.824	0.202	4.760	0.153	5.620	0.171	6.149	0.200	4.265	0.136	5.761	0.132	6.344
12	0.052	11.114	0.171	5.169	0.107	6.718	0.056	10.795	0.129	5.300	0.078	7.595	0.047	10.672
13	0.037	13.270	0.102	6.694	0.041	10.856	0.026	15.749	0.107	5.821	0.033	11.720	0.014	19.547
14	0.011	24.120	n.a.	n.a.	n.a.	n.a.	0.015	20.789	n.a.	n.a.	n.a.	n.a.	0.006	28.822

6 SOURCES OF GOODWILL IMPAIRMENT

6.1 INTRODUCTION

Goodwill impairment offers many challenges to academics and practitioners. Besides providing numerous opportunities for theoretical discussion and new issues for empirical research it also raises questions about implementation in practice. Papers on goodwill topics can be traced back to the 19th century and the number of studies as well as the variety of investigated aspects discussed has steadily increased over the years.

Previous research on goodwill impairment shows that the concern (of investors, regulatory bodies or other parties) that write-downs might be conducted based on managers' reporting incentives rather than the economic impairment of the asset could be well justified. Results of this research (including the previous studies in this thesis) are arrived at by concentrating mostly on the purely quantitative aspects of goodwill impairment. This study adds to academic research by asking additional questions ('why' and 'how') about goodwill impairment and using different (qualitative, partly combined with quantitative) methodology to find answers. Ultimately, the objective of this study is to enhance the understanding of goodwill impairment and to provide impulses for future research.

More specifically, two issues are explored in the following sections. The first concentrates on the relationship between (challenging) economic environment and goodwill impairment. Prior research uses primarily capital market data and accounting ratios to describe and investigate the link between impairment and economic performance. However, the variables used in quantitative models measure the outcomes of economic performance (MTB, share price, etc; for details see chapter 2). This study explores the drivers behind the measures of economic performance. In doing so, it aims to improve the transparency of the impairment process and to obtain a deeper and more timely understanding of its underlying causes. Such understanding is not only vital to management but even more so for external users of the company financial statements, for example investors, auditors or regulators who are relying on such information to make an independent evaluation of the quality of management reporting (Hayn & Hughes, 2006, p. 225).

The investigation is conducted in the form of an exploratory study and relies on qualitative methodology (case study approach). Despite the numerous advantages of quantitative studies they sometimes fail to provide a complete insight into the depths of a particular research question. This problem could be caused by proxy inadequacy and/or variables completely omitted from the quantitative analysis, or statistical complications. Thus, quantitative studies often standardise complex economic phenomena by fitting them into orderly structures and constructing a model based on simplifying assumptions. While this procedure enjoys the (very significant) advantage of allowing the researcher to test numerous hypotheses, make conclusions and issue statements on various aspects of financial and economic reality, it also has several drawbacks. The main disadvantage as seen from the perspective of this study is that by reducing the complexity of real life phenomena, quantitative studies might ignore factors or influences which are of material importance for the investigated topics. This disadvantage could be minimised, if not removed, by applying qualitative methods of research which offer a more individual approach to explore specific research settings. Therefore, the analysis of the drivers of economic performance and their relation to goodwill impairment differs from previous research in approach and methodology. While previous studies on goodwill impairment rely mostly on quantitative methods (for further details see chapter 2), this investigation reviews internal and external information by means of a case study approach. It uses qualitative methods in an attempt to uncover further aspects of the goodwill impairment decision.[133] In this context the first research question in this study is as follows:

Why do companies impair goodwill (the 'Why' question): do drivers of the measures for economic performance provide better understanding of the managerial decision to impair goodwill? Does a change of methodology (case study approach) help to raise issues for future research?

The second objective of this study is based on evidence gathered in previous research suggesting that managerial opportunistic behaviour is related to goodwill impairment.

[133] Despite the disadvantages of quantitative methods mentioned above, they sometimes do have an advantage where the objectivity of results is concerned as they provide answers which are independent from the individuals involved in the impairment process (management). Thus, while exploring the (qualitative) methodology opportunities for this research question the researcher also considered interviews of and / or questionnaires to management and external users of financial statements. However, the sensitivity of the research question (in particular where related to managerial opportunism) could have potentially lead to biased answers or to lack of access. Therefore, document analysis of the two companies was considered more appropriate for the investigation at hand as it combined the advantages of more flexibility and an independent investigation.

Several empirical studies have documented traces of managerial manipulation of the amount or timing of goodwill write-down (for an overview see chapters 2 and 5). This study adds to prior research by illustrating some of the opportunities managers have at their disposal to adjust goodwill write-downs according to their specifications and needs. It explores the impairment disclosures of companies and compares them to an independently conducted calculation of the discount rates used in the impairment process. Additionally, it discusses the quality of the impairment disclosures and the information provided to an external user of the financial statements. The investigation is conducted (continuing the first objective of the study) in the form of case studies and combines quantitative methods (the independent calculation of the discount rates) with qualitative techniques (comparison to disclosed discount rates and document analysis of impairment disclosures). In doing so, this study aims to pinpoint challenges of the impairment calculation and open new areas for future research. The research question relating to the second objective of the study is as follows:

How do companies go about making the goodwill impairment calculation (the 'How' question): are company impairment disclosures sufficiently transparent to allow a financial statement user to understand goodwill impairment? Do managers behave opportunistically when impairing goodwill by using the discretionary room available in the derivation of discount rates?

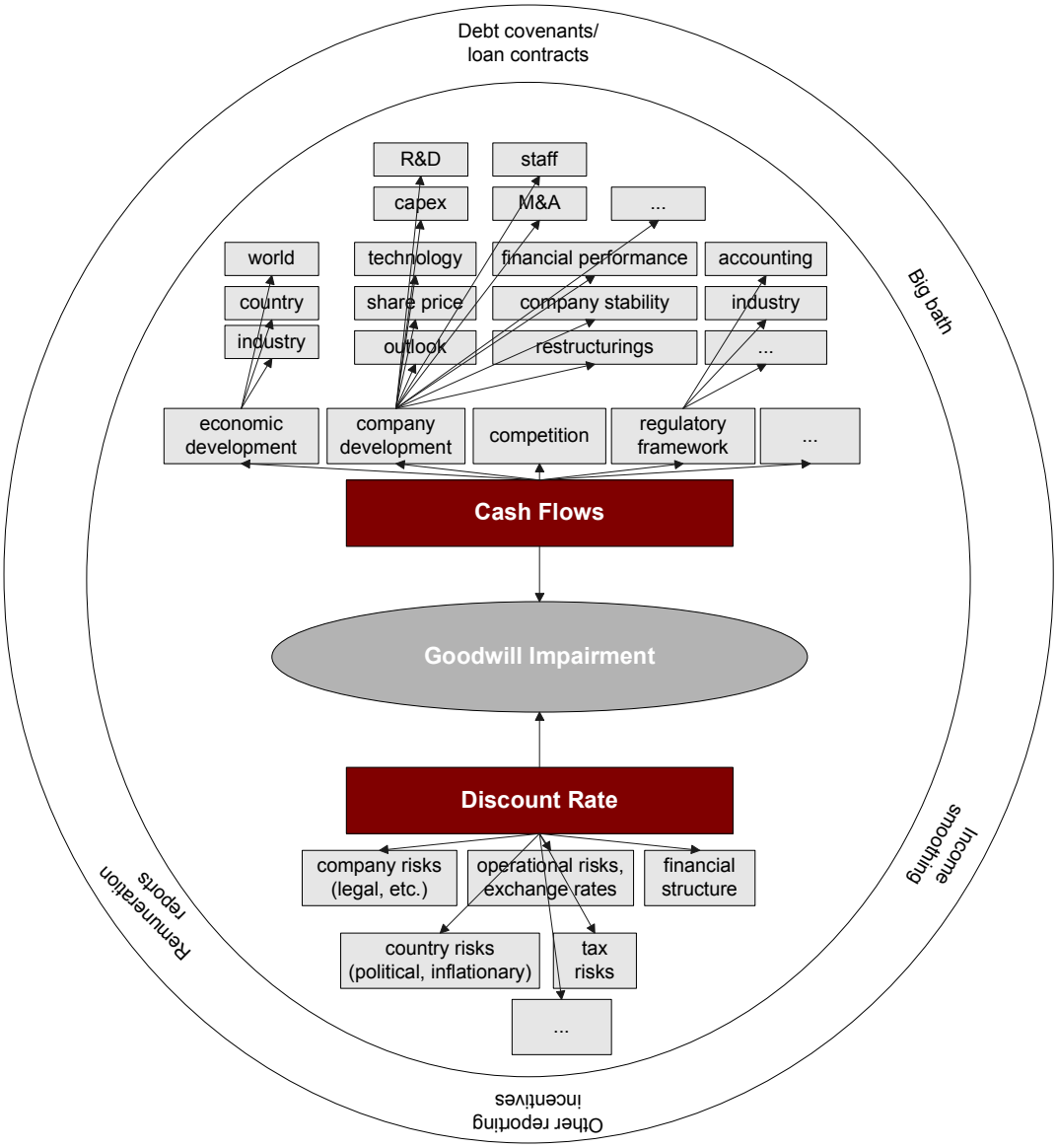
This study contributes to previous research on goodwill impairment in four ways: first, the research questions are explored using a methodology which is new to this area of research. The overall exploratory study approach aims to look behind the numbers and individualise the analysis by investigating information which is usually overlooked when collecting data samples for purely quantitative studies (databases, etc.). The combination of quantitative and qualitative techniques in the form of case studies reinforces this effect. Second, this study aims to search for influences on the goodwill impairment decisions and calculations which have not yet been explored in previous research by looking at the drivers of economic performance rather than at the outcomes. Third, this study aims to illustrate the room for discretionary behaviour made available to managers by the lack of regulatory detail on impairment disclosures. Finally, by exploring various aspects of the goodwill impairment decision this study aims to provide new impulses and suggestions for future academic research in the field of goodwill impairment.

6.2 FRAMEWORK FOR ANALYSIS AND DESCRIPTIVE STATISTICS

Overall, considering the current goodwill accounting regulations and the design of the impairment calculation, the process of goodwill impairment can be split into four phases. First, the existence (or lack thereof) of triggering events (FRS 11, paras. 8, 10 and 13); second, the choice of IGUs; third, the forecasting of cash flows of the IGU and, fourth, the derivation of the discount rate. This chapter concentrates on the last two of these impairment drivers: more specifically on factors influencing the forecasted cash flows and on the application of the appropriate discount rate.

The factors influencing the forecasted cash flows for the impairment calculation can be economic events influencing the financial performance of the IGU, or, the company-specific risks, or, (reporting) incentives providing motivation for management to incur or avoid a goodwill write-down. These causalities are presented in illustration 6.1 below:

Illustration 6.1: Factors influencing the impairment calculation



While illustration 6.1 shows clearly that there are many possible economic drivers and many possible ways of influencing impairment numbers, the scope of this thesis limits significantly the factors that can be investigated. Therefore, in order to keep the extent of this chapter manageable, this section concentrates on industry regulation and competition. These two phenomena were chosen as they are regularly present (independently or jointly) in the economic environment of a company. Additionally, their impact is regularly sufficiently material to have an effect on many companies, rather than just on individual ones. Moreover, they are considered significant enough to be mentioned as key events for credit rating analyses (S&P, 2005) or, as to be included by standard setters in the triggering event examples for goodwill impairment (FRS, para. 10, see also chapter 2). Finally, a preliminary overview of the available

documents revealed that there was sufficient information to allow analysis and discussion of competition and industry regulation.

6.3 DESCRIPTIVE STATISTICS

Essential financial information about the two companies for the investigation period is provided in table 6.22, followed by a summary of the development of their goodwill during the relevant period in tables 6.23 and 6.24 (all in the supplement to this chapter). The financial information was collected from the relevant annual reports as reported in the respective year (sometimes when reported as comparables for the previous financial year the financial information might be slightly different than in the report for the original year due to various adjustments to comparables).

Vodafone Plc specialises in mobile telecommunications and operates worldwide through a number of subsidiaries, investments (altogether 26 countries in 2005) and network partners (in further 14 countries). Although the Group concentrates on mobile telecommunication services including voice and data communications, it also had a controlling interest in companies operating in non-mobile telecommunications (Germany) during the investigation period (see for example Vodafone Annual Report 2005, p. 10). Group turnover increased significantly during the investigation period with the most significant effect provided by the AirTouch Merger in 2000 (turnover increased from £ 7,873 mln in 2000 to £ 15,004 mln in 2001). The acquisition of Mannesmann in 2001 resulted in material goodwill amortisation charges in the following years which led to negative results from 2001 onwards despite positive cash flows from operating activities. Cash outflows from investing activities were also material during the investigation period (peaking in 2001 at £ -18,988 mln) reflecting the significant M&A activity of the Group as well as substantial investments in the new 3G technology. The share price of the Group fell sharply from 1,151p in 1999 to 193p in 2001, probably echoing the turbulent economic environment for telecommunications companies during and after the internet bubble burst at the start of the 21st century as well as financial pressures of the Group itself. Finally, goodwill constituted a large portion of total assets, amounting to well over 50.0% following the Mannesmann acquisition (from 2001 onwards). The Group recorded goodwill impairment additionally to goodwill amortisation in 2002 and 2005. In 2002 and 2003 the Group also reported an impairment loss relating to one of its associated companies, Grupo Iusacell.

Cable & Wireless Plc (hereafter referred to as 'C&W') operates nationally and internationally covering a wide range of telecommunication services including, fixed network, voice, data, broadband, internet protocol ('IP') and mobile services. The Group provided services in 34 countries in 2005 (see C&W Annual Report 2005, p. 11). After a rise of Group turnover in 2000 to £ 9,201 mill, revenue fell continuously until the end of the investigation period reflecting the financial difficulties facing the Group and leading to negative results in years 2002 through 2004. The share price of the company shows a similar pattern during 1999-2003 but it rises slightly towards the end of the investigation period, probably reacting to the Group's restructuring efforts during this time. Goodwill reached 20.6% of total assets in 2001 before being subject to impairment and complete elimination from the balance sheet until 2004. The Group recorded impairment losses additional to goodwill amortisation in years 2002 through 2004.

6.4 ANALYSIS BASED ON THE FRAMEWORK: ECONOMIC FACTORS

The following sections present the analysis of the two investigated companies in respect of two economic factors and their potential influence on goodwill impairment: industry regulation and competition.[134]

6.4.1 Vodafone Plc

6.4.1.1 Analysis based on information disclosed by the Company

Vodafone prepared its consolidated financial statements under UK GAAP throughout the investigation period (1999 – 2005). During this time the Group has recorded impairment charges on goodwill of its fully controlled and non-controlled subsidiaries in three reporting years: 2002, 2003 and 2005. The following subsidiaries were disclosed as having been subject to impairment:

[134] For an overview of further factors seen as influential for goodwill impairment see chapter 2.

Table 6.1: Vodafone Plc: overview of goodwill impairment charges (1999-2005) according to subsidiary

Vodafone subsidiary	1999	2000	2001	2002	2003	2004	2005
				£ mln			
Arcor	---	---	---	4,000	---	---	---
Japan Telecom	---	---	---	400	---	---	---
Cegetel	---	---	---	250	---	---	---
Grupo Iusacell	---	---	---	450	80	---	---
Vodafone Sweden	---	---	---	---	---	---	315
Total charge	**---**	**---**	**---**	**5,100**	**80**	**---**	**315**

Source: Vodafone Annual Reports 1999-2005

All impairment charges were reported under exceptional items and disclosed respectively in notes 4 'Exceptional operating items' and 11 'Intangible fixed assets' of the notes to the consolidated financial statements.

The first impairment charge was conducted during the financial year 2002. It amounted to £ 5,100 mln. The disclosed amount was further split into an impairment charge of £ 4,353 mln reported in the note 11 'Intangible fixed assets' and a further impairment charge of £ 706 mln provided in note 13 'Fixed asset investments' on associated undertakings. A more detailed explanation of the impairment charge is offered in note 14 'Impairment' which includes information on the assumptions of the impairment charge calculation and allocates an impairment charge of altogether £ 6,000 mln to the subsidiaries.[135] It can be deduced that the impairment charges referring to Arcor and Japan Telecom, both being wholly-owned subsidiaries, were reported in note 11 while the impairment charges in note 13 were related to Cegetel and Grupo Iusacell.

In 2003 a further impairment charge of £ 80 mln was reported relating only to Vodafone's Mexican subsidiary, Grupo Iusacell. This impairment charge was not shown in note 11 'Intangible fixed assets' due to the fact that the investment in Grupo Iusacell was accounted for under associated undertakings.

Finally, in 2005 Vodafone reported an impairment charge amounting to £ 315 mln related to the carrying value of goodwill of Vodafone Sweden.

[135] A shortcoming in the quality of Vodafone disclosures emerges when impairment amounts in different parts of the annual report are compared. The disclosed amounts in notes 4, 11 and 14 can only be approximately reconciliated due to lack of precise information on amounts and categorisation of the impairment charges. The impairment charge stated in note 14 includes an impairment charge of £ 900 mln relating to the Group's interest in China Mobile (Hong Kong) Limited which was accounted under exceptional non-operating items and is not discussed here as it does not represent an impairment charge on goodwill. This leaves an impairment charge of £ 5,100 mln under operating items which can be roughly split into the amounts stated in the text above.

The main assumptions for the impairment charge calculation disclosed by Vodafone refer to the significant drivers of future revenue growth. Vodafone bases its cash flow projections on the expansion and development of GPRS and 3G technology to enhance voice average revenue per user (ARPU) and provide solid basis for new data products and services. Therefore, main cogs of the cash flow projections relate to capital expenditure, voice ARPU and data revenue. According to the disclosed information voice ARPU is projected to include the effect of price declines which indicates an increased awareness of management in this respect whether the price declines were based, for example, on technological progress, on industry regulation effects or an increasing number of competitors in the regions where Vodafone had businesses. The impairment test assumptions have the same structure every year and are very similar.[136]

Table 6.2: Summary of assumptions for the impairment calculation Vodafone Plc

Assumptions for impairment calculation	2002	2003
Length of detailed forecasts	10 yrs	10 yrs
Forecasted growth sustainable phase	=nominal GDP for mobile businesses;< nominal GDP for non-mobile	=nominal GDP for mobile businesses;< nominal GDP for non-mobile
Discount rate	8.80-11.50%	7.50-10.00%

Assumptions for impairment calculation	2004	2005
Length of detailed forecasts	10 yrs	10 yrs
Forecasted growth sustainable phase	=nominal GDP for mobile businesses;< nominal GDP for non-mobile	≤nominal GDP for mobile businesses;< nominal GDP for non-mobile
Discount rate	8.10-10.30%	8.30-11.60%

The information provided in the annual report on the development of subsidiaries leading to an impairment of goodwill in 2002 is not extensive. While Arcor's market position of leading competitor to Deutsche Telekom is emphasised and an increase of both its customer base and traffic volumes is reported, it is also noted that these were offset by tariff reductions reflecting the competitive environment:

> 'During the 2002 financial year, Arcor saw its contract voice customer base increase by 7% to 2.4 million customers and traffic volumes increase by 30% to over 21 billion minutes. However, the effect of these increases was almost entirely offset by tariff reductions, reflecting the competitive environment.' (Vodafone Annual Report 2002, p. 21).

[136] Differences in the discount rates used during the impairment testing in the different financial years are discussed in the section 6.5.2.

Altogether a brief statement in the annual report suggests that despite revenue of € 1.6 bln in the previous year, Arcor has reported increased losses for the financial year ended 31 March 2002:

> 'Arcor...has retained its position as the leading private operator and the strongest competitor to Deutsche Telekom with a total market share of more than 6%, which equates to 40% share of the total alternative German fixed-line operator market. ... The results for the 2002 financial year include increased losses within Arcor... The revenue of Arcor in the year ended 31 March 2001 reached approximately 1.6 billion' (Vodafone Annual Report 2002, pp. 21, 36 & 39).

The reasons for the impairment of Grupo Iusacell and Japan Telecom were not commented on, although the acquisition summary on Grupo Iusacell reports that Vodafone paid £ 692 mln for a fair value of assets amounting to £ 19 mln (in accordance with UK GAAP), leaving a goodwill value of £ 673 mill (97% of the purchase price) for this acquisition (Vodafone Annual Report 2002, p. 114). Nevertheless, the acquisition of Grupo Iusacell is presented in a positive light as follows:

> 'On 4 April 2001, the Group acquired a 34.5% interest in Grupo Iusacell. Grupo Iusacell currently provides wireless services in seven of Mexico's nine regions, covering a population of 90 million people and representing approximately 90% of the country's total population. Roaming is provided in the two remaining regions. At 31 March 2002, market penetration in Mexico was 22%. Mexico's cellular market has continued to expand, with customer growth largely driven by prepaid products. At 31 March 2002, Grupo Iusacell had 1,995,000 registered customers, an increase of almost 13% since the date of acquisition. Of the total registered customer base, 81% were prepaid customers.' (Vodafone Annual Report 2002, p. 17)

This information suggests, at first, more of a promising investment in a market with a rather impressive potential for expansion. It does not suggest anything explaining the impairment charge on Grupo Iusacell in the same reporting period.

More detailed information was provided on the 2003 impairment charge related to Grupo Iusacell. According to Vodafone the reasons for writing goodwill off were based on Grupo Iusacell's financial and restructuring problems:

> 'Iusacell's financial performance continued to decline in the year despite a modest increase in its customer base and management's efforts to restructure the business through substantial headcount reductions and tight cost and cash management.
>
> In order to alleviate certain of the resulting financial pressures, Iusacell began a debt restructuring effort in December 2002 and, in May 2003, secured a temporary waiver related to its $266 million secured bank credit facility. Iusacell will continue to work with its financial advisor to restructure the terms and payment schedules of its various debt agreements and instruments. It is likely that Iusacell will require additional funding in order to grow its operations. However, there is no assurance that such funding could be obtained at all or, if obtainable, on terms which would be acceptable to Iusacell. As a result of Iusacell's deteriorating financial performance, the Group has written off its investment and is currently considering its options with respect to its investment, including disposal.' (Vodafone Annual Report 2003, p. 13)

This information paints a very inconsistent picture with the positive announcement about Grupo Iusacell in the previous financial year (2002). It clearly states that the subsidiary is in severe financial distress. The use of the term 'temporary waiver' in the quote above even suggests breach of loan covenants. This information, however, is more in line with the goodwill write-down conducted on Grupo Iusacell already in 2002 and implies that the note on Grupo Iusacell in 2002 was uninformative and misleading and that reasons for impairment were not disclosed in a timely manner.

In 2005 impairment testing led to a write-down relating to the carrying value of goodwill of Vodafone Sweden. The primary reason for the impairment was stated as follows:

> 'The impairment results from recent fierce price competition in the Swedish market combined with onerous 3G license obligations.' (Vodafone Group annual report 2005, p. 34).

