UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Goodwill Accounting

- A study of public groups in Sweden, Germany and the United Kingdom before and after IFRS

Bachelor thesis
Financial Accounting
Spring 2014

Tutor:
Andreas Hagberg

Authors:
Diego Artigas
Martin Lorentsson
Axel Nilsson

Preface

We would like to express our gratitude for the help and support that we have received from our tutor Andreas Hagberg during the course of this project. We would also like to thank the fellow students that have participated in our common seminars for their valuable input.

Gothenburg, May 2014

Diego Artigas, Martin Lorentsson & Axel Nilsson

Abstract

Bachelor Thesis in Financial Accounting, spring 2014
School of Business, Economics and Law, University of Gothenburg

Authors: Diego Artigas, Martin Lorentsson & Axel Nilsson
Tutor: Andreas Hagberg
Title: Goodwill Accounting - A study of public groups in Sweden, Germany and the United Kingdom before and after IFRS

Background and problem: The European Union has worked to achieve accounting harmonization during the last decades. In 2005, IFRS became mandatory for public groups within the European Union when compiling their consolidated financial statements. Whether or not this has lead to harmonization in practise is a debated subject. One large change that the implementation of IFRS brought for many countries was the abolishment of goodwill amortizations in favour of annual impairment tests. This is an area where the accounting quality under IFRS has been frequently discussed.

Purpose: The purpose of this study is twofold. The first one is to investigate whether there have been national differences concerning goodwill charges in public groups, and the second one is to investigate if certain financial factors have influenced goodwill charges in the three countries before and after the mandatory adoption of IFRS.

Method: Financial data for the years 2001-2012 was retrieved from an online database and then divided into the three time periods 2001-2004, 2005-2008 and 2009-2012. A total of 15 multiple regression tests were performed, which concerned different time periods and different countries. Six of them were done to investigate differences between Sweden and the UK and Germany respectively, and the remaining nine were used to investigate what factors that have influenced goodwill charges. The results were interpreted and analyzed using the theories and standards that are described in the study.

Results and conclusions: The regression tests show that there were differences between both Sweden and Germany and Sweden and the UK during the first period investigated (2001-2004). However, the regression model could not find any differences during the two other periods. As for the tests regarding the influencing factors on goodwill charges, it was hard to find any general pattern as to what factors were influential to goodwill charges over time and between different countries. The conclusion is drawn that the factors affecting goodwill charges are many, varied and seemingly arbitrary.

Suggestions for further research: A similar study could be conducted using a qualitative method, enabling factors that are not as easy to quantify, such as disclosure compliance, to be studied.

Key terms: Accounting, goodwill, impairment, amortization, IFRS, harmonization.

Abbreviations

ASB	Accounting Standards Board
DRS	Deutsche Rechnungslegungsstandards (German accounting standards (GAS))
DRSC	Deutsches Rechnungslegungs Standards Committee (German accounting standards committee (GASC))
FASB	Financial Accounting Standards Board
FEE	Fédération des Experts Comptables Européens (Federation of European Accountants)
FRS	Financial Reporting Standards (issued by ASB)
GAAP	Generally Accepted Accounting Principles
HGB	Handelsgesetzbuch (German commercial code)
IASB	International Accounting Standards Board
IAS	International Accounting Standard (the standards issued by IASC, some of which are still in use)
IASC	International Accounting Standards Committee
IFRS	International Financial Reporting Standards (issued by IASB)
RR	Redovisningsrådets Rekommendationer (Swedish Financial Accounting Standards Council's Recommendations)
SEC	Securities and Exchange Commission
SFAS	Statements of Financial Accounting Standards (issued by FASB)
ÅRL	Årsredovisningslagen (Swedish Annual Accounts Act (AAA))

Table of Contents

List of tables and figures

1. Introduction

1.1 Background

One of the main purposes of the European Union, as established by the Maastricht Treaty signed in 1992, is to achieve a common market, where free movement of capital is an integral part. In order to achieve free movement of capital, comparability between companies' financial statements is essential. Consequently, one of the measures taken towards a more efficient market has been the harmonization of accounting regulations between the member states. At first, the union's harmonization effort was expressed through directives issued by the European Council. However, due to too many accounting options and differences in implementation amongst the member states, the directives proved not to be enough to achieve the desired level of harmonization (United Nations 2006).

In 2002, a significant move was made in the effort towards reaching the desired comparability. The European Union adopted the IAS-regulation, through which it was decided that from 2005 and on, all consolidated groups traded on public markets within the member states are required to apply the same standards when they compile their financial statements (European Parliament and the Council of the European Union 2002). The set of standards that the IAS-regulation prescribes are the *International Financial Reporting Standards* (IFRS), published by the *International Accounting Standards Board* (IASB). It is stated in the IAS-regulation that the harmonization of accounting standards should lead to a better functioning internal market. When all publicly traded groups apply the same standards, cost-efficiency on the European capital market should be enhanced. (European Parliament and the Council of the European Union 2002)

One accounting area where the IFRS implementation has brought a significant change for many European companies when compiling their financial statements, is the one concerning goodwill. Goodwill on the balance sheet arises when a company acquires another, and is then calculated as the difference between the purchasing price and the fair value of the acquired company's net assets at the moment of acquisition. In many countries, like Germany, the United Kingdom and Sweden, national standards before 2005 essentially required goodwill in public groups to be systematically amortized over a limited period of time (FEE 2002; FRS 10 §19; RR 1 §60). However, the IFRS implementation brought a new goodwill accounting system to these countries, where the recognized goodwill is instead only subject to yearly impairment tests (IAS 36 §10).

1.2 Problem discussion

European accounting has historically been characterized by two different traditions: the continental tradition, with Germany at the forefront, and the Anglo-Saxon tradition, where the United Kingdom has been the most influential country (Blake, Akerfeldt, Fortes and Gowthorpe 1997). Marton, Lumsden, Lundqvist and Pettersson (2012, p. 3) mentions two of the strongest reasons behind why accounting differences have risen between countries. First there is the ownership structure of companies, and secondly there is the connection between the company's financial statements and its tax liability. In both of these aspects, Germany and the United Kingdom have been at opposite ends of the spectrum.

In Germany, the equity market has historically been dominated by large ownerships like wealthy families and large banks. This structure is characterized by a few people having more or less unlimited access to all information that is relevant to investment decisions, and

therefore the need for transparent financial statements from an investor's point of view is not as vital. (Marton et al. 2012, p.4) The contrary can be said about capital markets that are characterized by vast amounts of smaller owners of companies. When such is the case, the financial statements are highly relevant to the owners, as they are the main source of information (Smith 2006). The demand for high-quality, transparent financial reporting has therefore been higher. One of the countries where this has traditionally been the case is the United Kingdom, and in line with this, British accounting standards have generally been known to be of high quality (Jacob and Madu 2009).

Between Germany and the United Kingdom, an equally as significant traditional difference as the ownership structure is the connection between the financial statements and tax. In Germany, the connection has historically been strong. A company could generally not claim tax deduction unless the subjected cost was booked in the financial statements (Haller 1992). Moves have been made towards a somewhat weaker link between taxation and the commercial statements, but the authoritative principle, which states that the amount of tax that a company is liable to pay is based on the commercial statement (Pfaff and Schröer 1996). On the contrary, financial statements and taxation have essentially been independent in the United Kingdom (Aisbitt 2002; Blake et al. 1997).

Since Sweden is a small country compared to the United Kingdom and Germany, it has naturally not been an equally as influential actor in European accounting. Instead, the country has obtained a lot of influences from other countries. Sweden has historically been classified as a country belonging to the continental tradition (Callo et al. 2009), and similarities can be seen between Swedish and German accounting. One example is the link between tax and the financial statements that has been prevalent for a long time (Blake et al. 1997). Furthermore, both Swedish and German regulations required prudent financial reporting before the implementation of IFRS (ÅRL chapter 2§4; Nobes and Parker 2006, pp. 305-306).

As mentioned earlier, since the first of January 2005 all consolidated groups in the member states of the European Union are required to compile their financial statements under IFRS. The debate about how well international accounting harmonization has worked in practise, and the value relevance of IFRS in particular, has been prevalent ever since the implementation. Numerous pieces of research have been conducted on the subject, and the outcomes have varied. Here follows some of the criticism that has been directed against the attempts towards global accounting harmonization, and towards harmonization under IFRS.

According to Bradshaw and Miller (2008) the connection between harmonization of accounting standards and regulations (de jure) and harmonization in practice (de facto) has largely not been proven yet. They studied non-US firms that adopt US Generally Accepted Accounting Principles (GAAP), another globally influential set of accounting standards, and find that even though the firms apply the same accounting methods, the lack of similar enforcement bodies may lead to differences in reporting anyway. Similarly, when studying companies compiling their financial statements under IFRS, Jacob et al. (2009) finds national differences among the member states of the European Union, and point out inequalities in enforcement mechanisms, legal structures and educational systems as reasons for this. Ball, Robin and Shuang Wu (2003) point out that IASB does not have the ability or authority to enforce IFRS properly within the member states of the European Union, and that standards alone are not enough to ensure comparability between companies in different countries. Lundh (2009) further states that accounting regulations are merely requirements on paper when adequate enforcement mechanisms are not in place.

In 2012, Cole, Branson and Breesch conducted a survey where 426 users of European IFRS statements were asked about how they perceive comparability between different countries. Only 41% of the respondents indicated that they perceive all financial statements compiled under IFRS as comparable. The authors maintain that belonging to different accounting traditions is not a significant factor that causes problems when it comes to the comparability of statements under IFRS, and that a things such as the influence of statement preparers is more important. Furthermore, Callao, Ferrer, Jarne and Laínez (2011) found that while significant differences in application in different countries were identified during the first years after the IFRS implementation, it has been suggested that those were not necessarily caused by national differences prior to the harmonization of standards.

The treatment of goodwill in financial statements has been a controversial and frequently discussed subject among experts all over the globe (Bloom 2009). Goodwill arises on the balance sheet when a company acquires another entity, and pays more for it than the fair value of the purchased object's net assets. However, the accounting debate about goodwill is largely centred on how the post should subsequently be treated, after the time of the acquisition. When applying the most globally influential accounting systems of today, IFRS and US GAAP, the booked goodwill is subject to yearly impairment tests. However, just because those two sets of standards have been changed so that yearly amortizations are not allowed anymore, does not mean that there is a general consensus that the current method of treating goodwill is the most appropriate.

Sahut, Boulerne and Teulon conducted a study in 2011, where the value relevance of goodwill accounting under IFRS was compared with the value relevance under local GAAPs. It is concluded that even though IFRS tends to make companies better at allocating larger parts of purchase prices to identifiable intangible assets, the goodwill item is one of the areas where investors generally consider accounting under local GAAPs to be of higher value relevance than under IFRS. Similar results were found by both Sevin and Schroeder (2005) and Bini and Della Bella (2007), when they studied US firms after the adoption of SFAS 142, a standard that just like IAS 36 of IFRS, does not allow goodwill amortizations. Both of those studies found that earnings management through decisions to impair or not to impair goodwill was prevalent after the amortization system was abolished.

A recent study shows that during seven of the first eight years that Sweden applied IFRS, public groups booked more than 50% of the sum of all purchase prices when acquiring other companies, as goodwill. At the same time, the average ratio between the sum of newly purchased goodwill and the sum of the yearly impairments was higher than six. Furthermore, during every year between 2008-2012, the sum of total impairments of goodwill among companies on the Nasdaq OMX Stockholm Large Cap list only represented 1-2% of the total ingoing balance of goodwill. The researchers warn that this situation is unsustainable and can lead to problems in the long run. (Gauffin and Nilsson 2013)

Even if public consolidated groups within member states of the European Union now compile their financial statements under the same accounting standards, differences in application have been found. In a study by Markovic and Senay Oguz (2011) partially concerning differences in enforcement mechanism among European states, goodwill impairments were focused upon. IFRS companies in four different European countries, there among Sweden, Germany and the United Kingdom, were studied during the period 2005-2009. When comparing the UK and Germany, differences were found. However, no significant national

differences in goodwill impairments seemed to exist between Sweden and Germany or the United Kingdom respectively.

1.3 Purpose

There are two main purposes with this study. The first one is to investigate whether there have been national differences concerning goodwill charges in public groups. The countries that will be compared are Sweden on one hand, and Germany and the United Kingdom respectively on the other, both before and after the implementation of IFRS. The second one is to investigate if certain financial factors have influenced goodwill charges in the three countries before and after the change.

1.4 Research questions

- Have there been differences concerning goodwill charges between publicly traded Swedish companies and German and British equivalents respectively, before and after the implementation of IFRS?

- What factors have influenced goodwill charges in Sweden, Germany and the United Kingdom before and after the implementation of IFRS?

1.5 Contribution

This study will serve as a compliment to previously conducted research on the subject of harmonization between IFRS countries, and particularly to the area concerning goodwill. A lot of the literature discussing differences between amortization and impairment of goodwill has an American perspective, focusing on the changes that US GAAP underwent. This study, on the contrary, will revolve around European companies and the implementation of IFRS. Furthermore, in this study the same sample of companies will be studied during a time period that embraces both the last years before IFRS became mandatory for public groups in the European Union, as well as years after the implementation of IFRS in 2005. Additionally, most studies concerning goodwill accounting in the European Union has not included data up to such recent financial years as 2012.

