GOODWILL IMPAIRMENTS AND THE VALUE RELEVANCE OF GOODWILL OF THE SMALL LISTED COMPANIES IN FINLAND

**Jyväskylä University School
of Business and Economics**

Master's thesis

2016

Suvi Vallius
Accounting
Supervisor: Aila Virtanen

JYVÄSKYLÄN YLIOPISTO

ABSTRACT

Author	
Suvi Vallius	

Title of thesis	
Goodwill impairments and the value relevance of goodwill of the small listed companies in Finland	

Discipline	Type of work
Accounting	Master's thesis
Time (month/year)	Number of pages
February 2016	63

Abstract

The valuation and value relevance of goodwill is explored in this study with the closer research of the chosen target companies. The purpose of this study is to examine whether capitalised goodwill is value relevant and how the amount of recorded goodwill has changed during the eight-year period from 2007 to 2014. Moreover, one objective is to explore what has been the market reaction for goodwill impairments. The research approach applied is quantitative study, with some characteristics from field study approach. Apart from literature, data used consists of annual reports and other financial information e.g. data of the stock price development.

The financial statement analysis showed that the amount of goodwill decreased substantially from 2007 to 2014. Also, the correlation analysis resulted as strong relationships between goodwill and companies' liquidity and profitability. With the relations to goodwill, these correlations indicate that goodwill is certainly related to the performance of a company. The regression analysis had statistically significant results showing that liquidity and solvency had the highest explanatory power. All in all, fundamental variables were connected with goodwill as the research results displayed in the correlation and regression analysis. The correlation analysis resulted a strong correlation between goodwill and market beta, but no connection with change in stock exchange price was found.

Key words

Goodwill accounting, value relevance, goodwill impairment, IFRS

Location

Jyväskylä University School of Business and Economics

TIIVISTELMÄ

Tekijä	
Suvi Vallius	
Työn nimi	
Goodwill impairments and the value relevance of goodwill of the small listed companies in Finland	
Oppiaine	Työn laji
Laskentatoimi	Pro gradu -tutkielma
Aika (kuukausi/vuosi)	Sivumäärä
Helmikuu 2016	63

Tiivistelmä

Tutkimuksen tavoitteena on tarkastella, miten liikearvon arvo määräytyy ja onko liikearvo arvorelevanttia. Kohdeyritysten taloudellisten tietojen ja niiden analysoinnin pohjalta on tarkoituksena selvittää, onko liikearvon ja yrityksen markkina-arvon välillä yhteys sekä miten liikearvon määrä on vaihdellut kohdeyritysten taseissa vuosina 2007-2014. Tavoitteena on myös selvittää, miten markkinat suhtautuvat liikearvon arvonalentumiskirjauksiin. Tutkimusmenetelmä on kvantitatiivinen tutkimus, jossa on myös ominaispiirteitä field-tutkimuksesta. Tutkimusaineisto koostuu kirjallisuuden lisäksi kohdeyritysten tilinpäätöstiedoista sekä muusta taloudellisesta informaatiosta, kuten pörssikurssitiedoista.

Tutkimustulokset osoittivat, että liikearvon määrä väheni merkittävästi vuodesta 2007 vuoteen 2014. Tilinpäätösanalyysin lisäksi toteutettiin korrelaatio- ja regressioanalyysit, jotta eri tunnuslukujen ja liikearvon välille löydettäisiin yhteys. Analyysit osoittivat, että liikearvon ja tunnuslukujen välillä vallitsee yhteys. Yrityksen pörssikurssimuutos oli ainoa tunnusluku, joka ei korreloinut liikearvon kanssa. Tulokset osoittivat, että liikearvo on yhteydessä yrityksen suorituskykyyn vaikka yhteyttä markkina-arvoon ei pystytty vahvistamaan.

Asiasanat
Goodwill accounting, value relevance, goodwill impairment, IFRS

Säilytyspaikka
Jyväskylä yliopiston kauppakorkeakoulu

FIGURES

TABLES

TABLE OF CONTENT

1 INTRODUCTION

1.1 Background and motivation

Goodwill has been a popular subject of research for decades, and it is still a fairly topical subject of research. Already in the 1920s, Owens (1923) researched goodwill and realised that more research is needed, especially related to the problematic valuation of goodwill and the impairment of goodwill. Moreover, researchers have still contradictory views about goodwill and consensus remains unachieved (e.g. Bugeja & Gallery 2006; Gynther 1969; Johnson & Petrone 1998; Seetharaman, Balachandran & Saravanan 2004).

During the year 2013, European companies conducted less goodwill impairments than during the previous year. Still in 2013, the amount of impairments was greatly more compared to the year 2010. (Duff & Phelps 2014.) Also, the amount of acquisitions in total has increased in Europe during the past years (PwC. 29.10.2012). The professionals in Finland working with mergers and acquisitions also believe that the amount of acquisitions will increase during the year 2015 (Deloitte. 21.1.2015). According to Giacomino & Akers (2009), the quantity of goodwill impairments was on the increase in 2008. They suggested that due to the poor economic situation, the same trend will continue in the future.

The trend of goodwill impairments of the European companies did not end in 2008, whereas there have been several companies announcing new goodwill impairments. For example the Finnish information technology company Affecto announced an impairment of 7.4 million euros in the year 2014 related to the company's Swedish unit. Other examples for substantial impairments are Trainers' House, which informed an impairment of 17.6 million euros in 2011 and Microsoft with an impairment 6.2 billion dollars in 2012. The impairments mentioned above resulted also as a net loss of the financial period. Another example is Hewlett-Packard, which made an impairment of 8.8 billion dollars in November 2012 for an 11 billion dollar acquisition the company made only one year before the impairment. These multi-million impairments indicate that the incorrect valuation could result as heavy losses. Although as Seetharaman, Sreenivasan, Sudha & Ya Yee (2005) have stated that measuring the fair value of the goodwill is not unambiguous and companies should make detailed plans in order to maintain the value of goodwill.

In the year 2005, listed companies in Finland started to follow the International Financial Reporting Standards (IAS/IFRS). Before that, Finnish companies had applied the principles of straight-line depreciation instead of the IAS/IFRS and the required annual impairment tests. The objective of the new impairment testing method was to enhance the quality of financial reporting and harmonise the international practises (IAS 36). Some suggest that the goodwill impairments are unpredictable changes in the financial market and make the determination of value more difficult compared to the previously used straight-line depreciation method (Huikku & Silvola 2012b).

Previous research has focused mainly on the determination of the concept of goodwill and finding the correct book value of goodwill (mm. Bloom 2009; Gore & Zimmerman 2010; Gynther 1969; Johnson & Petrone 1998). Some have researched the value relevance of goodwill and the connection between goodwill and profit performance of companies (mm. Bugeja & Gallery; Hirchsey & Richardson 2002; McCarthy & Schneider 1995; Vance 2010). Others have researched the value relevance of goodwill in the European setting and stated that not so many have studied the changes in the value relevance of goodwill accounting after the adoption of IAS/IFRS (Hamberg & Beisland 2014). Goodwill and the connection to the profit performance in the Finnish business environment have not been significantly researched after the financial crisis and the adoption of the IAS/IFRS regime, which makes the subject interesting and worth to further research.

1.2 Objectives and limitations

One objective for this study is to research how the amount of goodwill has developed in the balance sheets of the target companies during the years 2007-2014. Some previous studies have indicated that the absolute value of goodwill decreased from the year 2007 to 2012 (Vallius 2014). The focus in this research is also to investigate whether the same decreasing trend continued in 2013 and 2014. Furthermore, the connection between the amount of goodwill and profitability, share price development and the value relevance of goodwill are researched within the environment of small listed companies.

Goodwill arises in an acquisition as the surplus price paid in relation to the fair market value of the net assets, so one goal is to research the additional value gained in an acquisition or the overvaluation of the purchased company. Goodwill impairment could be recorded if the purchased company is discovered as overvalued. The valuation of goodwill and value relevance is explored in this study with the closer research of the chosen target companies and their financial reports. The purpose of this study is to examine whether capitalised goodwill is value relevant and how the amount of recorded goodwill has changed during the eight-year period from 2007 to 2014. Moreover, one objective is to explore what has been the market reaction for goodwill impairments. This study strives to answer to following research questions:

> *What have been the changes in volume of capitalised goodwill in balance sheets during 2007-2014? Moreover, what kind of relations can be found between goodwill and other fundamentals?*

> *Does the market treat goodwill as value relevant asset? Also, what is the association between the accounting numbers and the market value of security?*

The following research hypotheses will be investigated to answer the research questions represented:

Hypothesis 1. The performance of the company is related to the capitalised goodwill.

Hypothesis 2. Goodwill is value relevant and can be shown as the connection between the capitalised goodwill and stock exchange price changes, as well as in relation to goodwill and market beta.

Hypotheses are derived from the previous theories and researches, which will be presented in Chapter 3. Nine previous studies are concentrated on investigating the value relevance of goodwill, while value relevance can be interpreted as the association between accounting numbers and the market value of security. Due to the fact that majority of the previous studies have been conducted before the IFRS adoption of before the implementation of goodwill impairment regime, same kind of study is worth to perform in IFRS environment. In contrast, some of the researchers have collected the data before and after the goodwill impairment rules or the IFRS adoption. This study will clarify if similar results can be found in comparison with the studies secondly mentioned.

This study is focused on Finnish companies with capitalised goodwill in their balance sheets, while companies from other countries and without goodwill are excluded. Also, research is concentrated in goodwill and investigating the value-relevance of goodwill. However, the profound examination of goodwill impairments and different testing methods is not part of the study. Research is limited in eight-year time period during 2007-2014, while earlier financial statement and market data will not be analysed. The research strategy and selected fundamentals are presented in Chapter 4, which reveals the ones that have been involved.

1.3   Research approach and data

The research approach applied is quantitative study, with some characteristics from field study approach. In addition to traditional quantitative analysis methods, this study will utilise some methods used in field study approach. Apart from literature, data used consists of annual reports during the years 2007-2014 and other financial information e.g. data of the stock price development. The financial data is collected from small Finnish companies listed in the NASDAQ OMX Nordic. Chosen companies are from two different sectors, which are Technology and Industrials.

1.4   Structure

Next, the key terms will be defined and the main standards (IAS/IFRS) related to goodwill and goodwill impairment are presented. This is followed by a review of prior research and also the principal theories associated to the quantitative research approach and field study are presented. The next part will present the methodology and research design including the research strategy,

data collection and quality of the research. Final chapters are about the empirical results of the research and the empirical analysis of the results, which are presented together with some descriptive statistics. This will be followed by a conclusion part with some guidance for future research.

This study comprises of listed companies, who comply with the International Financial Reporting Standards in goodwill and goodwill impairments. The most important standards related to the study are IAS 16 Property, Plant and Equipment, IAS 36 Impairment of Assets, IAS 38 Intangible Assets and IFRS 3 Business Combinations. Goodwill impairment testing is excluded from the study, because research is focused on goodwill impairment and the value relevance of goodwill. Moreover, research will not conduct standards used in other countries including US GAAP, and the standards used by Finnish non-listed companies.

1.5 Definition of the key terms

1.5.1 Goodwill

Goodwill has been controversial concept within researchers and accountants for more than decades, and generally accepted definition and accounting treatment is still not reached (Seetharaman et al. 2004). The problematic related to goodwill definition is based on the numerous elements of goodwill, which makes it complicated to determine (Owens 1923). Some of the researchers define goodwill as a company asset, while some argue against that and refuse to accept goodwill as an asset. Also, divergent views about the correct accounting treatment for goodwill exist between researchers. According to IAS/IFRS, an asset can be defined as a resource that a company controls and assumes to receive economic benefits in the future (IAS 38.8). As Bugeja & Gallery (2006) have stated, goodwill is identified as an asset by the investors. Some studies recognise goodwill as an asset and some assert the opposite (Johnson & Petrone 1998).

Company can control and own tangible and intangible assets, which can be valued and recorded. According to IAS/IFRS tangible assets can be defined as items that are used during more than one year to produce goods and services or that are being used for administrative purposes (IAS 16.6). For example special knowledge, design and implementation of new processes or systems, licences, intellectual property and trademarks are named as intangible resources that are determined as identifiable assets which are non-monetary and do not include physical substance (IAS 38.8-9). As Vance (2010) has demonstrated, goodwill is no different than other tangible or intangible assets but is valued as an asset like any other intangible or tangible assets.

Owens (1923) shares the same opinion as Vance (2010) that goodwill can usually be interpreted to other intangible assets, such as trade names, trademarks and patents. Some researchers have also considered goodwill as an asset, and contemplated the substance of goodwill. Others have stated that goodwill should not be treated as an asset. For instance, Gore & Zimmerman (2010) explain goodwill as the generated synergy, when two companies

combine into one. Thus, goodwill reflects something additional to justify the premium paid for a certain company, but does not necessarily present an asset (Gore & Zimmerman 2010). Nevertheless the criticism, IAS/IFRS interprets goodwill as an intangible asset (IFRS 3, Appendix A).

Goodwill will only arise from a business combination as the difference between the fair value of the purchased company and fair value of the identifiable net assets (Gore & Zimmerman 2010). Net assets are the difference between the company's assets and liabilities. According to IAS/IFRS, the fair value of an asset can be defined as "-- the amount for which that asset could be exchanged between knowledgeable, willing parties in an arm's length transaction" (IAS 38.8). If the acquired assets and assumed liabilities compose an independent business, IAS/IFRS requires that it should be treated as business combination (IFRS 3.3). Transaction or other can be defined as business combination if the buyer achieves the control of one or more businesses (IFRS 3, B5). Goodwill can be defined as an intangible asset, which is arisen in business combination of two companies.