Ideally, a researcher would be able to use the information provided by internal and external sources in order to simulate the impairment process and then look into the reasons which led to an impairment charge in one particular year and not during others. In practice, however, there is not enough information provided or the information supplied is not transparent enough to enable a simulation of the impairment testing process.[137] Thus, in the case of Vodafone, although the main assumptions were provided in the relevant note, it is still not clear exactly what growth assumptions have been used[138], deductions from cash flows other than the capital expenditure deductions are not explained, and only the range of the used discount rates is provided rather than the discount rate used for each IGU[139]. Furthermore, no information on the formation of IGUs is provided so that any IGU constellation in an impairment testing simulation would be conjecture. Nevertheless, based on the on the information available to the public about growth drivers and risks, several observations can be made about the likely impact (or lack of it) of different factors on the impairment drivers.

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[137] The poor quality of impairment disclosures continued to represent a problem also under IFRS as recently as in 2008 and the Financial Reporting Review Panel instituted a special review of compliance with the disclosure requirements of IAS 36, the results of which were issued in 2009, see http://www.frc.org.uk/frrp/press/pub2019.html. The results of an initial review showed that 22 of 30 investigated companies provided better disclosures on impairment compared to the previous reporting period, however, qualifying almost 25% of the sample as unsatisfactory and subject to further review.

[138] According to the notes to the consolidated financial statements, the growth assumed for the cash flow forecasts is, depending on the type of business, either at, or below nominal GDP of the relevant country (see table 6.2). However, the exact growth rates are not specified, leaving almost endless room for speculation.

[139] This appears to be a common problem for companies, for example under IFRS, see Carlin et al (2007a), Carlin & Finch (2010). More details on discount rates are provided in sections 2.2.3.3.2 and 6.5.2.

Since the first logical step in the impairment testing process would be to set the IGUs for the calculation of the value in use,[140] the first step of this case study will be to investigate the assumptions made by Vodafone about their IGUs. According to FRS 11 Group revenue should be split into 'as many largely independent income streams as is reasonably practicable' (FRS 11, para. 27), aiming to achieve the highest possible number of IGUs within reason and practicability. This requirement would lead, at first, to the assumption that every subsidiary of Vodafone could represent a separate IGU for impairment testing purposes, or, at least, every country (where there is more than one subsidiary in the same country, for example France or Japan). However, this would lead to numerous IGUs and such problems as for example having to make exceptions to the rule for subsidiaries that are too small, or for countries where the Group has only non-controlled interests (for example Mexico). In practice, it is not unusual for a company to mould its IGUs for impairment testing according to an already set internal structure (product, division, geographical) and pull income streams into larger portions of Group revenue thus reducing the complication level of the determination of IGUs. Therefore, another possibility is that the IGUs follow Vodafone's internally set broad geographical structure. As of the financial year 2002 (Vodafone Annual Report 2002, p. 11) Vodafone announced that the Group structure will be split for reporting purposes into the following geographical divisions: Northern Europe, Central Europe, Southern Europe, Americas, Asia Pacific, Middle East and Africa.[141]Additionally, Vodafone categorised its businesses according to their nature: mobile or non-mobile businesses.[142] Since no further or more exact information is available all of these possibilities have been considered in the data collection in order to trace the effect of competition and industry regulation on the revenue growth drivers. Table 6.3 below presents a summary of this information:

[140] For an overview of the different phases of the impairment testing process see p. 27.

[141] The Group structure prior to 2001 is not of immediate concern for this study (there were no impairments between 1999 and 2002) and is, therefore, not discussed here. Furthermore, in 2004 the geographical divisions of Vodafone were reorganised again (mainly the countries included in the Northern, Central and Southern Europe segments). In order to ensure consistency of the analysis the data included in this section has been adjusted to reflect the original geographical structure of 2002.

[142] Further possibilities arise from categorisation according to product types, etc. However, since the investigation of IGUs is not the (primary) subject of this exploratory study and the pulling together of possible IGUs serves simply the presentation of industry regulation and competition data, it is not further discussed. It should also be noted that only IGUs relating to the disclosed impairment charges are presented above.

Table 6.3: Possible IGUs including the impaired Vodafone subsidiaries in years 2002-2004

Possible IGU	Country/-ies
Based on subsidiaries:	
Arcor	Germany
Cegetel	France
Japan Telecom	Japan
Grupo Iusacell	Mexico
Vodafone Sweden	Sweden
Based on type of business (mobile / non-mobile):	
	Germany, France, Vizzavi Europe
non-mobile businesses: Europe	
non-mobile businesses: Asia Pacific	Japan
mobile businesses: Americas	USA, Mexico
Based on geographical area:	
Central Europe (mobile / non-mobile)	Germany, Poland, Switzerland, Hungary, etc.
Northern Europe (mobile / non-mobile)	Sweden, Belgium, France, etc.
Asia Pacific (mobile / non-mobile)	Japan, Australia, China, Hong Kong, etc.

Considering the possible combinations, the following suggested IGUs are defined for purposes of this analysis: Northern Europe (mobile and non-mobile), Central Europe (mobile and non-mobile), Asia-Pacific (mobile and non-mobile) and Americas[143].

Information quality rises steeply in financial year 2002 when apparently also a number of organisational changes were conducted within the Group (such as the new geographical division structure, see above). This is also the year of the introduction of the new EU regulatory framework for the communications industry and the first year of FRS 11 goodwill impairment for Vodafone.

In February 2002, the European Union introduced a new regulatory framework for the communications sector aiming to replace old regulations which were in force since the early 1990s. The purpose of the new regulatory framework was to increase consistency between the National Regulatory Authorities (NRAs) and to set the basic parameters of regulatory intervention. For example, it raised the threshold for Significant Market

[143] The Americas IGU based on type of business is the same as when based on geographical area since Vodafone only had mobile businesses in this area during the investigation period.

Power (SMP) from 25% to 40% (Vodafone Annual Report 2002, p. 23).[144] The NRAs were under the obligation to implement the new regulatory framework by 24 July 2003.

Although only first introduced in 2002 the regulatory framework must have had an effect on the cash flow prognoses for impairment testing of Vodafone for two reasons: first, Vodafone was among the biggest two or three market competitors in almost all countries where the Group had subsidiaries. Therefore, any price regulation due to SMP – even only anticipated ones – would have direct impact on revenues for Vodafone and would have to be considered especially since the detailed cash flows were forecasted over a prolonged period of 10 years, rather than the 5 years defined by the standard (FRS 11, para. 37). Second, substantial complications if not price reductions and fees could be foreseen already in 2001/2002, since some of the investigations of the European Commission had started at that point. Vodafone reports:

> 'As part of its sectoral enquiry into roaming charges, in July 2001, officials of the European Commission visited the offices of operators in the United Kingdom and Germany, including Group subsidiaries. The investigation is seeking evidence of collusion and / or excessive prices, in relation to both retail and wholesale roaming charges. The European Commission has yet to indicate how or if it may proceed in these matters.'(Vodafone Annual Report 2002, p. 23)

The collected information further suggests that particularly in France, but also in other countries belonging to the Northern Europe division such as UK and Ireland price reductions were introduced starting in the financial year 2002 and continuing each year of the investigation period and beyond:

> 'NRAs in Belgium and France have reached decisions during 2001/02 which both resulted in reductions of approximately 15% in call termination charges in 2002 and further proposed reductions in 2003.' (Vodafone Annual Report 2003, p. 19)

The German NRA had not implemented the regulatory framework by the required date.

Additionally, some Vodafone subsidiaries in other countries were also imposed on to comply with price reductions or price caps as summarised in table 6.4:

[144] While at a first glance this increase of the SMP threshold would seem to allow price increases for some companies (which under the 'old' regulation were subject to SMP restrictions and under the new ruling were not), for companies retaining their SMP status (such as Vodafone in many EU markets) the new regulations were bound to complicate the market situation as such companies would still be subject to regulatory price caps while facing an increased competition at the same time. An example of just this effect was provided by events in Sweden in 2005 leading to an impairment charge, see p. 168.

Table 6.4: Price reductions in relevant Vodafone (suggested) IGUs

Possible IGU	Countries	Price reductions due to industry regulation in relevant country/-ies 2002	2003	2004	2005
Based on subsidiaries:					
Arcor	Germany				yes
Cegetel	France	yes	yes		yes
Japan Telecom	Japan				
Grupo Iusacell	Mexico				
Vodafone Sweden	Sweden				
Based on type of business (mobile / non-mobile):					
non-mobile businesses: Europe	Germany, France, Vizzavi Europe	yes	yes		yes
non-mobile businesses: Asia Pacific	Japan				
mobile businesses: Americas	USA, Mexico				
Based on geographical area:					
Central Europe (mobile / non-mobile)	Germany, Poland, Switzerland, Hungary, etc.				yes
Northern Europe (mobile / non-mobile)	UK, Ireland, Netherlands, Sweden, Belgium, France, etc.	yes	yes	yes	yes
Asia Pacific (mobile / non-mobile)	Japan, Australia, China, Hong Kong, etc.			yes	yes

Source: Vodafone Annual Reports 2002-2005

Furthermore, Vodafone was declared to have SMP in many countries in Southern Europe (Italy, Greece, etc.) where no impairment was necessary.[145]This fact would suggest that the effects of regulatory actions in the countries of this IGU were not strong enough to provoke an impairment charge by themselves.

Table 6.5: Overview of SMP limitations for Vodafone according to geographical divisions

	SMP in relevant country (ies) 2003	2004	2005
Northern Europe	---	yes	yes
Central Europe	---	---	---
Southern Europe	yes	yes	yes
Americas	---	---	---
Asia Pacific	---	---	yes
Middle East and Africa	---	---	---

Source: Vodafone Annual Reports 2003-2005

[145] A possible explanation of this phenomenon was that UK subsidiary is so much bigger than the other ones that price reductions in the UK had a bigger effect on the IGU.

In Sweden the new EU regulatory framework had succeeded to show its effect on Vodafone by 2005. The Group reports in its annual report:

> 'Sweden implemented the new EU Framework in July 2003. In its review of the Call Termination Market, the NRA concluded that all mobile network operators have SMP and imposed obligations of cost-orientation, non-discrimination, accounting separation and transparency. The NRA developed a LRIC Model to determine cost oriented mobile call termination rates and proposed from July 2004, a reduction from the current rate of SEK 1.35 to SEK 0.8 and reducing to SEK 0.54 by July 2007.' (Vodafone Annual Report 2005, p. 19)

While Vodafone Sweden had to struggle with price reductions imposed due to its SMP position, the competition apparently had also an impact on the Swedish telecommunications market:

> 'Intense competition (...) contributed to a 4% decline in Sweden.' (Vodafone Annual Report 2005, p. 38)

Finally, another problem was rising for the Swedish subsidiary which would more than likely increase its difficulties. A part of the NRA-regulated conditions for obtaining a 3G licence in Sweden required that the operators achieve certain coverage at specified points in time in the future. As Vodafone disclosed in its annual report, these conditions were not fulfilled by Vodafone Sweden by the financial year 2005 meaning that the company feared governmental fees for not complying with 3G licence terms:

> 'Sweden: … The NRA is also reviewing the 3G coverage required to be achieved by the four 3G licensees by 31 December 2003 (such obligations were subsequently extended to 31 December 2004). Discussions between the Government, the NRA and the licensees are being held on these matters. The NRA has powers to fine operators for non-compliance.' (Vodafone Annual Report 2005, p. 19)

Altogether, it seems more than likely that in some countries industrial regulation might have at least aggravated pricing conditions in a way causing Vodafone to rethink its cash flow forecasts which might have led to an impairment charge.

The EU regulatory framework had, however, no effect on the impairment testing in Mexico or Japan. However, Japan was subjected to a turbulent series of reforms in the telecommunications sector starting in 2001:

> 'The Japanese market has been liberalised in stages over the last 15 years. ... In 2001, the Japanese government embarked on a two-year programme of economic reform, underpinned by review obligations contained in the Telecommunications Business Law. There are a variety of regulatory and policy issues under consideration, including fixed-line interconnection charges on NTT's networks, regulation of the mobile sector, competition guidelines, administrative arrangements and universal service.' (Vodafone Annual Report 2002, p. 24)

Additionally, pressure on the whole IGU of Asia Pacific was coming through the price reductions in Australia during the financial years 2004 and 2005 (Vodafone Annual Report 2004, p. 16 and Vodafone Annual Report 2005, p. 20).

For Mexico no information about regulatory pressures is provided at all. The Americas division is mentioned in the annual reports of Vodafone; however, only a general statement about the FCC regulation in the US is provided. When looking at Grupo Iusacell another fact is very obvious. Table 6.6 below provides information about Vodafone's main competitors as seen by the company in the main countries where it has subsidiaries:

Table 6.6: Overview of Vodafone's main competitors

Possible IGU	Country/-ies	Nr of competitors in relevant country/-ies			
		2002	2003	2004	2005
Based on subsidiaries:					
Arcor	Germany	3	3	3	3
Cegetel	France	2	2	2	2
Japan Telecom	Japan	3	3	3	3
Grupo Iusacell	Mexico	8	8	n.i.	n.i.
Vodafone Sweden	Sweden	2	2	4	3
Based on type of business (mobile / non-mobile):					
non-mobile businesses: Europe	Germany, France, Vizzavi Europe	5	5	5	n.i.
non-mobile businesses: Asia Pacific	Japan	3	3	3	n.i.
mobile businesses: Americas	USA, Mexico	13	13	5[1]	4[1]
Based on geographical area:					
Central Europe (mobile / non-mobile)	Germany, Poland, Switzerland, Hungary, etc.	5	9	10[2]	10[2]
Northern Europe (mobile / non-mobile)	UK, Ireland, Netherlands, Sweden, Belgium, France, etc.	15	16	19[2]	17[2]
Asia Pacific (mobile / non-mobile)	Japan, Australia, China, Hong Kong, etc.	7	10	12	n.i.

Notes:

[1] Numbers adjusted to reflect former (prior to FY 2004) geografic regions

[2] Information provided by Vodafone includes only national US carriers, Mexican Competitors and regional carriers were not included

n.i.: not included in annual report

Source: Vodafone Annual Reports 2002-2005

While for most of the subsidiaries between two and four competitors have been deemed relevant, in the case of Mexico eight companies are among the main competition for Vodafone in financial years 2002 and 2003. Grupo Iusacell might have had serious financial problems, but its financial situation seems to have been further exacerbated by the large number of companies in the market.

6.4.1.2 Analysis based on information provided by external sources

A look at some of the analyst reports written on Vodafone during the investigation period provides useful information about the industry and other pressures which had

their effect on the Group. Already in the financial year 1999 S&P and Fitch Ratings placed Vodafone on CreditWatch and Rating Alert Negative respectively due to anticipated rise in debt levels and reduction of debt coverage ratios following the proposed merger with AirTouch Plc (S&P, 7 Jan 1999; Fitch Ratings, 19 Jan 1999) and again following the hostile takeover of Mannesmann a year later (Fitch Ratings, 19 Nov 1999). Meanwhile, S&P reported signs of consolidation for the US market while also favourably commenting on Vodafone's creation of Verizon Wireless in FY 2000 in the US together with Bell Atlantic Corp. and GTE Corp. The competition on the wireless market seemed to produce first results and Vodafone appeared firmly set on one of the top positions (S&P, 10 Jan 1999). The report stated four acquisition characteristics pointing to the consolidation of at least the US telecommunications market:1) national US footprint (according to Vodafone's annual report, Verizon Wireless had achieved this milestone and was taking further steps to reinforce its position, Vodafone Annual Report 2000, p. 26); 2) national brand (at that time Vodafone was already renaming all acquired businesses, Vodafone Annual Reports 2000-2003); 3) strong international ties (since Vodafone had subsidiaries at that time in over 20 countries, it is safe to assume that this prerequisite was provided); 4) unified technical standards. This last trait would have represented a problem for Vodafone due to reported difficulties in matching phones and handsets at that time. However, the Group had already allocated resources to find solutions to this challenge (Fitch Ratings, 10 Dec 2001; DBRS Benchmark Report, 28 Sep 2001). In fact the main challenges for the company during the 2001 financial year were reported to be:

> '(1) ... average revenue per user ('ARPU') is falling as increasing competition has led to rate discounting. (2) [The Company] is faced with rising handset subsidies as analog subscribers are migrated to digital service, which has a higher subsidy. (3) Its free cash flow is under pressure from high capital spending, which includes supporting network upgrades and expansions as well as strategic investments.' (DBRS, 5 Jun 2000)

During the financial year 2002, analyst research commented again on value drivers for Vodafone and future growth potential. The Group was noted to have grown inorganically, i.e. based on acquisitions more than continuous operations while essential value drivers such as ARPU had been falling in key markets and potential for new customer acquisition had been limited either through increasing competition and very high market penetration (for example in continental Europe, Japan) or, through high customer acquisition costs for data services (for example in Germany):

> 'The number of customers has increased by 55.64% to 83 mn. This comes mainly from acquisitions and increases in stakes undertaken by the company rather than from continuing operations. The turnover increased to 21 bn pounds which again is inorganic growth rather than

> growth from continuing operations. Hence the growth till now has been mainly inorganic rather than incremental.
>
> …
>
> The ARPU has fallen substantially in one year. This is reflective of the worldwide trend of increasing competition in the wireless sector, resulting in falling tariffs. The rates have been decreased also in order to increase the subscriber base. This is especially true of the European market where the penetration rates have reached the highest levels in the world. Now with these increased penetration rates, the focus will turn to customer retention. Herein, the ARPUs will again come under pressure due to high churn rates and falling tariffs.
>
> …
>
> Germany…The data revenues as a percentage of total revenues are the highest in whole of Europe. But the high customer acquisition costs incurred by the company make this business model unsustainable. Hence the focus needs to shift to cost controls and increasing returns per customer rather than increasing the customer base. Substantial costs (5.55 bn pounds) were incurred for acquisition of the 3G license for this region.
>
> …
>
> Asia Pacific… The increase in EBIDTA is primarily inorganic in nature. Increase in the connection costs and increased competitiveness resulted in margins falling from 27% to 19%. The toughest part of this market is the competition in form of NTT DoCoMo.' (First Global Research report, 8 Jun 2001).

Furthermore, regulatory investigations in the UK were noted to potentially reduce ARPU even more:

> 'United Kingdom… Also, a recent investigation by Oftel to impose price caps may hurt the ARPU. Thus the ARPUs will come under pressure in the future.' (First Global Research report, 8 Jun 2001).

The conclusion of the analysts was that apart from maintaining its conservative debt profile (Vodafone had financed a large part of its acquisitions through issue of equity rather than increasing its debt) Vodafone would have to shift focus from acquisition of new customers and markets to customer retention and cost control in order to survive the increasing pressure of the markets:

> 'The company has identified data services as the future growth driver. Herein the role of Vizzavi portal becomes extremely important. It aims to use it as a tool for increasing airtime usage, reduce churn and create additional value. At present this venture is running into huge losses. The company expects this venture to turn profitable in next 2 years. This forms a key component of the group's strategy.
>
> It has also invested a lot on the GPRS technology and 3G licenses. Their commercial launches have just taken place in some countries and will happen in other countries in the near future. One would have to wait and watch as to how well they perform.' (First Global Research report, 8 Jun 2001)

While noting the advantages of Vodafone's acquisitions and investments in the newest technology analysts remained watchful of the accelerating competition and increasing saturation of the telecommunications markets.

However, following results for the first half of the financial year 2002 analysts were becoming more optimistic due to considerable EBITDA improvement despite bottom-line loss. Items such as goodwill amortisation and goodwill impairment during the year were discarded since they do not affect cash flows:[146]

> '***The company reported a huge loss of 9.8 bn pounds for the April-September period of 2001 but without considering the exceptional items and amortisation charges (both of which are non-cash) the operating income increased by 40% to 3.4 bn pounds***. This is reflective of its strong continuing operations. The exceptional items amounted to a huge 4.7 bn pounds due to write-down of its investments in Arcor (a fixed line business in Germany), Iusacell and China Mobile. A charge of 6.7 bn pounds was made for goodwill amortisation. ***But these do not affect the cash flows of the company as the interest coverage ratio improved to 8.9 times compared to 4.8 times for the previous 6-months and 4.1 for the April-Sep. period of 2000. The adjusted earnings per share improved to 2.5 pence, a 63% rise year-on-year and 22% on a sequential basis***.' (First Global Research report, 19 Nov 2001)

Nevertheless, when commenting on the major risk sources for Vodafone for the financial year 2002 and the years following S&P noted:

> 'Key risk factors: 1) increasing voice competition, 2) uncertainty about future mobile data revenues, 3) regulatory and event risk. Competitive pressures are expected to intensify in Vodafone's key markets as new 3G entrants activate networks and voice markets reach saturation, which could result in ongoing reductions in voice average revenue per user (APRU). There is also substantial uncertainty about the future cash-generating ability of enhanced data services on 3G networks. Vodafone has, however, funded its 3G-license investment conservatively and is not dependent on future 3G cash flow to protect its credit quality and ratings. Furthermore, Vodafone is exposed to regulatory risk, which could compress international roaming and wholesale termination margins and ARPU. Vodafone's event risk is relatively high, as the group considers transactions that would allow it to broaden its global wireless footprint, particularly in countries where it already has a presence.' (S&P, 12 Jun 2002)

As opposed to previous years competition and regulatory risk had already made their way to being among the essential risks the company was facing when predicting future cash flows.

Despite positive reports of strong organic growth in the financial year 2003, analysts remained further cautious and slightly sceptical regarding Vodafone's future prospects. The main reasons for this prudence were - again - the high penetration rates in continental Europe which left little room for further expansion (CreditSights, 30 Jan 2003; CreditSights, 3 Feb 2003). Furthermore, a short announcement directly referring to Gruppo Iusacell was published to report the financial difficulties of the subsidiary:

> 'Mexican wireless phone operator Grupo Iusacell SA, controlled by Verizon Communications (VZ) and Vodafone Group PLC (VOD), may need a cash injection from shareholders to stay afloat'. (Income Securities Advisors, 13 Sep 2002)

[146] For a detailed discussion of analysts' and raters' views on goodwill impairment and goodwill amortisation see chapter 4.

The analysis of the IT sector provided by Fitch ratings reported serious problems for the whole telecommunications industry including weak world economy, regulatory pressures, increasing competition, high capital expenditures and additional goodwill charges. According to the rating company these difficulties – while less pressing than in 2001 and 2002 – continued to plague many companies in the sector. However, the outlook was more positive than during the years before (Fitch Ratings, 18 Dec 2002).

Even more significant were analyst comments on the decision of the Competition Commission to regulate call termination charges[147] in the UK. Fitch ratings predicted declining revenues following the verdict (Fitch Ratings, 30 Jan 2003) which were bound to have an impact on goodwill impairment calculations.

The financial year 2004 brought more positive reports by analysts indicating that Vodafone had stabilised its ARPU, improved cost control, continued growing and improved its debt profile.[148] Although growth in 2003 was mainly due to the consolidation of the Japanese subsidiaries for the first full year, in the first quarter of 2004, analysts report that 80% of the growth was organic (CreditSights, 29 Jul 2003). The positive trend continued through the entire financial year.[149] By the end of the financial year 2004, however, a further announcement of reduced tariffs (GPRS and 3G) by 50% was issued by the Portuguese subsidiary of Vodafone (Income Advisors, 7 Jan 2004). Judging from the timing of the announcement, such reduction would have had no effect on the numbers for 2004, but rather on future periods (i.e. its effects cannot be fully traced in the investigation period relevant here).