1.6 Disposition

This section outlines the continued disposition of this thesis.

Standards and regulations: This section contains the accounting standards and regulations that are relevant for this study.

Theoretical framework: In this section, opinions on amortization and impairment of goodwill, prior studies on harmonization as well as factors that could potentially influence impairment of goodwill is presented.

Methodology: The Methodology section describes the research method used and the collection, controlling and processing of data. Furthermore, the analysis model, a multiple regression analysis, is presented, along with the hypothesis development. Finally, the quality of research is discussed.

Results and analysis: The results of the multiple regression tests are presented and analyzed using the theories and accounting standards presented.

Summary and Conclusions: Finally, this section answers the research questions, summarizes the findings and presents the conclusions. It also contains suggestions for further research.

2. Standards and regulations

2.1 Goodwill accounting before IFRS

This section describes the accounting regulations that were in place in the respective countries before the adoption of IFRS in 2005.

2.1.1 Swedish regulations and goodwill accounting

Before IFRS, Swedish companies prepared their consolidated financial reports in accordance with Swedish GAAP, which consists of laws, standards (the RRs) and interpretations and guidelines (KPMG 2005). The *Swedish Annual Accounts Act* (ÅRL) contains information about all components that need to be included in the annual report of the company.

RR 1:00 Group Accounting states that assets or liabilities that do not meet the criteria to be accounted for on their own should be included in the goodwill value. Goodwill is defined as "the difference between the purchase price and the sum of the fair values of the acquired identifiable assets and liabilities" (RR 1:00 §41). According to *RR 15 Intangible Assets*, only acquired goodwill can be activated on the balance sheet, which means that internally generated goodwill cannot be capitalized (RR 15 §36).

When goodwill has been recognised and capitalized, RR 1:00 prescribes amortization with a rebuttable presumption of a useful life not exceeding 20 years (RR 1:00 §54). In cases where it can be justified that the useful economic life exceeds 20 years, the standard requires companies to annually calculate the recoverable amount in order to investigate whether or not there is need for impairment. The standard states that these cases are rare. (RR 1:00 §60) Furthermore, the useful economic life cannot be indefinite (RR 1:00 §61).

RR 17 Impairment states that companies have to assess whether or not there are any indications that an asset, including goodwill, has declined in value when compiling financial statements (RR 17 §6). There are several indicators, external and internal, that companies as a minimum are required to check. The external are: a decline in market value for reasons other than normal, changes in the technological, market, economical or legal environment, increased market interest rates, and when the company's net assets exceed its market capitalization. The internal ones are: damage and obsolescence, decreased returns, or changes within the company such as a restructuring which might render the asset useless. (RR 17 §7) There might also be other indications of impairment to an asset, for instance, cash inflows lower than expected (RR 17 §8-9). After the impairment test, an asset's carrying amount should be written down in the event that the carrying amount exceeds the recoverable amount, which is the highest of the net realizable value and the value in use (RR 17 §5: RR 17 §13).

2.1.2 British regulations and goodwill accounting

Prior to 2005, publicly traded British companies reported under UK GAAP. The standard *FRS 10 Goodwill and Intangible Asset*, issued by the *Accounting Standards Board* (ASB), was to be applied for publicly traded groups. It states that purchased goodwill should be capitalized at an initial value equal to "the difference between the cost of an acquired entity and the aggregate of the fair values of that entity's identifiable assets and liabilities" (FRS 10 §2). Furthermore, the standard prescribes amortizations over the economic life of the intangible asset, unless the economic life can be determined to be indefinite. There is a

rebuttable presumption that purchased intangible assets, including goodwill, have useful economic lives of 20 years. There might be reasons for the economic life of an asset to be greater than 20 years, or even indefinite, but the presumption cannot be rebutted unless the asset is capable of continued measurement (FRS 10 §19).

In addition, the standard states that goodwill is required to be tested for impairment at the end of the first full financial year after the acquisition, and then whenever there is an indication of a decline in value (FRS 10 §34). Also, goodwill that is amortized over a longer period than 20 years should be reviewed for impairment at the end of each reporting period. This also applies to cases where the post is not amortized at all (FRS 10 §37-38).

FRS 11 Impairment of Fixed Assets and Goodwill states that an impairment test of goodwill has to be done if events or changes in circumstances indicate that the carrying amount of the goodwill is not recoverable. The standard lists several examples of these indicators, like operating losses in which goodwill is involved, net cash outflows from operating activities in combination with past or expected operating losses, and operating net cash outflows. Furthermore, an adverse change in the market, statutory or regulatory environment, a commitment to undertake a significant reorganisation, or the loss of key personnel might indicate the need of goodwill impairment (FRS 11 §10). When undertaking the actual impairment test, the carrying amount of the goodwill is compared to its recoverable amount, which is the highest of the value in use and the net realizable value. For the sake of determining the value-in-use, goodwill should first be allocated to income-generating units or groups of such units (FRS 11 §34). If the carrying amount is higher than the recoverable amount, an impairment loss has to be recognised (FRS 11 §14).

2.1.3 German regulations and goodwill accounting

Before IFRS became mandatory, publicly traded groups in Germany compiled their financial statements in accordance with the *German Commercial Code* (HGB) (Nobes and Parker 2006, pp. 289-290). In addition, they also were required to apply standards given out by the *German Accounting Standards Committee* (DRSC), called *German Accounting Standards* (DRS) (Nobes and Parker 2006, p. 283).

Regarding goodwill arising from business combinations, the HGB offers three options. The first option is to amortize goodwill over four years starting from the consolidation. However, companies may also choose to amortize goodwill over its useful economic life. Finally, the third option is to offset goodwill against reserves (HGB §309). However, with the introduction of the *DRS 4 Acquisition accounting* in consolidated financial statements, which applies to consolidated reports, offsetting goodwill against reserves is no longer allowed. The goodwill should be capitalized at the value of the difference between the cost of the acquisition, and the net value of the assets of the acquired entity, on the acquisition date (Deloitte and Touche 2001; Pwc 2010). DRS 4 also introduced a rebuttable presumption that the useful economic life of the goodwill did not exceed 20 years (FEE 2002). However, because tax regulations allowed a maximum of 15 years, it was rather that length that became common practise (Nobes and Parker 2006, p. 306).

Before the transition to IFRS in 2005, publicly traded German companies could, in addition to the local German regulations, choose to prepare their consolidated financial statements in accordance with US GAAP or IFRS (Ding, Richard and Stolowy 2008), the former being issued by the *Financial Accounting Standards Board* (FASB). This meant that not all

companies were obliged to amortize goodwill. Companies that chose to follow US GAAP only needed to test for impairment at least once a year, in accordance with *Statement of Financial Accounting standards (SFAS) 142: Goodwill and other Intangible assets* (§26). When on the balance sheet, goodwill was to be tested for impairment at the reporting unit level through a two-step model. Step one is to determine the carrying amount and the fair value of the reporting unit. If the carrying amount exceeds the fair value, step two can take place. The second step is to measure the amount of the impairment, which is done using an estimate of the implied fair value of goodwill, which is then compared with the carrying amount. The difference, if the carrying amount is higher, is the impairment loss (SFAS 142 §18-20).

German companies that chose to follow IFRS before it became mandatory in 2005, had to make systematic amortizations over the useful life of the goodwill up until 2004 (when IFRS went over to today's system with only impairment tests, which is described in a later section). In those standards, there was also a rebuttable presumption that the useful life does not exceed 20 years. (Alexander and Archer 2000; Deloitte n.d.) Goodwill and other intangible assets should also be tested for impairment whenever there is an indication of possible impairment (IAS 36 §IN5). The previous IAS 36 had a list of indicators of impairment that companies had to assess at the end of each reporting period (IAS 36 §9; Alexander and Archer 2000). After a comparison, it has been found that the list of the previous IAS 36 has been carried over to the present IAS 36. That standard is described further down. Furthermore, the recoverable amount had to be calculated annually for goodwill with a useful economic life exceeding 20 years (Deloitte n.d).

2.2 Goodwill accounting under IFRS

Regarding goodwill accounting under IFRS, the relevant standards are *IFRS 3 Business Combinations*, *IAS 36 Impairment of Assets* and *IAS 38 Intangible Assets*. In IAS 36 it is stated that goodwill is the combined amount of all intangible assets that are not identifiable in an acquisition (IAS 36 §10-11). For an intangible asset to be identifiable, it either has to be separable from the entity, or arise from a contractual or other legal right (IAS 36 §12). IFRS 3 states, somewhat simplified, that goodwill should be recognised as the difference between the fair value of the transferred consideration and the net of the fair values of the identifiable assets and liabilities acquired (IFRS 3 §32). IFRS does not allow the capitalization of internally generated goodwill, which is stated clearly in IAS 38 §48.

Given the standards, it is impossible to determine the useful life of goodwill (Marton et al. 2012 p. 410). This means that goodwill is not amortized, but is rather tested annually for impairment (IAS 36 §10). The goodwill post is considered not to be able to generate any cash flows on its own, hence for impairment purposes, goodwill has to be allocated to a cash-generating unit. If the goodwill item cannot be allocated to a single cash-generating unit, it will have to be allocated to a group of them instead (IAS 36 §81). Intangible assets with indefinite useful lives have to be tested annually for impairment. In addition to this, any asset must also be tested whenever there is an indication of possible impairment (IAS 36 §9-10). The standard lists a number of external and internal sources of information that companies must consider when determining whether or not an asset needs to be tested for impairment (IAS 36 §12).

Four external factors are listed: observations that an asset's value has declined more than what could be expected as normal, negative changes in the company's technological, market, economic or legal environment, increasing market rates, and that the company's market capitalization is lower than the booked value (IAS 36 §12). Three internal factors are listed as well. They are evidence of obsolescence or damage to the asset, evidence of worse economic performance than expected from the asset, and changes to the entity that negatively affects the usage of the asset (IAS 36 §12). These are the minimum required indicators that companies have to consider when deciding if the goodwill post needs to be impaired, but there might be other indicators as well. For example, it is also stated that a decline in budgeted future cash flows could be a sign that impairment need to be considered (IAS 36 §14).

When doing an impairment test, the carrying value of the asset or cash-generating unit is compared with the recoverable amount (IAS 36 §8). The recoverable amount is defined as the higher of the fair value less cost of disposal and the value in use. Regarding goodwill, if the carrying amount of the cash-generating unit(s) exceeds its recoverable amount, the impairment is first and foremost allocated to the goodwill item. Any remaining impairment loss is allocated to the individual assets that comprise the cash-generating unit(s) in question (IAS 36 §104).

3. Theoretical Framework

3.1 Previous research on harmonization

A study by Glaum, Schmidt, Street and Vogel (2013) investigated the compliance with disclosure requirements for IFRS 3 and IAS 36. They found that the level of disclosure compliance was determined by country and company specific factors. The country specific determinants include strength of the enforcement system and the size of the national stock market, both of which are positively correlated with compliance with disclosure requirements. The size of the goodwill item, prior experience with IFRS, the type of auditor and ownership structure are some of the company specific factors that are positively correlated with compliance with disclosure requirements. The authors conclude that the implementation of IFRS might be uneven, which could mean that the reduction of information asymmetry is limited. They also call for better enforcement mechanisms, so that the true benefits of common standards can be reaped. In line with this, Sahut et al. (2011) maintain that national differences still exist, and state that inequalities between the different legal and regulatory environments might cause this.

Berger (2010) studied the enforcement mechanisms in different member states of the European Union. He describes the institutions that are involved in this process in the different countries, and reviews the quality of the enforcement mechanisms based on the work they do. It is noted that in Sweden, very few errors in financial statements are found, and the author questions whether this is because Swedish financial statements are generally produced with particularly high quality, or because the enforcement mechanism is not sufficient to discover errors. The enforcement mechanism in the United Kingdom is criticized for largely focusing on the level of disclosures, while actual methods for evaluation are not controlled to a satisfactory level. Berger further notes that while the institutions in Germany that control financial statements lack the legal authority that equivalents in many other countries have, but the fact that they discover a great amount of errors is a sign that the German enforcement system can be considered tight.

Callao et al. (2009) studied the impact of IFRS on European countries, and evaluated if national accounting differences that were prevalent after 2005 were connected to accounting traditions (Anglo-Saxon or continental). A sample of 242 firms from eleven countries was used. The authors made a cluster analysis where different countries were placed in different groups depending on how they differed from the average. The groups did not turn out to be homogeneous, in the sense that they consisted of mixtures of countries classified under either the continental or the Anglo-Saxon tradition. Thus, it is stated that the harmonization effort of the European Union has brought countries from the two traditions closer to each other. The authors also stress the importance of a consistent implementation and effective enforcement of IFRS in order to achieve de facto harmonization (Callao et al. 2009).

Markovic and Senay Oguz (2011) conducted a study concerning the period 2005-2009, where IFRS companies in four different European countries were investigated. One of the purposes with the study was to find out whether national differences concerning goodwill impairments still existed after the countries had adopted IFRS. The results showed that no significant difference between Swedish and German companies seemed to exist, and the same thing was found when the Swedish companies were compared to British equivalents. When the German companies were compared to the British however, it was found that the British companies acknowledged slightly higher goodwill impairments.