1.5.2   Goodwill impairment

According to IAS/IFRS recognised goodwill is the difference between the acquisition-date fair value and the net identifiable assets, and is recorded on the balance sheet. Goodwill and the cash-generating unit it has been allocated, should be tested for impairment annually or frequently if there is an indication for impairment (IAS 36.90). Impairment testing aims to examine whether the book value of an asset or cash-generating unit has declined (Yritystutkimusneuvottelukunta Ry 2006). IAS/IFRS explains an impairment loss as the amount by which the carrying amount of an asset surpasses its recoverable amount, which is the higher of the following: an asset's fair value less costs to sell and its value in use (IAS 16.6). According to the IAS 16, carrying amount can be defined as "-- the amount at which an asset is recognised after deducting any accumulated depreciation and accumulated impairment losses" (IAS 16.6). Giancomino & Akers (2009) explain that the objective of impairment testing is to find out whether the premium paid in business combination is yet appropriate or is goodwill impairment needed as an indicator of the overpayment.

Goodwill impairment is usually seen as decrease in expected profits, whereas goodwill presents the positive future profits. Hirschey & Richardson (2002) studied goodwill and its information content, and they discovered that goodwill impairment typically causes 2-3 % reduction in stock price. They suggest that the negative effects of goodwill impairment embody the connection between accounting numbers and market value. Negative stock-price reactions related to goodwill write-off decisions are significant indicators of changes in intangible assets (Hirschey & Richardson 2002). There are several reasons for goodwill impairments. Gore & Zimmerman (2010) explain that prior to the financial crisis, companies grew through acquisitions due to the available cheap loans, which sometimes resulted as an overpayment of the target company.

Many difficulties exist related to the measurement of goodwill impairment. Seetharaman et al. (2005) emphasise that the valuation of goodwill write-off is controversial and complex, where comprehensive understanding of tangible and intangible asset valuation methodology and purchase price allocation is needed. IAS/IFRS recognises external and internal sources of information, which are the two types of indicators identifying for assets that may be impaired (IAS 36.12). External factors include the declined market value of an asset during the period, significant harmful changes in the market environment that have taken place during the period or that will take place in the near future, increased market interest rates or other market rates of return on investments that likely affect the discount rates and the carrying amount of the net assets is more than its market capitalisation. Internal sources of information contains for example the obsolescence or physical damage of an asset, significant changes that have taken place during the period or are expected to take place, which will reform the way an asset is used or is expected to be used and indicators that show that the economic performance of an asset is, or will be, worse than expected (IAS 36.12).

Like IAS/IFRS, also Seetharaman et al. (2005) found internal and external indicators for goodwill impairment. External indicators that were identified included changes in business climate, unexpected competition, disadvantageous action or assessment by regulator e.g. political and legal factors and also changes in business contracts with major suppliers and distributors. Internal factors contain the significant changes in the company that are for example failures in budget forecasting, loss of key personnel and change in the company name and failure in managing acquisition. (Seetharaman et al. 2005.)

The current goodwill impairment method has encountered criticism within researchers and accounting professionals. Bloom (2009) criticises current goodwill impairment regime for the definitive nature of goodwill impairment and argues that the current system is not worth maintaining. Still, according to IAS/IFRS the reversal of impairment loss recognised for goodwill is not possible (IAS 36.124). Some others have claimed that goodwill and impairment testing are tools for management to implement financial planning (Huikku & Silvola 2012b). Furthermore, Bugeja & Gallery (2006) proved in their study that investors do not consider goodwill as an asset with future economic expectations two years after the acquisition. The statements of Bugeja & Gallery (2006) are controversial with the renewed IAS/IFRS rules with the requirement of restoring goodwill until the impairment tests show that impairment loss is needed.

Moreover, there has been discussion about the right timing of goodwill impairment. Ojala (2007c) shows that the recorded goodwill impairment loss is one or two years behind the real impairment. Owens (1923) has also considered the timing of goodwill write-offs and referred to "one writer" who said that if a company can afford goodwill impairment, it does not need to do that, but if it cannot afford to do that, it should do the write-off.

1.5.3   Value relevance

Value relevance can be defined as the association between accounting numbers and the market value of security (Barth, Beaver & Landsman 2000). Many researchers have studied value-relevant fundamentals (e.g. Lev & Thiagarajan 1993) and the value relevance of goodwill (e.g. Bugeja & Gallery 2006; McCarthy & Schneider 1995; Vance 2010). Lev & Thiagarajan (1993) have examined the value-relevant fundamentals to evaluate companies' performance and estimate future earnings. Results showed that most of the studied fundamentals were value-relevant during the examined period (Lev & Thiagarajan 1993). Accounting numbers can be defined value-relevant if they are significantly associated with the market value of the security (Barth et al. 2000).

In addition to academic researchers, value relevance studies are also in the interest of other groups including standard setters, firm managers, financial statement users, policy makers and regulators (Barth et al. 2000). Different interest groups are curious to find the relation between accounting numbers and the market value of a company. Accounting amount can be seen as value relevant if it has a significant connection to share price and if the information is relevant to investors and is reliably reflected to share prices (Barth et al. 2000). Furthermore, value relevance is constructed of both relevance and reliability of the accounting amount.

The goal of value relevance studies is not to estimate the value of a firm as a whole (Barth et al. 2000). The difference between value relevance studies and fundamental analysis studies (e.g. Lev & Thiagarajan) is that fundamental analysis aims to include all variables influencing the current or predict future firm value (Barth et al. 2000). By contrast value relevance studies focus on selected variables to understand the valuation of specific accounting amounts (Barth et al. 2000). Fundamental analysis seeks to determine the value of corporate securities and examine the key value-drivers, which are estimated by their value relevance (Lev & Thiagarajan 1993). Value relevance studies concentrate on the selected accounting amounts and their value relevance, while fundamental analysis aims to examine the key value drivers affecting to current or future company value. The objective of fundamental analysis is to estimate firm value, whereas for the value relevance studies are not.

1.6   Summary of the previous studies

The accounting treatment for goodwill and IAS/IFRS rules for goodwill accounting and goodwill impairment will be presented in Chapter 2. Furthermore, the chapter includes background for goodwill accounting and three different schools of thoughts are expressed. Chapter 3 encapsulates nine different studies related to goodwill and the market value of security and to goodwill value relevance and profitability. The majority of the studies have used the data before the IFRS adoption or before the goodwill impairment, while only three of them have collected the data before and after the goodwill impairment rules or the IFRS adoption. Most of the previous studies are from

the US and single studies include Australia, United Kingdom, Sweden and Europe. Altogether, research data have been collected between the years 1982 and 2010. Regarding the studies mentioned the differences in the research data are summarised in the Table 1.

All of the previous studies are concentrated on investigating the value relevance of goodwill, while value relevance can be interpreted as the association between accounting numbers and the market value of security. Some researched the market perception of goodwill and whether the market values goodwill as an asset (McCarthy & Schneider 1995). In addition to that, the relation between accounting numbers and the market value was also examined (Jennings et al. 1996; Qureshi & Ashraf 2013). Moreover, the information content of goodwill as it ages (Bugeja & Gallery 2006) and the effects of goodwill write-offs on the market value (Hirschey & Richardson 2002) have been studied previously. Besides the relation between capitalised goodwill and the market value of a company, researchers have investigated the connection between the performance of a company and goodwill (Hamberg & Beisland 2014; Lys et al. 2012; Sahut et al. 2011; Vance 2010).

TABLE 1 The primary differences between the studies presented

Author(s), publishing year	Data collected	Standards related to goodwill treatment
Bugeja & Gallery, 2006	Australia, 1995-1999	before the IFRS adoption
Hirschey & Richardson, 2002	US, 1992-1996	before the goodwill impairment
Jennings, Robinson, Thompson & Duvall, 1996	US, 1982-1988	before the goodwill impairment
Lys, Vincent & Yehuda, 2012	US, 2002-2005	after the goodwill impairment
McCarthy & Schneider, 1995	US, 1988-1992	before the goodwill impairment
Qureshi & Ashraf, 2013	UK, 1998-2003	before the IFRS adoption
Vance, 2010	US, 1995-2004	before and after the goodwill impairment
Hamberg & Beisland, 2014	Sweden, 2001-2010	before and after the IFRS adoption
Sahut, Boulerne & Teulon, 2011	Europe, 2002-2004 & 2005-2007	before and after the IFRS adoption

To sum up, the previous studies include different aspects on measuring the value relevance of goodwill. Some have studied the income statement and balance sheet in addition to the market value. Others have focused on goodwill impairments and the market reactions, while evaluating the value relevance for investors. The research data consists of accounting information and stock price information, which is statistically measured and analysed. The following chapters will deepen the accounting perspectives and describe the related theories more precisely.

2 GOODWILL AND GOODWILL ACCOUNTING

2.1 Perspectives for goodwill and goodwill accounting treatment

Goodwill is the difference between the fair value of the purchased company and the fair value of the identifiable net assets, but selecting how to treat goodwill after its created is more complicated. Seetharaman et al. (2004) divide the past literature for accounting treatment for goodwill into three different schools of thoughts. According to the first one, goodwill should be written off against retained earnings right after the acquisition. The second school of thoughts demands, as does the current IAS/IFRS treatment, that goodwill should not be written off unless the impairment testing supports the impairment procedure. The third viewpoint represents the previously used goodwill accounting treatment in Finland, which required that goodwill should be amortised during a reasonable time period. (Seetharaman et al. 2004.)

In addition to Seetharaman et al. (2004), e.g. Bloom (2009) has identified two different types of goodwill, which are internally generated and purchased goodwill. Because of the accepted rules of double entry bookkeeping and historical cost based accounting, internally generated goodwill shall not be recognised. Bloom (2009) criticises the current system, since according to him internally generated goodwill can represent up to 50 per cent of company's total value. IAS/IFRS denies the recognition of internally generated goodwill as an asset, because it is not an identifiable resource controlled by the company and it cannot be measured reliably (IAS 38.48-49). Also, the difference between company's market value and the carrying amount of its net assets do not represent the cost of intangible assets controlled by the company (IAS 38.50). IAS/IFRS defines cost as follows "Cost is the amount of cash or cash equivalents paid or the fair value of the other consideration given to acquire an asset at the time of its acquisition --" (IAS 16.6). Gore & Zimmerman (2010) state that purchased goodwill shall not be recorded as an asset, because IAS/IFRS does not approve the recognition of internally generated goodwill either.

Other researchers have also agreed that goodwill should be recorded, when defined as the premium paid in an acquisition. As Owens (1923) have demonstrated, accountants think that recording fictitious goodwill is unacceptable, but when goodwill is the excess amount of the net worth of the purchased company it shall be put on the books. On the other hand, Gore & Zimmerman (2010) state that, if the explanation for the recognition of goodwill is synergy and goodwill is identified as an asset, it will not fulfil the requirements for identifying an asset. In other words, researchers argue that the current system can easily overstate company's assets and make the valuation more challenging. Also, because of the current system the amount of goodwill decreases quickly from the balance sheets, when the economy turns down and future expectations decline. (Gore & Zimmerman 2010.) Owens (1923) agrees also that goodwill is temporary and it represents future profits, because of the competition and new products on the market.

Johnson & Petrone (1998) explain that goodwill can be considered from either of two different perspectives, which are "top-down perspective" and "bottom-up perspective". The former defines goodwill as a component or subset of something larger, which represents the future earnings from the business combination. Latter perspective determines that goodwill is the sum of the components and is the premium paid over the book value of the net assets of the purchased company. (Johnson & Petrone 1998.) The IAS/IFRS practice is an illustration of the bottom-up perspective made by Johnson & Petrone, because according to the IFRS 3 goodwill can be defined as "An asset representing the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognised." (IFRS 3, Appendix A).

According to the bottom-up perspective, the acquirer presumes to gain resources that have value through business combination in addition to the net identifiable assets of the purchased company. The components of goodwill can be divided as follows: "excess of the fair values over the book values of the acquiree's recognised net assets" (1), "fair values of other net assets not recognised by the acquiree" (2), "fair value of the "going concern" element of the acquiree's existing business" (3), "fair value of synergies from combining the acquirer's and acquiree's businesses and net assets" (4), "overvaluation of the consideration paid by the acquirer" (5), and the "overpayment (or underpayment) by the acquirer" (6). If all of the components mentioned were included in goodwill, it would represent the purchase premium and the top-down perspective, not the bottom-up perspective. (Johnson & Petrone 1998.)

Even though components 1 and 2 as well as 5 and 6 can sometimes be interpreted as a part of goodwill, Johnson & Petrone (1998) state that the core goodwill is formed by components 3 and 4. Going concern element of the existing business of the purchased company and the fair value of synergies deriving from the business combination are the only ones that are part of the goodwill (Johnson & Petrone 1998). Also, the study of Henning, Lewis & Shaw (2000) shows similar results with the core goodwill view of Johnson & Petrone (1998) that the market values the going concern component and the synergy component of goodwill. Moreover, both of the components are significantly positively related to the market value of a company. They also found that investors do not value the residual component of goodwill as an asset and will likely write off the portion of the residual during the year of the business combination. (Henning et al. 2000.) Regardless of criticism, other components apart from the core goodwill may be also included to goodwill, because of the difficulties in measurement technologies, recognising the gains and losses on purchase transactions or defining fair values (Johnson & Petrone 1998).

According to the IAS/IFRS, the recognised goodwill is the excess of the acquisition-date fair value and the amount of any non-controlling interest of the purchased company over the net of the acquisition-date amounts of the identifiable assets and liabilities (IFRS 3.32). Many researchers have reached consensus that goodwill is the excess price paid over the net identifiable assets of the purchased company (e.g. Gore & Zimmerman 2010; Johnson & Petrone 1998; Owens 1923; Vance 2010). Despite the consensus of goodwill, some have

criticised the definition of the net assets. For example, Seetharaman et al. (2004) have argued that the explanation for net identifiable assets may not be relevant in the future, because of the significant changes in companies' assets and the increasing amount of intangible assets. Furthermore, consumer preferences change even faster and demand for new products grow, which will make the goodwill based on intangibles worthless (Seetharaman et al. 2004).

Gynther (1969) shares the same view of goodwill definition with many other researchers e.g. Gore & Zimmerman (2010), Johnson & Petrone (1998), Owens (1923) and Vance (2010). Goodwill can be calculated as the sum of the intangible assets such as special skills and knowledge, high managerial ability, monopolistic situation, business connections, trade names and good reputation etc. The problem is that all of the intangibles cannot be identified and the net values of the identified intangible assets are disputable. (Gynther 1969.) Many complications exist related to the value of goodwill. Also, McCarthy & Schneider (1995) state that "The market value of goodwill is unknown."