The analyst outlook on the telecommunications sector remained negative. Analysts highlighted severe competition and regulatory pressures (CreditSights, 15 Jan 2003; Fitch Ratings, 11 Dec 2003).

Financial year 2005 showed that problems from previous years were still not solved. Again analysts note:

> '…business risk for the Company has not eased during the past year, attributable to heightened competition, regulatory changes, and the implementation of 3G. Additionally, a clear dichotomy in operating results has become evident, with Germany and Italy continuing to

[147] 'Call termination charges are the charges made by mobile phone companies to complete phone calls on their networks that were originated on the networks of fixed line operators or other mobile operators. The regulatory view is that each operator has a monopoly over the termination of calls on its own network." (Fitch Ratings, 30 Jan 2003)

[148] Cazenove 27 May 2003; Deutsche Bank, 27 May 2003; CreditSights, 29 May 2003; Cazenove, 8 Jul 2003.

[149] Cazenove, 19 Aug 2003 and 18 Nov 2003; CreditSights, 20 Nov 2003.

> improve, while the U.K. and Japan have deteriorated. Pressure in the U.K. market is attributable to: (1) heightened competition in the contract customer market, resulting in higher customer acquisition and retention costs; and (2) regulatory decisions that have lowered termination rates, with further rate cuts to be implemented in September 2004.' (DBRS, 8 September 2004)

Thus, regulatory and competitive problems in the UK more than likely exercised considerable pressure on the North and Central European IGUs. Overall, analysts predicted declining free cash flows for 2005 (DBRS, 8 Sep 2004).

Based on the information collected and presented above, the analysis shows that Vodafone was under considerable regulatory and competitive pressure in the countries where impairment charges were conducted. Furthermore, it is also evident that these pressures were forming a trend as confirmed by the company in its annual reports and by analysts in theirs. Such trends would inevitably have been included in at least the detailed cash flow forecasts for the impairment calculation, especially considering that Vodafone relied on a detailed forecast phase which was twice as long as the time required by FRS 11. Therefore, it seems more likely than not that industry regulations and competitive environment had an impact on goodwill impairment.[150]

6.4.2 Cable & Wireless Plc

6.4.2.1 Analysis based on information disclosed by the Company

Similarly to Vodafone, C&W had prepared its consolidated financial statements according to UK GAAP through the whole investigation period. Impairment charges on goodwill were reported in financial years 2002, 2003 and 2004. The company disclosed impairment charges referring to the following subsidiaries:

[150] Suggestions on future research based on this conclusion are provided in section 6.6.

Table 6.7: An overview of C&W impairment charges (1999-2005)

C&W subsidiary	1999	2000	2001	2002	2003	2004	2005
				£ mln			
C&W Global	---	---	---	---	---	---	---
UK	---	---	---	985	2,725	---	---
US	---	---	---	697	---	---	---
Europe	---	---	---	190	---	---	---
Japan	---	---	---	124	---	---	---
Rest	---	---	---	11	---	---	---
C&W Regional	---	---	---	---	---	---	---
Jamaica	---	---	---	---	---	10	---
	---	---	---	---	---	---	---
Total charge	**---**	**---**	**---**	**2,007**	**2,725**	**10**	---

Source: C&W Annual Reports 1999-2005

The impairment information provided in financial year 2002 allocates the goodwill impairment charge mainly to the UK and US businesses (and small amounts to the rest of the European subsidiaries and Japan).

In 2003 an impairment charge of altogether £ 2,725 mln was allocated to C&W Global and, more specifically, to the UK business.

Finally, in 2004, goodwill was written off by further £ 10 mln relating to the subsidiary in Jamaica (i.e. C&W Regional). Thus, by the end of 2004 C&W had written off all of its goodwill (see table 6.24 in the supplement to this chapter).

Information on the assumptions of the impairment calculation was even less detailed than the information provided by Vodafone. C&W disclosed key assumptions such as the length of the period including detailed forecasts, growth of revenue forecasts for the period after the detailed period and discount rates. This information is summarised in table 6.8 below:

Table 6.8: Assumptions of goodwill impairment C&W

Assumptions for impairment calculation	2002	2003	2004	2005
Length of detailed forecasts	5 yrs	5 yrs	5 yrs	---
Forecasted growth sustainable phase	2.50%	2.50%	---	---
Discount rates	11.00%	14.00%	10.50-20.00%	8.00-40.00%

Source: C&W Annual Reports 1999-2005

The information disclosed covers only some of the key issues of the impairment calculation. Details such as revenue growth during the first five years or capital expenditure forecasts were not reported. Furthermore, the major value drivers of the

business development and future expectations relating to them were not analysed in the annual reports. Additionally, no comments were provided explaining why the growth rate for the sustainable phase was set at 2.5%. Considering that FRS 11 recommends application of growth rates for this phase which are not higher than the long-term average for the country / -ies where the business is operating (FRS 11, para. 37) this assumption at least needs some explanatory details (the UK average post-war GDP growth was 2.25% p.a., see Ernst & Young, 2003, p. 1039).

C&W had divided its operations into two major units: C&W Regional providing telecommunications services in 33 countries, and C&W Global concentrating on IP (internet protocol) and data services for business customers (mostly Europe, US and Asia Pacific). Similarly to Vodafone no specific information as to the definition of IGUs is provided by the Group. However, as C&W was smaller than Vodafone (for example C&W turnover in 2005 was approximately 10% of Vodafone's turnover in that year) it seems likely for C&W to have used the two major units, or, some combination of subsidiaries for the definition of their IGUs.[151]

The C&W annual report 2002 does not provide much information on the goodwill impairment charge that year. The performance of the UK and the US subsidiaries is not discussed in detail, although it is noted that significant problems in capacity sales and voice solutions in the UK and the US have led to a 14% decline of revenues from Service Providers and 18% decline in revenues from Business Markets.[152]The decrease in revenues in Business Markets, in particular, was attributed to weak world economy and product shift to higher margins. C&W further states:

> 'Declining prices, rising customer bankruptcies and a deliberate move away from low margin business, led to lower voice revenue.' (C&W Annual Report 2002, p. 10)

It is not clear, however, whether these declining prices were due to the weak markets, intensifying competition or industrial regulation. Altogether, during the financial year 2002 no information whatsoever is provided on industry regulation in the countries where the C&W Global businesses were active.

[151] Further analysis on potential IGU structure could not be performed due to lack of supporting information.

[152] Service Providers were defined as 'businesses that provide communication services direct to customers" (C&W Annual Report 2002, p. 79).

Another indication of the problems C&W Global was experiencing is displayed by the extensive headcount reduction programme (from 18,600 in December 2000 to 10,201 in March 2002, see C&W Annual Report 2002, p. 12).

In 2003 the information provided is more extensive. The Group indicated as follows:

> 'Cable & Wireless recorded a total operating loss of £6,000 million in 2003, compared with £4,910 million in 2002. Exceptional costs of £5,548 million were charged in 2003 reflecting the difficult trading conditions in the telecommunications sector, particularly the markets in which Cable & Wireless Global operates. Goodwill of £2,713 million was written off at 30 September 2002 and fixed assets were impaired by a further £787 million. Additional impairment charges of £1,491 million were recognised at 31 March 2003 as the Group's assessment of future performance was again revised downwards, together with a £115 million write down of redundant fixed assets.' (C&W Annual Report 2003, p. 27)

Furthermore, C&W reported that despite lower losses before exceptional items compared to 2002 (mainly due to the lower amortisation charge following impairment in 2002), the operating profit before depreciation, amortisation and exceptional items had deteriorated, in the UK by as much as 23% (C&W Annual Report 2003, p. 27). But even at turnover level, it is obvious that C&W had been having problems during the last years, especially in C&W Global:

Table 6.9: C&W turnover overview (1999-2005)

	1999*	2000*	2001	2002	2003	2004*	2005*
				£ mln			
C&W Global	8,252	3,448	3,362	3,271	2,867	---	---
C&W Regional	---	---	1,433	1,466	1,411	---	---
Intra-Group Turnover	-308	-443	-107	-34	-31	-23	-22
Continuing operations	---	---	4,688	4,703	4,247	3,384	3,023
Discontinued operations	---	---	3,163	1,045	144	287	199
Group turnover	7,944	9,201	7,851	5,748	4,391	3,671	3,222

* in financial years 1999 and 2000 C&W Regional did not exist yet; in financial years 2004 and 2005 information is reported according to geographical segments, rather than for C&W Global and C&W Regional

Source: C&W Annual Reports 1999-2005

At a first glance it seems that the impairment charges in C&W were caused by the economic / performance problems the company was facing at the time. It remains to be determined what the role of industrial regulation and / or competition in this process was. Since the largest single amounts of the goodwill impairment charge were allocated to the UK, US, Continental Europe and Japan businesses, the industry regulations and the competition situation in these geographic regions as well as in Jamaica will be discussed in the following section.

The risk factor review in 2003 includes large portions dedicated to regulatory environment and competitive difficulties (C&W Annual Report 2003, p.46f.). Thus, it is noted that many of the countries in which C&W has active subsidiaries are heavily regulated and companies declared to have SMP, in particular, are likely to experience some kind of negative impact on their performance due to industry regulation. Among the possible effects of industry regulation on the Group's performance and financial situation the following are specifically noted:

> 'In some jurisdictions, the Group is currently required to offer competitors access to its networks, supply subscribers with various telecommunications services at regulated rates or on regulated terms and/or contribute to universal services funds.' (C&W Annual Report 2003, p. 46)

More specifically, in the UK, C&W had been alleged to have SMP on wholesale International Direct Dial (IDD) on routes to four different locations (C&W Annual Report 2003, p. 16). Therefore, with the new EU regulatory framework being implemented[153] C&W could reasonably expect some effect on future revenues and cash flows even at a time when the decisions of the regulator were not final yet.[154]The (more ample) information disclosed by Vodafone in their annual report reveals that, by 2003, the UK regulator of the telecommunications sector was already conducting investigations of the UK market and planning price reductions for SMP operators (see table 6.4, p. 166, and Vodafone Annual Report 2003, p. 18). Since both Vodafone and C&W were operating in a similar line of business (and in the same industry sector) it seems more than likely that C&W was informed about forthcoming regulations and would / should have included their impact into future forecasts.

A similar situation was emerging in continental Europe where it was reported as highly likely that 'Cable & Wireless would be designated as having 'Significant Market Power' for calls terminating on each of Cable & Wireless' national voice networks' (C&W Annual Report 2003, p. 16). Although this information was provided in the annual report for 2003 rather than in 2002 (when a goodwill impairment for continental Europe was effected), it was probably already known to the Group in 2002, especially considering that the intentions of the regulator were made public long before their official entry into force (Vodafone Annual Report 2002, p. 23f.). Due to the prudent view that FRS 11 requires for impairment testing (for example FRS 11,

[153] For a more detailed discussion of the EU regulatory framework for the telecommunications sector see also the section referring to Vodafone plc (p. 165).

[154] According to the information provided the new regulator of the telecommunications sector in the UK, the Office of Telecommunications (Oftel), was due to start acting officially in the end of 2003 or 2004 (C&W Annual Report 2003, p. 16).

para. 38), such information would have been inevitably bound to make an impact on forecasted cash flows and, possibly, on impairment losses.

Even in Japan (where goodwill was also written-off in financial year 2002), industry regulation was reported to influence materially the Group's results:

> 'Interconnection charges for origination and termination traffic on the networks of NTT East and NRR West impact the profitability of Cable & Wireless IDC's voice business. The Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) regulates these interconnection charges. ... Legislation to establish a Universal Service Fund was passed in 2001, but the Japanese government has not yet announced an intention to impose levies on carriers. There remains, however, a possibility that Cable & Wireless IDC will be liable to make payments in future years.' (C&W Annual Report 2003, p. 17)

In the United States C&W was declared a dominant market participant for some specific routes. The regulatory burden was further acerbated by the competition situation in the US. Due to the recent difficulties the telecommunications sector was experiencing as a whole, some of C&W's competitors in the US market were forced to file for bankruptcy under local bankruptcy law (Chapter 11 protection). One of the major competition risks for C&W was stated to stem from exactly such firms, which might have been able to rebuild their businesses at a lower restructuring cost or financial burden than C&W itself was bearing at the time (C&W Annual Report 2003, pp. 47 and 49).

Furthermore, competition fears in other C&W subsidiaries (especially Europe, including UK and Japan) were also quite strong based on sector-specific problems and regulatory issues:

> 'The Group faces competition and downward pressure on prices in many areas and markets of its business. ... The Group also believes the sector may experience consolidation in the near future, which could result, amongst other things, in further competition that would make it more difficult for Cable & Wireless to compete effectively. ...The transatlantic, pan-European and US markets are all currently experiencing considerable levels of overcapacity. ... If the current overcapacity situation is not resolved or worsens, prices may continue to decline in the affected regions and such price decline could have a material adverse effect on the Group's operations.' (C&W Annual Report 2003, p. 49-50).

Having stated these difficulties so clearly as major risks for the Group, C&W would have had to include such issues in the goodwill impairment calculation, or, more likely, (if these effects were not quantifiable yet) at least in the economic decision whether to impair goodwill for the respective IGU or not.

In 2004 there was hardly goodwill left on the balance sheet (at the end of 2003 the remaining goodwill was amounting to £ 10 mln, see table 6.24 in the supplement to this chapter). Nevertheless, a further impairment charge was conducted relating to the

C&W subsidiary in Jamaica. The Group reported a significant finding for the Caribbean region in its report: deregulation in the region which had started several years ago (C&W Annual Reports 1999-2003 for disclosures on the liberalisation of the Caribbean markets) was progressing at an immense pace resulting in mostly completely liberalised markets, eliminating exclusive licensing and introducing competition in most of the 16 countries in the Caribbean where C&W had subsidiaries. Most notably, countries such as Jamaica, Barbados and the Cayman Islands had fully liberalised their telecommunications markets by 2004. While prior to liberalisation, C&W had exclusive licences in these countries, the Group reported in 2004 that 'over 70 per cent of the Group's revenues in this region [are] now exposed to competition' due to market liberalisation (C&W Annual Report 2004, p. 22).

6.4.2.2 Analysis based on information provided by external sources

External sources on the financial performance of C&W and the environment of the Group show a similar picture to the information already disclosed by the company. Although there were less analyst reports covering C&W than Vodafone[155] the findings indicate that C&W was not only struggling with problems due to deteriorating financial performance but also that these problems were at least partially caused by increasing regulatory and competitive pressures. Thus, S&P notes in its full report on C&W in 2003 that competitive pressures are among the main challenges C&W was facing. Furthermore, when analysing the performance of the C&W Global unit and, in particular, the UK business, the analysts state as follows:

> 'The company has cash on hand to fund the identified restructuring costs of £1 billion and is in part reverting to the better-established operations in the U.K. Given the adverse industry conditions, however, especially in the wholesale carrier business where there is overcapacity and pricing pressure, there are major uncertainties regarding the execution of this restructure and whether it will deliver a sustainable enterprise with a supportable cost base.' (S&P, 8 May 2003).

While analysts recognised that C&W can rely on its core operations in the UK where the Group was considered to be the second largest operator after British Telecommunications in terms of market share, they were unsure of C&W's ability to deal with competitive challenges and price pressures:

> 'The U.K. market ... Competition is active and C&W needs to meet the threats posed by both BT, which has refocused on its fixed-line business, and the surviving alternative carriers such

[155] Many analyst reports on C&W could not be downloaded due to limitation of access. Therefore, the author has reviewed mainly S&P reports on C&W over the investigation period.

> as COLT Telecom Group PLC (B-/Stable/--) and WorldCom Inc., which, while itself restructuring, continues to operate under Chapter 11 in the U.S.' (S&P, 8 May 2003)

In the 2004 report of S&P on C&W analysts note already that the regulatory environment in the UK has changed and has become a factor to be considered due to the market investigations initiated by Oftel (S&P, 27 Aug 2004). Referring to competition in the UK market, S&P further states:

> 'The significant transmission capacity in the [UK] market, available from a large number of providers, results in continued pressure on prices for carrier services, which contribute about one-half of C&W's U.K. revenue base.
>
> The remainder of the U.K. revenue base is derived from the provision of telecoms services to enterprise and business customers. Although this business typically has a value-added component and higher margins, the competition here is also intense as C&W seeks to retain customers where it is the main provider and increase business as a secondary or occasional provider.' (S&P, 27 Aug 2004).

Considering the performance problems the Group was facing combined with this level of competition and rapidly increasing regulatory interference it is not surprising that C&W had written down almost its entire goodwill by the beginning of 2004.

In Japan industrial regulation also represented a significant problem for C&W:

> 'The business in Japan is to be retained primarily, as low access charges make it possible for small players such as C&W to compete. Nevertheless, access charges have recently been increased for the first time in 10 years by 5%, and this is likely to weaken C&W's cost base and competitive position.'(S&P, 8 May 2003)

In the Caribbean region the gradual increase of industry regulation effects (in the form of liberalisation of the telecommunications market) and of intense competition as a direct consequence thereof can be followed from year to year.[156] While in 2001 and in 2002, C&W was reported to have a dominant position, even, monopoly in most of the Caribbean countries where it had subsidiaries (S&P, 21 Dec 2001 and 14 Nov 2002), by 2003 this favourable situation had begun to change, albeit very slightly.

The Caribbean operations were still reported to have developed favourably in 2003 despite the ongoing liberalisation of the local telecommunication markets. Nevertheless, industrial regulation was quickly becoming the main topic when discussing the C&W Regional business. The positive analyst outlook for the Caribbean was based on the importance of C&W for local states:

[156] This is a particularly interesting environment since throughout the investigation period C&W Regional had been the successful unit of the C&W Group as opposed to the loss-generating C&W Global (C&W annual reports 1999-2005). Nevertheless, even this successful division saw fit to impair goodwill in 2004.

> 'As the C&W business is often an important corporate locally and local governments are significant stakeholders, deriving both taxes and dividends from C&W Regional's operations, there is a rational basis for constructive engagement on liberalization and regulatory issues.' (S&P, 8 May 2003)

However, a year later, in 2004, the competitive situation had further changed to the worse from C&W perspective. As liberalisation of markets continued analysts became more concerned about its effect on C&W's performance in the Caribbean:

> 'The Caribbean and Panama are the division's most significant operations contributing about 25% of group revenues and over one-half of the group's EBITDA. Performance in these regions was severely affected by strong competition, some one time charges and adverse U.S. dollar and local currency movements, especially in the second half of financial 2004. …The markets in which the National Telco's division operates have been or are being opened to competition. ... Although additional demand has been stimulated given the relatively low penetration rates, aggressive new entrants have taken significant market share with attractive propositions. C&W has worked with governments to achieve rebalancing and headcount reductions as liberalization occurs, but this has been insufficient to compensate for the pressure on revenue streams with good margins. C&W has faced strong competition and pricing pressure in both international calls and mobile services, especially in Jamaica.' (S&P, 27 Aug 2004).

It is during this financial year that the impairment calculations conducted by C&W led to a goodwill write-down of the goodwill in Jamaica. At this point, there was no further goodwill left to impair.

6.4.3 Summary and conclusion: Economic factors

The analysis in the preceding sections concentrates on the possible effects of industry regulation and competitive environment on goodwill impairment. Two companies from the telecommunication sector were chosen for this analysis which was conducted using a case study research methodology. Both companies were among the leading operators in their lines of business during the investigation period: Vodafone Plc in mobile telecommunications and C&W in fixed-line telecommunications and internet protocol. Both companies impaired goodwill in roughly the same years and both had subsidiaries around the world. The main difference between these companies for purposes of this study relates to the operating and financial difficulties which they (or some of their subsidiaries) were facing during the investigation period. Thus, while Vodafone continued expanding throughout the investigation period (see also tables 6.22 and 6.23 in the supplement to this chapter), C&W was facing major performance difficulties and was forced to retire from the US and most of the Continental European markets (see also Tables 6.22 and 6.24 in the supplement to this chapter). In this sense the analysis of both companies aims to uncover new aspects of the influence economic

factors have on the goodwill impairment for companies at different levels of the performance scale.

Despite the differences in the financial situation of both companies there are numerous indications that industry regulation and/or increasingly competitive environment might have at least added to the pressures leading to an impairment charge. In the case of Vodafone goodwill impairment was caused in countries such as Germany and Japan, both subject to industry regulation aiming to restrict dominant positions on the market either through price pressures or through market access barriers. Alternatively, in countries such as Mexico and Sweden, Vodafone's subsidiaries suffered as a result of the immense competition, leading to deteriorating performance, and, in the case of Grupo Iusacell, to a divesture of Vodafone's investment.

For C&W the effects of industry regulation and competition were even more intense. On the one hand, a seriously shattered UK business was being restructured just at the time when the UK started discussing the implementation of the EU regulatory framework for the telecommunications sector and initiated first market investigations. Moreover, in Japan, where the Group tried to enter the market it was facing access charge rises for the first time in 10 years. Finally, the traditionally strong Caribbean part of the business where C&W had been enjoying monopoly positions was being rapidly liberalised leading to an immense competition and further challenges for the Group. Considering this environment the complete write-down of goodwill in the financial years 2002-2004 is easily explained.

Overall, the findings suggest that industry regulation – either by means of pricing or increased competitive pressures – might lead to goodwill impairment or, at least, have a material impact both on the decision to impair goodwill and on the amount of goodwill impairment to the extent that these effects can be quantified.[157] Moreover, this evidence suggests that outsiders to the firm such as investors, auditors and accounting regulators should be aware that policies of industry regulators can provide an early indicator of pressure on company's financial performance and so lead to possible goodwill impairment losses.

[157] For suggestions for future research see chapter 7.

6.5 ANALYSIS BASED ON THE FRAMEWORK: MANAGERIAL DISCRETION

The evidence in the previous section looks at the economic environment of a company. As prior research suggests, however, economic factors are not always the only force behind goodwill impairment. According to research findings managers are likely to use, at least partially, the discretionary room available to steer the goodwill impairment calculation according to their needs (for details on research on goodwill impairment causes, see chapter 2, and, additionally, chapter 5 for results of own research). Considering the calculation of the value in use (see p. 27) managers have several ways of using potential discretionary room available: on the one hand, by manipulating the numerator of the value-in-use calculation which consists of the sum of the projected free cash flows of the IGU (and is based on the assumptions for this projection). On the other hand, room for managerial discretion might be potentially available in the denominator which consists of the discount rate specific for the IGU. The following sections discuss and illustrate the room for managerial discretion in the cases of Vodafone Plc and C&W Plc. While the case studies in section 6.5.1 rely on information provided in the impairment notes of the annual reports of the companies, the evidence related to discount rates in section 6.5.2 is provided by comparing the discount rates disclosed by the companies with an independent calculation of discount rates for the relevant period based on publicly available information.