Furthermore, Paglietti (2009) studied the effects that the adoption of IFRS has had on accounting quality in terms of earnings management, timely loss recognition and value relevance in Italy. Her findings were of a mixed nature. On one hand, there seemed to be a greater connection between accounting numbers and share prices under IFRS than there was before. This means that investors seemed to find accounting under IFRS to be of high relevance to their investment decisions. However, she also found an increase in earnings smoothing after the implementation of IFRS, indicating that the flexibility in IFRS could lead to lower value relevance in reality. To overcome the problem of income smoothing under IFRS, she suggests that the European Commission should focus on trying to implement an effective legal enforcement system.

Jeanjean and Stolowy (2008) researched earnings management in relation to the adoption of IFRS in Australia, France and the UK in 2005. Their study found no decline in earnings management due to the adoption of IFRS, and concerning France it was even found that the frequency of earnings management had increased. With this in mind the researchers suggested that using the same accounting standards is not enough to "create a common business language". Instead, organizations like IASB, SEC (the Securities and Exchange Commission) and the European Commission should focus on creating common goals, like for example trying to harmonize legal enforcement systems.

3.2 The impairment-amortization debate

Churyk (2005) researched whether it was appropriate or not to remove amortization of goodwill in favour of annual impairment tests. Her study concerns American companies, which compile their financial statements under standards issued by FASB. In 2001, FASB amended their standards concerning goodwill, so that amortizations were no longer allowed. The study expresses some support for FASB's decision to do this, as the results provide evidence of a connection between impairment tests and stock prices, which would not be apparent under regulations where amortizations are required. This relationship is favourable, since standards are applied to make companies' financial reports reflect the true values of the companies, and both stock prices and goodwill are supposed to be reflections of the future cash flows that they will bring. The study indicates that decreases in stock prices since the acquisition date tend to lead to impairment of goodwill.

Van Hulzen, Alfonso, Georgakopoulos and Sotiropoulos (2011) conducted a study that investigated the two discussed methods of goodwill accounting, in relation to their effects on the quality of accounting. The Conceptual Framework of IASB lists several qualitative characteristics that are required to make financial statements useful to stakeholders (Conceptual Framework §QC1). Two of these, relevance and timeliness, are investigated in the study of van Hulzen et al. Regarding timeliness, the results of the study indicate that impairments are quicker when it comes to capturing the actual decline in economic value of the goodwill.

However, the findings of van Hulzen et al. (2011) are not equally as positive regarding value relevance. Their findings show that the impairment expense, when compared to the amortization expense, is not more relevant to investors, and that investors do not find it to be more useful for valuation and decision-making purposes. The researchers indicate that this could be due to the "fair value nature of the impairment expense" (van Hulzen et al. 2011). Whilst fair value does represent the underlying economic changes better, according to the

authors it is also more difficult to understand, which makes it hard to interpret the accounting numbers. In order to enhance the relevance part, the authors call for a simplification of the impairment test, in order to increase understanding amongst the investors while interpreting the numbers.

Another study that displays a somewhat negative picture of goodwill impairments is the one made by Comiskey and Mulford (2010). They research the assessment process of deciding whether or not goodwill needs to be impaired. They find several factors that make it a challenge to implement impairment of goodwill. First of all, the effects that trigger impairment are many and they might vary greatly in significance and severity. They also point out differences between firms in their choice of valuation methods and the choice of discount factor. Another source of difference is the great need of estimates that companies have to use during the impairment testing. According to the researchers, there is a possibility that these estimates can be managed in order to avoid any impairment. Finally, they conclude that the assessment process of goodwill impairment limits the comparability between firms.

3.3 Factors influencing goodwill impairments

Ramanna and Watts (2012) studied a sample of American companies whose market indicators pointed towards the need of impairments. The variable that was used as an indicator of the need of impairment was the price-to-book value. The results of the study show that only about one third of the companies that according to the price-to-book value should impair goodwill do so. They also find that non-impairment decisions were related to factors such as CEO compensations and risk of violating debt-covenants.

Several studies have found that the size of the goodwill item on the balance sheet can determine the likelihood and size of impairments. For example, Hayn and Hughes (2006) conducted a study of American companies where goodwill scaled by the purchasing prices of acquired entities was used as an independent variable, and found that the higher the proportion was, the more likely the company was to make goodwill impairments. Similar results were found in a study of European companies by Markovic and Senay Oguz (2011), in which goodwill scaled by total assets was used as a variable. However, when measured by Dalström, Tingstedt and Odinsman (2014), the results showed no positive relationship between the goodwill variable and impairments.

Hayn and Hughes (2006) studied how well goodwill impairments in American companies could be predicted from only studying financial statements. They found a connection between decreasing financial performances and goodwill impairments, but that there seemed to be a time lag between the worsened performance and the impairment. Masters-Stout, Costigan and Lovata (2008) found a relationship between earnings and goodwill impairments, and that impairment as opposed to amortizations captures economic events that are relevant to investors. On the same topic, van Hulzen et al. (2011), as mentioned above, finds that the timeliness of earnings is reflected better in the goodwill post when amortizations are not used.

Deegan and Unerman (2006, pp. 395-396) state that the information given in financial statements have less impact on stock prices in larger firms than it has in smaller. This is due to the fact that information about larger firms often becomes public knowledge without the need of financial statements. Because of this, smaller firms could have greater incentives to report high earnings, which could affect the willingness to report impairments negatively. In

line with this, studies have shown that larger firms are more likely to acknowledge goodwill impairments (Verriest and Gaeremynck 2009).

One commonly mentioned factor that is believed to create incentives for earnings management is leverage. How the company is funded is likely to affect various stakeholders, as it is a tool used to measure how large the financial risk of a company is. Not least, it is a factor that will be of high interest to lenders (Caio Galdi, Lopo Martinez and Martins Ardison 2012). This notion is further supported in a study by Roychowdhury (2006), which found that the presence of debt is one of the factors that can lead to earnings management through accounting activities. Beatty and Weber (2005) studied economic incentives that could affect the choice of taking an impairment write off during the first year after the introduction of SFAS 142 in the US and, if so, how much goodwill that was written off. They found that factors such as bonus incentives, turnover and the risk of being delisted from the exchange affected the decision to accelerate or delay the impairment testing. The presence of debt was also one of the factors that influenced the amount of goodwill written off during the first year after the introduction of SFAS 142.

4. Methodology

4.1 Research Method

This study is investigating goodwill charges in Sweden, the UK and Germany both before and after the implementation of IFRS within the European Union. The study also aims to compare if there are any differences between the aforementioned countries. To do so, a quantitative study will be conducted, where financial data from the period 2001-2012 that has been collected will be analyzed. The ambition is to find statistical evidence of how the goodwill phenomenon is treated after the time of the acquisition, and to do that, multiple regression models will be used. Furthermore, the desire is to use as objective data as is possible. If a more qualitative approach had been used, through for example undertaking interviews, there would have been a risk of obtaining biased data, and that underlying reasons behind certain behaviours would have been hidden. The desire in this study is to illustrate actual occurrences rather than subjective answers that such interviews would have given. Holme and Krohn Solvang (1996, p. 14) maintain that the quantitative method has a high tendency to help researchers describe the correct situation when it comes to social sciences, and that statistical surveying, which is to be used in this study, is an integral part of the analysis of quantitative information.

4.2 Collection and processing of data

4.2.1 Collection of data

The sources of information for the first three chapters of this study essentially consist of academic articles and accounting standards that the studied companies applied during the investigated periods. The articles have mainly been collected from online databases like Emerald Insight and Google Scholar, while the standards have been downloaded from websites of the respective issuing boards. Additionally, some pieces of printed literature in the form of magazine articles and books have been used.

To obtain the financial data that will be used for the statistical analysis, Thomson Reuters' financial database Datastream has been used. The database contains data from financial statements of companies all over the world, and a wide range of different variables is available. In the following subsections, it is described how the sample of companies that is going to be used was found:

First of all, the search for companies in Datastream was filtered so that only companies from the three countries relevant for the study (Sweden, Germany and the United Kingdom) were included, and yearly data for the period 2001-2012 was requested. In the first search conducted, a variable indicating whether or not the company in question applies IFRS for their financial statements was used. Only companies that have applied IFRS since 2005 were included. From this search, a total of 2548 companies were found, out of which 618 were Swedish, 947 were British and 983 were German. A list containing Datastream's company codes for the selected companies was created to simplify the subsequent searches.

Furthermore, for a company to be included in the study, it was required that data was available for a range of different variables, for the years 2001-2012. Companies were required to have registered goodwill on the balance sheet in at least one of the studied years to be included. Moreover, the availability of data for the following Datastream variables was required for all the years: goodwill, total assets, market capitalization, price-to-book value,

amortization and impairment of goodwill, funds from operations and total debt as a percentage of total capital. After having searched for these variables, companies that lacked sufficient data were cleared from the sample, and in the end a total of 422 remained. Out of these, 94 were Swedish, 122 were British and 206 were German. Since a total of 12 years are to be studied, a total of 5064 observations were obtained.

4.2.2 Control of data

To control the reliability of the data, financial statements from 10 random companies in each of the three studied countries were examined. Only a few minor differences were found compared to the numbers given by Datastream, and those can be explained by the variable definitions (included in appendix 1) from Datastream, that sometimes contain posts that are not explicitly written out in financial statements.

4.2.3 Processing of data

The companies in the different countries do not use the same reporting currency, but most of the variables that are going to be used will be expressed as quotas, which means that there is no need to transfer all Datastream values into the same currency. The only variable that will be expressed in monetary terms is total assets. Because of this, the British and Swedish observations for that variable have been converted to euro at the exchange rate of the balance day in question. Furthermore, to make the total assets variable easier to interpret, the value will be expressed as its natural logarithm in the analysis model.

To be able to make comparisons over time, the observations have been divided into three different time periods. The first one covers the last years before the implementation of IFRS (2001-2004), and the two others concern the periods after the implementation (2005-2008 and 2009-2012).

Furthermore, extreme values were adjusted. For each country and time period, values that exceeded three standard deviations from the mean were identified for each variable. These observations were then adjusted to take on the value of three standard deviations from the mean. This was done since extreme values can distort the different patterns that exist in the different countries during the different time periods (Marton 1998).

4.3 Analysis model: Multiple regression analysis

To find out what factors that might have affected goodwill charges in the different countries during the different periods, a number of multiple regressions will be run. To do this, the statistical computer software SPSS will be used. All in all, 15 different regressions with different observations regarding country and time period will be run, and the output of these regressions will constitute the material for the analysis of this study. The different tests and variables that are going to be used are described further down in this chapter.

A multiple regression analysis has been chosen over the simple regression in this study, as it is able to handle a range of independent variables at the same time. Such an analysis gives a more detailed description of how the dependent variable is determined, since it finds to which degree all individual independent variables separately explain the dependent one. If only one independent variable is used, the outcome is likely to be too general and only describe a small portion of the whole situation (Bryman and Bell 2011, p. 157).

A multiple regression model also explains to which degree all the used independent variables together explain the variation in the dependent variable, through the coefficient of determination (R^2). This number is usually given as a fraction, where a value of 1 means that variations of the dependent variable is fully determined by the independent variables within the model, and a value of 0 means that the independent variables explain none of the variation of the dependent variable (Newbold, Carlson and Thorne 2013, p. 491-492). Holme and Krohn Solvang (1996, p. 278) state that since cases within the social sciences are usually complex and require many variables to explain the whole situation, the coefficient of determination is rarely above 0,5.

The variables that are going to be used in the regressions of this study have been decided upon after studying relevant literature and accounting standards. In the following sections, these variables are introduced.

4.3.1 Dependent variable

- Goodwill charges (GWC)

The charge associated with goodwill that the observed company acknowledges, scaled by total assets plus the goodwill charge, will be used as the dependent variable in all regressions of this thesis. As the study is largely focused around factors that affect goodwill charges, it is natural to use it as the dependent variable. GWC, as it will be called from now on in this study, will include both amortizations and impairments of goodwill in the period before 2005. In the next two periods, it will only measure goodwill impairments, as amortizations were not allowed for the studied companies after 2005. The reason behind scaling the post by total assets rather than expressing the charges in absolute numbers, is that company size would have been likely to have too great an impact on the outcomes of the regressions otherwise (company size will instead be used as an independent variable, see below).

4.3.2 Independent variables

- Goodwill (GW)

It is not explicitly stated in standards that the size of a company's goodwill post in relation to its total assets should affect the impairment in proportion to total assets, but it will still be included as an independent variable in this analysis to see if it affects GWC. Some earlier studies indicate that there is a positive relationship between the goodwill post and goodwill charges (Hayn and Hughes 2006; Markovic and Senay Oguz 2011). On other occasions, no significant impact was found from the size of the goodwill post (Dalström et al. 2014).

- Total assets (TA)

Deegan and Unerman (2006, pp. 395-396) state that reported earnings have greater impact on the stock prices of small companies, which would indicate that they should be more reluctant to report impairments. A study by Verriest and Gaeremynck (2009) has in line with this shown that larger firms are more likely to make goodwill impairments. The variable that will be used to check for the effect of size is the natural logarithm of the company's total assets.