2.2 Goodwill accounting rules (IFRS)

As expressed before, Seetharaman et al. (2004) divide the past literature for accounting treatment for goodwill into three different schools of thoughts. The current IAS/IFRS treatment presents the second school of thoughts, which requires that goodwill should not be written off unless the impairment testing supports the impairment procedure. From 2005, Finnish listed companies have followed the International Financial Accounting standards (IFRS) and before that they have used the Finnish Accounting Standards (FAS). Both IAS/IFRS and FAS define goodwill as the same manner and goodwill arises in business combination as the difference between the fair value of the purchased company and the fair value of the identifiable net assets. The difference between IAS/IFRS and FAS is the accounting treatment for goodwill.

According to FAS, goodwill is recognised and it should be amortised systematically over the 5-20 years period of time. The FAS accounting treatment demonstrates the third school of thoughts presented by Seetharaman et al. (2004). After the year 2005, Finnish companies have followed the IAS/IFRS. The financial reporting practises in business combinations are stated in IFRS 3 Business Combinations, which establishes the principles and requirements, how to recognise and measure goodwill (IFRS 3.1). Standard also demands that a company should account for business combinations by applying the acquisition method, which requires identifying the acquirer, determining the acquisition date, recognising and measuring the identifiable assets acquired, the liabilities assumed and any non-controlling interest in the acquire, and also recognising and measuring goodwill or a gain from a bargain purchase (IFRS 3.4-5).

Goodwill acquired in a business combination should be recognised as an asset in the balance sheet and tested annually and whenever there is indications for impairment (IFRS 36.10 & 36.90). The impairment testing should reflect better the development of goodwill than the straight-line depreciation method (Huikku & Silvola 2012a). Also, the objective of the IFRS 3 is to ameliorate the

relevance, reliability and comparability of the reported information arisen from a business combination (IFRS 3.1). Seetharaman et al. (2004) have researched the different goodwill accounting methods and they stated that the accounting treatment for goodwill need to be renewed and standards revised if needed.

The IFRS 3 was renewed in 2009 and according to the revised standard goodwill should be recognised in the acquisition date as the excess of the consideration transferred, the amount of any non-controlling interest and the acquisition date fair value of the acquirer's previously held equity interest over the acquired net of the acquisition date amounts of the identifiable assets and the liabilities assumed (IFRS 3.32). Goodwill is the excess of the purchase price over the fair value of the net identifiable assets.

If the acquirer makes a bargain purchase, where the acquired net of the acquisition date amounts of the identifiable assets and the liabilities assumed exceeds the purchase price, the acquirer should recognise the resulting gain in profit or loss on the acquisition date (IFRS 3.34). The premium purchase price is the excess purchase price and is reported as goodwill in the balance sheet, while the bargain purchase is recorded as gain and reported on the income statement (Gore & Zimmerman 2010). Goodwill resulted in bargain purchase is also called the negative goodwill, when the purchase price is less than the net assets acquired (Ma & Hopkins 1988). IAS/IFRS states that in the situation of the bargain purchase, the resulted gain should be recognised immediately to profit or loss (IFRS 3.34). Bargain purchase might be result from a forced sale business combination, where the seller must sell the company for some reason (IFRS 3.35).

2.3   Goodwill impairment accounting rules (IFRS)

The IAS 36 standard is about the impairment accounting of assets and the objective is to ensure that "-- assets are carried at no more than their recoverable amount" (IAS 36.1). An asset can be defined as impaired if its carrying amount exceeds its recoverable amount, which is either the asset's fair value less costs to sell or its value in use if the latter is higher (IAS 36.8 & IAS 16.6). The value in use of an asset is the present value of the future cash flows expected to be derived from an asset, which also includes choosing the appropriate discount rate for the future cash flows (IAS 36.6 & 36.30). According to IAS/IFRS, fair value less costs to sell is the amount available from the sale of an asset less costs of disposal (IAS 36.6)

Impairment loss should be recorded if the carrying amount of an asset or a cash-generating unit is more than its recoverable amount (IAS 36.6). Cash-generating unit can be defined as the smallest identifiable group of assets identified consistently that generate cash inflows and that are mostly independent of the other assets' or groups of assets' cash inflows (IAS 36.6 & 36.72). Goodwill should be allocated to the cash-generating units, because it does not generate cash flows independently of other assets or groups of assets and is often allocated to multiple cash-generating units (IAS 36.81).

According to the IAS/IFRS, two different methods exist for impairment testing, which are the fair value less costs to sell and the value in use (Huikku & Silvola 2012a). If either of the amounts mentioned above exceeds the carrying amount of an asset, the asset is not impaired and the evaluation of the other amount is not necessary (IAS 36.19). If the estimation of the recoverable amount of the individual asset is impossible, a company should evaluate the recoverable amount of the cash-generating unit to which the asset belongs (IAS 36.66). As of the acquisition date, goodwill should be allocated to the cash-generating units, or groups of cash-generating units in order to accomplish impairment testing. The chosen cash-generating units are expected to gain from the synergies of the business combination. (IAS 36.80.) The cash-generating unit or group of units should embody the lowest level at which goodwill is monitored for internal management purposes and not to be greater than an operating segment as defined by IFRS 8 Operating Segments (IAS 36.80).

Bloom (2009) criticises the current goodwill impairment system and notes that allocating goodwill to cash-generating units is not unambiguous. Sometimes goodwill can be only allocated to groups of cash-generating units rather than to individual cash-generating units (IAS 36.81). Also if the organisation changes the composition of the cash-generating units goodwill has been allocated, goodwill should be reallocated to the units (IAS 36.87). Huikku & Silvola (2012a) state that changes in organisation structure can result as an impairment loss. On the other hand, organisational changes can prevent impairment of assets (Huikku & Silvola 2012a). The cash-generating units should be tested annually or frequently, if any indications for unit impairment are detected (IAS 36.90). The annual testing can be completed any time during an annual period, but it should be at the same time every year. Different cash-generating units do not need to be tested simultaneously. Nevertheless, the cash-generating unit should be tested before the end of the annual period, if the goodwill allocated to the unit was acquired during the period in a business combination. (IAS 36.96.)

Factors affecting to the result of the impairment testing are e.g. estimated future cash flows and their growth rate, chosen discount rate and the definition of the cash-generating units (Huikku & Silvola 2012a). An impairment loss should be allocated to the cash-generating unit and to reduce the carrying amount of the assets in two phases. First, the impairment loss should reduce the carrying amount of any allocated goodwill to the cash-generating unit, and then to the other assets of the unit in proportion on the basis of the carrying amount of each asset in the unit. Declines in carrying amounts are treated as impairment losses on individual assets, which are recognised instantly (IAS 36.104 & IAS 36.60). The allocated reduction for carrying amount of an asset should not below the highest of its fair value less costs to sell, its value in use and zero (IAS 36.105). IAS/IFRS identifies internal and external sources of information indicating that asset might be impaired (IAS 36.12), while investors interpret goodwill impairment as poor managerial decisions resulted from over priced acquisition (Seetharaman et al. 2005).

3 THE VALUE RELEVANCE OF GOODWILL

3.1 Goodwill and the market value of security

Value relevance can be defined as the association between accounting numbers and the market value of security. In this section, the value relevance of goodwill and the related theories will be described more precisely. The previous studies of goodwill are focused on determining the concept of goodwill and research the relation of goodwill and the market value of a company and the value relevance of goodwill (e.g. Bugeja & Gallery 2006; Hirschey & Richardson 2002; Jennings, Robinson, Thompson & Duvall 1996; Lys, Vincent & Yehuda 2012; McCarthy & Schneider 1995; Qureshi & Ashraf 2013; Vance 2010). Furthermore, researchers have studied whether the market perceives goodwill as an asset and the impact of goodwill amortisation to the market value of security (Hirschey & Richardson 2002; McCarthy & Schneider 1995). Majority of the relevant studies have used the evidence from the United States (e.g. Hirscey & Richardson 2002; Jennings et al. 1996; McCarthy & Schneider 1995), some have researched goodwill in the United Kingdom (e.g. Qureshi & Ashraf 2013), and some in the Australian context (e.g. Bugeja & Gallery 2006) and fewer have researched the goodwill and the value relevance of goodwill of the Finnish companies.

McCarthy & Schneider (1995) investigated whether the market perceives goodwill as an asset while defining the value of the company. They also tested if the market perception of goodwill is equivalent to other assets. In their research, they used a sample of US companies that reported goodwill during the five-year period in 1988-1992. Many studies have investigated empirically the relationship between goodwill and the market value of a security, which have resulted finding a positive relationship between the reported goodwill and the market value of the company. They used Ohlson's model (1989, 1993) to explain the market value of a company, which includes both balance sheet and income statement components. Researchers stated that goodwill should be significantly and positively correlated with the company's market value, if the market values the reported goodwill as an asset. Moreover, they tested is goodwill priced differently compared to other assets, if goodwill is significant.

McCarthy & Schneider (1995) encountered several econometric problems in their study, while estimating the regression equation including heteroscedasticity, multicollinearity and measurement error and also the self-selection bias of the sample firms. Nevertheless, they received results of the regression model that goodwill is, while valuating the company, included by investors. Research could not completely confirm that market values goodwill higher compared to other assets. They concluded that goodwill is perceived by the market with at least the equal value of other assets and possibly greater than that. (McCarthy & Schneider 1995.)

Jennings et al. (1996) researched the relation between goodwill and the value of a company during the period 1982-1988. They studied goodwill from the perspective of the balance sheet and income statement. The balance sheet

approach investigated whether goodwill should be capitalised or written off at the time of acquisition. If the relation between expected future benefits with the purchased goodwill and its cost beyond the date of acquisition exist, the assets of the company are probably presented better if goodwill is recognised. On the contrary, goodwill should be excluded from the balance sheet if the relation does not exist. From the income statement point of view, they researched whether the value of goodwill declines over time or whether goodwill sustains its value for perpetuity. If goodwill can be maintained indefinitely, they state that the best way to represent company's resources and performance is to capitalise goodwill and to review goodwill annually in case of reductions in value. On the contrary, systematic amortisation can be the better way, if the value of goodwill declines for all companies.

For the balance sheet issue, Jennings et al. (1996) investigated several alternative regressions that related market value of equity to components of accounting net assets including goodwill. Their sample included companies from the US during the selected period. Results from the regressions indicated strong positive association between the recorded goodwill and the company's market value. Received results suggested that investors perceive recorded goodwill as a part of valuable economic resources. For the income statement issue, Jennings et al. (1996) estimated several alternative specifications of an earnings capitalisation model that related market value of equity to components of expected future earnings, which included goodwill amortisation. Results from the analysis indicated weak negative association between the goodwill amortisation and the company's market value. All in all, they stated that investors value goodwill as an asset that is expected to decline in value on average and also as an resource that does not decline in value for some companies. Jennings et al. (1996) concluded that the capitalisation of goodwill and the annual review is the best way to represent company's resources and performance.

Bugeja & Gallery (2006) investigated the value relevance of purchased goodwill and the information content of the goodwill as it ages. They suggest that previous studies have consistently found a positive relation between the market value of a company and goodwill (e.g. Jennings et al. 1996; McCarthy & Schneider 1995) both in the US and Australia. However, Jennings et al. (1996) have not find differential effects to recently acquired and older goodwill, which is the main objective for Bugeja & Gallery (2006). They aim to investigate whether the market perceives different values to the components of recorded goodwill during the 1995-1999, when the goodwill is divided into different age groups. Their results stated that the value of a company is positively associated with purchased goodwill in the observation year and the preceding two years. Moreover they suggest that recently acquired goodwill is associated with the market value of a company, while older goodwill does not have future economic benefits according to the market perception.

As an explanation for the received results, Bugeja & Gallery (2006) explained that one reason could be that the benefits of the business combination are reflected in normal operations e.g. increased earnings, and not in the goodwill asset. For example, companies could attain cost savings through

business combinations, which is not reflected to the recorded goodwill. According to Bugeja & Gallery (2006), the other explanation is the failure to achieve post-merger improvements in performance, which results as decrease in the goodwill value by the market. The results of the Bugeja & Gallery (2006) are inconsistent with the current IAS/IFRS treatment. If recorded goodwill has no economic benefits after two years after the business combination (Bugeja & Gallery 2006), it should not be preserved in the balance sheets. Otherwise, financial reports with older goodwill do not provide relevant information.

Hirschey & Richardson (2002) investigated the effects of goodwill write-offs on the market value of a company. If the write-off represents meaningful information for investors, write-off should result as a negative stock price impact. Balance sheet accounting embodies useful information, if it helps investors to evaluate the intangible assets of a company. According to Hirschey & Richardson (2002), several previous studies indicate that accounting goodwill numbers include relevant information for investors e.g. Chauvin & Hirshey (1994), Jennings et al. (1996), McCarthy & Schneider (1995), and Henning et al. (2000). Contrary to some previous studies, Hirschey & Richardson (2002) utilised a new test of the information content of accounting goodwill numbers such as an event-study framework.

They examined the market-value effects of goodwill write-off announcements, in which the resulted market-value influences can be identified precisely and regarded as evidence that investors value such information as useful. Negative stock price effects related to goodwill write-off announcements indicate that goodwill accounting numbers have economic relevance, hence on average that kind of announcements do not result as direct cash-flow implications. In their study, Hirschey & Richardson (2002) focused on investigating the discretionary goodwill write-off announcements taken by US companies during a five-year period in 1992-1996. They conducted a key word search to database in order to find the relevant news regarding the company's write-off decisions. Majority of the goodwill write-off decisions were made at the same time with other significant information, while simple goodwill announcements were in the minority. Results confirmed the economic importance of goodwill write-off decisions, even though the information was mixed with other sources of information. They found that goodwill write-off decisions resulted as 2-3 % negative stock price reactions, which was consistent with other previous studies. (Hirschey & Richardson 2002.)