6.5.1 Managerial discretion in the numerator

6.5.1.1 Vodafone Plc

Two things are noticeable when the assumptions of impairment testing in Vodafone's annual report 2002 are scrutinised. Although FRS 11 strongly recommends that the time frame of detailed cash flow projections is 5 years at the most, it allows longer periods to be used under unusual circumstances which are to be explained in the relevant note (FRS 11, para. 37). Vodafone has made use of this exception and has defined a period of 10 years for its detailed cash flow prognoses:

> '...Revenue growth is forecast from a combination of new data products and services and strong underlying voice ARPU. Data revenue is expected to increase significantly to 2006 but grow at more modest rates to 2011. Voice ARPU is forecast to benefit from new services and traffic moving from fixed networks to mobile networks and reflects the impact of price declines. Accordingly, the directors believe that it is appropriate to use projections in excess of five years as growth in cash flows for the period to 31 March 2011 is expected to exceed relevant country growth in nominal GDP.' (Vodafone Annual Report 2005, p. 97)

It can be deduced from the information provided in this passage that the directors' team has made special efforts to project cash flows as accurately as possible by taking into account such effects as price declines and specific new products and services. On the other hand, the prolonged period (almost double the standard period recommended in FRS 11) of detailed cash flow forecasts assuming a higher rate of growth than the sustainable post-2011-growth leaves room for managerial discretion. The length of the period could be possibly used to adjust the value in use so that impairment charges might be avoided, or at least, the amounts of the impairment charge can be minimised. In the annual report 2005 Vodafone elaborates further on this subject as follows:

> 'The Group prepares and internally approves formal ten year plans for its businesses and uses these as the basis for its impairment reviews' (Vodafone annual report 2005, p. 95)

This information implies that ten year plans are regularly prepared and approved for all businesses for all other purposes and are additionally used for the impairment calculation. Since, however, FRS 11 requires that the cash flow projections used for the impairment testing differ on the prudent side from cash flow forecasts used for other purposes it is not clear to what extent the ten year plans for Vodafone's businesses are altered or adjusted for impairment testing.[158] (FRS 11, paras. 37f., Ernst & Young, 2003, p. 1040).

The second observation refers to the assumption relating to the forecast of capital expenditures (capex). According to FRS 11 the cash flow projections for the impairment calculation should be made on the basis of the *status quo* situation of the company (FRS 11, para. 38). This means that capex can be included in the cash flow projections but only to the extent that current products or services need to maintained. However, capital expenditure relating to new investments as well as future income resulting from them should not be included in the cash flow projections. Such a requirement might seem antiquated and unrealistic (Ernst & Young, 2003, p. 1040) as it excludes future development potential of the subject of the impairment test which is an intrinsic part of the fair value of the business. However, the standard setter seems to be more interested in a 'prudential' approach in order to avoid unexpected future impairment losses.

The 2002 annual report of Vodafone provides some information on the capex assumptions used in the impairment calculation:

[158] For an example of these differences see below the second observation referring to capex assumptions.

> '...For mobile businesses, projections reflect investment in network structure to provide enhanced voice services and a platform for new data products and services, enabled by GPRS and 3G technologies, which are forecast to be significant drivers of future revenue growth. Capital expenditure is heaviest in the early years of the projections, but in most countries is expected to fall to below 10% of revenues by the year ended 31 March 2008.'(Vodafone Annual Report 2002, p. 97)

It is unclear from the information provided in this passage whether capex refers only to the already initiated investments (maintenance capex), or whether it includes expansion capex as well. This shortcoming must have been noted by Vodafone or their auditors because by 2005 the capex assumption was altered very slightly – albeit crucially – stating that capex included in cash flow projections results from continuous investment in network infrastructure:

> '...The plans include cash flow projections for the mobile businesses which reflect continuing investment in network infrastructure to provide enhanced voice and data services, which are forecast to be significant drivers of future revenues growth. Capital expenditure is heaviest in the early years of the projections but is forecast to fall to 10% of revenue at Group level by the year ending 31 March 2008.'(Vodafone annual report 2005, p. 95)

While this new wording more closely fits the requirements of FRS 11 it is still noticeable that capex is projected to be largest in the early projection years – the schedule for the projections has not changed since 2002 – and is then expected to fall. This assumption does not fit the idea of maintenance capex and is more in line with the heavy investments in the early 2000s in the then new GPRS and 3G technology. It can be argued that as these investments were already starting in the early 2000s, the capital expenditures in the following years were included in the impairment calculations as continuing investments in an already existing network. Nevertheless, the capex assumption provides a good example of the room for managerial discretion when projecting cash flows for impairment testing.

6.5.1.2 Cable & Wireless Plc

Unlike Vodafone C&W has provided very little information on the details concerning the impairment process. Specific information about the parameters of the goodwill impairment calculation appears first in year 2002 and it is most detailed in years 2002 and 2003. Even then the only information available related to the projection of cash flows refers to the duration of the detailed forecasts and the growth rates after this period[159]:

[159] Additionally, information is provided on possible impairment triggering events and on the discount rate(s) used in the impairment calculation (see also section 6.5.2). Growth rates for the sustainable phase are adjusted in the cost of capital (denominator) and are, therefore, not discussed here.

> 'Future cash flows were determined with reference to Cable & Wireless' five year plan using a growth rate of 2.5 per cent in the period beyond Cable & Wireless' five year plan (based on a nominal increase in GDP for the countries in which Cable & Wireless operates)…. Changes to the assumptions used by management to determine the level of impairment required, such as the discount rate or growth rate used, could significantly affect Cable & Wireless' results.' (C&W Annual Report 2003, p. 42)

The use of five-year detailed forecasts which are based on the business plans approved by the board of directors (see C&W Annual Report 2003, p. 106) suggests at first a more conservative approach than Vodafone's 10-year-forecasts. However, there is no way to assess the effects of this forecast period due to the complete lack of information regarding the basic assumptions of these forecasts. Unlike Vodafone, where the growth rates for the detailed forecasts were at least verbally described (if not quantified), C&W refrains from mentioning anything about the detailed forecast which could help users of financial statements to understand why management has conducted an impairment write-down of virtually its complete goodwill in years 2002 and 2003.

In 2004 and 2005, although hardly possible, the information disclosed on goodwill impairment is even less. The disclosures were limited to only repeating important events which could trigger impairment and reporting the discount rates used. No information referring to the cash flow projections is provided. This could be due to the small amount of goodwill on the balance sheet (£ 10 mln which were impaired in 2004 and £ 88 mln resulting from acquisitions in 2005).

The lack of disclosures about the impairment assumptions can also be interpreted as an opportunity for managerial discretion. If no information is provided about the impairment calculation, the reported impairment losses are – at best – unexplainable and non-transparent. Additionally, considering the disclosure requirements of FRS 11 (FRS 11, paras. 69f.) the issue of UK GAAP compliance could also be further researched.[160]

6.5.2 Managerial discretion in the denominator

According to FRS 11 the forecasted cash flows of the IGU are discounted by using the appropriate pre-tax discount rate (FRS 11, para. 41). The appropriate discount rate is defined as the discount rate investors would require for the next best (equally risky) alternative on the capital market (Ernst & Young, 2003, p.1041). The discount rate may be determined by researching the market for transactions of similar assets. In the

[160] However, due to limitations of scope this issue is not part of the research questions in this chapter.

case that an active market for the IGU does not exist, the discount rate may be deduced from the discount rate of a comparable listed company, the cash flows of which are similarly risky to the cash flow profile of the IGU. Alternatively, it may be derived from the WACC for the whole company and adjusted for IGU-specific risks. In this last case, the discount rate should be adjusted if the growth rate of the cash flows is projected to be higher than the five-year average. Additionally, the weighted average of the specific discount rates of all IGUs should equal the company's individual WACC (FRS 11, para. 42f). For IGUs it is unlikely that an active market exists (unless the IGU structure is subsidiary based), therefore, the alternative ways to determine the discount rates will have to be used (Ernst & Young, 2003, p. 1042). It is clear that, *ceteris paribus*, the choice of the discount rate can influence the goodwill impairment decision as well as the write-down amount. FRS 11 requires disclosure of the discount rates for the impairment calculation, although it does not specify whether the rates are to be disclosed when there has been an impairment charge only, or, whether they are to be reported irrelevant of the outcome of the calculation (FRS 11, para. 69). Furthermore, although the discount rates must be disclosed, the assumptions of their derivation are not required. Therefore, it is not clear to what extent companies have used discretionary room when determining the discount rate. The following sections simulate the derivation of the discount rates for Vodafone and C&W based on publicly available data. Thus, the investigation attempts to provide a better understanding of the discount rates used in the impairment calculation and their calculation. The aim of the simulation is to see whether an independent calculation will yield discount rates which are materially different than the ones disclosed by the companies.

Additionally, this discount rate simulation illustrates some of the opportunities for managerial discretion related to the derivation of discount rates in the impairment process. As discussed in sections 2.2.3.3.2 and 3.1.3 there are several (technical) choices managers need to make when calculating the discount rates. Since no details referring to the discount rate calculation are provided by the companies, it is not clear, for example, what the exact specifics of the determination of the beta factor in the cost of equity are. In the following sections the beta factors are derived based on varying lengths of the total period (1 year, 2 years, 3 years and 5 years), based on different intervals (daily, weekly and monthly) as well as compared to different indices (national indices, FTSE 100 and Mexbold, and a world index, MSCI).

One issue which needs to be addressed is that discount rates need to be determined for every IGU. However, since neither Vodafone, nor C&W have disclosed any information regarding their IGUs for impairment calculation purposes, such a calculation cannot be performed (such data are not publicly available). Therefore, the discount rates for the whole entities of Vodafone and of C&W are determined, as according to FRS 11, they would have to equal the weighted average result of their IGU rates (see above).

6.5.2.1 Vodafone Plc

Since there was no information provided by Vodafone on the derivation of the beta factor for the discount rate calculation, beta factors were deduced based on varying intervals, on different time periods and compared to different indices. All of these constellations are commonly used in practice and discussed in the literature (see chapter 2). The findings are provided in table 6.10 below. The table shows beta calculations for each year based on daily, weekly and monthly intervals as well as on data collected over 1-year, 2-year, 3-year and 5-year periods. Panel A uses the FTSE100 as the reference index while Panel B refers to the worldwide MSCI as a benchmark for the deduction of the beta factors:

Table 6.10: Derivation of beta factors for Vodafone Plc (Panel A: FTSE 100)[161]

VODAFONE GROUP PLC

Reference Index: FTSE 100 Total Return

2005	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	1,15	35,24%	251	11,64	yes	1,01	24,62%	51	4,00	yes	1,46	24,34%	12	1,79	no
2 years	1,13	36,98%	505	17,18	yes	0,77	16,47%	103	4,46	yes	1,12	28,83%	24	2,99	yes
3 years	1,38	53,48%	757	29,46	yes	0,95	25,44%	155	7,23	yes	1,26	44,00%	35	5,09	yes
5 years	1,58	50,50%	1261	35,84	yes	1,23	29,70%	260	10,44	yes	1,35	33,63%	60	5,42	yes

2004	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,13	37,88%	254	12,40	yes	0,59	10,41%	51	2,39	yes	1,06	32,31%	12	2,18	no
2 years	1,40	55,11%	506	24,87	yes	0,94	25,33%	103	5,85	yes	1,29	47,38%	23	4,35	yes
3 years	1,45	52,67%	757	28,98	yes	0,93	22,78%	155	6,72	yes	1,23	31,85%	35	3,93	yes
5 years	1,55	45,50%	1263	32,45	yes	1,23	27,59%	260	9,91	yes	0,98	20,13%	60	3,82	yes

2003	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,46	59,08%	252	19,00	yes	1,04	29,14%	51	4,49	yes	1,72	64,59%	11	4,05	yes
2 years	1,50	54,80%	503	24,65	yes	0,97	23,85%	103	5,62	yes	1,33	30,65%	23	3,05	yes
3 years	1,66	52,69%	756	28,98	yes	1,30	31,15%	156	8,35	yes	1,42	31,97%	36	4,00	yes
5 years	1,54	45,19%	1261	32,22	yes	1,40	33,67%	260	11,44	yes	1,05	20,10%	60	3,82	yes

2002	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,60	48,77%	250	15,37	yes	0,92	20,14%	51	3,51	yes	0,61	4,43%	11	0,65	no
2 years	1,91	50,43%	503	22,58	yes	1,51	34,23%	104	7,29	yes	1,38	22,64%	24	2,54	yes
3 years	1,70	41,17%	756	22,97	yes	1,41	29,66%	156	8,06	yes	0,59	6,03%	36	1,48	no
5 years	1,51	37,73%	1262	27,63	yes	1,43	34,50%	260	11,66	yes	0,79	11,63%	60	2,76	yes

2001	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	2,28	54,24%	252	17,22	yes	2,33	54,83%	52	7,79	yes	1,85	34,82%	12	2,31	yes
2 years	1,77	38,39%	505	17,70	yes	1,75	36,78%	104	7,70	yes	0,43	3,70%	24	0,92	no
3 years	1,58	38,33%	757	21,66	yes	1,80	42,87%	156	10,75	yes	0,71	8,96%	36	1,83	no
5 years	1,48	33,59%	1262	25,24	yes	1,55	37,28%	260	12,38	yes	0,73	10,11%	59	2,53	yes

2000	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,25	23,57%	253	8,80	yes	1,14	19,78%	52	3,51	yes	-0,65	36,12%	12	2,38	yes
2 years	1,30	31,89%	505	15,35	yes	1,53	37,16%	104	7,77	yes	0,15	0,70%	24	0,39	no
3 years	1,23	29,07%	759	17,61	yes	1,33	33,91%	156	8,89	yes	0,25	2,09%	36	0,85	no
5 years	1,24	24,38%	1263	20,17	yes	1,31	28,16%	261	10,08	yes	0,29	1,93%	60	1,07	no

1999	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,32	40,71%	252	13,10	yes	1,80	55,92%	51	7,88	yes	1,02	18,59%	12	1,51	no
2 years	1,21	32,75%	506	15,67	yes	1,37	42,14%	103	8,58	yes	0,65	10,64%	24	1,62	no
3 years	1,24	29,74%	757	17,88	yes	1,36	37,47%	155	9,57	yes	0,77	11,04%	35	2,02	no
5 years	1,18	21,89%	1262	18,79	yes	1,31	30,58%	260	10,66	yes	0,95	16,67%	60	3,41	yes

[161] The beta factor is determined in a regression of the company stock returns against the returns of a representative index returns (reflecting the market portfolio). For further details see section 3.1.3.

Table 6.10 (cont'd): Derivation of beta factors for Vodafone Plc (Panel B: MSCI)

VODAFONE GROUP PLC															
Reference Index: MSCI															
	daily					**weekly**					**monthly**				
2005	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	0,59	12,33%	251	5,92	yes	0,65	18,22%	51	3,30	yes	0,64	8,38%	12	0,96	no
2 years	0,66	14,17%	505	9,11	yes	0,41	6,98%	103	2,75	yes	0,48	6,51%	24	1,24	no
3 years	1,16	28,13%	757	17,19	yes	0,76	19,61%	155	6,11	yes	1,10	36,79%	35	4,38	yes
5 years	1,26	24,89%	1261	20,42	yes	0,90	17,90%	260	7,50	yes	1,00	24,31%	60	4,32	yes
	daily					**weekly**					**monthly**				
2004	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	0,71	15,28%	254	6,74	yes	0,17	1,25%	51	0,79	no	0,43	5,67%	12	0,77	no
2 years	1,24	30,49%	506	14,87	yes	0,78	19,59%	103	4,96	yes	1,14	40,36%	23	3,77	yes
3 years	1,23	26,88%	757	16,66	yes	0,81	19,16%	155	6,02	yes	1,03	28,31%	35	3,61	yes
5 years	1,26	22,32%	1263	19,03	yes	0,89	15,63%	260	6,91	yes	0,81	17,80%	60	3,54	yes
	daily					**weekly**					**monthly**				
2003	Raw Beta	R^2	Data-points	t-value	95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,42	35,75%	252	11,79	yes	0,96	26,84%	51	4,24	yes	1,57	61,99%	11	3,83	yes
2 years	1,34	29,35%	503	14,43	yes	0,90	22,29%	103	5,38	yes	1,14	30,66%	23	3,05	yes
3 years	1,41	27,58%	756	16,95	yes	1,00	19,63%	156	6,13	yes	1,06	24,81%	36	3,35	yes
5 years	1,32	23,18%	1079	18,03	yes	0,99	18,63%	230	7,23	yes	0,85	19,65%	60	3,77	yes
	daily					**weekly**					**monthly**				
2002	Raw Beta	R^2	Data-points	t-value	95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,19	20,31%	250	7,95	yes	0,87	19,67%	51	3,46	yes	0,47	5,48%	11	0,72	no
2 years	1,41	22,70%	503	12,13	yes	1,05	17,68%	104	4,68	yes	0,71	10,51%	24	1,61	no
3 years	1,28	18,11%	756	12,91	yes	0,96	14,74%	156	5,16	yes	0,49	6,03%	36	1,48	no
5 years	1,26	18,30%	837	13,68	yes	1,02	17,09%	190	6,22	yes	0,64	10,90%	60	2,66	yes
	daily					**weekly**					**monthly**				
2001	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,63	25,31%	252	9,21	yes	1,37	19,32%	52	3,46	yes	0,71	8,49%	12	0,96	no
2 years	1,33	17,38%	505	10,29	yes	1,05	13,89%	104	4,06	yes	0,35	3,27%	24	0,86	no
3 years	1,30	17,64%	575	11,08	yes	1,12	16,99%	126	5,04	yes	0,56	8,87%	36	1,82	no
5 years	1,29	17,57%	597	11,26	yes	1,09	16,92%	149	5,47	yes	0,61	10,55%	59	2,59	yes
	daily					**weekly**					**monthly**				
2000	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	0,92	8,54%	253	4,84	yes	0,68	7,22%	52	1,97	no	-0,57	26,31%	12	1,89	no
2 years	0,98	10,74%	323	6,21	yes	0,90	13,57%	74	3,36	yes	0,26	3,00%	24	0,83	no
3 years	0,97	10,87%	334	6,36	yes	0,88	13,48%	86	3,62	yes	0,32	4,15%	36	1,21	no
5 years	0,95	10,57%	358	6,49	yes	0,82	11,88%	110	3,82	yes	0,37	4,63%	60	1,68	no
	daily					**weekly**					**monthly**				
1999	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,14	20,02%	70	4,13	yes	1,18	30,81%	21	2,91	yes	0,70	17,96%	12	1,48	no
2 years	1,10	19,51%	81	4,38	yes	1,03	24,47%	33	3,17	yes	0,61	13,75%	24	1,87	no
3 years	1,07	18,93%	92	4,58	yes	1,00	24,31%	44	3,67	yes	0,70	16,08%	35	2,51	yes
5 years	1,05	18,37%	117	5,09	yes	0,91	18,69%	69	3,92	yes	0,74	14,75%	60	3,17	yes

All beta factors based on daily and weekly intervals are significant at the 95% confidence level (with the exception of financial year 2000, weekly intervals). The R^2-results of the regressions are not very high, which, however, is not unusual for the beta derivation: for the FTSE 100 reference index between 10.11% (2001, 5 years, monthly intervals) and 59.08% (2003, 1 year, daily intervals) for the significant findings; for MSCI between 6.98% (2005, 2 years, weekly intervals) and 40.36% (2004, 2 years, monthly intervals). This suggests that other factors must be involved in the explanation

of the dependent variable (rate of return of Vodafone) beside the rate of return of the index (the only independent variable in the model). However, complete explanation of the dependent variable or the determination of all predictors is not the purpose of this investigation. The t-values, on the other hand, which indicate strength of the relationship between the independent and the dependent variable, are significant as described above.

The beta factors derived on the basis of monthly intervals for one year were not considered for the following calculations, even if they were significant, since the regression included a maximum of 12 data points in these cases which could point to misleading results due to the small sample.

The findings suggest that depending on the method of calculation, the variation in the beta factor can be very high. A summary of the above beta factor derivation is provided in table 6.11 as follows:

Table 6.11: Summary beta factors Vodafone Plc

	Beta Factors Vodafone					
	FTSE 100			MSCI		
	Max	Min	Range	Max	Min	Range
2005	1,58	0,77	0,81	1,26	0,41	0,85
2004	1,55	0,59	0,96	1,26	0,71	0,55
2003	1,66	0,97	0,69	1,42	0,85	0,57
2002	1,91	0,79	1,12	1,41	0,64	0,77
2001	2,33	0,73	1,60	1,63	0,61	1,02
2000	1,53	1,14	0,39	0,98	0,82	0,16
1999	1,80	0,95	0,85	1,18	0,7	0,48

The differences in beta factors between the data collection periods are material for both reference indices. Thus, when measured against the FTSE 100 beta factors can differ up to 1.60 (2001) and in the case of MSCI up to 1.02 (2001). Additionally, although a general conclusion about the direction of the intervalling effect cannot be made based on the evidence, it is clear that the beta factors differ significantly depending on the interval chosen for their calculation. A trend related to the intervalling effect is noticeable: before 2002 the betas based on monthly intervals tend to be lower than the daily and the weekly deduced betas, post 2002 this trend reverses and the monthly betas – while still lower than the ones determined on a daily basis – are higher than the weekly betas.

Furthermore, while differences related to the length of period or the data collection intervals remain between the calculated betas when the MSCI is taken as a benchmark, the differences are smaller than when using the FTSE 100 index. Thus, with the exception of 2005 when the span between the maximum and the minimum beta is roughly the same for both indices, the range of calculated betas under the MSCI index is a narrower than under FTSE 100.

The findings also indicate that the values of the beta factors are overall lower when the MSCI is used as a reference index.

Altogether, this evidence shows that, all other things equal, the choice of input parameters for the derivation of the beta factor will lead to substantial differences which will be then reflected in the discount rate and in the impairment charge respectively. Thus, it is well possible that the choice of the beta factor is used to manipulate the impairment decision or amount in one direction or the other, especially, since specifics concerning this particular calculation need not be disclosed.

The choice of calculation for the beta factor can be traced to the calculation of the discount rate chosen for the impairment calculation. For Vodafone, these discount rates were calculated and compared to the ones reported in the annual reports. The findings are presented in table 6.12. The table shows the calculation of the cost of equity which is based on the beta factors as determined in table 6.10 and uses the effective cost of debt to calculate the WACC (weighted average cost of capital) as defined in the CAPM.[162]

[162] The WACC is defined as the sum of the cost of equity and the cost of debt weighted by the percentage of their corresponding capital (equity or debt) from total capital. For further details see section 3.1.3.