- Cash flow (CF)

IAS 36 states that goodwill impairments should be linked to worse economic performances than expected. In this study, operating cash flow will be used as an indicator of economic performance. Several studies have been done where the link between economic performance and goodwill charges have been examined. For example, Masters-Stout et al. (2008) found a negative relationship between economic performance and goodwill impairments. Hayn and Hughes (2006) discovered the same relation, although their findings indicated that there is often a time lag between bad performances and impairments. For this study, operating cash flow in the present year has been chosen as the indicator of economic performance. The variable is scaled, in the same fashion as the dependent variable, with total assets before goodwill charges.

- Market capitalization (MC)

When Markovic and Senay Oguz (2011) used market capitalization scaled by total assets as a control variable to find out how impairment decisions were made in European companies, the variable turned out to have a negative relationship with impairments. Churyk (2005) found the same tendency in her study concerning which goodwill accounting method is the most appropriate when it comes to showing the real economic value of the asset. In this study, market capitalization will be scaled as a fraction of total assets.

- Price to-book value (PTBV)

In IAS 36, it is stated that if the price-to-book value goes below one, this could be an indicator of the need of impairment. The variable will be included in this study to see if it has any effect on impairments in reality. In a study by Ramanna and Watts (2012) on the implementation of SFAS 142, it was found that a majority of firms with a price-to-book value below one did not report goodwill impairments. Here, it will be investigated if the same relationship holds under IFRS.

- Debt-to-capital ratio (DTC)

Previous studies have shown that the presence of debt on the balance sheet can affect goodwill charges (Beatty and Weber 2005; Roychowdhury 2006). Caio Galdi et al. (2012) also mentions leverage as a factor that can work as an incentive to perform earnings management, which could potentially be done through refraining to impair goodwill in cases where it would have been appropriate. In this study, leverage will be included as an independent variable in the form of the debt-to-capital ratio, in order to find out if the level of debt affects goodwill charges.

4.3.3 Dummy variable (independent)

- Sweden (1=Swedish company, 0=other)

Glaum et al. (2013) studied financial statements of European companies applying IFRS, and found out that the level of disclosure varied depending on what country the company is based in. Things such as strength of enforcement systems and size of stock market can cause national differences even though the companies apply the same accounting standards. A study by Sahut et al. (2011) supports the theory that there are still at least slight national differences under the application of the same standards. Meanwhile, Callao et al. (2009) maintains that the harmonization work within the European Union during the last decades has brought countries from the continental and the Anglo-Saxon accounting tradition closer to each other. Markovic and Senay Oguz (2011) found no evidence that there were still national differences between Sweden on one hand, and Germany or the United Kingdom on the other, when it came to goodwill impairments during the period 2005-2009. To identify possible national differences in this study, the dummy variable will take on the value of 1 for all Swedish observations, and 0 for all other observations.

4.3.4 Summary of variables

TABLE 1: VARIABLE DESCRIPTIONS

Abbreviation	Variable name	Formula	Type
GWC	Goodwill charge	Impairment & amortization of goodwill/(Total assets + Impairment & amortization of goodwill)	Dependent
GW	Total Goodwill	(Goodwill + Impairment & amortization of Goodwill)/(Total assets + Impairment & amortization of goodwill)	Independent / Control
TA	Total Assets	Natural logarithm of Total assets	Independent / Control
CF	Operating Cash Flows	Operating cash flows/(Total assets + Impairment & amortization of goodwill)	Independent / Control
MC	Market Capitalization	Market capitalization/(Total assets + Impairment & amortization of goodwill)	Independent / Control
PTBV	Price-to-book-value	Share price/Book value per share	Independent / Control
DTC	Debt-to-capital	Total debt/Total capital	Independent / Control
Sweden		Swedish Companies = 1, British and German = 0	Independent / Dummy

4.3.5 The tests

To be able to see differences both over time and between the countries, a total of 15 different regressions will be run, the outputs of which will constitute the analysis material for this study. As was mentioned earlier, the variables have been divided into three different time periods, allowing analysis over time: 2001-2004, 2005-2008 and 2009-2012.

The first six tests will be used to answer the first research question, which concerns national differences between Sweden and the other two countries. For each of the three periods, two regressions will be run: one where Swedish and German observations are included, and one including Swedish and British observations. In these regressions, the dummy variable indicating whether the observation is of a Swedish company or not, will be included. The other independent variables will in these tests be regarded as control variables as the analysis on these tests will mostly concern the dummy variable. The regression equation for the first six tests is the following:

$$GWC = \beta_0 + \beta_1 GW + \beta_2 TA + \beta_3 CF + \beta_4 MC + \beta_5 PTBV + \beta_6 DTC + \beta_7 Sweden$$

In the remaining nine tests, which will be used for the second research question, only observations of companies in one country at a time will be included. In every time period, the observations of all countries will be tested separately. Since the separate tests will only look at one country at a time, the dummy variable will be excluded from these regressions, yielding the regression equation:

$$GWC = \beta_0 + \beta_1 GW + \beta_2 TA + \beta_3 CF + \beta_4 MC + \beta_5 PTBV + \beta_6 DTC$$

The following table summarizes the 15 tests:

TABLE 2: OVERVIEW OF TESTS

Test number	Observed Country (countries)	Time period	Independent variables
Test 1	Sweden, UK	2001-2004	All variables (including dummy)
Test 2	Sweden, Germany	2001-2004	All variables (including dummy)
Test 3	Sweden, UK	2005-2008	All variables (including dummy)
Test 4	Sweden, Germany	2005-2008	All variables (including dummy)
Test 5	Sweden, UK	2009-2012	All variables (including dummy)
Test 6	Sweden, Germany	2009-2012	All variables (including dummy)
Test 7	Sweden	2001-2004	All variables (excluding dummy)
Test 8	UK	2001-2004	All variables (excluding dummy)
Test 9	Germany	2001-2004	All variables (excluding dummy)
Test 10	Sweden	2005-2008	All variables (excluding dummy)
Test 11	UK	2005-2008	All variables (excluding dummy)
Test 12	Germany	2005-2008	All variables (excluding dummy)
Test 13	Sweden	2009-2012	All variables (excluding dummy)
Test 14	UK	2009-2012	All variables (excluding dummy)
Test 15	Germany	2009-2012	All variables (excluding dummy)

4.4 Interpreting results from the model

To interpret the results of the regression models, F-tests and t-tests will be utilized. A significance level of $\alpha = 0{,}05$ will be used. First of all, the significance of the whole model is tested through an F-test, where a P-value of less than 0,05 means that at least one of the independent variables can determine the dependent variable to some degree. Where the F-test renders significance, the independent variables will be studied through t-tests. The general hypotheses for the t-tests are:

$$H_0: Bx = 0$$
$$H_1: Bx \neq 0$$

Put in words, if H_0 is true it means that the model cannot prove that the independent variable in question has any statistically significant impact on the dependent variable. A rejection of H_0 means the contrary: that the variable has a significant impact on the dependent variable. Since a significance level of 0,05 is going to be used, the criterion for rejection of the null-hypothesis is that the P-value of the independent variable is below 0,05.

To answer the first research question, regarding national differences between Sweden and the other countries, the tests with the dummy variable will be used. On the dummy variable, the following hypotheses will be used:

$$H_0: \textit{There is no difference in GWC between Swedish companies and companies from the other country.}$$

$$H_1: H_0 \textit{ is rejected.}$$

For analysis on the second research question, the regressions without the dummy variable will be used. The hypotheses for all variables will not be written out explicitly, but independent variables with a P-value below 0,05 will be regarded as having a significant impact on the dependent variable.

4.5 Quality of research

When building a regression model, the goal is to create an as accurate reflection of reality as possible. It is virtually impossible to include all variables that could explain a phenomenon within the world of business and economics. A model such as this is only a simplified reflection that is created to get a close approximation of reality (Newbold et al. 2013, p. 552). It can also be problematic to determine whether one variable is affected by another, or if the opposite relation is more accurate. Furthermore, researchers suggest that goodwill impairment is an area where it is particularly difficult to identify reasons and underlying motives behind decisions (Comiskey and Mulford 2010). With the assumption that it is largely impossible to fully explain goodwill treatment statistically, it is important that caution is used in the analysis process. For the regressions in this study, independent variables have been decided upon after studying standards and literature, but many factors that are also probable to affect a company's goodwill treatment have been left out due to difficulties in quantification or restricted availability of data.

Concerning the sample of companies used for the study, it is largely influenced by the availability of data in Datastream. Datastream is a large database, but in the search process data for some companies was on occasion missing, which led to the exclusion of these companies. It is hard to tell if there were any underlying reasons for the occasional lack of data, like for example insufficient disclosure in financial statements, and whether the companies that were excluded have any common features. If the latter is the case, there could be a risk that the outcome of this study becomes slightly biased, as it would fail to capture the whole scope of companies on the different markets. In any case, the data from which the regressions will be made should be reliable, as a sample of financial statements have been controlled, and no major differences compared to the Datastream values were found.

When considering the articles that have been used for the framework of this study, a part of them consist of studies of American companies that apply US GAAP. A lot of the research

that has been done on the goodwill subject has been made from an American perspective. It is not necessarily unproblematic to make the assumption that conditions in the USA can be generalized to the European market. However, concerning regulations as to how goodwill is treated, there are similarities between how American and European standards have changed. The most obvious one is how US GAAP issued SFAS 142 in 2001, which just like IAS 36 today requires companies to make yearly impairment tests rather than amortizations.

5. Results and analysis

In this section, the results and analysis of the regression tests performed are presented. Descriptive statistics as well as a table of Pearson correlations between the variables included in the study are presented in appendix 6 and appendix 2 respectively.

5.1 Tests with dummy variable

In this section, the results of the first six tests will be presented and analyzed through comparison with theories. The tests are performed to find national differences between Sweden and the other countries through using a dummy variable, called "Sweden". For the dummy variable, all Swedish companies were coded as 1 while companies of the other country of comparison (either the UK or Germany) were coded as 0. All six F-tests rendered a P-value well below the significance level of 0,05, meaning that at least one of the variables in each test are likely to affect the dependent variable GWC. The results from the F-tests are included in appendix 3. Since the F-tests rendered significance, the results from the t-tests will follow now.

5.1.1 Sweden and the UK 2001-2004

This multiple regression model has been based on data from Swedish and British companies in the period 2001-2004. The independent variable "Sweden" is a dummy variable that took on the value of 1 for Swedish companies, and 0 for British companies.

TABLE 3: TEST 1

Variable	B	t	P-value
(Constant)	0,0192	4,6672	0,0000
GW	0,0858	24,4265	0,0000
TA	-0,0011	-3,8201	0,0001
CF	-0,0123	-2,4197	0,0157
MC	-0,0044	-4,5174	0,0000
PTBV	0,0011	4,7351	0,0000
DTC	-0,0095	-2,9974	0,0028
Sweden	0,0056	4,0602	0,0001

Adjusted R^2 = 0,465

The adjusted R^2 tells us that the independent variables explain 46,5% of the variation in goodwill charges. Since cases within the social sciences rarely have an adjusted R^2 above 0,5, the independent variables are considered to explain GWC relatively well. (Holme and Krohn Solvang 1996, p. 278)

As can be seen from this test, the P-value of the Swedish variable was 0,0001, which is below the set significance level of 0,05. This means that the null-hypothesis for the period, which states that there are no differences in GWC between the Swedish and British companies in the period, can be rejected. The positive B-value indicates that a Swedish company, all other variables the same, is likely to acknowledge a higher GWC than a British one. One possible reason behind this could be the precautionary principle stated in ÅRL. This principle required Swedish companies to be more conservative in their accounting, which could have led to them incurring costs as early as possible. With this approach, it might have been the case that Swedish companies generally decided on shorter useful lifetimes of assets, so that

amortizations were made over shorter periods of time than in the United Kingdom, and that the Swedish companies also were more prone to make impairments.

Another possible reason could be that even though both countries allowed companies to amortize goodwill over a period longer than 20 years in exceptional cases, Swedish standards clearly state that those cases are very rare (RR 1:00 §60). British standards only state the criteria that must be met, without mentioning how common these exceptional cases are (FRS 10 §19). Furthermore, the British standards also state that the useful economic life of purchased goodwill may be regarded as indefinite if certain criteria are met (FRS 10 §19), while the Swedish standards state that the useful economic life of goodwill must always be limited (RR 1:00 §60). This could also be a reason behind why British companies generally have a lower GWC in this period.

5.1.2 Sweden and Germany 2001-2004

This multiple regression model has been based on data from Swedish and German companies in the period 2001-2004. The independent variable "Sweden" is a dummy variable that took on the value of 1 for Swedish companies, and 0 for German companies.

TABLE 4: TEST 2

Variable	B	t	P-value
(Constant)	0,0187	5,2562	0,0000
GW	0,1122	26,6108	0,0000
TA	-0,0011	-3,8714	0,0001
CF	-0,0136	-3,0093	0,0027
MC	-0,0054	-5,1156	0,0000
PTBV	0,0008	3,6786	0,0002
DTC	-0,0107	-4,0990	0,0000
Sweden	0,0038	2,9949	0,0028

Adjusted R^2 = 0,428

In this test the adjusted R^2 tells us that the independent variables explain 42,8% of the variations in goodwill charges. Like in the previous test, the independent variables are considered to explain the variations in GWC relatively well.