Previously presented studies by McCarthy & Schneider (1995), Jennings et al. (1996) and Hirschey & Richardson (2002) focused on the goodwill accounting in the US, and Bugeja & Gallery (2006) in Australia, while Qureshi & Ashraf (2013) investigated the association between reported goodwill and market value of companies in the UK. They used a valuation model to study listed firms in UK over a six-year period in 1998-2003. The valuation model includes both balance sheet and income statement components in order to resolve the market value of a company after controlling for the valuation effects on other intangible assets such as advertising and R&D. Qureshi & Ashraf (2013) found that an existing strong positive association between capitalised

goodwill and the market value of a company, which indicates that investors value the excess price paid in business combinations.

Qureshi & Ashraf (2013) show that some previous studies failed to include both earnings and company book value as explanatory variables in their models, which they aim to fix in their own study. They also criticise the previous studies that goodwill captures the effects of other intangibles such as advertising and R&D, if the variables mentioned are absent in their models. Researchers argue that capitalised goodwill includes important information and reflects the future cash flows to investors. These results were consistent with other previous studies e.g. Jennings et al. (1996) and McCarthy & Schneider (1995). (Qureshi & Ashraf 2013.)

3.2   Goodwill value relevance and profitability

In addition to investigating the relation between the market value of a company and goodwill, researchers have studied the market reactions for acquisitions and the relation between recorded goodwill and economic performance (e.g. Lys et al. 2012; Vance 2010). For example, Vance (2010) researched the goodwill contribution to performance and investigated whether the contribution of goodwill is measurable and the variation of contribution between different industries. Moreover, Lys et al. (2012) focused on examining the nature of accounting goodwill as an asset and stated that goodwill provides future economic benefits.

Vance (2010) defined the measurement of goodwill contribution to performance as difficult, because of the residual nature of goodwill. His aim was to examine whether goodwill contributes to performance and analyse the divergence between different industries. Previous studies (e.g. Jennings et al. 1996; McCarthy & Schneider 1995) indicated that goodwill is valued as high as other assets by the market, except in the manufacturing industry. Vance (2010) presented some criticism regarding to goodwill capitalisation. Yet, he stated that goodwill should be treated as a rent-generating asset, if goodwill contributes to profitability.

Vance (2010) studied the goodwill contribution to performance by investigating return on assets (ROA) in US companies with goodwill and without booked goodwill during a ten-year period in 1995-2004. The dependent variable tested was ROA defined as operating income before depreciation and amortisation scaled by average assets, while the independent variables included industry, companies with goodwill, companies without goodwill and with high goodwill. Then, the mean and standard deviation of ROA were calculated by the independent variables and tested for statistically significant differences. As a result, Vance (2010) concludes that goodwill can be interpreted as a rent-generating asset and that on average companies with goodwill performed at least as well as companies without goodwill. Also, he found that most of the companies with a high amount of booked goodwill performed at least as well as companies without goodwill. Furthermore, the rate of return on assets varied between different industries. (Vance 2010.)

In addition to Vance (2010), Lys et al. (2012) also studied goodwill from the perspective of the contribution of goodwill to performance. Lys et al. (2012) examined if goodwill provides future economic benefits to the combined company. They studied US companies that had acquired majority interest during a five-year period in 2002-2005. The basis of their research related to three streams of prior studies, which included for example examining the relation between the acquisition goodwill and both the valuation implications and the information content of goodwill write-offs. The second stream of studies included the research focused on the valuation implications of components of goodwill. The third viewpoint expanded the perspective to investigating the valuation implications of goodwill impairment charges and considering whether or not goodwill is an asset.

Lys et al. (2012) questioned the consistent results indicating that goodwill is regarded as an asset by the investors, because of the inadequate connection between accounting goodwill and economic profit. They studied the correlations between recognised accounting goodwill and expected economic profit or loss from the transaction and found a positive correlation with recognised goodwill only when there was an expected economic profit. Also, they found a negative correlation between transactions with expected economic losses and future company performance. Moreover, they concluded that recognised accounting goodwill and the expected economic loss are both connected to the future impairment charges. Lys et al. (2012) argue that companies with an expected economic loss from the business combination should write down the goodwill, because mostly it does not present an asset.

In addition to the viewpoints of Vance (2010) and Lys et al. (2012), some have studied the significance of the current standards and goodwill accounting practices. Hamberg & Beisland (2014) researched the value relevance of goodwill accounting in the European environment and the IFRS 3 standard. They used the data from the OMX Nordic Exchange Stockholm and studied all the Swedish firms that were listed during the nine-year period in 2001-2010. The first four years relies on the accounting information reported under Swedish GAAP and the following six years is reported in accordance with the IAS/IFRS. Moreover, they selected only the firms with capitalised goodwill. For the selected companies, they analysed the descriptive statistics for the return and price regression variables and the detailed annual information on the goodwill balances, reductions and impairment frequencies and the correlations between the explained and explanatory variables.

As a result, Hamberg & Beisland (2014) found that goodwill as a percentage of equity has increased during the nine-year period. The practise of reversed goodwill amortisation at the time of IFRS adoption and the removal of goodwill amortisations was the explanation for the increased amount of goodwill. Furthermore, they found that the size of goodwill impairments both in absolute value and in relation to book value decreased following the IFRS adoption. The correlation matrix indicated that under the IFRS all accounting variables except goodwill impairment correlated with the stock price. They also found support for their hypothesis that goodwill amortisations are not value relevant. Moreover, goodwill impairments are not statistically connected to the

stock returns and prices. The most important finding from the price regression was that goodwill balance was an equally significant determinant of value under both the IFRS and Swedish GAAP.

The empirical results of Hamberg & Beisland (2014) showed that goodwill impairments have lost value relevance and impairments have not been associated with stock returns after the change from Swedish GAAP to IFRS. They suggested that the absence of value relevance of the goodwill impairments is derived from the opportunistic management behaviour. On the other hand, market participants may have perceived the value reductions under the Swedish GAAP as a stronger signal compared to IFRS impairments, which has led to decreases in value relevance under the IFRS. Also, the awareness of the market might be one reason for the different relation between goodwill accounting and stock prices under the IFRS. The impairments are priced by the market before the announcement, because of the significance of goodwill numbers. (Hamberg & Beisland 2014.)

Consequently, Hamberg & Beisland (2014) state that the introduction of the impairment-only standard may have had contradictory consequences in Europe and in the US. Previous studies from the US companies have showed the value relevance of goodwill accounting and the relation between goodwill and the market value of a security before the impairment regime (e.g. Hirschey & Richardson 2002; Jennings et al. 1996; McCarthy & Schneider 1995), but there is a lack of similar evidence under the standards resembling to IFRS 3. Nevertheless, some evidence does exist e.g. Lys et al. (2012) studied the contribution of goodwill to performance after the adoption of the goodwill impairment regime in the US and found a positive correlation between recognised goodwill and an expected economic profit.

Along with Hamberg (2014), Sahut, Boulerne & Teulon (2011) have also studied goodwill in the European setting before and after the adoption of the IFRS. Sahut et al. (2011) examined the information content of intangible assets, including goodwill, under IAS/IFRS when compared to the previous local GAAP for European listed companies. They studied the quality of financial information of intangibles with regression models for a sample of European listed companies during a six-year period from 2002 to 2007. The focus was to investigate the empirical relation between the market value and the book value of the intangible assets first from 2002 to 2004 under local GAAP and then under IFRS from 2005 to 2007. They found that during the switch to IFRS, the amounts of goodwill and other intangibles increased on average by over 21 per cent, while the amounts of goodwill grew by 24 per cent.

Moreover, Sahut et al. (2011) investigated the relation between the intangibles and share prices. Received results confirmed their hypotheses that goodwill and other intangibles under IFRS are positively associated with share prices and that goodwill and other intangibles under IFRS are positively associated with higher returns. Their sample consisted of companies from the United Kingdom (40.8 per cent), France (23.3), Sweden (9.5), Italy (6.6) and Finland (5.4) and less than 15 per cent were from Spain, Norway, Belgium, Luxembourg and Ireland.

Majority of the studies related to investigating the relationship between goodwill and the market value of security and examining goodwill value relevance and profitability have been released before the IFRS adoption and prior to the US GAAP changes that are similar to IAS/IFRS regime. In this context, Bugeja & Gallery (2006), Hirschey & Richardson (2002), Jennings et al. (1996), McCarthy & Schneider (1995) and Qureshi & Asraf (2013) have studied goodwill in advance the goodwill impairment accounting treatment. Furthermore, Lys et al. (2012) investigated the nature of accounting goodwill as an asset during the goodwill impairment regime and concluded that goodwill provides future economic benefits. Moreover, some researchers have concentrated examining goodwill prior to and after the IAS/IFRS and the equivalent US GAAP adoption, e.g. Hamberg & Beisland (2014), Sahut et al. (2011) and Vance (2010).

4 RESEARCH APPROACH

4.1 Research strategy

Research design

This chapter will present the research approach used in this study including research design, methods and problem definition. Creswell (2014, 3-4) defines research approach as the strategy of research, which will start from assumptions and continue to specific methods of data collection and analysis and in the end in interpretation of the results. According to Creswell (2014, 3-16) research approaches can be divided between three different perspectives, which include qualitative, quantitative and mixed methods. The selected approach, research design and research methods are affected by philosophical worldviews (Figure 1), which can be interpreted as the general philosophical orientation and the nature of the research (Creswell 2014, 6).

Philosophical Worldviews	
Postpositivist, Constructivist, Transformative, Pragmatic	

Research Approaches	Research Designs
Quantitative	Experimental, Nonexperimental
Qualitative	Narrative, Phenomenology, Grounded Theory, Etnographies, Case Study
Mixed Methods	Convergent, Explanatory sequential, Exploratory sequential; Transformative, embedded or multiphase

Research Methods
Questions, Data Collection, Data Analysis, Interpretation, Validation

FIGURE 1 A framework for research (modified: Creswell 2014, 5-12)

The nature of this study is related to the postpositivist worldview, which describes most likely the features of quantitative study. Postpositivist view is about finding causes that determine effects or outcomes with careful measurement and observation (Creswell 2014, 7-8). The research is based on a theory, which will be continued with data collection that will confirm or refute

the selected theory and result as modifications and additional tests (Creswell 2014, 7-8). The three other views, which include constructivist, transformative and pragmatic worldviews are more related to qualitative and mixed methods approaches than to quantitative approach, thus are not described here more precisely.

In the late 1990s, quantitative research methods were in the centre of the research of accounting based on the financial statement and market data analysis, and also the survey studies based on the large amounts of data. Simultaneously, the role of case and field studies in the accounting research has been less significant. (Lukka 1999.) Moreover, Järvenpää & Pellinen (2005) state that the selection of the research approach should be affected by the desired research results. Already in 1890s, a German philosopher Wilhelm Windelband (1848-1915) introduced the divergent terms nomothetic and idiographic. Traditional nomothetic research aims to generalise by employing statistical data to infer causality (Salmi & Järvenpää 2000). Moreover, the accounting research is dominated by the approaches used in the US, e.g. traditional quantitative methods, while case studies are more in favour of researchers in the UK and in Nordic countries (Lukka 2005).

Some argue that the classification between case studies and field studies, and traditional quantitative studies is ambiguous (Järvenpää & Pellinen 2005). Creswell (2014, 14-16) have also presented the mixed methods research approach, which combines the qualitative and quantitative research and data methods. In the domain of business studies, case and field studies have presented the mainstream research approaches during the past decades. Moreover, in management accounting most of the recent Finnish studies can be categorised as case or field studies. (Järvenpää & Pellinen 2005.) On the other hand, some argue that generally in accounting case and field studies have not had a strong position in the past years (Lukka 1999).

Some identify the difference between case and quantitative studies in their relation to theory. Case studies tend to focus on theory development phase, while quantitative research concentrates to develop and employ existing theories. (Salmi & Järvenpää 2000.) The selection of case or field study does not necessarily portray the specific characteristics of the study (Järvenpää & Pellinen 2005), even though different case studies do have several common factors (Lukka 2005). Quantitative research is systematic and empirical with established practices, while case study as a research approach is still developing and common established practises are non-existent (Salmi & Järvenpää 2000).

In addition to different perspectives of theory, case and quantitative studies differ in the amount of research objects. Since the goal of quantitative study is to find causalities and regularities, the amount of research objects should be reasonably high (Salmi & Järvenpää 2000). For case and field studies, the amount of research objects has been a topic of discussion (Järvenpää & Pellinen 2005; Lukka 2005; Salmi & Järvenpää 2000). According to Salmi & Järvenpää (2000), case studies are concerned for one or few research objects only, which have relevant characteristics regarding the research topic. On the other hand, some distinguish case and field studies in the amount of research objects, in which field studies focus on several objects and case studies on lesser

(Järvenpää & Pellinen 2005). Some argue that case studies can be characterised as studies, which include a small number of research objects (Lukka 2005).

Besides the view of Salmi & Järvenpää (2000), Lukka (2005) has also questioned the position of case research in accounting in general, but argued that in management accounting the position of case research is the strongest. In the accounting literature, for case and field studies several different classifications exist (Lukka 1999). In the following chapter, three different approaches for categorising case research in management accounting are being presented, which include Lukka (1999, 2005), Salmi & Järvenpää (2000) and Scapens (1990). Since this study includes characteristics of both case and field studies and traditional quantitative research approach, also quantitative scientific methods are being presented.

Taxonomies of case research

For case studies, one of the most cited classifications is developed by Scapens (1990) (Lukka 2005), who differentiated case studies between descriptive, illustrative, experimental, explorative, and explanatory research. Scapens (1990) described that "descriptive case research" aims to illustrate accounting practices, whilst the new innovative practices are being searched by "illustrative case research" (Table 2). At the same time, "experimental case research" focuses on studies implementing new accounting practices, and "explorative case research" intends to explain selected accounting phenomena by the developed hypotheses. Eventually, purpose of the fifth "explanatory case research" studies is to understand and explain accounting practices by existing theory or by modified theory. (Scapens 1990.)