Table 6.12: Discount Rates Vodafone Plc

VODAFONE GROUP PLC

Panel A

Reference Index: FTSE 100 Total Return

	Length of period for beta	RFR	ERP	Beta (daily)	Cost of equity	Cost of debt	Tax rate	Equity ratio	Debt Ratio	WACC	Pre-tax WACC	Beta (weekly)	Cost of equity	WACC	Pre-tax WACC	Beta (monthly)	Cost of equity	WACC	Pre-tax WACC	Pre-tax disount rate (pre-tax WACC) published in annual report
2005	1 year	4,56%	5,90%	1,15	11,34%	6,00%	28,01%	88,82%	11,18%	10,56%	14,66%	1,01	10,53%	9,83%	13,66%	N/A	N/A	N/A	N/A	8.3-11.6%
	2 years			1,13	11,25%					10,48%	14,55%	0,77	9,10%	8,56%	11,90%	1,12	11,14%	10,38%	14,42%	
	3 years			1,38	12,72%					11,78%	16,37%	0,95	10,14%	9,49%	13,19%	1,26	11,99%	11,13%	15,46%	
	5 years			1,58	13,90%					12,83%	17,82%	1,23	11,83%	10,99%	15,26%	1,35	12,55%	11,63%	16,16%	
2004	1 year	4,63%	5,90%	1,13	11,28%	9,13%	28,75%	91,27%	8,73%	10,86%	15,25%	0,59	8,11%	7,97%	11,19%	N/A	N/A	N/A	N/A	8.1-10.3%
	2 years			1,40	12,90%					12,34%	17,32%	0,94	10,19%	9,86%	13,84%	1,29	12,23%	11,73%	16,47%	
	3 years			1,45	13,21%					12,63%	17,72%	0,93	10,12%	9,80%	13,76%	1,23	11,88%	11,41%	16,01%	
	5 years			1,55	13,78%					13,14%	18,45%	1,23	11,89%	11,42%	16,03%	0,98	10,41%	10,07%	14,13%	
2003	1 year	4,60%	5,90%	1,46	13,24%	7,88%	29,53%	84,45%	15,55%	12,04%	17,09%	1,04	10,75%	9,94%	14,10%	1,72	14,74%	13,32%	18,89%	7,5-10%
	2 years			1,50	13,47%					12,23%	17,36%	0,97	10,31%	9,57%	13,58%	1,33	12,45%	11,38%	16,15%	
	3 years			1,66	14,39%					13,01%	18,47%	1,30	12,27%	11,23%	15,93%	1,42	12,97%	11,81%	16,76%	
	5 years			1,54	13,68%					12,42%	17,62%	1,40	12,84%	11,71%	16,61%	1,05	10,80%	9,98%	14,17%	
2002	1 year	5,08%	5,90%	1,60	14,51%	6,87%	30,72%	87,98%	12,02%	13,34%	19,25%	0,92	10,51%	9,82%	14,17%	N/A	N/A	N/A	N/A	8.8-11.5%
	2 years			1,91	16,32%					14,93%	21,55%	1,51	13,97%	12,86%	18,57%	1,38	13,19%	12,18%	17,58%	
	3 years			1,70	15,13%					13,88%	20,04%	1,41	13,41%	12,37%	17,85%	N/A	N/A	N/A	N/A	
	5 years			1,51	13,97%					12,86%	18,57%	1,43	13,50%	12,45%	17,97%	0,79	9,77%	9,16%	13,23%	
2001	1 year	4,61%	5,90%	2,28	18,07%	10,90%	31,49%	94,88%	5,12%	17,53%	25,59%	2,33	18,36%	17,80%	25,98%	1,85	15,52%	15,11%	22,05%	N/A
	2 years			1,77	15,04%					14,65%	21,39%	1,75	14,95%	14,57%	21,27%	N/A	N/A	N/A	N/A	
	3 years			1,58	13,94%					13,61%	19,86%	1,80	15,21%	14,82%	21,63%	N/A	N/A	N/A	N/A	
	5 years			1,48	13,32%					13,02%	19,01%	1,55	13,78%	13,45%	19,64%	0,73	8,93%	8,85%	12,92%	
2000	1 year	4,35%	5,90%	1,25	11,75%	9,71%	32,36%	96,99%	3,01%	11,59%	17,14%	1,14	11,10%	10,97%	16,22%	-0,65	0,51%	0,69%	1,02%	N/A
	2 years			1,30	12,00%					11,83%	17,49%	1,53	13,38%	13,17%	19,47%	N/A	N/A	N/A	N/A	
	3 years			1,23	11,59%					11,44%	16,91%	1,33	12,19%	12,02%	17,78%	N/A	N/A	N/A	N/A	
	5 years			1,24	11,64%					11,49%	16,98%	1,31	12,06%	11,89%	17,58%	N/A	N/A	N/A	N/A	
1999	1 year	4,51%	5,90%	1,32	12,32%	6,85%	32,69%	35,07%	64,93%	7,31%	10,87%	1,80	15,12%	8,29%	12,32%	N/A	N/A	N/A	N/A	N/A
	2 years			1,21	11,67%					7,09%	10,53%	1,37	12,62%	7,42%	11,02%	N/A	N/A	N/A	N/A	
	3 years			1,24	11,82%					7,14%	10,60%	1,36	12,55%	7,39%	10,99%	N/A	N/A	N/A	N/A	
	5 years			1,18	11,47%					7,02%	10,42%	1,31	12,23%	7,28%	10,82%	0,95	10,12%	6,54%	9,72%	

Table 6.12 (cont'd): Discount Rates Vodafone Plc

VODAFONE GROUP PLC

Panel B

Reference Index: MSCI

	Length of period for beta	RFR	ERP	Beta (daily)	Cost of equity	Cost of debt	Tax rate	Equity ratio	Debt Ratio	WACC	Pre-tax WACC	Beta (weekly)	Cost of equity	WACC	Pre-tax WACC	Beta (monthly)	Cost of equity	WACC	Pre-tax WACC	Pre-tax disount rate (pre-tax WACC) published in annual report
2005	1 year	4,56%	5,90%	0,59	8,02%	6,00%	28,01%	88,82%	11,18%	7,61%	10,57%	0,65	8,39%	7,94%	11,02%	N/A	N/A	N/A	N/A	8.3-11.6%
	2 years			0,66	8,46%					8,00%	11,11%	0,41	6,95%	6,66%	9,25%	N/A	N/A	N/A	N/A	
	3 years			1,16	11,38%					10,59%	14,71%	0,76	9,06%	8,53%	11,85%	1,10	11,02%	10,27%	14,27%	
	5 years			1,26	11,98%					11,12%	15,45%	0,90	9,87%	9,25%	12,85%	1,00	10,47%	9,79%	13,59%	
2004	1 year	4,63%	5,90%	0,71	8,80%	9,13%	28,75%	91,27%	8,73%	8,60%	12,07%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.1-10.3%
	2 years			1,24	11,94%					11,47%	16,09%	0,78	9,23%	8,99%	12,62%	1,14	11,33%	10,91%	15,31%	
	3 years			1,23	11,86%					11,39%	15,99%	0,81	9,40%	9,15%	12,84%	1,03	10,68%	10,31%	14,47%	
	5 years			1,26	12,05%					11,57%	16,24%	0,89	9,85%	9,56%	13,42%	0,81	9,40%	9,15%	12,84%	
2003	1 year	4,60%	5,90%	1,42	12,99%	7,88%	29,53%	84,45%	15,55%	11,83%	16,79%	0,96	10,27%	9,53%	13,53%	1,57	13,84%	12,55%	17,81%	7,5-10%
	2 years			1,34	12,50%					11,42%	16,20%	0,90	9,89%	9,22%	13,08%	1,14	11,30%	10,41%	14,77%	
	3 years			1,41	12,92%					11,78%	16,71%	1,00	10,47%	9,71%	13,78%	1,06	10,83%	10,01%	14,20%	
	5 years			1,32	12,40%					11,34%	16,09%	0,99	10,45%	9,69%	13,75%	0,85	9,64%	9,00%	12,78%	
2002	1 year	5,08%	5,90%	1,19	12,12%	6,87%	30,72%	87,98%	12,02%	11,23%	16,21%	0,87	10,23%	9,57%	13,82%	N/A	N/A	N/A	N/A	8.8-11.5%
	2 years			1,41	13,38%					12,34%	17,82%	1,05	11,26%	10,48%	15,13%	N/A	N/A	N/A	N/A	
	3 years			1,28	12,62%					11,67%	16,85%	0,96	10,75%	10,03%	14,48%	N/A	N/A	N/A	N/A	
	5 years			1,26	12,53%					11,60%	16,74%	1,02	11,10%	10,34%	14,92%	0,64	8,87%	8,38%	12,09%	
2001	1 year	4,61%	5,90%	1,63	14,22%	10,90%	31,49%	94,88%	5,12%	13,87%	20,25%	1,37	12,68%	12,41%	18,11%	N/A	N/A	N/A	N/A	N/A
	2 years			1,33	12,45%					12,20%	17,80%	1,05	10,81%	10,64%	15,53%	N/A	N/A	N/A	N/A	
	3 years			1,30	12,31%					12,06%	17,60%	1,12	11,22%	11,03%	16,10%	N/A	N/A	N/A	N/A	
	5 years			1,29	12,23%					11,98%	17,49%	1,09	11,02%	10,84%	15,83%	0,61	8,24%	8,20%	11,96%	
2000	1 year	4,35%	5,90%	0,92	9,75%	9,71%	32,36%	96,99%	3,01%	9,66%	14,27%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2 years			0,98	10,12%					10,01%	14,80%	0,90	9,66%	9,56%	14,14%	N/A	N/A	N/A	N/A	
	3 years			0,97	10,09%					9,99%	14,76%	0,88	9,54%	9,45%	13,97%	N/A	N/A	N/A	N/A	
	5 years			0,95	9,97%					9,86%	14,58%	0,82	9,16%	9,08%	13,43%	N/A	N/A	N/A	N/A	
1999	1 year	4,51%	5,90%	1,14	11,22%	6,85%	32,69%	35,07%	64,93%	6,93%	10,29%	1,18	11,45%	7,01%	10,41%	N/A	N/A	N/A	N/A	N/A
	2 years			1,10	10,97%					6,84%	10,16%	1,03	10,58%	6,70%	9,96%	N/A	N/A	N/A	N/A	
	3 years			1,07	10,81%					6,78%	10,08%	1,00	10,43%	6,65%	9,88%	0,70	8,67%	6,03%	8,96%	
	5 years			1,05	10,73%					6,76%	10,04%	0,91	9,90%	6,46%	9,60%	0,74	8,90%	6,11%	9,08%	

The key points of this information are summarised in table 6.13 below to illustrate the variation opportunities in the discount rate stemming from the application of different beta factors:

Table 6.13: Summary discount rates Vodafone Plc

	Discount Rates Vodafone						Discount rate published in annual report
	FTSE 100			MSCI			
	Max	Min	Range	Max	Min	Range	
2005	17,82%	11,90%	5,92%	15,45%	9,25%	6,20%	8,30%-11,60%
2004	18,45%	11,19%	7,26%	16,24%	12,07%	4,17%	8,10%-10,30%
2003	18,47%	13,58%	4,89%	16,79%	12,78%	4,01%	7,50%-10,00%
2002	21,55%	13,23%	8,32%	17,82%	8,38%	9,44%	8,80%-11,50%
2001	25,98%	12,92%	13,06%	20,25%	11,96%	8,29%	N/A
2000	19,47%	16,22%	3,25%	14,80%	13,43%	1,37%	N/A
1999	12,32%	9,72%	2,60%	10,41%	8,96%	1,45%	N/A

Three main conclusions can be made based on the calculated discount rates:

1. All independently calculated pre-tax rates using the FTSE 100 as a reference index are higher and most are significantly higher than the discount rates disclosed by Vodafone. As there is no information available as to what are the IGUs of Vodafone, the independently analysed discount rates are calculated for the whole company. These discount rates should represent the weighted average of the rates for Vodafone's IGUs. Vodafone has disclosed a range of values for the discount rates in several years meaning that the rate for the whole company should be somewhere within these disclosed ranges. However, the calculated discount rates (based on the FTSE 100) are well above the reported ranges. The reason as to why Vodafone has used lower discount rates is not discussed or disclosed anywhere in the information analysed here. It is, however, entirely possible that Vodafone management might have used lower discount rates (based on other parameter constellations than the ones used in this study) in order to calculate higher value in use for (at least some of) the IGUs, therefore, reducing the amount of goodwill impairment or, avoiding it altogether. These findings are reinforced by the information reported by Vodafone referring to the use of longer detailed forecast periods for the impairment calculation (see p. 184) which could also lead to a higher value in use (due to the use of higher growth rates for the detailed forecasts).

The discount rates based on the MSCI are better comparable to the rates disclosed by Vodafone. [163] However, the independently calculated discount rates are still higher than the reported ones. Also interesting is the discrepancy in the trend in discount rate development over time: while the rates disclosed by Vodafone tend to get higher between 2003 and 2005 (after falling from 2002 to 2003), the trend in the independently calculated discount rates is reversed.

2. The intervalling effect present in the derived beta factors has an impact on the calculation of the discount rates. The impact is most noticeable in weekly discount rates which are lower due to the lower beta factors. Therefore, if management were to aim for lower discount rates, intervalling effect would allow additional room for discretion. Intervalling effect is present in both FTSE 100 and MSCI calculations. However, discount rates calculated based on the MSCI are more robust to the effects of this phenomenon.

3. The length of period for calculating beta has a significant effect on the FTSE 100 calculation but has almost no effect (with the exception of 2005) on rates calculated using the MSCI. For example, daily rates in 2001 range between 19.01% and 25.59% based on FTSE 100 but between 17.49% and 20.25% with the MSCI as a reference index. In 2003 weekly rates range between 13.58% and 16.61% (FTSE 100) and between 13.08% and 13.78% respectively. Altogether, it can be concluded that MSCI provides more robust beta factors, at least referring to the length of period and the intervals. Nevertheless, since arguments in favour of use of both national and international indices can be applied (see section 2.2.3.3.2), management might have used either FTSE 100 or MSCI (or a completely different reference index) irrelevant of the robustness issue.

One of the limitations of this investigation refers to the fact that information on the IGU classification of Vodafone is not available and, therefore, discount rates can only be independently calculated on Group basis. However, one of the Vodafone subsidiaries which was almost completely impaired before being disposed of (in 2002 and 2003) – Grupo Iusacell – was listed separately on the Mexican Stock Exchange since August 4, 1999. Therefore, beta factors and discount rates could be determined

[163] In 2002 and 2005 the range of the independently calculated rates even partly overlaps with the rates disclosed by Vodafone, also suggesting that the Group might have used the MSCI for the calculation of the discount rates.

for Grupo Iusacell[164] and compared with the rates disclosed by Vodafone. Considering that Grupo Iusacell was impaired, it can be assumed that either the cash flows of the IGU were low, or the discount rate was high, or both. Since the information provided on Grupo Iusacell by Vodafone in 2002 stated that the subsidiary had financing problems, it is more than likely that these risks should have been reflected (at least partially) in the discount rates for the IGU. Therefore, for Grupo Iusacell, the discount rates would be expected to be in the higher range of the rates disclosed by Vodafone. The findings – including a summary of key data - are presented as follows:

[164] The debt ratios in the independent discount rate calculation for Grupo Iusacell are based on *Bloomberg* data since balance sheets for the subsidiary were not provided in the Vodafone annual reports. It should be noted, however, that a subsidiary's debt ratio is often difficult to accurately ascertain as the amount of debt and equity it has will often be subject to overall group financing issues.

Table 6.14: Derivation of beta factors for Grupo Iusacell (Panel A: Mexbold)[165]

Grupo Iusacell
Panel A
Reference Index: Mexbold

2005	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	0.75	8.80%	240	4.79	yes	0.85	8.33%	51	2.11	yes	0.58	7.41%	12	0.89	no
2 years	0.89	3.46%	493	4.20	yes	0.69	2.00%	103	1.44	no	0.21	0.20%	24	0.21	no
3 years	1.10	6.85%	745	7.39	yes	1.48	10.29%	155	4.19	yes	1.94	16.28%	35	2.53	yes
5 years	1.14	12.21%	1179	12.80	yes	1.43	21.96%	260	8.52	yes	1.79	30.73%	60	5.07	yes

2004	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1.03	2.58%	253	2.58	yes	0.39	0.35%	51	0.41	no	-3.16	7.79%	12	0.92	no
2 years	1.22	6.91%	505	6.11	yes	1.72	11.34%	103	3.59	yes	2.55	20.87%	23	2.35	yes
3 years	1.30	10.44%	751	9.34	yes	1.73	17.47%	155	5.69	yes	2.52	32.60%	35	4.00	yes
5 years	1.08	11.39%	1056	11.64	yes	1.30	20.42%	241	7.83	yes	1.80	34.09%	55	5.24	yes

2003	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1.24	12.18%	252	5.89	yes	2.22	25.28%	51	4.07	yes	3.38	32.04%	11	2.06	no
2 years	1.33	17.18%	498	10.15	yes	1.93	30.57%	103	6.67	yes	2.67	49.27%	23	4.52	yes
3 years	1.19	18.78%	686	12.58	yes	1.53	34.68%	156	9.04	yes	1.92	45.95%	36	5.38	yes
5 years	1.08	15.79%	803	12.26	yes	1.34	28.41%	189	8.62	yes	1.83	46.74%	43	6.00	yes

2002	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1.41	24.61%	245	8.91	yes	1.74	37.25%	51	5.39	yes	2.53	76.04%	11	5.34	yes
2 years	1.16	23.71%	433	11.57	yes	1.40	43.11%	104	8.79	yes	1.70	65.83%	24	6.51	yes
3 years	1.03	17.62%	550	10.82	yes	1.21	31.52%	137	7.88	yes	1.63	60.58%	31	6.68	yes
5 years	1.03	17.62%	550	10.82	yes	1.21	31.52%	137	7.88	yes	1.63	60.58%	31	6.68	yes

2001	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1.03	24.24%	187	7.69	yes	1.28	52.41%	52	7.42	yes	1.41	78.02%	12	5.96	yes
2 years	0.89	15.30%	304	7.39	yes	1.08	31.36%	85	6.16	yes	1.37	63.77%	19	5.47	yes
3 years	0.89	15.30%	304	7.39	yes	1.08	31.36%	85	6.16	yes	1.37	63.77%	19	5.47	yes
5 years	0.89	15.30%	304	7.39	yes	1.08	31.36%	85	6.16	yes	1.37	63.77%	19	5.47	yes

2000	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	0.61	5.53%	117	2.60	yes	0.65	8.88%	33	1.74	no	1.04	29.05%	7	1.43	no
2 years	0.61	5.53%	117	2.60	yes	0.65	8.88%	33	1.74	no	1.04	29.05%	7	1.43	no
3 years	0.61	5.53%	117	2.60	yes	0.65	8.88%	33	1.74	no	1.04	29.05%	7	1.43	no
5 years	0.61	5.53%	117	2.60	yes	0.65	8.88%	33	1.74	no	1.04	29.05%	7	1.43	no

1999	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	N/A		0		no			0		no			0		no
2 years	N/A		0		no			0		no			0		no
3 years	N/A		0		no			0		no			0		no
5 years	N/A		0		no			0		no			0		no

[165] The beta factor is determined in a regression of the company stock returns against the returns of a representative index returns (reflecting the market portfolio). For further details see section 3.1.3.

Table 6.14 (cont'd): Derivation of beta factors for Grupo Iusacell (Panel B: MSCI)

Grupo Iusacell
Panel B
Reference Index: MSCI

2005	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	0.72	2.87%	240	2.65	yes	2.13	17.12%	51	3.18	yes	0.82	3.91%	12	0.64	no
2 years	0.27	0.21%	493	1.02	no	0.63	1.20%	103	1.11	no	1.41	4.17%	24	0.98	no
3 years	0.52	1.22%	745	3.03	yes	0.49	0.89%	155	1.17	no	2.27	14.35%	35	2.35	yes
5 years	0.88	3.90%	1179	6.92	yes	1.09	6.05%	260	4.08	yes	2.31	21.71%	60	4.01	yes

2004	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	0.08	0.02%	253	0.21	no	0.05	0.01%	51	0.06	no	1.62	2.49%	12	0.51	no
2 years	0.50	1.09%	505	2.35	yes	0.28	0.29%	103	0.54	no	2.55	16.85%	23	2.06	no
3 years	0.75	2.77%	751	4.62	yes	0.77	2.82%	155	2.11	yes	2.72	20.50%	35	2.92	yes
5 years	0.87	3.59%	1056	6.26	yes	0.95	4.40%	241	3.32	yes	2.20	21.47%	55	3.81	yes

2003	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	0.65	3.10%	252	2.83	yes	0.10	0.05%	51	0.16	no	1.85	12.09%	11	1.11	no
2 years	0.94	6.20%	498	5.72	yes	0.83	4.36%	103	2.15	yes	2.48	18.57%	23	2.19	yes
3 years	1.05	7.45%	686	7.42	yes	1.12	7.90%	156	3.63	yes	2.18	22.16%	36	3.11	yes
5 years	1.03	6.22%	803	7.29	yes	1.05	6.20%	189	3.52	yes	2.09	22.78%	43	3.48	yes

2002	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1.41	13.38%	245	6.13	yes	1.43	17.08%	51	3.18	yes	4.15	41.19%	11	2.51	yes
2 years	1.41	12.59%	433	7.88	yes	1.62	19.46%	104	4.96	yes	2.50	37.89%	24	3.66	yes
3 years	1.31	8.86%	550	7.30	yes	1.41	12.34%	137	4.36	yes	2.17	32.90%	31	3.77	yes
5 years	1.31	8.86%	550	7.30	yes	1.41	12.34%	137	4.36	yes	2.17	32.90%	31	3.77	yes

2001	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1.38	11.28%	187	4.85	yes	1.89	22.70%	52	3.83	yes	2.25	58.17%	12	3.73	yes
2 years	1.19	6.25%	304	4.49	yes	1.38	9.60%	85	2.97	yes	1.89	39.70%	19	3.35	yes
3 years	1.19	6.25%	304	4.49	yes	1.38	9.60%	85	2.97	yes	1.89	39.70%	19	3.35	yes
5 years	1.19	6.25%	304	4.49	yes	1.38	9.60%	85	2.97	yes	1.89	39.70%	19	3.35	yes

2000	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	0.55	0.77%	117	0.95	no	-0.18	0.10%	33	0.18	no	0.72	5.72%	7	0.55	no
2 years	0.55	0.77%	117	0.95	no	-0.18	0.10%	33	0.18	no	0.72	5.72%	7	0.55	no
3 years	0.55	0.77%	117	0.95	no	-0.18	0.10%	33	0.18	no	0.72	5.72%	7	0.55	no
5 years	0.55	0.77%	117	0.95	no	-0.18	0.10%	33	0.18	no	0.72	5.72%	7	0.55	no

1999	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	N/A		0		no	N/A		0		no	N/A		0		no
2 years	N/A		0		no	N/A		0		no	N/A		0		no
3 years	N/A		0		no	N/A		0		no	N/A		0		no
5 years	N/A		0		no	N/A		0		no	N/A		0		no

Table 6.15: Summary beta factors Grupo Iusacell

	Beta Factors Grupo Iusacell					
	Mexbold			MSCI		
	Max	Min	Range	Max	Min	Range
2005	1,94	0,75	1,19	2,31	0,52	1,79
2004	2,55	1,03	1,52	2,72	0,50	2,22
2003	2,67	1,08	1,59	2,48	0,65	1,83
2002	1,74	1,03	0,71	2,50	1,31	1,19
2001	1,37	0,89	0,48	1,89	1,19	0,70
2000	0,61	0,61	0,00	N/A	N/A	N/A
1999	N/A	N/A	N/A	N/A	N/A	N/A

Results based on less than 20 data points were not considered in the investigation due to the small sample even if they were statistically significant. Furthermore, results which were based on the same amount of data points despite different length of the investigation period were also not included in the analysis (for 2002 all results based on a 3- and a 5-year period, for 2001 – 2-, 3- and 5-year periods and for 2000 – 1-, 2-, 3,- and 5-year periods). This is due to the fact that Grupo Iusacell was first listed in 1999 and there were no capital market data available for prior periods. Despite these limitations of the results, the remaining beta factors show a much higher volatility than the beta factors of the Vodafone Group. Thus, for example for the Mexbold, the beta factor range reached 1.59 in 2003 with a similar value in 2004.The beta factors using the MSCI as a reference index were even more volatile: in 2002 and 2003 when Vodafone's interest in Grupo Iusacell was written off, the beta factor range for Grupo Iusacell amounted to 1.19 and 1.83 respectively, moving to peak at 2.22 in 2004 (although this fluctuation might well have been the result of Vodafone's divesture of Grupo Iusacell). The intervalling effect is also very pronounced in the beta factors based on the MSCI index: betas based on monthly intervals seem to be a lot higher than weekly and daily betas. Interestingly, the results for Grupo Iusacell have a different trend relating to the reference index than the results for Vodafone. While the Vodafone beta factors based on the MSCI seem to be more robust to variations of the parameters, the MSCI betas for Grupo Iusacell are more sensitive to parameter changes.