As can be seen from the above table, the dummy variable is significant as the P-value is lower than the level of significance that is required (0,05). Hence it is possible to reject the null-hypothesis, that GWC are the same in Sweden and Germany. In other words, there seem to be a connection between country of origin and goodwill charges. More specifically, Swedish companies seem to incur slightly higher goodwill charges than their German counterparts.

It is important to note that while Swedish companies were required to follow a single set of standards, German equivalents had the option to choose between IAS, German GAAP or US GAAP (Ding et al. 2008). Companies that used US GAAP were not allowed to make amortizations even before the IFRS implementation of 2005 (SFAS 142 §26), which might very well have affected GWC in those companies. This factor might be an explanation to why German companies reported less GWC than Swedish ones.

5.1.3 Sweden and the UK 2005-2008

This multiple regression model has been based on data from Swedish and British companies in the period 2005-2008. The independent variable "Sweden" is a dummy variable that took on the value of 1 for Swedish companies, and 0 for British companies.

TABLE 5: TEST 3

Variable	B	t	P-value
(Constant)	0,0071	2,5802	0,0100
GW	0,0138	6,1268	0,0000
TA	-0,0002	-1,1353	0,2566
CF	-0,0065	-1,3501	0,1773
MC	-0,0021	-4,0220	0,0001
PTBV	0,0000	0,1131	0,9100
DTC	-0,0045	-2,1279	0,0336
Sweden	0,0001	0,0899	0,9284

Adjusted R^2 = 0,067

The adjusted R^2 in this test was much lower than in the previous ones. The independent variables only explain 6,7% of the variation in GWC. Since the biggest difference compared with the previous time period is that amortizations were not allowed in this period, it is probable that the size of a company's reported goodwill lost significance when reporting goodwill charges. The fact that these seven independent variables only explain such a small proportion of the variation in GWC backs Comiskey and Mulford's (2010) claim that reasons as to why companies make goodwill impairments can be many, and often differ from company to company.

Despite the low adjusted R^2 it might still be interesting to see if there are any differences between the two countries. In the second period, the P-value of the Swedish variable, 0,92, is much higher than the significance level of 0,05. This means that the null-hypothesis cannot be rejected, and that this model cannot prove that there is any difference between Swedish and British companies concerning goodwill charges during 2005-2008. This throws further support to the study by Markovic and Senay Oguz's (2011), where no national differences in GWC were found between Sweden and the United Kingdom in the period 2005-2009.

While these two countries are usually classified as belonging to two different accounting traditions, the results from this test would indicate that this has not been an important factor after the IFRS implementation. Callao et al. (2009) have also found that different traditional accounting backgrounds have not hindered harmonization under IFRS. It is hard to say anything in regard to Berger's (2010) criticism of both of these countries' enforcement mechanisms, as no differences between them became evident from this test.

5.1.4 Sweden and Germany 2005-2008

This multiple regression model has been based on data from Swedish and German companies in the period 2005-2008. The independent variable "Sweden" is a dummy variable that took on the value of 1 for Swedish companies, and 0 for German companies.

TABLE 6: TEST 4

Variable	B	t	P-value
(Constant)	0,0025	1,5546	0,1203
GW	0,0172	9,3038	0,0000
TA	-0,0001	-0,9639	0,3353
CF	-0,0076	-2,5972	0,0095
MC	-0,0014	-3,3724	0,0008
PTBV	0,0006	2,5506	0,0109
DTC	-0,0013	-1,0121	0,3117
Sweden	-0,0002	-0,3107	0,7561

Adjusted R^2 = 0,085

The adjusted R^2 in this test also decreased a lot compared with the previous time period. In this test the independent variables only explain 8,5% of the variation in goodwill charges. This is also in line with the theories stating that impairment testing involves many factors that vary in significance and severity between different companies (Comiskey and Mulford 2010).

The table above describes the results of the regression involving the dummy variable for the second period studied. In contrary to the first period, the P-value has increased to a level that far exceeds the required significance level of 0,05. This means that the null-hypothesis cannot be rejected, so the model indicates that there were no national differences between Sweden and Germany in this period. The major difference from the first period is that IFRS has become mandatory for both Swedish and German companies, and it would seem as though the adoption has harmonized accounting practise between the two countries, in regards to GWC. The results from this test are similar to those found by Markovic and Senay Oguz (2011), where no national differences in GWC were found between these two countries in the period 2005-2009.

Berger (2010) questioned the quality of the Swedish enforcement mechanism, while the German equivalent was praised. The results of this test, however, would suggest that these conditions have not affected the area of goodwill accounting, and the need of a common enforcement mechanism that Glaum et al. (2013) point to does not become evident from these findings.

5.1.5 Sweden and the UK 2009 – 2012

This multiple regression model has been based on data from Swedish and British companies in the period 2009-2012. The independent variable "Sweden" is a dummy variable that took on the value of 1 for Swedish companies, and 0 for British companies.

TABLE 7: TEST 5

Variable	B	t	P-value
(Constant)	0,0066	2,3911	0,0170
GW	0,0141	6,2054	0,0000
TA	-0,0004	-2,1822	0,0294
CF	-0,0126	-2,5228	0,0118
MC	-0,0012	-1,7652	0,0779
PTBV	0,0003	1,3231	0,1862
DTC	0,0007	0,2973	0,7663
Sweden	0,0008	0,9740	0,3303

Adjusted R^2 = 0,063

The adjusted R^2 continued to decrease in the last time period. The independent variables only explain 6,3 per cent of the variation in goodwill charges. Even though the decrease in R^2 is less than one percentage, it could indicate that the independent variables are continuing to lose relevance when testing for impairment.

During the last period, 2009-2012, the P-value (0,3303) is lower than in the middle period, but still not low enough to motivate a rejection of the null-hypothesis. The model cannot show that there is any difference between Swedish and British companies concerning GWC in relation to total assets in this period. As the outcome of this test was similar to the outcome of the test concerning the same countries in the period 2005-2008, it is difficult to draw any different conclusions about harmonization than those stated for the last period. In any case, these findings indicate that national differences concerning GWC have not become apparent again a few years after the implementation of IFRS.

5.1.6 Sweden and Germany 2009-2012

This multiple regression model has been based on data from Swedish and German companies in the period 2009-2012. The independent variable "Sweden" is a dummy variable that took on the value of 1 for Swedish companies, and 0 for German companies.

TABLE 8: TEST 6

Variable	B	t	P-value
(Constant)	0,0046	2,3259	0,0202
GW	0,0217	9,5288	0,0000
TA	-0,0003	-2,2180	0,0267
CF	-0,0116	-3,1289	0,0018
MC	-0,0025	-3,8651	0,0001
PTBV	0,0016	4,7973	0,0000
DTC	-0,0022	-1,3136	0,1892
Sweden	-0,0004	-0,4948	0,6208

Adjusted R^2 = 0,104

The final test comparing Swedish and German companies had a slightly higher R^2 than the one concerning the period before the IFRS implementation. In this test the independent variables explained 10,4 per cent of the variance in GWC. It is a small increase of only 1,9 percentages, but it could still be seen as an indication that the independent variables increased in relevance compared with the previous period.

The table above shows the results of the last period's regression involving Swedish and German companies. Just like in the preceding period, the P-value of the dummy variable is far above the significance level of 0,05. Because the null-hypothesis cannot be rejected, this model is incapable of finding evidence that country of origin matters to a company's GWC. No differences were found concerning the first years after the implementation of IFRS, and the results from this test indicates that those conditions still hold in the period 2009-2012.

5.2 Country by country tests

Tests 7-15 were done using only observations from one country at a time, and the dummy variable was excluded. The tests are presented in appendix 5. In order to facilitate comparison between the different countries, the results from the nine different tests are presented variable by variable, with all three countries and time periods in the same table. All nine F-tests conducted rendered P-values below 0,05, which means that at least one of the variables in each test have some degree of explanatory power on the dependent variable GWC. The results of the F-tests are included in appendix 4. In the tables below, the unstandardized coefficients (B-values) of the variables are illustrated.

5.2.1 GW

B-values written in black indicate that the variable had a significant impact on GWC (P-value < 0,05), and that the null-hypothesis for the variable was rejected in the t-test. Grey numbers indicate that the variable was not significant (P-value > 0,05), and that the null-hypothesis could not be rejected.

TABLE 9: B-VALUES FOR GW

Country	2001-2004	2005-2008	2009-2012
Sweden	0,1221	0,0229	0,0299
The UK	0,0641	0,0089	0,0052
Germany	0,1024	0,0125	0,0146

In all nine regressions, the GW variable was significant (P-value < 0,05). This means that the proportion of goodwill that a company had on its balance sheet had an impact on the goodwill charges during all periods, in all three countries. As can be seen from the unstandardized coefficients, the impact of goodwill proportion on the balance sheet was much larger before than after the IFRS implementation, which seems natural. Before 2005, Sweden, the UK and Germany all allowed amortization over a maximum of 20 years (RR 1:00 §54, FRS 10 §19 and HGB §309). Even if impairment tests were required in all countries when there was sign of decline in value, the size of GWC was largely influenced by the size of the goodwill post.

As the unstandardized coefficients are lower for periods when countries did not allow amortizations (from 2005 and on), the German coefficient in the first period is likely to be affected by the inclusion of the companies that applied standards that did not allow

amortizations even before 2005. If the sample had only contained companies applying local German GAAP, it is reasonable to believe that the coefficient would have been higher.

The fact that the coefficient values were higher for Sweden and Germany in the first period could be a reflection of the conservatism in the two countries as they both have principles of prudence stated in law. A company issuing financial statements of a conservative nature are likely to incur costs as early as possible. In the light of this, the case might have been that German and Swedish companies generally decided on shorter useful lifetimes of assets, and that they were more prone to make impairments than their British equivalents were, before 2005.

GW is the only independent variable that rendered significance in all the nine tests without the dummy variable, and so it was the only variable that in all periods, and regardless of country, had an impact on GWC. This supports the results found in studies by Hayn and Hughes (2006) and Markovic and Senay Oguz (2011). Those indicated that the amount of goodwill on the balance sheet partially explain the size of impairments under accounting regulations where yearly impairment tests are required, and the same tendency is found here.

5.2.2 TA

B-values written in black indicate that the variable had a significant impact on GWC (P-value < 0,05), and that the null-hypothesis for the variable was rejected in the t-test. Grey numbers indicate that the variable was not significant (P-value > 0,05), and that the null-hypothesis could not be rejected.

TABLE 10: B-VALUES FOR TA

Country	2001-2004	2005-2008	2009-2012
Sweden	-0,0015	-0,0002	-0,0004
The UK	-0,0009	-0,0001	-0,0002
Germany	-0,0008	-0,0001	-0,0001

The results of the regressions without the dummy variable also show that company size, measured in total assets, had significance in all countries in the first period, but not after the IFRS implementation. These findings indicate that company size seems to have had a negative relation to goodwill charges in the studied countries in the first period, with the greatest impact to be found in Sweden. The lack of significance in the later periods means that this study cannot confirm that company size has impacted goodwill impairments in the investigated countries since the IFRS implementation.

Deegan and Unerman (2006) conclude that larger companies are generally less affected by reporting lower earnings, since information about them reaches the public eye regardless of what is written in their financial statements. Furthermore, earlier studies have shown that there is a positive relationship between size and goodwill charges (Verriest and Gaeremynck 2009). The results from the tests conducted in this study show that the opposite relationship is present before the studied countries adopted IFRS regulations. However, no such connection between company size and charges are found in the later periods, so no conclusion can be drawn to support the theories that say that company size matters in the studied countries after the implementation of IFRS.

5.2.3 CF

B-values written in black indicate that the variable had a significant impact on GWC (P-value < 0,05), and that the null-hypothesis for the variable was rejected in the t-test. Grey numbers indicate that the variable was not significant (P-value > 0,05), and that the null-hypothesis could not be rejected.

TABLE 11: B-VALUES FOR CF

Country	2001-2004	2005-2008	2009-2012
Sweden	-0,0060	-0,0050	-0,0198
The UK	-0,0159	-0,0053	0,0088
Germany	-0,0145	-0,0096	-0,0065

As can be seen in the above table, the independent variable CF only rendered significance in one third of the tests: for Germany in the two first periods, and for Sweden during the last. For the UK, the variable had no significance in any of the tests. In the tests where the variable was statistically significant, the relationship between CF and GWC was negative, which is in line with IAS 36 that states that worse economic performance should lead to impairment tests. The lack of consistency in the results however, indicate that the IFRS implementation has not led to a general situation on the European market where economic performance is instantly reflected in the goodwill post of companies from all member states.

IAS 36 §12 states that worse economic performance than what is budgeted for is an indicator of the need for impairment. Looking at the tests concerning the two later periods, during which all companies applied IFRS, the CF variable only rendered significance on two out of six occasions. Generalizing a bit, it would seem from these findings that companies on the European market have not used economic performance measured by cash flows in the present year consistently as a basis for impairment decisions. The results cannot support van Hulzen et al.'s (2011) findings that the company's economic performance is reflected faster in the goodwill post when only impairments are available, since the variable only had significance in one country in every period. Using only this variable as an indicator of economic performance, it is hard to tell whether Hayn and Hughes's (2006) notion that it takes time before bad results are reflected in the goodwill post holds, or that companies simply choose not to base their impairment decisions on economic performance indicators like CF.