TABLE 2 The five different types of case research (Scapens 1990)

Case research	Objective
Descriptive case research	- illustrate current accounting practices
Illustrative case research	- searches for new innovative accounting practices
Experimental case research	- explore new implemented accounting practices
Explorative case research	- develop hypotheses and interpret the selected accounting phenomena
Explanatory case research	- comprehend accounting practices by existing theory (or by modified theory)

The second taxonomy of case research is made by Lukka (1999, 2005), who divides case research in management accounting into two dimensions by the strength and nature of researcher's empirical intervention (Figure 2). He criticises the previous classifications (e.g. Scapens 1990) as inadequate, because prior studies are focused on mostly to non-interventionist case research. Case research studies can be subdivided by empirical intervention into two categories, which are non-interventionist and interventionist studies. The first one, non-interventionist research aspires to eliminate researcher's empirical intervention and states that research should stay value-free and objective. By contrast, interventionist studies encourage the participation of the researcher and recognises the participative nature as advantageous for the study. Generally, interventionist studies intend to bring new knowledge to the field and serve for practical purposes. Another difference related to the two dimensions is their relation to time. The empirical work of non-interventionist studies is conducted *ex post facto*, while interventionist researcher carries out the study simultaneously with the normal life of the target organisation. (Lukka 2005.)

	Empirical intervention	
Theory linkage	Non-interventionist case research	Interventionist case research
Theory discovery case research	E.g. Grounded Theory Research	In principle, open to all theory linkage options.
Theory illustration case research	E.g. case studies informed by social theories	Action research - often 'limited intervention' participation in the stream of action in practice
Theory refinement case research	E.g. case studies suggesting new variables to existing theoretical models	Constructive research -strong intervention: theory contribution pursued by attempting to solve real-world problems
Theory testing case research	E.g. Applications of 'most-likely' or 'least-likely' research designs	

FIGURE 2 The two dimensions of case research in management accounting (Lukka 2005)

Interventionist and non-interventionist research have differing connection to existing theories, because of their divergent approaches. While interventionist research is related to action research and constructive research, non-interventionist research is associated to theory discovery case research along with theory illustration case research, theory refinement research and theory testing case research. (Lukka 2005.) Some linkage between the two classifications made by Lukka (2005) and Scapens (1990). The former expands

the thoughts originally presented by Scapens (1990) and inserts the interventionist point of view.

Lukka (2005) presented also the theory testing case research, which is one form of non-interventionist case research. Theory testing case studies are quite unusual and some believe that theory can be only tested with large amount of data. On the other hand, only one counter-case can be enough to refute the formulated hypothesis, while the empirical evidence used is rarely complete. Theory testing case research can utilise qualitative or quantitative data or even both. Several aspects advocate including theory testing case studies to case studies. Moreover, for theory testing case research the aim is always to minimise the empirical intervention of the researcher with a clear linkage to theory. The data selection is also an important part of the study and usually the idea of random sampling does not work. For example, the 'most likely' research design aims to analyse cases in which the given theory should most likely be supported by the received empirical results. Thus, potential theory refuting empirical findings might result as strong disconfirming evidence. (Lukka 2005.)

Finally, the third taxonomy of case research was presented by Salmi & Järvenpää (2000). Regarding the previously mentioned descriptive case research (Scapens 1990) and illustrative case research (Lukka 2005), Salmi & Järvenpää (2000) criticised them being only one phase of the whole study, not an independent study. Moreover, they classified case research types more broadly to three. According to the first approach, case study aims to structure and analyse the object to create theoretical framework or use an existing theory. (Salmi & Järvenpää 2000.) The first view has some similar characteristics with the explorative case research by Scapens (1990). Another approach examines the object from divergent viewpoints and utilises data from several sources including quantitative and qualitative data. The last case research is focused on researching objects over different theories. (Salmi & Järvenpää 2000.)

In addition to Scapens (1990), Lukka (1999, 2005) and Salmi & Järvenpää (2000) also Ahrens & Dent (1998) have studied the field research studies and especially the richness of field studies. Like mentioned before, some researchers differentiate case and field studies by the sample size (Järvenpää & Pellinen 2005; Lukka 2005; Salmi & Järvenpää 2000). By contrast, Ahrens & Dent (1998) address that the sample size of a field study can vary, depending on the perspective of the study. The richness of the study is the most significant objective, which might be enabled with smaller samples (Ahrens & Dent 1998).

Taxonomies of quantitative research

Creswell (2014, 3-16) presented the framework for research, which included quantitative, qualitative and mixed methods approaches. Quantitative approach can be divided into nonexperimental and experimental designs. One form of qualitative nonexperimental design is correlational design, which describes and measures the relationship between two or more variables by utilising correlational statistics (Figure 2, Creswell 2014, 12-13). The other form of nonexperimental design is causal-comparative research, which aims to compare two or more independent variables that have already occurred

(Creswell 2014, 12-13). Typically quantitative study is based on one theory and statistical data, which includes the testing of the hypotheses based on the theory and statistical and correlation analysis (Salmi & Järvenpää 2000).

```
┌─────────────────────────────────┐
│                                 │
│     Testing or verifying a theory     │
│                                 │
└─────────────────────────────────┘
                 │
┌─────────────────────────────────┐
│     Testing hypotheses or research     │
│        questions from the theory       │
└─────────────────────────────────┘
                 │
┌─────────────────────────────────┐
│     Defining and operationalising      │
│     variables derived from the theory   │
└─────────────────────────────────┘
                 │
┌─────────────────────────────────┐
│     Measuring and observing variables   │
│     using an instrument to obtain scores │
└─────────────────────────────────┘
```
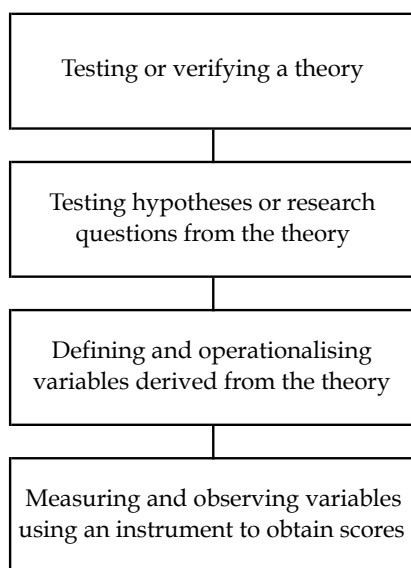
FIGURE 3 The deductive approach used in quantitative research (modified: Creswell 2014, 59-60)

The objective of quantitative study is to test or verify some existing theory with the collection and analysis of data. The research includes the hypotheses derived from the theory and contains defined variables. (Creswell 2014, 59). Quantitative research is often based on one selected theory, while case studies are reflected by several theories (Salmi & Järvenpää 2000). The difference between quantitative research approaches and case study approaches seems to be in their relation to theory and whether the goal is to test the theory or enhance and develop an existing theory. On the other hand, some perspectives support the utilisation of different theories and frameworks to reach versatile research results (e.g. Creswell 2014; Salmi & Järvenpää 2000).

The deductive approach, which is typically used in quantitative research, is presented in Figure 3. As well as Creswell (2014), Salmi (1986) also relates positivist view to quantitative research in accounting, when the focus is on explaining the variables. In the background of deductive approach are the assumptions, which are connected to the theory testing or verifying the theory (Creswell 2014, 59-60; Salmi 1986). The empirical part is followed by the theory selection, which is focused on testing the hypotheses or research questions derived from the theory. Then variables will be defined and operationalized, and finally measured and observed statistically to obtain scores. (Creswell 2014, 59-60; Salmi 1986). Finally, the received results will confirm or refute the selected theory (Salmi 1986).

4.2   Data collection and selected research methods

The research approach and the method for data collection are illustrated in this part. The selected approach is quantitative research, which has also some characteristics of field and case studies. Some researchers connect field study with case studies (Lukka 1999). By contrast, some interpret field study as clearly different compared to case study, because more research objects are included in the field study (Järvenpää & Pellinen 2005). All in all, this research is focused on more than one or few research objects, which favours the use of traditional quantitative approach. On the one hand, the data collection and analysis utilise the traditional quantitative methods, which stands for quantitative research. On the other, the selection of the research objects is not random, but they are selected in order to contain relevant aspects regarding the prior studies and theories presented in Chapter 3, which supports the use of field study approach. Finally, the research design used is quantitative study, which takes advantage of the field study approach.

The data of the study is collected from the financial statements of the selected listed companies with the stock exchange prices from the years 2007-2014. Research utilises traditional quantitative methods, since the form of data and the analysis methods. Salmi (1986) has also stated that in general research utilising annual reports and stock exchange price data represent positivist and quantitative research approach. The collected data is numerical and the analysis methods include correlation and regression analysis, which are common characteristics for quantitative research approach. Furthermore, the research objects are listed companies from two different industries in Finland. The small amount of listed companies in Finland compared to for example to the US, supports the form of a quantitative approach.

Creswell (2014, 11-13) presented two different research design groups related to quantitative research approach, which includes experimental and nonexperimental designs. One of the nonexperimental designs is the *correlational design*, which aims to find relationships between selected variables with the use of correlational statistics. Moreover, according to Lukka (1999, 2005), six different forms of case research can be identified. One of them is non-interventionist *theory testing case research*, which allows the use of both qualitative and quantitative use of data and aims to minimise the empirical intervention of the researcher. Also, the 'most likely' approach advocates the use of research objects, which the given theory supports by the received empirical results. (Lukka 2005.) The theory testing case research aims to experiment the existing theory with the collected data, neither to generalise statistically the hypotheses. This study includes characteristics from both correlational design presented by Creswell (2014) and theory testing case research introduced by Lukka (1999, 2005).

The research object companies operate in a certain industry and they all represent a certain size category with applicable characteristics regarding the study. Related to that, also Salmi & Järvenpää (2000) state that research objects should have relevant characteristics concerning the research topic. The research data in this study is formed by the eight-year time period of financial

statements of the object companies and financial ratios for the same time period. Moreover, data includes the information and analysis of the stock exchange prices during the eight-year period. The selection of the research objects do not comply with the traditional quantitative research sampling, where the goal is to generalise larger groups than the study sample.

All the selected companies had goodwill in their balance sheets during the first year 2007, so companies with no recognised goodwill are excluded from the study. Furthermore, one company was eliminated due to the insolvency of the company and finally the bankruptcy in 2014. Geocentric Oyj is the company at issue, which had goodwill in the balance sheet in 2007, but like stated, did not meet the requirements for the data collection. In addition, company called Stonesoft Oyj was also removed from the listed companies in NASDAQ OMX Nordic. Also, three other companies (Nurminen Logistics Oyj, Scanfil Oyj and Soprano Oyj) are not included in the study, because they went public after 2007. The selected companies along with the removed companies from the two sectors are presented in Appendix 1.

All the selected companies are listed in NASDAQ OMX Nordic and operate mainly in Finland. The research object companies belong to the Small Cap segment and in other words are small listed companies. After 2007, Elektrobit Oyj has moved to the Mid Cap segment and Revenio Group Oyj has transferred to the Healthcare sector, but both companies are still included in the study. The two sectors in which this study focuses on are Industrials and Technology. Altogether 24 companies met the criteria mentioned and will be analysed and interpreted by their financial statements and stock price data.

The research data consists of the financial statements and annual reports during the eight-year period in 2007-2014 and the historical stock exchange prices during the same period in 2007-2014, which is collected from the NASDAQ OMX database (Appendix 2). For many Finnish companies, goodwill data in detailed is not found in public databases. For that reason, goodwill impairment data and other financial statement data are collected manually from the annual reports of the companies. Then the financial statement analysis will be conducted, which is based on the official annual reports and notes to financial statements and other possible information sources (Yritystutkimus ry 2011, 7).

During the years 2007-2014, financial statement analysis will be performed including ratios based on both balance sheet and income statement, which comprise of seven different ratios in total. The ratios reflect the profitability, liquidity and solvency of the selected companies. Some researchers have studied the different financial variables and the value-relevance of these fundamentals (e.g. Lev & Thiagarajan 1993). For example, Lev & Thiagarajan (1993) researched the value-relevance of 12 fundamentals and their explanatory power of earnings. They argue that most of the fundamentals included value-relevant information during the examined time period (Lev & Thiagarajan 1993). On the other hand, the fundamentals used by Lev & Thiagarajan (1993) are sometimes unsuitable for all types of studies. In this study, fundamentals are different compared to the ones presented by Lev & Thiagarajan, because the selected ones are supposed to serve better the objectives of the study. The

connection between goodwill and fundamentals will be demonstrated with the correlation and regression analysis, if the connection is found.

In addition to financial statement analysis, the market beta and changes in stock exchange prices will be calculated for the time period of 2007-2014. The Capital Asset Pricing Model (CAPM) originated by Sharpe and Litner in 1960s can be used to define the required rate on return of a stock. The model utilises the coefficient on beta, which reflects the systematic risk or market risk (Fama & French 2004). The beta of a stock (β) reflects the sensitivity of a stock to the changes in market rate on return. If the stock beta is zero ($\beta=0$), rate on return of a stock is independent from the market rate on return. (Fama & French 2004.)

4.3 Quality of the research

This part is about analysing the quality of the research, which includes evaluating the internal and external threats to the validity of the research. First, some external threats for the validity are described. Since the sample of the research is a non-random sample, the results could not be generalised to all companies listed in the NASDAQ OMX Nordic. Because of the different characteristics of other sectors than Industrials and Technology, and other segments than the Small Cap, generalisation might be invalid. Thus, achieved conclusions could be generalised for companies in the same sector and segment from other Nordic countries than Finland, which requires careful consideration.

Internal threats to the validity include for example the selection and measurement of fundamentals. If the relationships between selected variables could not be found, further research should be conducted. In addition, goodwill impairment data and other financial statement data are collected manually from the annual reports of the companies, which includes risks related to the collection process. Moreover, the sample is not randomly selected, but with characteristics relevant regarding the study (e.g. companies with capitalised goodwill) and others excluded from the research (e.g. companies without capitalised goodwill). These aspects should be taken into consideration while evaluating the research results and concluding the study.