The discount rates calculated using the above specifications are presented below[166]:

[166] The WACC is defined as the sum of the cost of equity and the cost of debt weighted by the percentage of their corresponding capital (equity or debt) from total capital. For further details see section 3.1.3.

Table 6.16: Discount rates Grupo Iusacell

Grupo Iusacell																			
Panel A																			
Reference Index: Mexbold																			Pre-tax disount rate (pre-tax WACC) published in annual report VODAFONE
	Length of period for beta	RFR	ERP	Beta (daily)	Cost of equity	Cost of debt	Tax rate	Equity ratio	Debt Ratio	WACC	Pre-tax WACC	Beta (weekly)	Cost of equity	WACC	Pre-tax WACC	Beta (monthly)	Cost of equity	WACC	Pre-tax WACC	
2005	1 year	4,56%	5,90%	0,75	9,00%	11,90%	30,00%	90,52%	9,48%	8,94%	12,77%	0,85	9,59%	9,47%	13,53%	N/A	N/A	N/A	N/A	8.3-11.6%
	2 years			0,89	9,82%					9,68%	13,83%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3 years			1,10	11,06%					10,80%	15,43%	1,48	13,31%	12,84%	18,34%	1,94	15,98%	15,25%	21,79%	
	5 years			1,14	11,28%					11,00%	15,72%	1,43	12,98%	12,54%	17,92%	1,79	15,13%	14,49%	20,70%	
2004	1 year	4,63%	5,90%	1,03	10,72%	11,05%	33,00%	89,67%	10,33%	10,38%	15,49%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.1-10.3%
	2 years			1,22	11,82%					11,37%	16,96%	1,72	14,80%	14,04%	20,95%	2,55	19,65%	18,39%	27,44%	
	3 years			1,30	12,27%					11,77%	17,56%	1,73	14,83%	14,06%	20,98%	2,52	19,51%	18,26%	27,26%	
	5 years			1,08	11,00%					10,63%	15,87%	1,30	12,29%	11,78%	17,59%	1,80	15,28%	14,47%	21,59%	
2003	1 year	4,60%	5,90%	1,24	11,91%	12,26%	34,00%	88,78%	11,22%	11,48%	17,39%	2,22	17,71%	16,63%	25,20%	N/A	N/A	N/A	N/A	7,5-10%
	2 years			1,33	12,45%					11,96%	18,12%	1,93	15,96%	15,08%	22,85%	2,67	20,35%	18,97%	28,75%	
	3 years			1,19	11,61%					11,21%	16,99%	1,53	13,61%	12,99%	19,68%	1,92	15,92%	15,04%	22,79%	
	5 years			1,08	10,96%					10,64%	16,11%	1,34	12,48%	11,99%	18,17%	1,83	15,38%	14,56%	22,07%	
2002	1 year	5,08%	5,90%	1,41	13,40%	11,87%	35,00%	91,50%	8,50%	12,91%	19,87%	1,74	15,35%	14,70%	22,62%	2,53	19,99%	18,94%	29,14%	8.8-11.5%
	2 years			1,16	11,95%					11,59%	17,83%	1,40	13,34%	12,86%	19,79%	1,70	15,11%	14,48%	22,28%	
	3 years			1,03	11,14%					10,85%	16,69%	1,21	12,23%	11,85%	18,23%	1,63	14,68%	14,09%	21,67%	
	5 years			1,03	11,14%					10,85%	16,69%	1,21	12,23%	11,85%	18,23%	1,63	14,68%	14,09%	21,67%	
2001	1 year	4,61%	5,90%	1,03	10,72%	12,71%	35,00%	93,61%	6,39%	10,56%	16,24%	1,28	12,19%	11,94%	18,36%	1,41	12,91%	12,61%	19,40%	N/A
	2 years			0,89	9,89%					9,78%	15,05%	1,08	11,01%	10,83%	16,66%	1,37	12,71%	12,42%	19,11%	
	3 years			0,89	9,89%					9,78%	15,05%	1,08	11,01%	10,83%	16,66%	1,37	12,71%	12,42%	19,11%	
	5 years			0,89	9,89%					9,78%	15,05%	1,08	11,01%	10,83%	16,66%	1,37	12,71%	12,42%	19,11%	
2000	1 year	4,35%	5,90%	0,61	7,93%	7,35%	35,00%	95,97%	4,03%	7,81%	12,01%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2 years			0,61	7,93%					7,81%	12,01%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3 years			0,61	7,93%					7,81%	12,01%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	5 years			0,61	7,93%					7,81%	12,01%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
1999	1 year	4,51%	5,90%	N/A	N/A	6,93%	35,00%	10,88%	89,12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	5 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Table 6.16 (cont'd): Discount rates Grupo Iusacell

Grupo Iusacell																			
Panel B																			
Reference Index: MSCI																			Pre-tax disount rate (pre-tax WACC) published in annual report VODAFONE
	Length of period for beta	RFR	ERP	Beta (daily)	Cost of equity	Cost of debt	Tax rate	Equity ratio	Debt Ratio	WACC	Pre-tax WACC	Beta (weekly)	Cost of equity	WACC	Pre-tax WACC	Beta (monthly)	Cost of equity	WACC	Pre-tax WACC	
2005	1 year	4,56%	5,90%	0,72	8,82%	11,90%	30,00%	90,52%	9,48%	8,78%	12,54%	2,13	17,14%	16,31%	23,30%	N/A	N/A	N/A	N/A	8.3-11.6%
	2 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3 years			0,52	7,64%					7,70%	11,00%	N/A	N/A	N/A	N/A	2,27	17,95%	17,04%	24,34%	
	5 years			0,88	9,73%					9,59%	13,71%	1,09	10,98%	10,73%	15,33%	2,31	18,20%	17,27%	24,67%	
2004	1 year	4,63%	5,90%	N/A	N/A	11,05%	33,00%	89,67%	10,33%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.1-10.3%
	2 years			0,50	7,57%					7,55%	11,27%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3 years			0,75	9,08%					8,91%	13,29%	0,77	9,16%	8,98%	13,41%	2,72	20,67%	19,30%	28,80%	
	5 years			0,87	9,76%					9,52%	14,21%	0,95	10,25%	9,95%	14,85%	2,20	17,63%	16,58%	24,74%	
2003	1 year	4,60%	5,90%	0,65	8,46%	12,26%	34,00%	88,78%	11,22%	8,42%	12,76%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7,5-10%
	2 years			0,94	10,15%					9,92%	15,02%	0,83	9,51%	9,35%	14,17%	2,48	19,20%	17,96%	27,21%	
	3 years			1,05	10,82%					10,51%	15,93%	1,12	11,18%	10,84%	16,42%	2,18	17,47%	16,42%	24,87%	
	5 years			1,03	10,67%					10,38%	15,73%	1,05	10,77%	10,47%	15,86%	2,09	16,93%	15,94%	24,15%	
2002	1 year	5,08%	5,90%	1,41	13,41%	11,87%	35,00%	91,50%	8,50%	12,92%	19,88%	1,43	13,51%	13,02%	20,03%	4,15	29,54%	27,69%	42,60%	8.8-11.5%
	2 years			1,41	13,40%					12,91%	19,87%	1,62	14,63%	14,04%	21,60%	2,50	19,86%	18,83%	28,96%	
	3 years			1,31	12,79%					12,36%	19,01%	1,41	13,42%	12,94%	19,90%	2,17	17,88%	17,01%	26,18%	
	5 years			1,31	12,79%					12,36%	19,01%	1,41	13,42%	12,94%	19,90%	2,17	17,88%	17,01%	26,18%	
2001	1 year	4,61%	5,90%	1,38	12,76%	12,71%	35,00%	93,61%	6,39%	12,47%	19,19%	1,89	15,75%	15,27%	23,49%	2,25	17,90%	17,29%	26,60%	N/A
	2 years			1,19	11,66%					11,44%	17,60%	1,38	12,77%	12,48%	19,20%	1,89	15,77%	15,29%	23,52%	
	3 years			1,19	11,66%					11,44%	17,60%	1,38	12,77%	12,48%	19,20%	1,89	15,77%	15,29%	23,52%	
	5 years			1,19	11,66%					11,44%	17,60%	1,38	12,77%	12,48%	19,20%	1,89	15,77%	15,29%	23,52%	
2000	1 year	4,35%	5,90%	N/A	N/A	7,35%	35,00%	95,97%	4,03%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	5 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
1999	1 year	4,51%	5,90%	N/A	N/A	6,93%	35,00%	10,88%	89,12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	5 years			N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Table 6.17: Summary discount rates Grupo Iusacell

	Discount Rates Grupo Iusacell						Discount rate published in annual report Vodafone
	Mexbold			MSCI			
	Max	Min	Range	Max	Min	Range	
2005	21,79%	12,77%	9,02%	24,67%	11,00%	13,67%	8,30%-11,60%
2004	27,44%	15,49%	11,95%	28,80%	11,27%	17,53%	8,10%-10,30%
2003	28,75%	16,11%	12,64%	27,21%	12,76%	14,45%	7,50%-10,00%
2002	22,62%	16,69%	5,93%	28,96%	19,01%	9,95%	8,80%-11,50%
2001	19,11%	15,05%	4,06%	23,52%	17,60%	5,92%	N/A
2000	12,01%	12,01%	0,00%	N/A	N/A	N/A	N/A
1999	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The main result shows a very significant discrepancy between the discount rates calculated independently and the discount rates disclosed by Vodafone. This result stands even assuming that the discount rates for the IGU including Grupo Iusacell must have ranged at the top of the Vodafone discount rates.[167] If one concentrates on the years in which Grupo Iusacell was part of the Vodafone Group (2001-2003), it is clear that in these years the discrepancies are particularly distinctive. Since Vodafone conducted goodwill impairments of its entire interest in Grupo Iusacell in 2002 and 2003, the findings suggest that discount rates might have provided some opportunity to time (delay) the impairments (by influencing their amounts and, therefore, their influence on the P&L) rather than impact the impairment decision itself.

The evidence also suggests that for subsidiaries with financial problems (and, therefore, more turbulent share price reactions) the discretionary opportunities available to management in the discount rate calculation increase.

6.5.2.2 Cable & Wireless Plc

The same parameters which were used for Vodafone and Grupo Iusacell were applied in the calculation of the discount rates for C&W:

[167] Since the pre-tax cash flows of the IGUs were not known the pre-tax rates in the independent calculation were not calculated in an iterative process but were approximated by using the after-tax discount rates. This is also a methodology widely used in practice (see Ernst & Young, 2003, p. 1044). Iterative pre-tax rates would have been slightly lower, however, not low enough in order to close the gap (4% + for the years 2002-2004) calculated between the independent and the disclosed tax rates.

Table 6.18: Derivation of beta factors for C&W Plc (Panel A: FTSE 100)[168]

CABLE & WIRELESS PLC

Reference Index: FTSE 100 Total Return

2005	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	1,18	13,39%	251	6,21	yes	1,41	18,31%	51	3,31	yes	1,61	10,16%	12	1,06	no
2 years	1,17	13,18%	505	8,74	yes	1,07	10,95%	103	3,53	yes	1,81	17,69%	24	2,17	yes
3 years	1,14	14,86%	757	11,48	yes	0,46	1,41%	155	1,48	no	1,27	11,41%	35	2,06	yes
5 years	1,39	22,25%	1261	18,98	yes	1,17	11,68%	260	5,84	yes	1,78	22,88%	60	4,15	yes

2004	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,17	13,01%	254	6,14	yes	0,84	6,82%	51	1,89	no	1,67	17,74%	12	1,47	no
2 years	1,14	15,00%	506	9,43	yes	0,35	0,81%	103	0,91	no	1,30	12,04%	23	1,70	no
3 years	1,24	19,42%	757	13,49	yes	0,78	5,39%	155	2,95	yes	1,49	15,83%	35	2,49	yes
5 years	1,39	22,17%	1263	18,95	yes	1,23	13,05%	260	6,22	yes	1,59	19,56%	60	3,76	yes

2003	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,13	15,26%	252	6,71	yes	0,11	0,07%	51	0,19	no	0,93	5,24%	11	0,71	no
2 years	1,25	20,49%	503	11,36	yes	0,71	4,37%	103	2,15	yes	1,11	8,57%	23	1,40	no
3 years	1,42	24,03%	756	15,44	yes	1,14	10,77%	156	4,31	yes	1,56	17,96%	36	2,73	yes
5 years	1,41	25,58%	1261	20,80	yes	1,30	15,92%	260	6,99	yes	1,57	20,52%	60	3,87	yes

2002	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,51	39,19%	250	12,64	yes	1,44	41,80%	51	5,93	yes	2,08	55,75%	11	3,37	yes
2 years	1,79	37,51%	503	17,34	yes	1,86	40,66%	104	8,36	yes	2,64	65,73%	24	6,50	yes
3 years	1,63	31,06%	756	18,43	yes	1,77	34,48%	156	9,00	yes	1,89	32,91%	36	4,08	yes
5 years	1,48	31,25%	1262	23,93	yes	1,53	31,77%	260	10,96	yes	1,68	33,54%	60	5,41	yes

2001	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	2,14	38,50%	252	12,51	yes	2,45	45,06%	52	6,40	yes	3,33	72,64%	12	5,15	yes
2 years	1,71	28,54%	505	14,17	yes	2,00	33,90%	104	7,23	yes	1,80	26,81%	24	2,84	yes
3 years	1,59	31,84%	757	18,78	yes	1,85	34,92%	156	9,09	yes	1,86	31,82%	36	3,98	yes
5 years	1,44	28,67%	1262	22,50	yes	1,51	28,84%	260	10,23	yes	1,55	28,11%	59	4,72	yes

2000	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	1,28	19,02%	253	7,68	yes	1,50	22,75%	52	3,84	yes	0,63	4,80%	12	0,71	no
2 years	1,37	29,40%	505	14,47	yes	1,55	29,91%	104	6,60	yes	1,25	18,05%	24	2,20	yes
3 years	1,26	26,80%	759	16,65	yes	1,27	24,72%	156	7,11	yes	1,07	17,01%	36	2,64	yes
5 years	1,23	24,95%	1263	20,48	yes	1,21	22,54%	261	8,68	yes	1,02	14,14%	60	3,09	yes

1999	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,43	42,23%	252	13,52	yes	1,67	41,93%	51	5,95	yes	1,95	43,15%	12	2,76	yes
2 years	1,25	33,37%	506	15,89	yes	1,21	28,61%	103	6,36	yes	1,36	30,48%	24	3,11	yes
3 years	1,23	30,94%	757	18,39	yes	1,19	26,71%	155	7,47	yes	1,38	29,18%	35	3,69	yes
5 years	1,25	30,94%	1262	23,76	yes	1,21	28,68%	260	10,19	yes	1,33	29,25%	60	4,90	yes

[168] The beta factor is determined in a regression of the company stock returns against the returns of a representative index returns (reflecting the market portfolio). For further details see section 3.1.3.

Table 6.18 (cont'd): Derivation of beta factors for C&W Plc (Panel B: MSCI)

CABLE & WIRELESS PLC

Reference Index: MSCI

2005	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	0,86	9,52%	251	5,12	yes	1,10	20,07%	51	3,51	yes	2,10	31,05%	12	2,12	no
2 years	0,90	8,78%	505	6,96	yes	0,99	14,17%	103	4,08	yes	2,02	26,80%	24	2,84	yes
3 years	0,96	7,91%	757	8,05	yes	0,55	2,39%	155	1,94	no	1,40	15,23%	35	2,43	yes
5 years	1,15	11,90%	1261	13,04	yes	1,04	10,37%	260	5,46	yes	1,62	25,06%	60	4,40	yes

2004	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	0,92	8,36%	254	4,79	yes	0,86	9,69%	51	2,29	yes	1,78	21,02%	12	1,63	no
2 years	0,98	7,77%	506	6,52	yes	0,45	1,48%	103	1,23	no	1,38	14,72%	23	1,90	no
3 years	1,07	10,44%	757	9,38	yes	0,85	6,98%	155	3,39	yes	1,42	18,34%	35	2,72	yes
5 years	1,14	11,23%	1263	12,63	yes	1,02	9,82%	260	5,30	yes	1,57	24,75%	60	4,37	yes

2003	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	0,98	7,37%	252	4,46	yes	0,22	0,31%	51	0,39	no	1,05	7,82%	11	0,87	no
2 years	1,10	10,69%	503	7,75	yes	0,79	5,82%	103	2,50	yes	1,10	11,62%	23	1,66	no
3 years	1,21	12,53%	756	10,39	yes	1,00	9,01%	156	3,91	yes	1,39	19,85%	36	2,90	yes
5 years	1,18	12,01%	1079	12,13	yes	1,07	10,98%	230	5,30	yes	1,52	28,36%	60	4,79	yes

2002	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,33	22,48%	250	8,48	yes	1,47	47,29%	51	6,63	yes	1,22	39,69%	11	2,43	yes
2 years	1,43	19,75%	503	11,10	yes	1,56	30,49%	104	6,69	yes	1,73	49,27%	24	4,62	yes
3 years	1,30	15,29%	756	11,67	yes	1,39	22,75%	156	6,73	yes	1,71	39,72%	36	4,73	yes
5 years	1,31	16,07%	837	12,65	yes	1,43	25,60%	190	8,04	yes	1,63	45,23%	60	6,92	yes

2001	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,55	18,67%	252	7,58	yes	1,76	23,72%	52	3,94	yes	2,27	55,42%	12	3,53	yes
2 years	1,29	13,00%	505	8,67	yes	1,36	16,43%	104	4,48	yes	1,89	39,18%	24	3,76	yes
3 years	1,31	13,96%	575	9,64	yes	1,41	19,52%	126	5,48	yes	1,76	45,49%	36	5,33	yes
5 years	1,30	14,07%	597	9,87	yes	1,36	19,78%	149	6,02	yes	1,49	38,20%	59	5,94	yes

2000	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%	Raw Beta	R^2	Data points	t-value	Significant 95%
1 year	0,91	6,55%	253	4,20	yes	0,68	7,22%	52	1,97	no	-0,57	26,31%	12	1,89	no
2 years	0,98	10,74%	323	6,21	yes	0,90	13,57%	74	3,36	yes	0,26	3,00%	24	0,83	no
3 years	0,97	10,87%	334	6,36	yes	0,88	13,48%	86	3,62	yes	0,32	4,15%	36	1,21	no
5 years	0,95	10,57%	358	6,49	yes	0,82	11,88%	110	3,82	yes	0,37	4,63%	60	1,68	no

1999	daily					weekly					monthly				
	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%	Raw Beta	R^2	Data-points	t-value	Significant 95%
1 year	1,14	20,02%	70	4,13	yes	1,18	30,81%	21	2,91	yes	0,70	17,96%	12	1,48	no
2 years	1,10	19,51%	81	4,38	yes	1,03	24,47%	33	3,17	yes	0,61	13,75%	24	1,87	no
3 years	1,07	18,93%	92	4,58	yes	1,00	24,31%	44	3,67	yes	0,70	16,08%	35	2,51	yes
5 years	1,05	18,37%	117	5,09	yes	0,91	18,69%	69	3,92	yes	0,74	14,75%	60	3,17	yes

The beta factors derived for C&W are differing widely depending on the parameter constellation chosen for the derivation. The following table provides the key summary:

Table 6.19: Summary beta factors C&W

	Beta Factors Cable & Wireless					
	FTSE 100			MSCI		
	Max	Min	Range	Max	Min	Range
2005	1,81	1,07	0,74	2,02	0,86	1,16
2004	1,59	0,78	0,81	1,57	0,85	0,73
2003	1,57	0,71	0,86	1,52	0,79	0,73
2002	2,64	1,44	1,20	1,73	1,30	0,43
2001	2,45	1,44	1,01	1,89	1,29	0,60
2000	1,55	1,02	0,53	0,98	0,82	0,16
1999	1,67	1,19	0,48	1,18	0,70	0,47

Thus, based on length of period and intervals, beta factors can differ up to 1.20 in an individual year (2002) when using FTSE 100 as a reference index, or up to 1.16 (2005) referring to the MSCI. Some trends can be observed based on the findings: beta factors referring to the MSCI are generally lower than the ones referring to the FTSE 100 and the range of the values is narrower (with the exception of 2005). A trend of higher betas in 2002, 2003 and 2005 is observed for both reference indices and shows that the parameters of the beta derivation will probably not change the general direction of the results but could be used to fine-tune the betas.

Furthermore, intervalling effect is observed in both MSCI and FTSE 100 betas with monthly betas higher than the daily or weekly betas for the period 2001-2005. The length of period had also significant impact: for example in 2003 the FTSE 100 weekly beta factor based on 2 years of return data was 0.71, while the one based on 5 years of data was 1.30. In 2002, the FTSE 100 monthly beta factor based on 2 years of data was 2.68 and 1.68 based on 5 years. In 2001, for FTSE 100 daily betas 1 year of return data yielded 2.14 and 1.44 based on 5 years. Since the betas based on shorter lengths of period in 2001 are higher than the ones based on longer periods, it can be deduced that 2001 was a turbulent year on capital markets. This effect can be traced to 2002 - 2004 when the betas based on longer periods become higher while the betas based on shorter periods decrease gradually.