If the variable would have been significant for Germany during all periods, it would have been possible to relate it to Berger's (2010) study, where he claims that the enforcement system in Germany is tight, while the other studied countries' equivalents are criticized. However, since the variable is statistically significant in Sweden during the last period, and not in Germany at the same time, it is hard to draw any conclusion about the MC variable based on differences in enforcement mechanisms.

5.2.4 MC

B-values written in black indicate that the variable had a significant impact on GWC (P-value < 0,05), and that the null-hypothesis for the variable was rejected in the t-test. Grey numbers indicate that the variable was not significant (P-value > 0,05), and that the null-hypothesis could not be rejected.

TABLE 12: B-VALUES FOR MC

Country	2001-2004	2005-2008	2009-2012
Sweden	-0,0079	-0,0012	-0,0028
The UK	-0,0025	-0,0034	-0,0015
Germany	-0,0043	-0,0015	-0,0022

One of the indicators of the need to impair intangible assets in IAS 36 §12 concerns market capitalization, and supports the notion that there should be a negative relationship between market capitalization and impairments. That relation has been confirmed by other studies related to this one (Markovic and Senay Oguz 2011; Churyk 2004).

The MC variable had significance in all tests except for the two conducted on Swedish companies after the IFRS implementation. In all tests where the variable was significant, the relationship was negative, so a lower value of MC meant a higher GWC. In the UK and Germany, MC was statistically significant in all periods, and the levels of the unstandardized coefficients in the different periods imply no trends indicating that the impact of MC on GWC has increased since the IFRS implementation. Furthermore, the lack of significance for the impact of MC on GWC for the Swedish observations in the later periods, is an indicator that it cannot be stated for sure that the impact of market value has not decreased in Sweden since the adoption of IFRS. It might be too harsh to say that these results speak against Churyk's (2005) findings, that financial statements compiled under regulations that do not allow yearly amortizations of goodwill reflect market value better. However, they do certainly not offer further support to the theory.

In Berger's (2010) study, it was questioned whether the lack of errors in financial statements found by Swedish enforcement bodies was down to high quality financial statements, or simply lack of sufficient control. The finding that no link between market capitalization and GWC was evident in either of the periods after the IFRS implementation should support the second alternative. However, the United Kingdom's enforcement mechanism was also criticized, but the results from these tests indicate that the link between MC and GWC that is proposed in IAS 36 §12 does exist in reality as well.

5.2.5 PTBV

B-values written in black indicate that the variable had a significant impact on GWC (P-value < 0,05), and that the null-hypothesis for the variable was rejected in the t-test. Grey numbers indicate that the variable was not significant (P-value > 0,05), and that the null-hypothesis could not be rejected.

TABLE 13: B-VALUES FOR PTBV

Country	2001-2004	2005-2008	2009-2012
Sweden	0,0020	0,0004	0,0015
The UK	0,0007	0,0000	0,0000
Germany	0,0005	0,0008	0,0015

Markovic and Senay Oguz (2011) could not conclude that price-to-book value had an impact on goodwill impairments in European companies between 2005-2009, but in this study the relationship is found in six out of nine tests. However, for the tests that rendered significance on the variable, the relationship seems to be positive, which is contrary to what IAS 36 §12 states that it should be.

Ramanna and Watts (2012) studied American companies that are applying FASB standards, which concerning goodwill impairments are comparable to the IFRS, and found that companies with a high book-to-market value (the inverted price-to-book value) did not impair as much goodwill as perhaps should have been appropriate. This study finds similar evidence concerning the price-to-book value in the studied European companies. In the tests where the variable had significance, the relationship to GWC was positive, which means that companies with higher price-to-book values tend to book higher goodwill costs, rather than the opposite. The fact that all values with significance are positive could also be a sign of earnings management, as the companies with low market values might be reluctant to incur further costs.

Since the relationship between PTBV and GW was found to be positive rather than negative when the variable was statistically significant, it is hard to draw any conclusions about differences in enforcement systems from this. IAS 36 §12 states that a sign that goodwill may need to be impaired is when the price-to-book value goes below one, which means that there should logically be a negative relationship between these two variables. The sign that the relationship is positive in all periods when the variable is significant is a sign that not only Sweden and the United Kingdom have deficiencies in their enforcement mechanisms like Berger (2010) stated, but that the same thing could be prevalent in Germany.

5.2.6 DTC

B-values written in black indicate that the variable had a significant impact on GWC (P-value < 0,05), and that the null-hypothesis for the variable was rejected in the t-test. Grey numbers indicate that the variable was not significant (P-value > 0,05), and that the null-hypothesis could not be rejected.

TABLE 14: B-VALUES FOR DTC

Country	2001-2004	2005-2008	2009-2012
Sweden	-0,0145	-0,0034	-0,0038
The UK	-0,0005	-0,0063	0,0027
Germany	-0,0093	-0,0007	-0,0020

The tests show that in two out of three countries, before the implementation of IFRS, the debt-to-capital ratio had a significant relation to goodwill charges. After that, only one test rendered significance, and that was in the UK in 2005-2008. The fact that DTC seemed to be of higher significance to GWC before 2005 is somewhat surprising, since previous research has found signs of increased occurrences of opportunistic behaviour in the form of earnings management, through the new treatment of goodwill (Comiskey and Mulford 2010; Paglietti 2009).

As measures of leverage are of high relevance to stakeholders (Caio Galdi et al. 2012), it is reasonable to assume that a high ratio of debt-to-capital could be an incentive for companies to make less impairment. However, the relationships between DTC and GWC found from these tests seem to have become weaker since yearly amortizations stopped being allowed in 2005. This also speaks against former studies that have indicated that leverage affects goodwill charges under accounting regulations where amortizations are not allowed, like the ones conducted by Beatty and Weber (2005) and Roychowdhury (2006).

The only occasion that the variable rendered significance after the IFRS implementation was for the United Kingdom 2005-2008. The fact that there seemed to be a negative relationship between DTC and GWC could have to do with Berger's (2010) notion that the British enforcement system does not investigate companies' methods for evaluations enough. The same relationship was not found in the last period though. Furthermore, Berger also questioned the Swedish enforcement system but in these tests, no relationship between DTC and GWC was found in either period after the implementation of IFRS.

5.3 Explanatory capability of the model

The different regressions' capabilities to explain the dependent variable (value of R^2) varied greatly between the different tests. During the first period, all the performed regressions rendered a much higher coefficient of determination than the later ones did, which means that the independent variables used in this study were more accurate at determining goodwill charges before the IFRS implementation than they were afterwards. Since almost all studied companies, except for the German ones that chose to apply international standards, compiled their financial statements under regulations and standards that required yearly amortizations of goodwill, it is likely that the GW variable had a large impact on the adjusted R^2. Even if companies could make different decisions regarding useful lifetimes of the goodwill which would affect the size of the amortizations, and there were criteria for when the goodwill should be tested for impairment (IAS 36; FRS 10; SFAS 42; RR17), the proportion of goodwill on the balance sheet had a strong impact on the size of the charges.

The following table illustrates the values of R^2 in tests 7-15, which were conducted on observations from one country at a time and without the dummy variable:

TABLE 15: R^2 FOR TESTS 7-15

Country	2001-2004	2005-2008	2009-2012
Sweden	0,5202	0,1060	0,1227
The UK	0,4876	0,0575	0,0298
Germany	0,3415	0,0662	0,0751

In all tests concerning the two later periods, the coefficient of determination ranged between 0,0298 and 0,1227. This means that the variables in the model, in the later periods, only explain 2,98-12,27% of the goodwill charges. Considering that more than 90% of the dependent variable in many of the tests is determined by factors that are not included in the used model, it is hard to draw unchallengeable conclusions from the results. However, Aczel (1999, p. 472) states that models that have a low coefficient of determination still can be used for interpretation, as long as caution is used when drawing conclusions.

That R^2 was so low in the regressions is in line with Comiskey and Mulford's (2010) statement that goodwill impairment decisions can have a wide range of explanations, many of which must not have been included in this analysis model. For example, some of the indicators that are listed in IAS 36 as indicators that intangible assets may need to be impaired were not included here since they are difficult to properly quantify. For example, negative changes in company technology, the market, the economic or the legal environment could have affected goodwill charges. The same thing applies to obsolescence or damage to assets, as well as entity changes that affect the usage of the asset.

Furthermore, other factors that are not stated in the standards are likely to have been influential in reality. Numerous pieces of research indicate that earnings management is prevalent when companies are compiling their financial statements under IFRS (Paglietti 2009; Jeanjean and Stolowy 2008). For example, Ramanna and Watts (2012) found connections between non-impairment decisions and CEO compensations, which is another factor not covered in any of the used variables that could potentially affect goodwill charges.

6. Summary and Conclusions

The European Union has worked towards accounting harmonization among its member states during the last decades. During the 1990s, the harmonization effort was mainly manifested through directives, but from 2005 and on, all public groups have had to compile their financial statements under the same standards: IFRS. In practice, one of the largest changes this has brought to companies is how the goodwill post is treated after it has been booked on the balance sheet. In many countries, like Sweden, Germany and the United Kingdom, before 2005 the goodwill post was essentially subject to yearly amortizations. However, under IFRS, amortizations are no longer allowed, and companies instead have to conduct yearly impairment tests.

Some studies indicate that IFRS has made financial statements from different countries within the European Union more comparable (Callao et al. 2009), but it has also been noted that national differences still exist under IFRS (Cole, Branson and Breesch 2012). Concerning the treatment of goodwill charges, studies have indicated that there still are national differences on occasion, but at least some countries within the European Union are now largely comparable (Markovic and Senay Oguz 2011). Furthermore, there is an ongoing debate about which method of subsequent treatment of goodwill is the most appropriate, where some researchers maintain that the possibility of using goodwill as a tool for earnings management is prevalent under systems were goodwill is only tested for impairment (Sevin and Schroeder 2005; Bini and Della Bella 2007).

This study has focused on treatment of the goodwill post in public groups in Sweden, Germany and the United Kingdom, during the period 2001-2012. Financial numbers from the companies were gathered, and then run through a number of different regressions where goodwill charges (GWC) was the dependent variable. This was done to try to find out what factors have affected goodwill charges in the different countries both before and after IFRS, and to find out in what periods differences between Sweden and the other countries have existed. The research questions and the main findings of this study are the following:

- Have there been differences concerning goodwill charges between publicly traded Swedish companies and German and British equivalents respectively, before and after the implementation of IFRS?

Six different multiple regressions were run with a dummy variable that indicated whether the observed company was Swedish or not. The control variables used were goodwill as a proportion of total assets, size measured in total assets, operating cash flows, market capitalization, price-to-book value and debt-to-capital ratio. In each test, Swedish companies were compared to either their German or British equivalents. The tests were done on observations from three different time periods: 2001-2004, 2005-2008 and 2009-2012. The null-hypothesis in each test implied that whether the observed company was Swedish or not had no impact on the acknowledged goodwill charges. The following table describes the results of the tests, where "X" denotes rejection of the null-hypotheses, and "O" indicates that the null-hypothesis was not rejected.

TABLE 16: HYPOTHESIS REJECTIONS TESTS 1-6

Countries	2001-2004	2005-2008	2009-2012
SWE and UK	X	O	O
SWE and GER	X	O	O

During the first period, significant national differences were found in both of the tests, indicating that Swedish companies had higher goodwill charges, holding all other factors the same. The difference was larger between Sweden and the United Kingdom than it was between Sweden and Germany. The Swedish-British difference could have to do with conservatism that seems to manifest itself in the Swedish GAAP. The difference between Sweden and Germany is small and might be explained by the fact that some German companies used US GAAP during the first period. The US and Swedish GAAP differ quite substantially with regards to how goodwill is expensed, as Swedish companies were required to make yearly amortizations, while the companies applying the American standards only conducted impairment tests.

The pattern is clear for the following two periods, 2005-2008 and 2009-2012, as the null-hypothesis could not be rejected in any of the tests concerning those periods. This means that the model used cannot with significance identify differences between the countries. This supports previous studies, which claim that differences are becoming weaker (Callao et al. 2009; Markovic and Senay Oguz 2011). The need of a common enforcement system between the member states of the European Union, such as those suggested by Paglietti (2009) and Jeanjean and Stolowy (2008), does not become evident from these tests, since no differences between the countries as of lately can be identified from the results.

- What factors have influenced goodwill charges in Sweden, Germany and the United Kingdom before and after the implementation of IFRS?

Additionally, nine different regressions were run with the same independent variables as for the first six tests, but this time without the dummy. The purpose of these regressions was to see what factors that could have influenced goodwill charges in the three countries, both before and after the IFRS implementation. Each test concerned one country in one time period. This was done to be able to both compare changes in one country over time, and to compare the results from different countries in the same period.

The results show that during the period immediately before it became mandatory for public groups traded on a market within the European Union to apply IFRS, one factor that seemed to have a large impact on goodwill charges in all countries was the size of the goodwill item. Since the vast majority of the studied companies applied standards that required yearly amortizations of booked goodwill, this might sound natural. However, the standards in use at the time left room for judgments about the useful lifetime of the goodwill item. Furthermore, the standards also contained indicators of impairment that were similar to those stated in IAS 36 today, so the possibility of affecting the charges with accounting choices still existed. In the periods after 2005, the variable still had significance, although its coefficients were considerably lower. This is in line with most of the previous studies examined (Hayn and Hughes 2006; Markovic and Senay Oguz 2011).