5   RESULTS AND ANALYSIS

5.1   Prior research, motivation and hypotheses

The more extensive background concerning this study has been already represented in Chapter 3, which included nine studies related to the field at issue: Hamberg & Beisland (2014), Qureschi & Ashraf (2013), Lys et al. (2012), Sahut et al. (2011), Vance (2010), Bugeja & Gallery (2006), Hirschey & Richardson (2002), Jennings et al. (1996) and McCarthy & Schneider (1995). Most of the studies were conducted before the IFRS adoption or before the goodwill impairment regime. Also majority of the researchers have collected their sample data in the United States, while fewer in Europe. After the adoption of the IAS/IFRS goodwill accounting rules, studies have not been conducted to a great extent. Therefore, previous theories and results need to be interpreted critically in the association with this study.

Nevertheless, some convergences between previous studies and this research do exist. For example, Qureshi & Ashraf (2013) found as a result that market values significantly capitalised goodwill and that investors perceive goodwill as an economic resource. One objective of this study is to examine whether capitalised goodwill is connected to the performance of a company. Moreover, some researchers have found a positive association between capitalised goodwill and the market value of a company before the IAS/IFRS or the adoption of the goodwill impairment regime (e.g. Bugeja & Gallery 2006; Jennings et al. 1996; McCarthy & Schneider 1995), and also some after the adoption (Lys et al. 2012). Another goal for this research is to investigate the relation between the stock exchange prices and recorded goodwill. Some researchers have studied other fundamentals related to the value relevance of goodwill, which will be explored with the analysis of selected fundamentals.

Vance (2010) studied if capitalised goodwill is related to performance of a company and analysed the variability between different industries. He used the Return on Assets (ROA) as a variable and examined companies with capitalised goodwill and with high amount of goodwill in comparison to companies without reported goodwill. The conclusion was that goodwill could be interpreted as an asset effecting to company's returns. (Vance 2010.) If capitalised goodwill is valued as other assets by the market, it should have an effect to the valuation of the company. Also, if investors assess negatively goodwill impairments, the result of the company should weaken and the stock price should dilute. All in all, capitalised goodwill should be connected with other fundamentals and stock exchange prices. Furthermore, if the market recognises capitalised goodwill as a risk, it should result as a connection with the stock beta (β). The following research hypotheses will be investigated:

> **Hypothesis 1.** The performance of the company is related to the capitalised goodwill.

The performance of the company will be examined with fundamentals calculated from the balance sheet and income statement, which are described more precisely in the following part and their formulae are presented in Figure 4. The relationship between goodwill and goodwill divided by net sales and total assets with the fundamentals is being examined. If correlation between goodwill and a fundamental is found, the performance of the company is related to the capitalised goodwill.

> **Hypothesis 2.** Goodwill is value relevant and can be shown as the connection between the capitalised goodwill and stock exchange price changes, as well as in relation to goodwill and market beta.

Previous studies have found the connection between the market value of a company and capitalised goodwill. The relationship in the Finnish context will be investigated by testing the Hypothesis 2. The relation of goodwill and goodwill divided by net sales and total assets with the change in stock exchange prices and with the market beta will be examined with correlation analysis. The market perceives goodwill as value relevant if the correlation exists between goodwill and stock exchange price. Also, investors recognise goodwill as a risk if the capitalised goodwill and market beta correlate.

5.2   Financial statement analysis of the historical data

With the financial statement analysis of the research object companies, my aim is to investigate the changes in the volume of capitalised goodwill in balance sheets and to examine the relation between goodwill and other fundamentals. The financial statements of the twenty-four companies will be analysed during the eight-year period in 2007-2014. The data will be first collected to an Excel workbook and then transferred to the SPSS Statistics for further analysis. Balance sheet and income statement based fundamentals are calculated under the guidelines created by the Finnish Committee for Corporate Analysis (Yritystutkimus ry 2011). All in all, seven different fundamentals will be determined for each of the twenty-four companies during every year based on the information given in the annual reports (Figure 4). Seven fundamentals are the variables, which will be analysed and possible causal relationships between the variables are examined. As a result, descriptive analysis and an examination of relationships will be conducted.

Three of the fundamentals portray the amount of capitalised goodwill and the relation of goodwill to total assets and net sales. In addition, four of the fundamentals measure the liquidity, profitability and solvency of the company. Liquidity will be estimated by the Current Ratio (CR), which is a liquidity ratio measuring the company's ability to conduct short-term obligations. Profitability on the other hand measures the financial performance of a company and will be estimated by two fundamentals, which include Net Profit or Loss and Return on Equity (ROE). The solvency will be evaluated with the Equity Ratio, which measures the relationship between shareholder's equity and liabilities. (Yritystutkimus ry 2011.) All the balance sheet and income statement based

fundamentals including Current Ratio, Net Profit or Loss, Return on Equity and Equity Ratio illustrate the overall performance of a company. With the different perspective to company performance, the selected fundamentals should provide quite broad set of variables.

Fundamental	Formula
Goodwill =	The amount of goodwill in the balance sheet
Goodwill divided by net sales =	$\dfrac{\text{The amount of goodwill in the balance sheet}}{\text{Net sales}}$
Goodwill divided by total assets =	$\dfrac{\text{The amount of goodwill in the balance sheet}}{\text{Total assets}}$
Current Ratio (CR) =	$\dfrac{\text{Current assets - Tax receivables}}{\text{Current liabilities}}$
Net Profit/Loss =	$\dfrac{\text{Result for the period}}{\text{Net sales}}$
Return on Equity (ROE) =	$\dfrac{\text{Operating profit +/- financing income/expenses - income tax}}{\text{Shareholder's equity}}$
Equity Ratio =	$\dfrac{\text{Shareholder's equity}}{\text{Total equity and liabilities}}$

FIGURE 4 Selected fundamentals and their formulae

Three of the fundamentals illustrate the capitalised goodwill and four other ones are related to the performance of the company. All of the fundamentals will be analysed and the correlations between these variables will be calculated in order to test the hypothesis expressed previously in this chapter. In addition to the analysis of balance sheet and income statement based fundamentals, changes in stock exchange prices and the market beta will be analysed later in this chapter. With the financial statement analysis, the goal is to identify trends and horizontally evaluate the calculated ratios. This study is focused on selected fundamentals, while other ratios and asset groups are excluded.

The first fundamental based on annual reports is the amount of capitalised goodwill in the balance sheet reported during the eight-year period in 2007-2014. In Figure 5, companies are divided by the amount of capitalised goodwill in three groups, which are 0-30 million euros of capitalised goodwill in the balance sheet, 30-60 million euros and 60-90 million euros. The first group has the most of the companies during the whole eight-year period. In the year 2007, the third group was the second largest, but during the 2008-2014 the second group was the second largest after the first group. Majority of the companies had 0-30 million euros of goodwill during the whole period, while the companies with no capitalised goodwill were excluded. From this perspective, crucial changes in the amount of goodwill were not detected during the years 2007-2014.

The average amount of goodwill calculated from the yearly averages of all the companies in 2007-2014 was 18.36 million euros (Table 3). The yearly average decreased every year from the 20.78 million euros in 2007 to 15.14 million euros in 2014. The average amount of goodwill in 2014 was 27 per cent

less than in the first year 2007. The smallest median was 8.62 million euros in 2013 and the second smallest was 8.70 million euros in the next year 2014. The largest median was 12.78 million euros in 2010 and second largest 11.32 million euros in the previous year 2009.
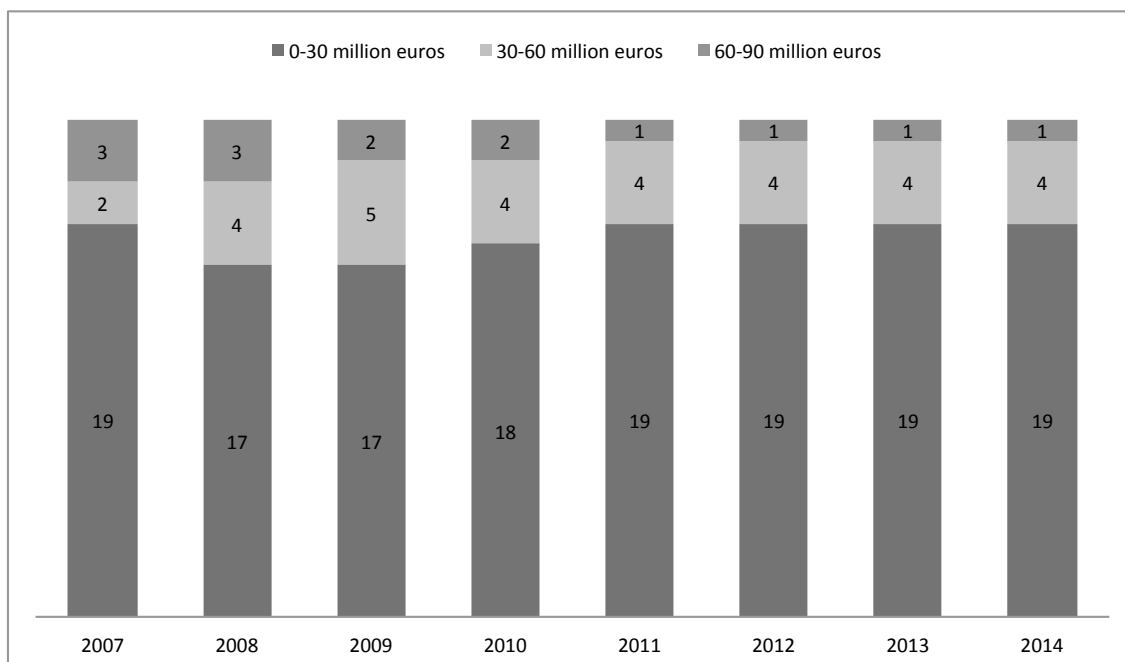
FIGURE 5 The amount of companies with different amount of goodwill

Kesla Oyj had the minimum amount of goodwill during the whole period, which remained the same in 2007-2013 and decreased to 280 thousands of euros in 2014. Digia Oyj had the largest capitalised goodwill in 2007-2008 and the amount was 86.93 million euros in the first year and 89.65 million euros in the following year. During the rest of the period in 2009-2014, Affecto Oyj had the largest amount of goodwill varying between 62.81 million euros to 74.65 million euros. Both Digia Oyj and Affecto Oyj operate in the technology sector.

The sum of companies' goodwill decreased 27 per cent from the 498.82 million euros in 2007 to the 363.31 million in 2014. In other words, goodwill worth almost 140 million euros disappeared from the balance sheets during the eight-year time period. The majority of the companies had less goodwill in 2014 compared to the first year 2007. All in all, 67 per cent of the companies lost goodwill, while 29 per cent gained more and only four per cent had the same amount during the whole time period. The largest decrease in the value of goodwill was reported by Trainers' House Oyj, which lost the value by 97 per cent and from the 52.5 million euros in 2007 to the 1.7 million euros in 2014. Also seven other companies lost more than 40 per cent of the value of goodwill during 2007-2014, which include Cencorp Oyj, Comptel Oyj, Digia Oyj, Glaston Oyj Abp, Ixonos Oyj and Revenio Group Oyj. Companies losing great amounts of goodwill were from the both industrials and technology sectors and evident differences between the two sectors were unperceived.

TABLE 3 Descriptive statistics of capitalised goodwill (in millions of euros)

	2007	2008	2009	2010	2011	2012	2013	2014
Average	20.78	20.76	20.22	19.46	17.66	16.88	15.96	15.14
Median	10.23	8.89	11.32	12.78	10.15	10.22	8.62	8.70
Standard deviation	26.24	25.18	21.28	20.46	18.53	18.46	17.90	17.00
Minimum	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.28
Maximum	86.93	89.65	69.42	72.87	73.10	74.65	72.17	62.81
Sum	498.82	498.32	485.19	467.03	423.84	405.13	383.02	363.31

The second fundamental was the goodwill divided by net sales (GWNS), which illustrates the degree of goodwill in relation to the volume of net sales. The average of goodwill divided by net sales of all the companies decreased from the year 2007 to the year 2014 (Figure 6). On average 54 per cent of the companies had less than 20 per cent of goodwill in relation to net sales, while 46 per cent had more than 20 per cent from which three companies had more than 50 per cent of capitalised goodwill.

	2007	2008	2009	2010	2011	2012	2013	2014
GWNS, %	28%	23%	31%	27%	21%	21%	24%	20%
GWTA, %	22%	24%	26%	25%	25%	25%	23%	24%
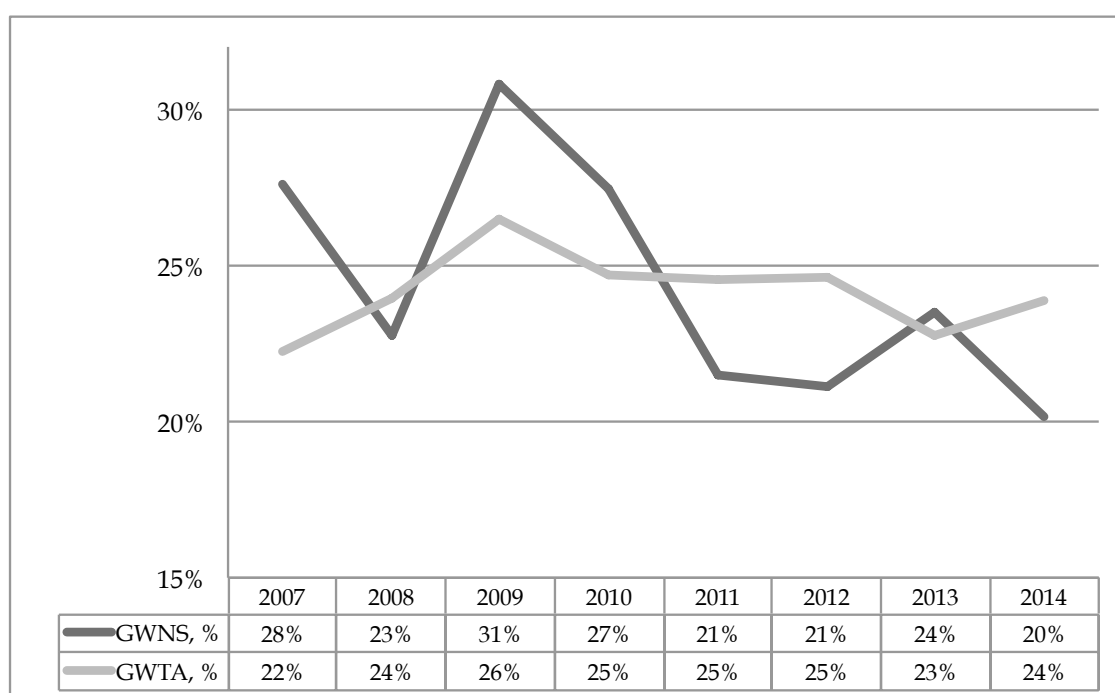
FIGURE 6 The percentage of goodwill to net sales and total assets

Figure 6, illustrates also the degree of goodwill in relation to the amount of total assets (GWTA) on average during the eight-year period. The GWTA per cent was during the whole period between 22-26 %, which was less volatile

compared to GWNS. In the first year, the degree was less than in the last year 2014. The amount of goodwill in relation to total assets increased during the period, while the amount of goodwill in relation to net sales decreased from 2007 to 2014.