The discount rates calculated on the basis of the above beta factors are presented below[169]:

Table: 6.20: Discount Rates C&W Plc

CABLE & WIRELESS PLC

Panel A

Reference Index: FTSE 100 Total Return

	Length of period for beta	RFR	ERP	Beta (daily)	Cost of equity	Cost of debt	Tax rate	Equity ratio	Debt Ratio	WACC	Pre-tax WACC	Beta weekly	Cost of equity	WACC	Pre-tax WACC	Beta monthly	Cost of equity	WACC	Pre-tax WACC	Disount rate published in annual report
2005	1 year	4,56%	5,90%	1,18	11,51%	8,03%	28,01%	77,35%	22,65%	10,21%	14,18%	1,41	12,90%	11,29%	15,68%	N/A	N/A	N/A	N/A	8.00%-40.00%
	2 years			1,17	11,48%					10,19%	14,16%	1,07	10,87%	9,72%	13,50%	1,81	15,23%	13,09%	18,18%	
	3 years			1,14	11,31%					10,06%	13,97%	N/A	N/A	N/A	N/A	1,27	12,06%	10,63%	14,77%	
	5 years			1,39	12,78%					11,20%	15,55%	1,17	11,47%	10,18%	14,14%	1,78	15,04%	12,94%	17,97%	
2004	1 year	4,63%	5,90%	1,17	11,51%	7,55%	28,75%	75,93%	24,07%	10,04%	14,09%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.50 -20.00%
	2 years			1,14	11,37%					9,93%	13,93%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3 years			1,24	11,96%					10,37%	14,56%	0,78	9,26%	8,32%	11,68%	1,49	13,41%	11,47%	16,11%	
	5 years			1,39	12,80%					11,01%	15,46%	1,23	11,87%	10,31%	14,47%	1,59	14,02%	11,94%	16,76%	
2003	1 year	4,60%	5,90%	1,13	11,26%	4,99%	29,53%	67,99%	32,01%	8,78%	12,46%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.00%
	2 years			1,25	11,95%					9,25%	13,13%	0,71	8,79%	7,10%	10,08%	N/A	N/A	N/A	N/A	
	3 years			1,42	13,00%					9,97%	14,14%	1,14	11,31%	8,81%	12,51%	1,56	13,83%	10,53%	14,94%	
	5 years			1,41	12,91%					9,90%	14,05%	1,30	12,28%	9,48%	13,45%	1,57	13,86%	10,55%	14,97%	
2002	1 year	5,08%	5,90%	1,51	14,01%	6,20%	30,72%	79,98%	20,02%	12,06%	17,41%	1,44	13,59%	11,73%	16,93%	2,08	17,38%	14,76%	21,30%	11.00%
	2 years			1,79	15,65%					13,38%	19,31%	1,86	16,05%	13,70%	19,78%	2,64	20,66%	17,38%	25,09%	
	3 years			1,63	14,73%					12,64%	18,24%	1,77	15,52%	13,27%	19,15%	1,89	16,22%	13,83%	19,96%	
	5 years			1,48	13,81%					11,91%	17,18%	1,53	14,13%	12,16%	17,55%	1,68	14,99%	12,85%	18,55%	
2001	1 year	4,61%	5,90%	2,14	17,21%	5,97%	31,49%	83,99%	16,01%	15,11%	22,06%	2,45	19,07%	16,67%	24,33%	3,33	24,25%	21,02%	30,68%	N/A
	2 years			1,71	14,70%					13,00%	18,98%	2,00	16,40%	14,43%	21,06%	1,80	15,25%	13,46%	19,65%	
	3 years			1,59	14,00%					12,41%	18,12%	1,85	15,52%	13,69%	19,99%	1,86	15,57%	13,73%	20,04%	
	5 years			1,44	13,13%					11,68%	17,05%	1,51	13,55%	12,03%	17,56%	1,55	13,75%	12,21%	17,82%	
2000	1 year	4,35%	5,90%	1,28	11,90%	7,41%	32,36%	56,45%	43,55%	8,90%	13,15%	1,50	13,17%	9,62%	14,22%	N/A	N/A	N/A	N/A	N/A
	2 years			1,37	12,42%					9,19%	13,59%	1,55	13,51%	9,81%	14,50%	1,25	11,73%	8,80%	13,02%	
	3 years			1,26	11,78%					8,83%	13,06%	1,27	11,83%	8,86%	13,10%	1,07	10,66%	8,20%	12,12%	
	5 years			1,23	11,61%					8,74%	12,91%	1,21	11,49%	8,67%	12,81%	1,02	10,38%	8,04%	11,89%	
1999	1 year	4,51%	5,90%	1,43	12,93%	8,80%	32,69%	43,64%	56,36%	8,98%	13,34%	1,67	14,37%	9,61%	14,27%	1,95	15,99%	10,31%	15,32%	N/A
	2 years			1,25	11,89%					8,53%	12,67%	1,21	11,66%	8,43%	12,52%	1,36	12,52%	8,80%	13,08%	
	3 years			1,23	11,76%					8,47%	12,58%	1,19	11,51%	8,36%	12,42%	1,38	12,66%	8,86%	13,17%	
	5 years			1,25	11,87%					8,52%	12,65%	1,21	11,67%	8,43%	12,52%	1,33	12,33%	8,72%	12,95%	

[169] The WACC is defined as the sum of the cost of equity and the cost of debt weighted by the percentage of their corresponding capital (equity or debt) from total capital. For further details see section 3.1.3.

Table: 6.20 (cont'd): Discount Rates C&W Plc

CABLE & WIRELESS PLC

Panel B

Reference Index: MSCI

	Length of period for beta	RFR	ERP	Beta (daily)	Cost of equity	Cost of debt	Tax rate	Equity ratio	Debt Ratio	WACC	Pre-tax WACC	Beta weekly	Cost of equity	WACC	Pre-tax WACC	Beta monthly	Cost of equity	WACC	Pre-tax WACC	Disount rate published in annual report
2005	1 year	4,56%	5,90%	0,86	9,62%	8,03%	28,01%	77,35%	22,65%	8,75%	12,15%	1,10	11,07%	9,87%	13,72%	N/A	N/A	N/A	N/A	8.00%-40.00%
	2 years			0,90	9,89%					8,96%	12,44%	0,99	10,38%	9,34%	12,97%	2,02	16,46%	14,04%	19,50%	
	3 years			0,96	10,23%					9,22%	12,81%	N/A	N/A	N/A	N/A	1,40	12,80%	11,21%	15,57%	
	5 years			1,15	11,36%					10,10%	14,03%	1,04	10,69%	9,58%	13,30%	1,62	14,10%	12,22%	16,97%	
2004	1 year	4,63%	5,90%	0,92	10,08%	7,55%	28,75%	75,93%	24,07%	8,94%	12,55%	0,86	9,68%	8,64%	12,13%	N/A	N/A	N/A	N/A	10.50 -20.00%
	2 years			0,98	10,39%					9,19%	12,89%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	3 years			1,07	10,96%					9,62%	13,50%	0,85	9,62%	8,60%	12,07%	1,42	12,99%	11,16%	15,66%	
	5 years			1,14	11,37%					9,93%	13,93%	1,02	10,64%	9,37%	13,15%	1,57	13,92%	11,86%	16,65%	
2003	1 year	4,60%	5,90%	0,98	10,38%	4,99%	29,53%	67,99%	32,01%	8,18%	11,61%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.00%
	2 years			1,10	11,06%					8,65%	12,27%	0,79	9,23%	7,40%	10,51%	N/A	N/A	N/A	N/A	
	3 years			1,21	11,73%					9,10%	12,91%	1,00	10,51%	8,27%	11,74%	1,39	12,80%	9,83%	13,95%	
	5 years			1,18	11,58%					9,00%	12,77%	1,07	10,90%	8,53%	12,11%	1,52	13,55%	10,34%	14,67%	
2002	1 year	5,08%	5,90%	1,33	12,90%	6,20%	30,72%	79,98%	20,02%	11,18%	16,14%	1,47	13,77%	11,88%	17,14%	1,22	12,26%	10,67%	15,39%	11.00%
	2 years			1,43	13,52%					11,68%	16,85%	1,56	14,28%	12,28%	17,72%	1,73	15,28%	13,08%	18,88%	
	3 years			1,30	12,73%					11,04%	15,94%	1,39	13,27%	11,48%	16,57%	1,71	15,15%	12,98%	18,73%	
	5 years			1,31	12,83%					11,12%	16,05%	1,43	13,52%	11,68%	16,85%	1,63	14,70%	12,62%	18,22%	
2001	1 year	4,61%	5,90%	1,55	13,78%	5,97%	31,49%	83,99%	16,01%	12,23%	17,85%	1,76	14,98%	13,23%	19,32%	2,27	18,01%	15,78%	23,03%	N/A
	2 years			1,29	12,22%					10,92%	15,93%	1,36	12,61%	11,25%	16,42%	1,89	15,75%	13,89%	20,27%	
	3 years			1,31	12,33%					11,02%	16,08%	1,41	12,94%	11,52%	16,82%	1,76	15,02%	13,27%	19,38%	
	5 years			1,30	12,28%					10,97%	16,01%	1,36	12,64%	11,27%	16,46%	1,49	13,38%	11,89%	17,36%	
2000	1 year	4,35%	5,90%	0,91	9,72%	7,41%	32,36%	56,45%	43,55%	7,67%	11,34%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2 years			0,98	10,12%					7,89%	11,67%	0,90	9,66%	7,63%	11,29%	N/A	N/A	N/A	N/A	
	3 years			0,97	10,09%					7,88%	11,65%	0,88	9,54%	7,57%	11,19%	N/A	N/A	N/A	N/A	
	5 years			0,95	9,97%					7,81%	11,54%	0,82	9,16%	7,35%	10,87%	N/A	N/A	N/A	N/A	
1999	1 year	4,51%	5,90%	1,14	11,22%	8,80%	32,69%	43,64%	56,36%	8,24%	12,23%	1,18	11,45%	8,33%	12,38%	N/A	N/A	N/A	N/A	N/A
	2 years			1,10	10,97%					8,12%	12,07%	1,03	10,58%	7,95%	11,81%	N/A	N/A	N/A	N/A	
	3 years			1,07	10,81%					8,06%	11,97%	1,00	10,43%	7,89%	11,72%	0,70	8,67%	7,12%	10,58%	
	5 years			1,05	10,73%					8,02%	11,92%	0,91	9,90%	7,66%	11,38%	0,74	8,90%	7,22%	10,73%	

The range of the pre-tax discount rates depending on the reference index is summarised in the following table:

Table 6.21: Summary discount rates C&W

	Discount Rates Cable & Wireless						Disount rate published in annual report
	FTSE 100			MSCI			
	Max	Min	Range	Max	Min	Range	
2005	18,18%	13,50%	4,68%	19,50%	12,15%	7,35%	8.00%-40.00%
2004	16,76%	11,68%	5,08%	16,65%	12,07%	4,58%	10.50 -20.00%
2003	14,97%	10,08%	4,89%	14,67%	10,51%	4,17%	14.00%
2002	25,09%	16,93%	8,16%	18,88%	15,94%	2,94%	11.00%
2001	24,33%	17,05%	7,28%	20,27%	15,93%	4,34%	N/A
2000	14,50%	11,89%	2,61%	11,67%	10,87%	0,80%	N/A
1999	14,27%	12,42%	1,85%	12,38%	10,58%	1,80%	N/A

In the case of C&W the independently calculated discount rates uncover different trends than for Vodafone. In years 2003 - 2005 the discount rates are similar for both reference indices. In 2001 and 2002, however, the FTSE 100 based discount rates are a lot higher than the MSCI ones (in this aspect the discount rates for C&W react similarly to the Vodafone ones). Moreover, while the range of the FTSE 100 discount rates in these years also increases compared to years 2003-2005, the range of the MSCI rates decreases. In fact, the range of the MSCI rates is highest in 2005 when it is almost twice as wide as for the FTSE 100 rates, thus providing more room for discretion (the opposite is true in 2001 and 2002).

The findings can only be compared to rates disclosed by C&W in years 2002 to 2005, since no information on discount rates was provided by the Group in years when there was no goodwill impairment (with the exception of 2005). Opposite to the results for Vodafone and Grupo Iusacell, the evidence for C&W suggests that in 2005, 2004 and, to some extent 2003, the independently calculated discount rates have a similar value range as the rates reported by the Group. In 2004, C&W has reported discount rates for impairment purposes between 10.5 and 20%; the rates calculated on the basis of publicly available information are between 11.68% and 16.76% (FTSE 100) and between 12.07% and 16.65% (MSCI). The fact that the ranges for both indices are narrower than the range of the discount rates C&W used could be explained by looking at the definitions of the discount rates: while C&W disclosed rates which have been used in the calculations of values in use for the different IGUs, the independently calculated discount rates are calculated for the whole company and should per

definition represent the weighted average of the discount rates for the IGUs. Since no information is available either on the exact IGUs of the company or the specific discount rates used in the goodwill impairment calculation an exact comparison is not possible. Nevertheless, a rough match is feasible and the deduction can be made that the range of the independently calculated discount rates 'fits' into the range of the disclosed ones.

For 2003 a more precise statement can be made. C&W has disclosed only one discount rate (14.0%) for this year which is stated to be 'the estimated weighted average cost of capital for Cable & Wireless' (C&W Annual Report 2003, p. 42) and which can be directly compared to the independently calculated discount rates. While the disclosed discount rate does match the upper end of the range calculated in the investigation (14.97% for FTSE 100 and 14.67% for MSCI) the findings illustrate how much room for discretion managers had in this year. The evidence for 2003 is, however, best interpreted in combination with the findings for 2002. In 2002, a very significant discrepancy is observed between the independently calculated and the disclosed discount rates. While the minimum rates calculated were 16.93% (FTSE 100) and 15.94% (MSCI) C&W had disclosed a discount rate which is significantly lower (11.0%). Since 2002 and 2003 were the years during which the Group had large portions of goodwill written-off (in 2004 the impairment amount was negligible compared to 2002 and 2003 as substantially all goodwill had been written off by the end of 2003, see C&W Annual Report 2004, p. 28) the use of discount rates which were lower than the ones deduced based on capital market data in one year and the discount rates which were at the top end of the independently calculated ones in the following year suggests income smoothing by spreading the impairment write-off over two years..

6.5.2.3 Managerial discretion in the denominator: Conclusion

The analysis in the previous sections illustrates the opportunities for managerial discretion in the impairment calculation by concentrating on discount rate effects in the denominator of the value in use formula.

The findings provide insights into the discretionary potential of discount rates by altering specific parameters used in the derivation of the beta factors.

For Vodafone and Grupo Iusacell the calculated discount rates are significantly higher than the ones disclosed by the Group in almost all cases. The findings, therefore, suggest that managers might have used additional discretionary parameters to adjust the discount rates to their needs. The evidence on C&W shows that the disclosed and the calculated discount rates move in a similar range for 2005 and 2004. However, the findings for 2002 and 2003 suggest that managers might have used discount rates to avoid burdening earnings in years of financial and economic turbulence.

Overall, the results lead to one material conclusion. The disclosures required on discount rates for goodwill impairment are not informative and do not support the understanding of financial statements regarding goodwill impairment. The above investigation has shown that despite the fact that discount rates were disclosed by both companies according to the requirements of FRS 11 the goodwill impairment decisions and amounts are still not transparent. In order to understand better the goodwill impairment process and to increase the transparency of financial statements, more precise information regarding the parameters of the discount rate calculation is needed, in particular the parameters of the derivation of the beta factor.

Additionally, the findings show clearly that even by using parameters which are commonly applied in practice and argued for in the literature managers still have a myriad of opportunities to 'customise' discount rates and, through them, goodwill impairment. This is a very worrying result, considering the aim of regulators that impairment (under IFRS, US GAAP) should reduce the noise and the lack of accuracy created by amortisation.

6.6 CONCLUSION AND FUTURE RESEARCH

This study concentrates on several aspects of the goodwill impairment process and its underlying causes. It addresses gaps in existing literature by investigating two drivers of economic performance (competition and industry regulation) and discussing their effect on goodwill impairment. Additionally, it illustrates the extent of potential for managerial opportunism and the quality of impairment disclosures by analysing (disclosed) impairment assumptions and discount rates used for the impairment calculation.

The study contributes to academic research on goodwill impairment in several ways. First, it is based on a combination of quantitative and qualitative methods and is

presented in the form of case studies. This technique allows an individualised analysis of the research questions and aims to provide ideas for future research in the area of goodwill impairment. Second, it addresses variables which have not been investigated in previous studies on goodwill impairment (such as the drivers of economic performance measures, or the beta factor derivation). Third, the investigation is conducted within the accounting framework of UK GAAP which allows both impairment and amortisation unlike other GAAP discussed in previous research. Finally, the companies investigated in the study are UK companies representing a different sample from the data used in prior research.

The main results show a strong indication that industrial regulation – by means of market liberalisation and increased competition, or price reductions – is more than likely to have an effect on goodwill impairment. These results imply that the actions of regulators not only have a direct effect on company profits (due to smaller revenues as a result of regulation) but also an indirect effect (due to their impact on the impairment charge as well as on the value of goodwill on the balance sheet). Therefore, presence of strong regulation in a company's sector may provide an early indicator of potential for goodwill impairment and could be a useful screening mechanism for users (for example investors) and others (for example auditors, accounting regulators) who want to focus on sectors likely to suffer impairments.

As regards the investigation of managerial incentives as a cause for goodwill impairment, the main results illustrate that the discount rate alone provides numerous opportunities for manipulation of the impairment charge. While various parameters commonly used in practice were varied in the calculation of the discount rate, the independently determined discount rates were still mostly higher than the rates disclosed by the companies. Additionally, for subsidiaries experiencing financial troubles, the room for managerial discretion in the discount rates may increase even further.

Finally, impairment disclosures were explored in order to further analyse the impairment assumptions. The main result shows very poor quality of impairment disclosures including mostly general statements about the impairment assumptions and

very few quantitative numbers. This might be due partly to non-compliance with FRS 11, or, to inadequate disclosure requirements of the standard.[170]

The evidence in this study points to several issues which might be interesting for future research. As regards the drivers of economic performance and their impact on goodwill impairment, this study represents a preliminary investigation. In this context future research could concentrate on the quantification of both variables investigated here and on quantitative research of their relationship to goodwill impairment. Additionally, further drivers of economic performance could be added to the investigation with the ultimate aim to increase understanding and the transparency of the goodwill impairment process. Furthermore, the results of the two case studies in this preliminary investigation cannot be generalised until tested using larger cross-sector samples.

The topic of discount rate calculation and disclosures also remains open to discussion as IFRS regulations referring to the goodwill impairment calculation are similar to the ones required under FRS 11. Therefore, possible paths for future research in this area include a large frame investigation including more companies (in different countries) and testing whether the discretionary potential illustrated here is a common phenomenon. Additionally, studies could concentrate on the interface of valuation standards (specific to a country[171]) and accounting standards to deduce standardised methods for deriving beta factors for impairment purposes aiming to reduce discretionary behaviour of management.

[170] This compliance issue, however, is not included in the scope of this thesis and is, therefore, not pursued further.

[171] For example, the IACVA valuation standards or the valuation standards of the Institute of Chartered Accountants (Institut der Wirtschaftsprüfer, IDW) in Germany.

Table 6.22: Financial data of the case study companies (1999-2005)

Summary Key Financial Information Vodafone							
£	2005	2004	2003	2002	2001	2000	1999
Group turnover (mln)	33,133	33,559	30,375	22,845	15,004	7,873	3,360
Profit/loss for FY (mln)	-7,54	-9,015	-9,819	-16,155	-9,885	542	637
Equity shareholders' funds (mln)	99,317	111,924	128,630	130,540	144,979	140,589	815
Net assets (mln)	102,135	114,931	131,493	133,395	147,400	142,109	924
Total assets (mln)	133,906	147,129	163,239	162,867	172,362	153,541	3,644
Net cash inflow from operating activities (mln)	12,713	12,317	11,142	8,102	4,587	2,510	1,045
Net cash outflow for capex and fin. investment	-4,768	-4,267	-5,359	-4,441	-18,988	-752	-688
Company share price at FYE	140.5p	128.75p	113p	129.75p	193p	348.5p	1,151p
Earnings/loss per share (diluted)	-11.39p	-13.24p	-14.41p	-23.77p	-16.09p	1.98p	20.52p
Weighted average nr shares (diluted) (mln)	66,196	68,096	68,155	67,961	61,439	27,360	3,102
Cash dividends per share	4.07p	2.03p	1.69p	1.47p	1.40p	1.34p	6.36p
Net book value goodwill (mln)	68,673	78,780	92,833	91,695	94,797	21,511	173
% goodwill of total assets	51.3%	53.5%	56.9%	56.3%	55.0%	14.0%	4.7%

Summary Key Financial Information Cable & Wireless							
£	2005	2004	2003	2002	2001	2000	1999
Group turnover (mln)	3,222	3,671	4,391	5,911	8,099	9,201	7,944
Profit/loss for FY (mln)	302	-237	-6,533	-5,123	2,632	3,724	908
Equity shareholders' funds (mln)	1,818	1,744	2,149	9,024	15,380	8,096	4,571
Net assets (mln)	2,137	1,993	2,520	9,423	16,511	11,125	7,997
Total assets (mln)	5,000	4,967	7,362	16,308	23,853	21,528	17,487
Net cash inflow from operating activities (mln)	346	73	95	119	1,348	2,236	2,602
Net cash outflow for capex and fin. investment	-268	-41	-215	-1,699	-4,125	-1,702	-1,936
Company share price at FYE	129.25p	129.75p	69p	223.75p	475p	1,178p	774p
Earnings/loss per share (diluted)	12.3p	-10.2p	-280.4p	-187.4p	95.4p	150.9p	37.5p
Weighted average nr shares (diluted) (mln)	2,528	2,328	2,336	2,735	2,761	2,470	2,434
Cash dividends per share	3.8p	3.15p	1.6p	16.5p	16.5p	15.0p	13.5p
Net book value goodwill (mln)	88	0	10	2,896	4,903	1,762	1,150
% goodwill of total assets	1.8%	0.0%	0.1%	17.8%	20.6%	8.2%	6.6%

Sources: Annual reports, Bloomberg, Group Websites

Table 6.23: Development of goodwill during the investigation period (1999-2005) for Vodafone Plc

VODAFONE GROUP PLC Cost	£ m	Change in goodwill	£ m	Net book v	£ m
01. Apr 98	---	*01. Apr 98*	---		
Exchange movements	10	Exchange movements	0		
Acquisitions	171	Amortisation charge	8		
Additions	-				
31-Mar-99	181	*31-Mar-99*	8	*31-Mar-99*	173
				31-Mar-98	---
01. Apr 99	181	*01. Apr 99*	8		
Exchange movements	-431	Exchange movements	4		
Acquisitions	22,447	Amortisation charge	674		
Additions	-				
31-Mar-00	22,197	*31-Mar-00*	686	*31-Mar-00*	21,511
				31-Mar-99	173
01. Apr 00	22,197	*01. Apr 00*	686		
Exchange movements	2,561	Exchange movements	11		
Acquisitions	87,185	Amortisation charge	9,585		
Additions	-				
Reclassifications from associated undertakings	11,49				
Disposals	-18,963	Disposals	-609		
31-Mar-01	104,470	*31-Mar-01*	9,673	*31-Mar-01*	94,797
				31-Mar-00	21,511
01. Apr 01	104,482	*01. Apr 01*	9,671		
Exchange movements	-2,047	Exchange movements	-54		
Acquisitions	4,938	Amortisation charge	10,962		
Additions	-	**Impairment charge**	**4,353**		
Reclassifications from associated undertakings	9,254				
31-Mar-02	116,627	*31-Mar-02*	24,932	*31-Mar-02*	91,695
				31-Mar-01	94,811
01. Apr 02	116,627	01. Apr 02	24,932		
Exchange movements	13,534	Exchange movements	3,811		
Acquisitions	3,290	Amortisation charge	11,875		
Additions	-				
Reclassifications from associated undertakings	-	Reclassifications from associated undertakings	-		
31-Mar-03	133,451	*31-Mar-03*	40,618	*31-Mar-03*	92,833
				31-Mar-02	91,695
01. Apr 03	133,451	01. Apr 03	40,618		
Exchange movements	-4,101	Exchange movements	-1,709		
Acquisitions	1,434	Amortisation charge	13,095		
Additions	-				
Reclassifications from associated undertakings	-				
Disposals	-407	Disposals	-407		
31-Mar-04	130,377	*31-Mar-04*	51,597	*31-Mar-04*	78,780
				31-Mar-03	92,833
01. Apr 04	130,377	01. Apr 04	51,597		
Exchange movements	2,737	Exchange movements	1,323		
Acquisitions	1,757	Amortisation charge	12,929		
Additions	-	**Impairment charge**	315		
Reclassifications from associated undertakings	-				
Disposals	-52	Disposals	-18		
31-Mar-05	134,819	*31-Mar-05*	66,146	*31-Mar-05*	68,673
				31-Mar-04	78,780