The variable total assets was used to control if company size had any effect on goodwill charges. The results from all tests conducted on the first period showed a negative relationship between the two, which is in contrast to theories that say that small companies have more to lose from reporting low earnings (Deegan and Unerman, 2006). In the later periods, no link between total assets and goodwill charges were found in either country. Regarding cash flows, results with significance could only be found in one third of the tests: in Germany during the two first periods, and in Sweden during the last. In the cases where the variable was significant, it had a negative coefficient, indicating that worsening economic performance leads to increasing goodwill charges. However, contrary to what van Hulzen et al. (2011) found, since these results lacked in consistency it does not become evident from the tests that economic performance is reflected faster in the goodwill post under IFRS than it was before.

The independent variable market capitalization yielded values of significance in all tests, except for those concerning Sweden after the adoption of IFRS. The values of the unstandardized coefficients were negative throughout, indicating that a lower market capitalization led to a higher goodwill charge. However, the results cannot support Churyk's (2005) findings that financial statements under impairment regulations better reflect market value, as the coefficients have not become stronger after the adoption of IFRS. Moreover, the results give some credibility to Berger's (2010) questioning of the Swedish enforcement mechanism.

Using price-to-book value as an independent variable yielded mixed results. While significance was found for all countries before 2005, only half of the tests after 2005 rendered significance (Germany 2005-2008 and 2009-2012, and Sweden 2009-2012). While a price-to-book value below one is an example of an indicator of the need to impair goodwill stated in IAS 36, the tests done in this study showed a positive relationship between price-to-book value and goodwill charges. This is in line with Ramanna and Watts (2012) findings when studying American companies, that companies with a low price-to-book value do not impair as much as should be appropriate.

When testing debt-to-capital as an independent variable, significance was only found in three out of nine tests, two of these occurring before 2005. It would seem as if the connection between leverage and goodwill charges has become weaker since the mandatory adoption of IFRS in 2005. This goes against previous research that has found that earnings management under IFRS has increased (Paglietti 2009; Jeanjean and Stolowy 2008). The findings also contradicts Beatty and Weber's (2005) and Roychowdhury's (2006) claims that leverage would affect the goodwill charge, as only one out of six tests after the adoption of IFRS was significant.

The above results show that the mandatory adoption of IFRS does not seem to have standardized which factors that determine goodwill charges, as the results varied so much over time and between different countries. Moreover, in all tests concerning the years after the IFRS implementation, the independent variables that were used in the regressions largely failed to explain the goodwill charges in all three countries. While the used variables were created after studying literature and indicators of the need of goodwill impairment stated in IAS 36, the explanatory capability of the model was still rather low. There are some stated indicators of goodwill impairment in IAS 36 that are hard to quantify which were not included as independent variables in the regression model. This is likely to be part of the reason why the model fails to determine goodwill charges better, as the impact of these

factors could not be measured. However, the low coefficient of determination could just as well support the theories that say that earnings management, in order to make the company seem more attractive to investors, is prevalent under IFRS (Paglietti 2009; Jeanjean and Stolowy 2008).

6.1 Suggestions for further research

During the process of making this study, the authors have thought of a few things that would be relevant to conduct future research on. It has become apparent that treatment of the goodwill post is a complicated subject, which can be approached from many different angles. Since this study has been of a quantitative nature, it would be interesting to conduct a study with a more qualitative approach, with the same countries and the same time period in focus. This would enable a quantification and analysis of variables that were out of this study's reach. For example, annual reports could be studied to find if the level of disclosures concerning goodwill impairments has been different, both over time and in the different countries.

As national differences were not found on the dummy variable between Sweden and the United Kingdom and Germany respectively in either of the periods after the implementation of IFRS, it would be interesting to examine if similar results would be found between other countries using IFRS. Since a lot of countries are using the common standards, it opens up for comparisons between countries and regions with profoundly different cultures. It would for instance be interesting to include Asian companies in such a comparison.

7. References

Here follows the list of references used in this study. Accounting standards and regulations can be found under section 7.1

Aisbitt, S. (2002). "Tax and accounting rules: some recent developments". *European Business Review*, Vol. 14 Iss: 2, pp.92-97.

Alexander, D. and Archer, S. (2000). "2001 Miller International Accounting Standards Guide". First edition, Hardcourt Inc.

Aczel, A. D. (1999). "Complete Business Statistics". 4th ed., Irwin/McGraw-Hill: Singapore.

Ball, R., Robin, A. and Shuang Wu, J. (2003). "Incentives versus standards: properties of accounting income in four East Asian countries". Journal *of Accounting and Economics*, 36/2003, pp. 235-270.

Beatty, A. and Weber, J. (2005). "Accounting discretion in fair value estimate: An Examination of SFAS 142 Goodwill Impairments". *Journal of Accounting Research*, Vol. 44 No. 2, pp 257-288.

Berger, A. (2010). "The development and status of enforcement in the European Union". Accounting in Europe, Vol. 7, iss: 1, pp. 15-35

Bini, M. and Della Bella, C. (2007). "Determinants of market reactions to goodwill write-off after SFAS 142". *Managerial Finance*, Vol. 33 Iss: 11, pp.904-914.

Blake, J., Akerfeldt, K., Fortes, H.J. and Gowthorpe, C. (1997). "The relationship between tax and accounting rules - the Swedish case". *European Business Review*, Vol. 97, Iss: 2, pp. 85-91

Bloom, M. (2009). "Accounting for Goodwill". Abacus, 45(3), pp. 379-389.

Bradshaw, M. and Miller, G. (2008). "Will harmonizing accounting standards really harmonize accounting? Evidence from non-U.S. firms adopting U.S. GAAP". *Journal of Accounting, Auditing and Finance*, Vol 23, pp. 233-263.

Bryman, A. and Bell, E. (2011). "Business Research Methods". 3rd Ed, Oxford University Press, New York.

Caio Galdi, F., Lopo Martinez, A. and Martins Ardison, K. M. (2012). "The effect of leverage on earnings management in Brazil". *Advances in Scientific and Applied Accounting*, Vol. 5 iss. 3, pp. 305-324

Callao, S., Ferrer, C., Jarne, J.I. and Laínez, J.A.(2009). "The impact of IFRS on the European Union: Is it related to the accounting tradition of the countries?". *Journal of Applied Accounting Research*, Vol. 10, Iss: 1, pp.33-55.

Churyk, N.T. (2005). “Reporting goodwill: are the new accounting standards consistent with market valuations?”. *Journal of Business Research*, No. 58/2005, pp. 1353-1361.

Cole, V., Branson, J. and Breesch, D. (2012). "The uniformity-flexibility dilemma when comparing financial statements: Views of auditors, analysts and other users". *International Journal of Accounting and Information Management*, Vol. 20 Iss: 2, pp.114 - 141.

Comiskey, E. and Mulford, C. (2010). “Goodwill, triggering events, and impairment testing”. Managerial Finance, Vol. 36, No 9/2010, pp. 746-767.

Dalström, M., Tingstedt, A. and Odinsman, J. (2014). “Goodwill och nedskrivningar - En jämförande studie mellan landet lagom och landet mycket”. Bachelor thesis, Lund University.

Deegan and Unerman. (2006). "Financial Accounting Theory". 1st European ed. Maidenhead: McGraw-Hill Education

Deloitte and Touche, (2001) “European Comparison: UK and Germany, The main differences between UK and German accounting practise”. Accessed online through <http://www.iasplus.com/en/binary/dttpubs/uk_ger.pdf>, viewed 2014-05-12.

Deloitte, (no date) "IAS 22 Business combinations - Superseeded". IAS plus, available online on <http://www.iasplus.com/en/standards/ias/ias22>, viewed 2014-05-27

Ding, Y., Richard, J. and Stolowy, H. (2008). “Towards and understanding of the phases of goodwill accounting in four Western capitalist countries: From stakeholder model to shareholder model”. *Accounting, Organisations and Society*, 33-2008, pp. 718-755.

European Parliament and the Council of the European Union (2002), “Regulation (EC) No 1606/2002 of the European Parliament and of the Council of 19 July 2002 on the application of international accounting standards”, *Official Journal of the European Union,* l 243/1, pp. 1-4

Fédération des Experts Comptables Européens. (2002) “FEE survey on business combinations”. March 2002. Brussels. Accessed online through <http://www.iasplus.com/en/binary/resource/feebcrpt.pdf>, viewed 2014-05-26

Gauffin, B. and Nilsson, S-A. (2013) “ Rörelseförvärv enligt IFRS 3, åttonde året - och inte blir det bättre”. *Balans*, Vol. 9/2013

Glaum, M., Schmidt, P., Street, D. and Vogel, S. (2013). “Compliance with IFRS3- and IAS 36-required disclosures across 17 European countries: company- and country-level determinants”. *Accounting and Business Research*, Vol 43, No 3, pp 163-204.

Haller, A. (1992). “The relationship of financial and tax accounting in Germany: A major reason for accounting disharmony in Europe”. *International Journal of Accounting*, Vol. 7, pp. 10-23.

Hayn, C. and Hughes, P. J. (2006). “Leading Indicators of Goodwill Impairment”. *Journal of Accounting, Auditing and Finance*, Vol. 21, Issue 3, pp. 223-265.

Holme, I. M and Krohn Solvang, B. (1996). ”Forskningsmetodik – om kvalitativa och kvantitativa metoder”. Studentlitteratur AB, Lund

Jacob, R. A. and Madu, C.N. (2009). "International financial reporting standards: an indicator of high quality?". *International Journal of Quality and Reliability Management*, Vol. 26 Iss: 7, pp.712-722.

Jeanjean, T. and Stolowy, H. (2008). “Do accounting standards really matter? An exploratory analysis of earnings management before and after IFRS adoption”. *Journal of accounting and public policy*, No. 27/2008 pp. 480-494

KPMG Bohlins (2005). “IFRS compared to Swedish GAAP: An overview”. Accessed online through <http://www.kpmg.com/cn/en/issuesandinsights/articlespublications/pages/ifrs-compared-to-swedish-gaap-o-200504.aspx>, viewed 2014-05-05.

Lundh, S. (2009). "Implementation of IFRS reporting in Sweden". Dissertation, University of Linköping

Markovic, S. and Senay Oguz, S. (2011). “Impairment of Goodwill - A study about differences in goodwill impairment and the enforcement regarding impairment of goodwill in Europe, The US and in the UK, France, Germany and Sweden”. Bachelor thesis, University of Gothenburg, Gothenburg

Marton, Jan. (1998). "Accounting and Stock Markets. A Study of Swedish Accounting for International Investors and Analysts". Dissertation, University of Gothenburg, Gothenburg.

Marton, J., Lumsden, M., Lundqvist, P. and Pettersson, A.K. (2012). "IFRS - i teori och praktik". 3rd ed. Stockholm: Sanoma Utbildning

Masters-Stout, B., Costigan, M. and Lovata, L. (2008). "Goodwill impairments and chief executive officer tenure", *Critical perspectives on Accounting,* 19/2008, pp. 1370-1383.

Newbold, P, Carlson W. and Thorne, B. (2013). "Statistics for Business and Economics". 8th ed. Pearson Education Limited, Essex.

Nobes, C. and Parker, R. (2006). "Comparative International Accounting". 5th ed. Essex: Pearson Education Limited.

Paglietti, P. (2009). “Earnings management, timely loss recognition and value relevance in Europe following the IFRS mandatory adoption: Evidence from Italian listed companies”. *Economia Aziendale Online.* No. 4/2009 pp. 97-117.

Pfaff, D. and Schröer, T. (1996). “The relationship between financial and tax accounting in Germany - the authoritativeness and reverse authoritativeness principle”. *The European Accounting Review*, Vol. 5 (Supplement), 963-979.

PWC (2010). "Similarities and differences: IFRS - German GAAP (revised)". Accessed online through >https://www.pwc.com/en_GX/gx/ifrs-reporting/pdf/IFRS-vs-German-GAAP-Similarities-and-differences_final2.pdf>, viewed 2014-04-23.

Ramanna, K. and Watts, R. (2012). "Evidence on the use of unverifiable estimates in required goodwill impairment". *Review of Accounting Studies*, Vol. 17, Iss. 4, pp. 749-780

Roychowdhury, S. (2006). “Earnings management through real activities manipulation”. *Journal of Accounting and Economics*, Vol. 42 iss: 3, pp. 335-370.

Sahut, J., Boulerne, S. and Teulon, F. (2011). "Do IFRS provide better information about intangibles in Europe?". *Review of Accounting and Finance*, Vol. 10 Iss: 3, pp.267-290.

Sevin, S. and Schroeder, R. (2005). "Earnings management: evidence from SFAS No. 142 reporting". *Managerial Auditing Journal*, Vol. 20 Iss: 1, pp.47-54.

Smith, D. (2006). “Redovisningens språk”. Studentlitteratur AB, Lund.