5.3 Analysis of the historical share prices and market beta

In addition to the analysis of the financial statements, the market beta and changes in stock exchange prices were calculated during the eight-year period. The beta of a stock (β) reflects the market risk and it's sensitivity to the changes in market rate on return. The market beta was calculated according to the Capital Asset Pricing Model (CAPM) with the following equation:

$$CAPM : E(R_i) = R_f + \beta_i * \left[E(R_m) - R_f \right]$$

$$\beta_i = \left[r(R_i, R_m) * \sigma(R_i) \right] / \sigma(R_m), \text{ where}$$

R_i = daily logarithmic returns of a stock i
R_m = daily logarithmic returns of a market index m
$r(R_i, R_m)$ = correlation between a stock and a market index
$\sigma(R_i)$ = standard deviation of a stock
$\sigma(R_m)$ = standard deviation of a market index

The market beta (BT) was calculated for all companies during 2007-2014, while the market index used was OMX Helsinki Small Cap GI. For all companies, the market beta values are in Appendix 1. Majority of the companies had an average of the eight-year period BT value less than 1, which included 14 companies (Table 4). Five of the companies had BT = 1, while five had value greater than 1 during the time period. As a result, majority of the companies indicated that the investment was less volatile than the market, since their BT was less than 1. Even amounts of the companies' stock prices indicated the equal risk with the market (BT=1) and more volatile than the market (BT>1). Moreover, the minimum and maximum amounts of the companies had quite wide range during 2007-2014. Cencorp Oyj had the greatest diversity in BT values, since in 2014 BT = 6.1 and in 2008 BT = 0.8. By contrast, Solteq Oyj had the lowest diversity in BT values. In 2013, Solteq Oyj had the value of BT = 0.3 and in 2011 the same value was BT = 0.8.

The following part included calculating the changes in stock prices from 2007 to 2014, which are in Appendix 3. The calculations used the daily logarithmic returns of a stock (R_i) and market index (R_m) during the eight-year period. The daily logarithmic returns for stocks and market index were already calculated with the market beta, in addition with the correlations and standard deviations. Majority of the companies (*N*=15) had negative change in logarithmic returns from 2007 to 2014, while minority had positive changes (*N*=9). The market index had a negative change of -25 per cent from 2007 to 2014, which indicates the same trend with majority of the research companies.

TABLE 4 The minimum, maximum and average values of market beta during 2007-2014

	Min BT	Max BT	Average BT
Affecto Oyj	0,4	1,1	0,8
Aspocomp Group Oyj	0,2	1,6	1,0
Cencorp Oyj	0,8	6,1	2,3
Componenta Oyj	0,3	1,6	1,0
Comptel Oyj	0,4	1,3	0,9
Digia Oyj	0,5	1,5	0,9
Dovre Group Oyj	0,4	1,1	0,8
Electrobit Oyj	0,6	2,3	1,4
Etteplan Oyj	0,3	1,3	0,8
Exel Composites Oyj	0,3	1,2	0,8
Glaston Oyj Abp	0,6	1,8	1,0
Incap Oyj	-0,6	1,1	0,7
Ixonos Oyj	0,9	1,8	1,3
Kesla Oyj	0,3	1,7	1,0
Neo Industrial Oyj	0,2	1,2	0,5
Revenio Group Oyj	0,7	1,9	1,2
Solteq Oyj	0,3	0,8	0,5
Tecnotree Oyj	0,5	1,9	1,1
Teleste Oyj	0,3	1,4	1,0
Trainers' House Oyj	-0,5	1,1	0,7
Tulikivi Oyj	0,1	1,2	0,8
Turvatiimi Oyj	-0,1	1,7	0,8
Vaahto Group Oyj	0,0	1,0	0,3
Wulff-Yhtiöt Oyj	0,0	0,9	0,3

5.4   Correlation and regression analysis

After studying the descriptive statistics, the collected data was transferred from Excel workbook to SPSS Statistics for further analysis. The aim was to examine the relationships between fundamentals based on balance sheet and income statement as well as variables calculated from the stock exchange price data. Linear correlations were calculated with SPSS for all of the fundamentals during the eight-year period with the use of Pearson product-moment correlation coefficient (Pearson's *r*). The variables representing goodwill included the amount of capitalised goodwill in balance sheet (GW), goodwill divided by net sales (GWNS) and goodwill divided by total assets (GWTA). The other variables included Current Ratio (CR) reflecting the liquidity, Net Profit or Loss (NPL) and Return on Equity (ROE) related to the profitability and Equity Ratio (ER) measuring the solvency of a company. Moreover the correlations were also calculated for the market beta (BT), which illustrates the systematic risk or market risk and for the change in exchange stock price from 2007 to 2014.

The objective for correlation analysis was to examine the relationships between goodwill variables and other selected variables. Some adjustments were made for the Return on Equity (ROE) fundamental to achieve more

reliable results from the correlation analysis. The following ROE fundamentals were replaced with the overall average of other companies including Incap Oyj (2012), Vaahto Group Oyj (2012), Cencorp Oyj (2013 and 2014) and Ixonos Oyj (2014). The replacement of the fundamentals was necessary because of the negativity of the stockholders' equity, which would have resulted misleadingly as a high positive ratio. After the adjustments, correlation analysis was conducted with the results of relationships found between goodwill and all other fundamentals except the change in exchange stock price.

TABLE 5 Correlations between CR and GW, CR and GWTA, and CR and GWNS

		CR_2	CR_3	CR_4	CR_5	CR_6	CR_7	CR_8
GW_2	Pearson Correlation	-.417 *						
	Sig. (2-tailed)	.043						
		CR_2	CR_3	CR_4	CR_5	CR_6	CR_7	CR_8
GWTA_1	Pearson Correlation	-.667 **	-.580 **	-.490 *				
	Sig. (2-tailed)	.000	.003	.015				
GWTA_2	Pearson Correlation	-.650 **	-.578 **	-.477 *				
	Sig. (2-tailed)	.001	.003	.018				
GWTA_3	Pearson Correlation	-.575 **	-.529 **	-.447 *				
	Sig. (2-tailed)	.003	.008	.029				
GWTA_4	Pearson Correlation	-.528 **	-.481 *					
	Sig. (2-tailed)	.008	.017					
GWTA_5	Pearson Correlation	-.548 **	-.453 *					
	Sig. (2-tailed)	.006	.026					
GWTA_6	Pearson Correlation	-.570 **	-.448 *	-.410 *				
	Sig. (2-tailed)	.004	.028	.046				
GWTA_7	Pearson Correlation	-.560 **	-.440 *					
	Sig. (2-tailed)	.004	.031					
GWTA_8	Pearson Correlation	-.574 **	-.444 *	-.407 *	-.420 *	-.418 *	-.410 *	
	Sig. (2-tailed)	.003	.030	.048	.041	.042	.046	
		CR_2	CR_3	CR_4	CR_5	CR_6	CR_7	CR_8
GWNS_2	Pearson Correlation	-.410 *						
	Sig. (2-tailed)	.047						
GWNS_6	Pearson Correlation	-.420 *						
	Sig. (2-tailed)	.041						
GWNS_7	Pearson Correlation	-.505 *						
	Sig. (2-tailed)	.012						
GWNS_8	Pearson Correlation	-.570 **			-.441 *	-.520 **	-.498 *	-.507 *
	Sig. (2-tailed)	.004			.031	.009	.013	.011

The first fundamental in correlation analysis was Current Ratio (CR), which resulted as a negative correlation between *the amount of capitalised goodwill* and *Current Ratio* in the year 2008. The correlation coefficient was *r*=-.417 and the statistical significance was p=.043. Also negative correlation between the variables *goodwill divided by net sales* and *Current Ratio* was found during the years 2008, 2012, 2013 and 2014. Correlation coefficient was between *r*=-.410 and *r*=-.520, while the statistical significance was between values of p=.047 and p=.009 (Table 5). Furthermore, negative correlation during the years 2007-2014 was found between *goodwill divided by total assets* and *Current Ratio*. Correlation

coefficient was between the values of *r*=-.407 and *r*=-.667 and the statistical significance was between the values of p=.048 and p=.000.

TABLE 6 Correlations between NPL and GWNS, and ROE and GWNS

		NPL_3	NPL_4	NPL_5	NPL_6	NPL_7	NPL_8
GWNS_1	Pearson Correlation		-.672 **	-.699 **			
	Sig. (2-tailed)		.000	.000			
GWNS_2	Pearson Correlation		-.602 **	-.653 **			
	Sig. (2-tailed)		.002	.001			
GWNS_3	Pearson Correlation		-.825 **	-.828 **			
	Sig. (2-tailed)		.000	.000			
GWNS_4	Pearson Correlation		-.797 **	-.800 **			
	Sig. (2-tailed)		.000	.000			
GWNS_5	Pearson Correlation		-.444 *	-.436 *			
	Sig. (2-tailed)		.030	.033			
GWNS_6	Pearson Correlation		-.513 *	-.536 **			
	Sig. (2-tailed)		.010	.007			
GWNS_7	Pearson Correlation	-.564 **				-.509 *	-.570 **
	Sig. (2-tailed)	.004				.011	.004
GWNS_8	Pearson Correlation	-.449 *			-.430 *	-.437 *	-.420 *
	Sig. (2-tailed)	.028			.036	.033	.041

		ROE_2	ROE_3	ROE_8
GWNS_1	Pearson Correlation			-.737 **
	Sig. (2-tailed)			.000
GWNS_2	Pearson Correlation			-.685 **
	Sig. (2-tailed)			.000
GWNS_3	Pearson Correlation			-.861 **
	Sig. (2-tailed)			.000
GWNS_4	Pearson Correlation			-.851 **
	Sig. (2-tailed)			.000
GWNS_5	Pearson Correlation			-.451 *
	Sig. (2-tailed)			.027
GWNS_6	Pearson Correlation			-.527 **
	Sig. (2-tailed)			.008
GWNS_7	Pearson Correlation	-.448 *	-.426 *	
	Sig. (2-tailed)	.028	.038	

The second fundamental in analysis was the Net Profit or Loss of a company (Table 6). Correlation was undiscovered between the amount of capitalised goodwill or goodwill divided by total assets with net profit or loss. By contrast, a negative correlation between *the goodwill divided by net sales* and *net profit or loss* was recognised during 2007-2014. Correlation coefficient was between the values of *r*=-.420 and *r*=-.828, while statistical significance was between the values of p=.041 and p=.000. The next fundamental was Return on Equity (ROE) and correlation was found neither between the variables the amount of

capitalised goodwill and return on equity, nor between goodwill divided by total assets and equity ratio. Whereas, a negative correlation was found between *goodwill divided by net sales* and *return on equity* during the years 2007-2014. Correlation coefficient was between the values of *r*=-.426 and *r*=-.861, while statistical significance was between the values of p=.038 and p=.000 (Table 6).

The fourth fundamental in the correlation analysis was Equity Ratio. Correlation between the amount of capitalised goodwill and equity ratio was unperceived with the same result between goodwill divided by total assets and equity ratio. In addition, only during the year 2010 weak negative correlation between the variables *goodwill divided by net sales* and *equity ratio* was found, while the correlation coefficient was *r*=-.408 and statistical significance was p=.048 (Table 7). Next variables included goodwill and market beta (β), while connection was neither found between the amount of capitalised goodwill and market beta, nor between goodwill divided by total assets and market beta. Positive correlation between the variables *goodwill divided by net sales* and *market beta* was found during the years 2013 and 2014 (Table 7). Correlation coefficient was between the values *r*=.475 and *r*=.600, while the statistical significance was between the values of p=.019 and p=.002. The last fundamentals included the change in exchange stock price from 2007 to 2014 and goodwill, which didn't result any correlation between the variables.

TABLE 7 Correlations between ER and GWNS, and BT and GWNS

		ER_3
GWNS_4	Pearson Correlation	-.408 *
	Sig. (2-tailed)	.048

		BT_6	BT_8
GWNS_7	Pearson Correlation	.574 **	.600 **
	Sig. (2-tailed)	.003	.002
GWNS_8	Pearson Correlation	.507 *	.475 *
	Sig. (2-tailed)	.012	.019

The correlation analysis was followed by regression analysis, which aims to investigate the relationships between selected variables. Three different models were tested with data of the year 2014. The first model had the amount of capitalised goodwill (GW) as the dependent variable, while the second one had goodwill divided by net sales (GWNS) and the third one goodwill divided by total assets (GWTA). All of the models had the same independent variables, which included Current Ratio (CR), Net Profit or Loss (NPL), Return on Equity (ROE), Equity Ratio (ER) and Market Beta (BT). The linear regression was conducted with the SPSS Statistics with the following equation

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_n X_{ni} + \varepsilon_i, \text{ where}$$

Y_i = dependant variable

β_0= the intercept term
β_n= are the n coefficients for independent variables (predictors)
ε_i= the error term

The first model had the amount of capitalised goodwill as the dependent variable (Y_1 = GW) and current ratio, net profit or loss and return on equity, equity ratio and market beta as the independent variables (X_1= CR, X_2=NPL, X_3= ROE, X_4= ER and X_5= BT). The adjusted R Square was 17.8 %, which means that the predictors explain almost one fifth of the amount of goodwill in the year 2014. Even though, the standard error of the estimate was 15.407, which is quite high. From the independent variables, CR and ER had the highest regression coefficient values, which means that they had the strongest impact on the dependent and also were statistically significant. The results from the regression analysis are summarised in Table 8.