Table 6.24: Development of goodwill during the investigation period (1999-2005) for C&W Plc

CABLE & WIRELESS PLC Cost	£ m	Change in goodwill	£ m	Net book v	£ m
01. Apr 98	---	*01. Apr 98*	---		
Exchange movements	25	Exchange movements	2		
Acquisitions		Amortisation charge	61		
Additions	1,188				
31-Mar-99	1,213	*31-Mar-99*	63	*31-Mar-99*	1,150
				31-Mar-98	---
01. Apr 99	1,213	*01. Apr 99*	63		
Exchange movements	51	Exchange movements	5		
Acquisitions		Amortisation charge	180		
Additions	746				
31-Mar-00	2,010	*31-Mar-00*	248	*31-Mar-00*	1,762
				31-Mar-99	1,150
01. Apr 00	2,010	*01. Apr 00*	248		
Exchange movements	122	Exchange movements	26		
Acquisitions		Amortisation charge	469		
Additions	3,626				
Reclassifications from associated undertakings					
Disposals	-125	Disposals	-13		
31-Mar-01	5,633	*31-Mar-01*	730	*31-Mar-01*	4,903
				31-Mar-00	1,762
01. Apr 01	5,633	*01. Apr 01*	730		
Exchange movements		Exchange movements	-3		
Acquisitions		Amortisation charge	562		
Additions	631	**Impairment charge**	**2,007**		
Reclassifications from associated undertakings	-12				
Disposals	-66	Disposals	-6		
31-Mar-02	6,186	*31-Mar-02*	3,290	*31-Mar-02*	2,896
				31-Mar-01	4,903
01. Apr 02	6,186	01. Apr 02	3,290		
Exchange movements	-55	Exchange movements	-8		
Acquisitions		Amortisation charge	128		
Additions	10	**Impairment charge**	**2,721**		
Reclassifications from associated undertakings		Reclassifications from associated undertakings			
31-Mar-03	6,141	*31-Mar-03*	6,131	*31-Mar-03*	10
				31-Mar-02	2,896
01. Apr 03	6,141	01. Apr 03	6,131		
Exchange movements		Exchange movements			
Acquisitions		Amortisation charge			
Additions		**Impairment charge**	**10**		
Reclassifications from associated undertakings					
Disposals	-2,252	Disposals	2,252		
31-Mar-04	3,889	*31-Mar-04*	3,889	*31-Mar-04*	0
				31-Mar-03	10
01. Apr 04	3,889	01. Apr 04	3,889		
Exchange movements	4	Exchange movements			
Acquisitions		Amortisation charge	7		
Additions	91				
Reclassifications from associated undertakings					
Disposals	-276	Disposals	276		
31-Mar-05	3,708	*31-Mar-05*	3,620	*31-Mar-05*	88
				31-Mar-04	0

7 CONCLUSION AND FUTURE RESEARCH

Goodwill has figured prominently in accounting research and practitioners' discussions for a very long period. Early publications on goodwill and its characteristics date as far back as the beginning of last century (for example Kemper, 1921). This considerable interest on both the academic and the practitioner side has been essentially prompted by the flexible nature of goodwill. Its intangible characteristics combined with the loopholes available in goodwill accounting provide numerous opportunities for discretionary managerial activities which have a significant role in the politics of financial statements. Additionally, goodwill amounts on the balance sheet are regularly so large that any changes are bound to have a significant impact on net income and on the balance sheet, and, therefore, on essential information communicated to financial statements' users. Finally, since goodwill represents a residual amount of the purchase price which cannot be allocated to specific assets, the lack of transparency stemming from its definition has represented a challenge to standard setters, academics and financial statements' users for many years now. It is in particular this challenge that has driven academic research in this area in its attempt to understand better the causes and the mechanism of goodwill and its write-downs and it is this challenge that motivates this thesis as a whole.

7.1 SUMMARY OF THESIS RESULTS AND CONCLUSION

This thesis focuses on selected aspects of the goodwill impairment process. While previous research[172] has clarified many of the underlying characteristics of goodwill and goodwill impairment, there are still questions which have yet to be answered, in particular, when facing the rapidly changing regulatory environment where goodwill is concerned.[173]

The overall purpose of this thesis is threefold. First, it aims to add new information to existing research in order to increase the understanding of the goodwill impairment process, its causes and impact. Second, it explores questions of goodwill impairment under the UK GAAP framework which allows both amortisation and impairment. This accounting regime provides a regulatory environment under which management's impairment decisions may differ from those under more restrictive regulations where

[172] For details on previous academic research see chapter 2.
[173] Goodwill accounting regulations as well as the accounting history of goodwill are discussed in section 2.1.

only the impairment approach is allowed. Finally, it provides impulses for future research based on the exploratory study on goodwill impairment (chapter 6).

This thesis includes three empirical essays on the impact and causes of goodwill impairment which focus on the following topics: the importance of goodwill write-downs in the credit rating decision making process, managerial choices in goodwill accounting in the UK, and the drivers of economic performance factors leading to goodwill impairment as well as the room for managerial discretion in goodwill impairment provided by discount rates in the impairment calculation. The main results of the studies are summarised in the following paragraphs.

The research questions are organised to explore goodwill impairment starting at the 'visible' side of the impairment process, i.e. its impact (chapter 4), and moving on to explore the underlying causes of goodwill impairment (chapter 5) as well as the drivers of these causes and the possible sources of impairment manipulation (chapter 6).

The focus of the first empirical essay lies on the impact of goodwill write-downs in the rating decision making process. While there is little information on the way goodwill write-downs are considered by rating agencies, it is common knowledge that the quantitative part of the rating analysis relies heavily on accounting information from the company financial statements. Prior research shows that goodwill write-downs may provide signals about the financial welfare of the company or the quality of management. Therefore, they might be incorporated at least to some extent in the rating decision making process. UK GAAP allows the application of different accounting treatments for goodwill, each of which might lead to a differing perception by rating agencies. Therefore, the study investigates whether and how goodwill and goodwill write-downs are taken into consideration in the rating decision making process. The investigation uses an *ex post* accounting predictive model based on key financial ratios to simulate the rating calculation. Results suggest that rating agencies ignore both goodwill as an asset and goodwill write-downs (amortisation or impairment) for purposes of the rating calculation. These findings are consistent with the largely preferred treatment of goodwill prior to the introduction of FRS 10 and 11 in the UK (immediate write-off against equity), and with the aim of rating agencies to achieve long-term stability in the rating assessment.

The second study is motivated by the UK regulatory framework for goodwill accounting available until 2005 for listed companies and presently for not listed

companies in the UK. As current UK GAAP regulations allow the simultaneous (or alternating) application of both amortisation and impairment treatments the room for managerial discretion in this area is material. In this context uncovering the underlying causes of goodwill impairment charges becomes essential. Therefore, the study investigates the motivation behind goodwill impairment losses undertaken additionally to the regular amortisation charge. The main results show that while the decision whether to impair goodwill or not may depend on the financial performance of the company, the decision about the amount of the impairment write-down seems to be based on reporting incentives, most notably income smoothing. The findings lead to the conclusion that while impairment does reflect the company situation to a certain extent, managers use their discretion to bias decisions to their advantage. Additionally, the presence of goodwill impairments in previous years is also likely to influence the decision to impair goodwill, however, not the amount of the write-down. This result is consistent with the relation between economic factors and the decision to impair goodwill as phases of financial distress are often known to stretch over several reporting periods. For further interpretation the findings of chapter 5 are considered in combination with the findings of chapter 4. The results show that on the one hand managerial discretion is not entirely eliminated by the use of goodwill impairment and there are still regulatory gaps providing management with the opportunity to adjust financial statements to its taste. In this sense the findings suggest that while standard setters have improved the content and transparency of financial statements (as regards goodwill impairment) to some extent, the goal of limiting management discretion is still yet to be achieved. On the other hand, goodwill impairment does seem to provide genuine signals about the financial welfare of the company as managers are at least likely to base their decision to impair goodwill on economic factors. This, however, implies that raters are not correct to exclude goodwill and its write-downs entirely from the credit rating assessment, as results of chapter 4 indicate, and might be omitting material information from their calculations.[174]

The third empirical study of this thesis, which adopts a case study methodology, extends research where the two previous essays, and indeed most other purely quantitative studies, leave off. While the investigation of the causes of goodwill impairment in chapter 5 is based on the use of certain measures of financial performance of the company and of managerial discretionary behaviour, chapter 6

[174] Of course, rating agencies might be incorporating goodwill impairments in a different way than modelled in chapter 4 (see section 7.2.2).

aims to investigate in greater depth what lies behind the numbers. It asks the 'Why' and the 'How' questions of goodwill impairment. In doing this, two of the drivers of the economic performance of the company, competition and industrial regulation, and their connection to goodwill impairment are investigated. In addition, the discount rates used in the impairment calculation are explored as a possible source of managerial discretion. Finally, the quality of impairment disclosures is evaluated by comparing independently calculated discount rates based on publicly available data with the discount rates disclosed by companies. This research is exploratory in nature and takes the form of case studies of two companies selected from the general data sample used for the other studies in this thesis. The results lead to the following conclusions. As regards the investigation of the relationship between competition and industrial regulation and goodwill impairment the findings suggest that the impairment charge is likely to be at least partially influenced by industrial regulation – whether by means of market liberalisation and, consequently, increased competition, or, by means of price caps. The findings imply that the actions of regulators not only have direct effect on company profits (due to smaller revenues as a result of regulation) but also an indirect effect on company profits (due to impact on the impairment charge) as well as on the value of goodwill on the balance sheet. As a result, the presence of regulation and/or strong competition are likely to provide financial statements users, auditors and accounting regulators useful early warning indicators of the likelihood of goodwill impairment.

As regards the investigation of the discount rates used in the impairment calculation, the main results suggest that the discount rate calculations provide numerous opportunities for managerial discretion. By testing various parameter constellations commonly used in practice the investigation illustrates significant differences in the values of possible discount rates. Such differences could have an effect on the presence or absence of a goodwill impairment charge and on its amount. More specifically, the independently calculated discount rates were mostly higher than the rates disclosed by the companies. For subsidiaries experiencing significant financial difficulties these discrepancies were even more pronounced. The results show that the wide range of potential discount rate values can be used to justify virtually any impairment charge desired by management.

The analysis of impairment disclosures shows the poor quality of the disclosures and lack of transparency. Thus, the disclosed information is often insufficient to enable

users to make an informed evaluation of the plausibility of the values used (for example in the case of discount rates, or growth rates for cash flow forecasts).

7.2 Contribution to Existing Research, Limitations and Future Research

7.2.1 Contributions to Existing Research

The first essay in this thesis concentrates on the role of goodwill write-downs in the rating decision process (chapter 4) and extends previous research which has primarily concentrated on shareholder reactions to goodwill impairment. The study focuses on the debt market, thus aiming to provide a more comprehensive understanding of goodwill perception by sources external to the company. Additionally, the investigation uses an accounting predictive model (on an ex post basis) which is also a new approach to goodwill accounting research.

The second essay (chapter 5) contributes to existing literature by elaborating on several aspects which are new to goodwill accounting research. First, the investigation of the managerial motivation for goodwill impairment differentiates between the decision to impair goodwill (the 'If' question) and the decision about the goodwill impairment amount (the 'How Much' questions). Additionally, the UK GAAP framework allowing both impairment and amortisation provides an interesting regulatory environment for goodwill research. Prior studies had mainly concentrated on US GAAP which regulates goodwill write-downs in a more rigid manner. Thus, goodwill accounting under UK GAAP offers the possibility to increase understanding of goodwill and to uncover new aspects of its structure. Finally, the investigation is based on a UK sample and thus differs from previous research on impairment which has covered mostly US companies. Furthermore, while prior studies mainly explore asset write-downs or goodwill write-downs under the transitional requirements of a new standard, chapter 5 focuses on goodwill impairment losses which are not motivated by the implementation of new accounting regulations.

The third essay in chapter 6 contributes to existing literature on goodwill impairment in the following ways. First, the study is exploratory by nature and uses qualitative research methodology (case study approach) which is new to goodwill impairment research and allows a more in-depth investigation of the research questions than purely quantitative methods. Additionally, the combination of qualitative and quantitative

techniques in the discount rate investigation allows the illustration of opportunities for managerial manipulation of the discount rate and, through it, goodwill impairment. Second, chapter 6 extends prior research by concentrating on the drivers of economic performance rather than on the outcomes which are mostly in the focus of interest of other studies on goodwill impairment. In this context the study searches for new aspects of the goodwill impairment process and aims to raise new questions for future research. Finally, chapter 6 investigates the impairment calculation to search for sources of managerial discretion. By exploring discount rates the study aims to show the room for manipulation available to management due to the lack of definition and detail in relevant regulations.

7.2.2 Limitations

This thesis concentrates on selected aspects of goodwill impairment under UK GAAP. Considering the significant amount of research which has been done in this area as well as the numerous questions left to answer, it does not presume to explore all aspects relevant to or variables potentially influencing goodwill impairment. In particular, the exploratory study in chapter 6 is a preliminary study, concentrating on specific issues of the goodwill impairment process (industrial regulation, competition and discount rates) while excluding from its scope other variables which could be equally or even more relevant for the goodwill impairment process. Due to number of possible variables which can still be investigated in relation to goodwill impairment these are topics which would exceed the scope of this thesis and are left for future research.

The main limitation of the thesis is that the investigated sample is relatively small. Thus, although the overall sample for all three studies includes 97 companies, in the credit rating study in chapter 4 the sample is based on 46 companies due to the small number of rated companies with goodwill impairment.[175] Therefore, the model used in chapter 4 could be tested on a larger sample in order to generalise and confirm the findings of the study.

The studies in this thesis use accounting information provided in audited financial statements. While these statements are of course only a representation of economic reality, it is often argued that they do faithfully reflect the firm's economic activities

[175] The sample of 97 companies is, in fact, the full population of FTSE 350 companies with an impairment charge during the investigation period.

and environment of the respective companies in the sense of the Statement of Financial Accounting Concepts No. 2 (SFAC 2) of the FASB:

> 'An analogy with cartography has been used to convey some of the characteristics of financial reporting, and it may be useful here. A map represents the geographical features of the mapped area by using symbols bearing no resemblance to the actual countryside, yet they communicate a great deal of information about it. The captions and numbers in financial statements present a "picture" of a business enterprise and many of its external and internal relationships more rigorously—more informatively, in fact—than a simple description of it. There are, admittedly, important differences between geography and economic activity and, therefore, between maps and financial statements. But the similarities may, nevertheless, be illuminating.' (SFAC 2, para. 24)

Based on the results of all three studies, however, the usefulness of this map could be questioned and the quality of the cartographers explored in situations where this assumption is relaxed or waived entirely.

Additionally, although several alternatives to the methodology used in the different chapters were considered before the researcher settled on the specific approach which was applied, it is possible that a change in methodology could have led to different results or insight into goodwill impairment. Thus, all research questions could benefit from an investigation based, for example, on interviewing techniques, or questionnaires. Such change of methodology would, however, require access to rating agencies which is currently restricted (see pp. 85 and 116). Additionally, the sensitivity of the topic of managerial opportunism, or indeed manipulation, would provide significant challenges to such a methodological approach. Finally, in particular where the first part of chapter 6 is concerned, the document analysis could be extended by adding further sources of information which are external to the firm such as for example media sources such as newspapers or other publications discussing goodwill impairment.

The results of the credit rating study in chapter 4 are limited to annual rating assessments. It is possible that goodwill and goodwill impairment are taken into account by rating agencies separately from these annual analyses. For example, a goodwill impairment charge might lead to a placement on the credit watchlist or provoke an event-driven rating analysis possibly leading to a downgrade of the rating. Furthermore, the model used in chapter 4 may be different from the models used by rating agencies in their assessment process and may, therefore, not reflect accurately all factors taken into consideration in the rating evaluation of a company.

The sample used for the study in chapter 5 included the original sample of 97 companies. These, however, did not all have a goodwill impairment charge in each year of the investigation period. Therefore, the 'How Much' revisited question in chapter 5 was tested for samples including between 16 and 56 companies (only the companies which had impairment charges in the relevant year).[176] Additionally, the model used in the investigation may not include all variables impacting the goodwill impairment loss. This is a limitation which chapter 6 seeks to, at least partially, neutralize. Moreover, although tested in prior research, it is possible that the proxies used to reflect economic phenomena or managerial behaviour fail to capture the essence of these phenomena.

Finally, the exploratory study in chapter 6 concentrates on two companies in order to provide the opportunity for extensive document research and the basis for the discount rate investigation. While the small number of companies investigated limits the generalisations that can be made, the aim of such case study research is to raise questions and suggest new directions for future research rather than provide conclusive statements valid for large data samples.

7.2.3 Future Research

The thesis provides several ideas for future research on goodwill impairment. In particular, chapter 6 – as is typical for exploratory studies – raises more questions than it answers.

The results of all chapters were tested on UK companies using the UK GAAP framework. In order to update the findings and test the usefulness of the new IFRS regulations the research questions could also be tested on other (geographical) samples within the IFRS framework.

The credit rating investigation could be extended by including not only annual credit ratings of the companies but also placements on the credit watchlist, event-driven ratings and also ratings by agencies other than S&P.

Chapter 5 raises some questions concerning the so-called 'border years' of the investigation (1999 and 2005). None of the results valid for the core of the investigation period were relevant for these years, suggesting that there might be other

[176] The 'If' and the 'How Much' questions were tested on the complete sample, see chapter 5.

factors influencing goodwill impairment when a regulatory change is imminent (1999 was the first year after the introduction of FRS 11 and 2005 – the first year of the mandatory application of IAS 36 for listed EU-companies). Therefore, future research might look into differing models reflecting the reality of regulatory changes.

Chapter 6 raises numerous questions for future investigations of goodwill impairment. These can be grouped into four categories. First, research on the drivers of economic performance can be extended to explore further variables which could be relevant for goodwill impairment as well as by testing the validity of the findings for larger samples in different accounting and geographical settings. Additionally, the methodology for such research can also be extended to include further document sources such as newspaper articles or other publications, or other research techniques such as interviews or questionnaires. Second, the investigation of the discount rates used in the goodwill impairment calculation provides various impulses for future research. Possible research paths in this area include a large frame investigation including more companies (in different countries) and testing whether the discretionary potential illustrated in chapter 6 is a common phenomenon. Third, studies could concentrate on valuation standards to evaluate whether the specification of standardised methods for deriving input variables in valuation calculations would improve reporting quality. Finally, the investigation of impairment disclosures in chapter 6 could be extended by examining the extent to which companies are or are not complying with existing standards, and whether impairment disclosure requirements suffice to provide adequate transparency to financial statement users.

7.3 GOODWILL IMPAIRMENT – CAUSES AND IMPACT: 'RESEARCH LESSONS LEARNT'

This thesis started as a project with the ultimate aim to improve understanding of the nature and the process of goodwill impairment. In order to achieve this, the researcher first explored large areas of research on goodwill impairment and a summary of this exploration is captured in the literature review in chapter 2. Starting to look at goodwill impairment at its 'visible end', i.e. the impact of goodwill write-downs, the researcher noted that most previous studies had concentrated on shareholders' reactions while lenders (and, in this context, also rating agencies) had largely been ignored. A preliminary testing on a potential study on the links between the debt market and goodwill impairment revealed that such an investigation was not easily performed.

While investors' reactions were often being proxied using share price movements or questionnaires, lenders' reaction was not readily available as most of the relevant documentation is not provided to the public. More specifically, in the case of rating agencies, there was no exact information about the rating assessment information. An attempt to interview rating agencies was not successful for the study, as – although one S&P employee would discuss the rating calculation unofficially with the researcher – they would not officially commit to providing information revealing the specifics of their procedures. These technical difficulties shifted the focus of the study on credit ratings and goodwill impairments from attempting to acquire information directly from the rating agencies to performing an independent investigation. Additionally, the researcher realised that such an independent investigation enjoys the benefits of exploring the transparency of the rating process which is important to end users of the credit rating.

As the results of the first empirical study showed that raters are most likely to ignore goodwill and its write-downs in their annual analyses, another question emerged: were they correct in doing what they were doing? This thought led to further exploration of the sample. However, in this second study the research questions were raised at the 'invisible end' of the impairment process: what were the reasons for the impairment charge? What was management communicating by reporting or avoiding impairment? Did impairment reflect 'black-and-white' information or did it include different shades of grey sub-reasons ('if' and 'how much' questions). In this way the second empirical study was tied to the first and could develop it further. Similar to the credit rating study, a qualitative investigation was considered at first but – due to the sensitive subjects of earnings management and managerial opportunism which were explored here – such an investigation did not appear appropriate. Therefore, a quantitative approach was selected.

Nevertheless, the researcher found that quite a few questions remained unanswered after the second empirical study. Most of all, despite the research done in and before this thesis it still seemed unclear why companies do what they do (in terms of goodwill impairment). This idea led to the third study contained in chapter 6. In fact, asking the question 'why' led to two new paths of research which split chapter 6 into two parts. First, after two relatively large sample statistical studies it was becoming clear that the thesis might, after all, benefit from a change in methodology. In particular, as chapter 6 was used to explore new aspects of goodwill impairment, a more in-depth case study

approach was adopted, primarily based on document analysis. This approach seemed particularly suitable, especially as methods such as interviews and questionnaires had to be discarded due to the sensitivity of the subject. Additionally, it did not seem anymore sufficient to ask why managers impaired goodwill. If there was managerial manipulation of goodwill, the question was also how it was done. This consideration led finally to the second part of chapter 6 which concentrates on discount rates. This part, however, while still remaining in the case study frame imposed on the whole chapter required a more quantitative approach to illustrate managerial opportunism in the discount rate calculation.

In conclusion, it is noted that while this project started as an attempt to learn more about the effects and causes of goodwill impairment, in the course of time it has changed its direction several times in order to also question the methodology and variables used in previous impairment research. The motivation for each study (except for the first one which resulted from the literature review) was born in the conclusion phase of the previous one as each investigation led to a set of questions some of which were raised in the following ones while the rest was left to future research.

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