United Nations (2006). “Review of practical implementation issues of international financial reporting standards - A case study of Germany”. Accessed online through <http://unctad.org/en/docs/c2isard33a2_en.pdf>, viewed 2014-05-28

van Hulzen, P., Alfonso, L., Georgakopoulos, G. and Sotiropoulos, I. (2011). “Amortisation versus impairment of goodwill and accounting quality”. *International Journal of Economic Sciences and Applied Research*, Vol. 4, Iss. 3, pp. 93-118

Verriest, A. and Gaeremynck, A. (2009). "What determines goodwill impairment?" *Review of Business and Economics*, Vol:54 Iss. 2, pp. 1-23

7.1 Accounting Standards and laws

4100-1 Handelsgesetzbuch (HGB) (German Commercial Code). (pre 2009). Berlin, Das Bundesministerium der Justiz und für Verbraucherschut

Financial Reporting Standard (FRS) 10: Goodwill and Intangible Assets. Accounting Standards Board (ASB). (1997).

Financial Reporting Standard (FRS) 11: Impairment of Fixed Assets and Goodwill. Accounting Standards Board (ASB). (1998).

International Accounting Standard (IAS) 36: Impairment. International Accounting Standards Board (IASB). (2013).

International Accounting Standard (IAS) 38: Intangible Assets.
International Accounting Standards Board (IASB). (2013).

International Financial Reporting Standard (IFRS) 3: Business Combinations.
International Accounting Standards Board (IASB). (2013).

Redovisningsrådets Rekommendation (RR) 1:00 Koncernredovisning.
Redovisningsrådet. (2005).

Redovisningsrådets Rekommendation (RR) 15 Immateriella Tillgångar.
Redovisningsrådet. (2005)

Redovisningsrådets Rekommendation (RR) 17 Nedskrivningar.
Redovisningsrådet. (2005).

SFS 1995:1554. Årsredovisningslagen (Annual Accounts Act).
Stockholm, Justitiedepartementet

Statement of Financial Accounting Standards (SFAS) No. 142: Goodwill and Other Intangible Assets.
Financial Accounting Standards Board (FASB). (2001).

The Conceptual Framework for Financial Reporting.
International Accounting Standards Board (IASB). (2010).

Appendices

Appendix 1: Datastream variable description

Datastream variables

Name	Symbol	Description
Total Assets	WC02999	TOTAL ASSETS represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets.
Funds From Operations	WC04201	FUNDS FROM OPERATIONS represents the sum of net income and all non-cash charges or credits. It is the cash flow of the company.
Total Debt % Total Capital	WC08221	(Long Term Debt + Short Term Debt & Current Portion of Long Term Debt) / (Total Capital + Short Term Debt & Current Portion of Long Term Debt)
Amortization & Impairment Of Goodwill	WC18224	AMORTIZATION AND IMPAIRMENT OF GOODWILL represents the amortization charge and loss due to impairment of goodwill.
Goodwill/Cost In Excess Of Assets Purchased, Net	WC18280	GOODWILL/COST IN EXCESS OF ASSETS PURCHASED represents the excess cost over the fair market value of the net assets purchased. It is included in other intangible assets.
Price To Book Value	PTBV	This is the share price divided by the book value per share.
Market Capitalization	WC08001	Market Price-Year End * Common Shares Outstanding
Accounting Standards Followed	WC07536	Accounting Standard, Annual Item

Appendix 2: Pearson correlation variables

Correlation (N=5064)

	GWC	GW	TA	CF	MC	PTBV	DTC
GWC	1	,347**	-,122**	-,171**	-,055**	,095**	-,031*
GW	,347**	1	-,049**	0,006	0,009	,065**	0,023
TA	-,122**	-,049**	1	,142**	-,253**	-,036**	,432**
CF	-,171**	0,006	,142**	1	,185**	-,064**	,029*
MC	-,055**	0,009	-,253**	,185**	1	,359**	-,366**
PTBV	,095**	,065**	-,036**	-,064**	,359**	1	-,032*
DTC	-,031*	0,023	,432**	,029*	-,366**	-,032*	1

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

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

Appendix 3: F-tests 1-6

ANOVAa F-test 1

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,257858302	7	0,0368369	108,311998	,000b
Residual	0,29112552	856	0,0003401		
Total	0,548983822	863			

ANOVAa F-test 2

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,351663839	7	0,050237691	129,1249183	,000b
Residual	0,463762756	1192	0,000389063		
Total	0,815426594	1199			

ANOVAa F-test 3

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,009680222	7	0,001382889	9,828481633	,000b
Residual	0,120441068	856	0,000140702		
Total	0,130121289	863			

ANOVAa F-test 4

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,00955798	7	0,001365426	16,94729912	,000b
Residual	0,09603816	1192	8,05689E-05		
Total	0,10559614	1199			

ANOVAa F-test 5

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,009631031	7	0,001375862	9,22182257	,000b
Residual	0,127712005	856	0,000149196		
Total	0,137343035	863			

ANOVAa F-test 6

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,018663866	7	0,002666267	20,90447668	,000b
Residual	0,152033931	1192	0,000127545		
Total	0,170697797	1199			

Appendix 4: F-tests 7-15

ANOVAa F-test 7

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,192070776	6	0,032011796	68,77257446	,000b
Residual	0,171759641	369	0,000465473		
Total	0,363830418	375			

ANOVAa F-test 8

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,089066585	6	0,014844431	78,24388585	,000b
Residual	0,091255325	481	0,00018972		
Total	0,180321911	487			

ANOVAa F-test 9

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,151056668	6	0,025176111	72,13815751	,000b
Residual	0,285131803	817	0,000348999		
Total	0,43618847	823			

ANOVAa F-test 10

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,006874638	6	0,001145773	8,409930937	,000b
Residual	0,050272737	369	0,00013624		
Total	0,057147375	375			

ANOVAa F-test 11

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,005045324	6	0,000840887	5,954348996	,000b
Residual	0,067927958	481	0,000141222		
Total	0,072973282	487			

ANOVAa F-test 12

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,003524997	6	0,000587499	10,71927317	,000b
Residual	0,044777945	817	5,48078E-05		
Total	0,048302942	823			

ANOVAa F-test 13

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,015487968	6	0,002581328	9,74267803	,000b
Residual	0,097766754	369	0,000264951		
Total	0,113254721	375			

ANOVAa F-test 14

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,000987805	6	0,000164634	3,495083291	,002b
Residual	0,022657269	481	4,71045E-05		
Total	0,023645074	487			

ANOVAa F-test 15

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0,004644972	6	0,000774162	12,13826608	,000b
Residual	0,052107141	817	6,37786E-05		
Total	0,056752113	823			

Appendix 5: Compilation of B-values, country by country

Numbers in black indicate that the B-value is significant while the grey numbers indicate a lack of significance.

Sweden

Variable	B-value 2001-2004	B-value 2005-2008	B-value 2009-2012
(Constant)	0,0269	0,0035	0,0055
GW	0,1221	0,0229	0,0299
TA	-0,0015	-0,0002	-0,0004
CF	-0,0060	-0,0050	-0,0198
MC	-0,0079	-0,0012	-0,0028
PTBV	0,0020	0,0004	0,0015
DTC	-0,0001	0,0000	0,0000
Adjusted R Square	**0,5202**	**0,1060**	**0,1227**

UK

Variable	B-value 2001-2004	B-value 2005-2008	B-value 2009-2012
(Constant)	0,0170	0,0082	0,0036
GW	0,0641	0,0089	0,0052
TA	-0,0009	-0,0001	-0,0002
CF	-0,0159	-0,0053	0,0088
MC	-0,0025	-0,0034	-0,0015
PTBV	0,0007	0,0000	0,0000
DTC	0,0000	-0,0001	0,0000
Adjusted R Square	**0,4876**	**0,0575**	**0,0298**

Germany

Variable	B-value 2001-2004	B-value 2005-2008	B-value 2009-2012
(Constant)	0,0160	0,0024	0,0032
GW	0,1024	0,0125	0,0146
TA	-0,0008	-0,0001	-0,0002
CF	-0,0145	-0,0096	-0,0065
MC	-0,0043	-0,0015	-0,0022
PTBV	0,0005	0,0008	0,0015
DTC	-0,0001	0,0000	0,0000
Adjusted R Square	**0,3415**	**0,0662**	**0,0751**

Appendix 6: Descriptive statistics

Descriptive Statistics Sweden 2001-2004

	N	Minimum	Maximum	Mean	Std. Deviation
GWC	376	0	0,1588	0,0178	0,0311
GW	376	0	0,6423	0,1259	0,1645
TA	376	7,2515	19,4327	12,2856	2,4854
CF	376	-0,7714	0,2328	-0,0034	0,1851
MC	376	0,0412	3,2303	0,9152	0,6759
PTBV	376	0,4	12,1296	2,6743	2,6112
DTC	376	0	0,9139	0,3011	0,252

Descriptive Statistics UK 2001-2004

	N	Minimum	Maximum	Mean	Std. Deviation
GWC	488	-0,004689606	0,088158946	0,013010304	0,019242424
GW	488	-0,000228688	0,758560986	0,165900162	0,194075791
TA	488	8,413158005	20,65866604	13,64465293	2,456188302
CF	488	-0,20286842	0,29907922	0,080753757	0,07535404
MC	488	0,031909817	5,213742688	0,93619574	0,916365745
PTBV	488	0,3	28,7052387	2,885431306	3,84105492
DTC	488	0	0,988262205	0,322351562	0,220557688

Descriptive Statistics Germany 2001-2004

	N	Minimum	Maximum	Mean	Std. Deviation
GWC	824	-0,007224493	0,12184781	0,01005497	0,023021688
GW	824	-0,088350673	0,471654627	0,094214013	0,121205728
TA	824	8,224967479	19,7969581	12,55672624	2,398182718
CF	824	-0,376756258	0,487210203	0,05895879	0,114936691
MC	824	0,009557907	3,186777601	0,701441619	0,674707752
PTBV	824	0,14	25,54410363	2,245401114	3,026339996
DTC	824	0	0,9947	0,297742597	0,259919173

Descriptive Statistics Sweden 2005-2008

	N	Minimum	Maximum	Mean	Std. Deviation
GWC	376	0	0,080871036	0,002579892	0,012344756
GW	376	0	0,679109334	0,158463677	0,171166897
TA	376	7,10162768	19,96326217	12,6622429	2,51061572
CF	376	-0,334961824	0,465563688	0,069982403	0,107520831
MC	376	0,016589818	6,237282455	1,122122342	0,999170679
PTBV	376	0,48	8,787037523	2,521468684	1,581162985
DTC	376	0	0,9348	0,279096011	0,231195194

Descriptive Statistics UK 2005-2008

	N	Minimum	Maximum	Mean	Std. Deviation
GWC	488	-0,060079752	0,080966882	0,002634478	0,012241016
GW	488	-1,77822E-05	0,758215889	0,180019457	0,189460242
TA	488	8,480697211	21,37404039	13,96493569	2,469006563
CF	488	-0,139585601	0,308689573	0,085387717	0,070354241
MC	488	0,00604763	3,588362894	0,959588898	0,799151807
PTBV	488	0,01	73,91631125	3,043440438	5,931514382
DTC	488	0	0,9283	0,30998668	0,220702941

Descriptive Statistics Germany 2005-2008

	N	Minimum	Maximum	Mean	Std. Deviation
GWC	824	-0,002290576	0,053000557	0,001828363	0,007661025
GW	824	-0,001728257	0,497491359	0,106856058	0,125867016
TA	824	8,286521374	20,08197214	12,81048473	2,411328287
CF	824	-0,21607409	0,366456546	0,081087373	0,083885889
MC	824	0,003008241	3,971915339	0,849480587	0,768173533
PTBV	824	0,19	7,576404139	1,968350055	1,291223434
DTC	824	0	0,9602	0,28253301	0,240092059

Descriptive Statistics Sweden 2009-2012

	N	Minimum	Maximum	Mean	Std. Deviation
GWC	376	-0,081140958	0,103346166	0,003438646	0,017378509
GW	376	-0,081140958	0,713239053	0,181918994	0,176291246
TA	376	6,725565495	20,39327449	12,85175807	2,583331036
CF	376	-0,41160269	0,293171652	0,056394035	0,106961845
MC	376	0,03353354	3,78249067	0,918207915	0,774475677
PTBV	376	0,23	7,80859761	1,92654677	1,575263513
DTC	376	0	0,9487	0,278726862	0,236195989

Descriptive Statistics UK 2009-2012

	N	Minimum	Maximum	Mean	Std. Deviation
GWC	488	0	0,035084076	0,001993964	0,006967963
GW	488	0	0,771153205	0,189860694	0,192666802
TA	488	8,853319662	21,43451807	14,09986866	2,523927608
CF	488	-0,169816289	0,29923801	0,079864345	0,072015427
MC	488	0,013757571	3,562055117	0,845813509	0,729967351
PTBV	488	0,08	36,34997818	1,946208927	2,901590828
DTC	488	0	0,9168	0,299690369	0,213359159

Descriptive Statistics Germany 2009-2012

	N	Minimum	Maximum	Mean	Std. Deviation
GWC	824	-0,003759295	0,068533003	0,001802733	0,008304072
GW	824	0	0,509627027	0,110717512	0,128270734
TA	824	8,865593999	20,29076223	12,96175748	2,441099542
CF	824	-0,252226828	0,3913959	0,071905923	0,085961162
MC	824	0,005657181	3,952175749	0,773023802	0,751593672
PTBV	824	0,18	7,145328729	1,561891524	1,164518538
DTC	824	0	0,9821	0,285693811	0,241493062