TABLE 8 Regression Model 1

Model 1	Regression coefficient	t-value	Sig.	Tolerance
(constant)		2.464	.024	
Current Ratio (CR)	-.697	-2.671	.016	.525
Net Profit or Loss (NPL)	-.165	-.366	.741	.148
Return on Equity (ROE)	.166	.864	.399	.966
Equity Ratio (ER)	.975	2.439	.025	.224
Market Beta (BT)	.214	.513	.614	.205
F	1.999			
R^2	.357			
Adjusted R^2	.178			

The second model included the goodwill divided by net sales (GWNS) as the dependent variable (Y_2= GWNS) and the same independent variables (X_1= CR, X_2=NPL, X_3= ROE, X_4= ER and X_5= BT) as Model 1. As seen in Table 9, the adjusted R Square was 38.0 %, which shows that independent variables explained better the GWNS compared to GW. The standard error of the estimate was also lower (0.131) than in Model 1. Also in this model, CR and ER had the highest influence on the dependent and the received results were statistically significant. Results from the second regression analysis are summarised in Table 9.

TABLE 9 Regression Model 2

Model 2	Regression coefficient	t-value	Sig.	Tolerance
(constant)		3.239	.005	
Current Ratio (CR)	-.736	-3.247	.004	.525
Net Profit or Loss (NPL)	-.354	-.827	.419	.148
Return on Equity (ROE)	-.015	-.087	.932	.966
Equity Ratio (ER)	.777	2.237	.038	.224
Market Beta (BT)	.497	1.372	.187	.205
F	3.817			
R^2	.515			
Adjusted R^2	.380			

TABLE 10 Regression Model 3

Model 3	Regression coefficient	t-value	Sig.	Tolerance
(constant)		3.953	.001	
Current Ratio (CR)	-.909	-3.924	.001	.525
Net Profit or Loss (NPL)	.034	.078	.939	.148
Return on Equity (ROE)	.127	.743	.467	.966
Equity Ratio (ER)	.951	2.678	.015	.224
Market Beta (BT)	.391	1.055	.305	.205
F	3.502			
R^2	.493			
Adjusted R^2	.352			

The last regression model (Table 10) had the goodwill divided by total assets (GWTA) as the dependent variable (Y_3 = GWTA) and also the same independents (X_1= CR, X_2=NPL, X_3= ROE, X_4= ER and X_5= BT) as the previous models. The adjusted R Square was 35.2 %, which means that the independents explained quite well the GWTA in 2014. The standard error of the estimate was in quite low level, which was 0.163. In previous models, CR and ER had the strongest impact on the dependent, which was also the result in this model. The regression coefficients for CR and ER were also statistically significant.

6   CONCLUSIONS

This part of the study summarises the research and primary theories and results. Two hypotheses were created and tested with the research data in order to answer the research questions. Firstly, the aim was to examine the changes in volume of capitalised goodwill in balance sheets and to find relations between goodwill and other fundamentals. The following hypothesis was created to indicate the relationships between goodwill and other fundamentals:

> **Hypothesis 1.** The performance of the company is related to the capitalised goodwill.

Previous studies have denoted that goodwill is valued as high as other assets by the market (e.g. Jennings et al. 1996; McCarthy & Schneider 1995). Some have also stated that goodwill should be treated as an asset, only if goodwill contributes to profitability (Vance 2010). Previous studies have similarly focused on finding the relationships between the capitalised goodwill and performance of the company. In this study, three of the fundamentals reflected goodwill, including the amount of capitalised goodwill (GW), goodwill divided by total assets (GWTA) and goodwill divided by net sales (GWNS). In addition, four of the other fundamentals assess the liquidity (Current Ratio, CR), profitability (Net Profit or Loss, NPL and Return on Equity, ROE) and solvency (Equity Ratio, ER) of the company, which all measure the overall performance of the company. With the different perspective to performance, the selected fundamentals should provide quite wide set of variables.

According to the financial statement analysis, the amount of companies with different amount of goodwill did not change significantly from 2007 to 2014. Majority of the companies had 0-30 million euros of goodwill during the whole period, while the average amount of the yearly averages was around 18 million euros. By contrast, the yearly average amount of goodwill was almost thirty per cent less in 2014 compared to the first year 2007, which was quite remarkable difference. In euros, almost 140 millions worth of goodwill disappeared from the balance sheets during the eight-year period. In conclusion, the descriptive statistics showed that the amount of goodwill decreased substantially from 2007 to 2014. This supports the suggestions of Giacomino & Akers (2009), who stated that due to the poor economic situation the increasing trend of goodwill impairments would continue.

The correlation analysis of the fundamentals resulted as negative correlation between CR and goodwill, and with negative correlation between NPL and goodwill. Furthermore, analysis resulted as negative correlation between goodwill and ROE, which was statistically significant result along with the other findings. Only ER and goodwill resulted as weak correlation coefficient, which indicates that significant relationship between these two fundamentals was undiscovered. All in all, the correlation analysis resulted as strong relationships between goodwill and companies' liquidity and profitability. With the relations to goodwill, these correlations indicate that

goodwill is certainly related to the performance of a company. Vance (2010) has also studied whether goodwill contributes to performance and concluded that companies with capitalised goodwill have performed at least as well as companies without goodwill. By contrast, research results couldn't show any strong relationship between solvency and goodwill, which should also be noted. However, majority of the results supported the Hypothesis 1, which is confirmed with the data and analysis.

Lys et al. (2012) have also studied the relationship between goodwill and performance with correlation analysis using expected economic profit or loss as one variable. They found a positive correlation with goodwill and expected economic profit and a negative correlation with expected economic losses and future company performance (Lys et al. 2012). In this study, profit or loss was measured in a different way compared to Lys et al. (2012) and a statistically significant correlation was found with NPL and goodwill. In fact, goodwill is associated with economic profits or losses. This finding also supports the Hypothesis 1 that goodwill is connected to the performance of a company.

Of all the variables, CR resulted as the most associated variable with goodwill. CR can be calculated by dividing the current assets with current liabilities measuring the liquidity and the ability to conduct short-term obligations. In terms of the correlation analysis, if the amount of goodwill increases, the liquidity of a company will decrease. Goodwill divided by total assets resulted as multiple relationships with CR during several years. One possible reason could be, that the high amount of goodwill affects company's short time performance.

In addition to correlation analysis, regression analysis was also conducted to deepen the understanding of the relationships between variables. Three different models were tested, which had the goodwill as dependent and CR, NPL, ROE, ER and BT as independent variables. The regression analysis had statistically significant results showing CR and ER with highest regression coefficients. Analysis also revealed that the selected fundamental variables explained around 17-38 per cent of amount or degree of goodwill. All in all, fundamental variables were connected with goodwill as the research results displayed in the correlation and regression analysis.

Secondly, this study investigated the value relevance of goodwill, which can be defined as the association between accounting numbers and the market value of security. If relationships are found, goodwill can be stated as value relevant asset. Relations were examined between goodwill accounting numbers and stock exchange price as well as between goodwill and market beta. In order to answer these questions, following hypothesis was composed:

Hypothesis 2. Goodwill is value relevant and can be shown as the connection between the capitalised goodwill and stock exchange price changes, as well as in relation to goodwill and market beta.

The value relevance of goodwill has been studied before with quite similar findings. For instance, McCarthy & Schneider (1995) received results addressing that goodwill is included in company valuation made by investors. Also,

Jennings et al. (1996) found a strong positive association between goodwill and market value of a company. In addition, Bugeja & Gallery (2006) stated that recently acquired goodwill is associated with the market value, while older goodwill is excluded with future economic benefits. Moreover, Hirschey & Richardson (2002) confirmed the economic importance of goodwill write-off decisions in their study, while Qureshi & Ashraf (2013) also confirmed the association between goodwill and market value. All of these studies mentioned supported the value relevance matter, but were conducted before the IFRS adoption or implementation of the goodwill impairment.

Lys et al. (2012) have found consistent results also after the implementation of the goodwill impairment, whereas Hamberg & Beisland (2014) have stated that goodwill impairments are no longer value relevant. After the adoption of the IFRS regime, the research results seem to be ambiguous compared to previous ones. Could the changes in accounting practices and standards modify the value relevance and market perception of goodwill? For instance, Hamberg & Beisland (2014) found that all accounting variables except goodwill impairment correlated with the stock price. In other words, all other financial fundamentals were connected to market value except goodwill. If market perceives goodwill as value relevant, connection between capitalised goodwill and stock market prices should be found besides with the relation between goodwill and market beta.

In this study, correlations and regressions were conducted between goodwill and change in stock exchange price and with goodwill and market beta in order to answer the question. The aim was to figure out whether the market perceives goodwill as value relevant. The correlation analysis resulted a strong correlation between goodwill and market beta, but no connection with change in stock exchange price was found. Goodwill is related to market beta, which indicates that the market and capitalised goodwill are connected. On the other hand, connection with market prices was missing. Maybe this could be the result of the adoption of IAS/IFRS, like Hamberg & Beisland (2014) stated with the results from Sweden. They asserted that after the adoption of IAS/IFRS, goodwill impairments have lost value relevance in Sweden (Hamberg & Beisland). The market beta was also one variable in the regression analysis, but lacked the statistically significant results as an independent variable.

With the received results, Hypothesis 2 is only partly supported with the significant results for market beta. By contrast, no evidence was found supporting the relationship between goodwill and stock exchange prices. Even though, some previous studies have found association between goodwill and other intangibles with stock exchange prices in Europe under the IFRS regime (e.g. Sahut et al. 2011), relationship between goodwill and market value was missing this time. These findings makes the results found in this study even more contradictory, while reflected to previous studies. Finally, some evidence was found supporting the value relevance of goodwill, but the relation could not be completely proven existent.

My aim was to investigate the changes in the volume of capitalised goodwill in balance sheets and to examine the relation between goodwill and

other fundamentals to confirm the relation between goodwill and company performance. Also, one goal was to clarify if goodwill is value relevant and examine the relationships between fundamentals based on balance sheet and income statement as well as variables calculated from the stock exchange price data. Some evidence was found supporting the relation between goodwill and company performance, while information was gained from the changes in the volume of capitalised goodwill during the eight-year period in 2007-2014. Unfortunately, the value relevance of goodwill and the market perception of capitalised goodwill, in other words the relationship between goodwill and market value remains unclear. Hopefully, further research will enlighten this enigma.

Collectively, the amount of goodwill has decreased during the financial crisis from 2007 to 2014. Also, empirical results showed that goodwill is related to other fundamentals calculated from both balance sheet and income statement. Results indicated the connection between goodwill and market value in some measure, but the linkage between capitalised goodwill and stock exchange price is not yet clear. However, the results of this study could be helpful for investors, analysts and financers, while evaluating the company and especially the value of goodwill in balance sheets.

Since the sample of the research is a non-random sample, the results could not be generalised to all companies listed in the NASDAQ OMX Nordic. For further studies, my suggestion is to focus on gaining a deeper understanding of the market reactions and stock exchange prices. For instance, a more extensive study could be conducted with the individual companies to obtain broader knowledge of single acquisitions and their market reactions. One could also include several variables calculated for stock exchange price instead of using only one or two, in order to provide more information from the market perspective.

REFERENCES

Ahrens, T. & Dent, J. 1998. Accounting and Organizations: Realizing the Richness of Field Research. Journal of Management Accounting Research 10, 1-39.

Barth, M., Beaver, W. & Landsman W. 2000. The relevance of value relevance research. Journal of Accounting & Economics conference 2000.

Bloom, M. 2009. Accounting For Goodwill. Abacus 45 (3), 379-389.

Bugeja, M. & Gallery, N. 2006. Is older goodwill value relevant? Accounting and Finance 46, 519-535.

Creswell, J. 2014. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 4th Edition. SAGE Publications Inc. California: SAGE Publications Inc.

Deloitte. 21.2.2015. Deloitte. Yrityskauppabarometri Q1 2015 [WWW document]. http://www2.deloitte.com/content/dam/Deloitte/fi/Documents/finance/Yrityskauppabarometri_Q1_2015.pdf

Duff & Phelps. 5.11.2014. 2014 European Goodwill Impairment Study [WWW document]. http://www.duffandphelps.com/Pages/newsDetail.aspx?itemid=828&list=News

Giancomino, D. & Akers, M. 2009. Goodwill and goodwill write-downs: their effects on earnings quality for 2008 and 2009. Journal of Business and Economics Research 7 (11), 9-18.

Gore, R. & Zimmerman. D. 2010. Is Goodwill an Asset? CPA Journal 80 (6), 46-48.

Gynther, R. 1969. Some "conceptualizing" on goodwill. The Accounting Review, 44 (2), 247-255.

Hamberg, M. & Beisland, L-A. 2014. Changes in the value relevance of goodwill accounting following the adoption of IFRS 3. Journal of International Accounting, Auditing and Taxation 23, 59-73.

Henning, S., Lewis, B. & Shaw, W. 2000. Valuation of the components of purchased goodwill. Journal of Accounting Research 38 (2), 375–386.

Hirschey, M., & Richardson, V. 2002. Information content of accounting goodwill numbers. Journal of Accounting and Public Policy 21, 173–191.

Huikku, J. & Silvola, H. 2012b. Liikearvon arvonalentumistestaus – voiko lukuihin luottaa? Tilintarkastus (2), 11-13.

Huikku, J. & Silvola, H. 2012a. Miksi liikearvon arvonalentumiskirjauksia ei tule? Tilintarkastus (1), 10-13.

IAS 16, 36 & 38, IFRS 3 & 8. 2014. 2014 International Financial Reporting Standards IFRS (Blue Book & Red Book).

Jennings, R., Robinson, J., Thompson, R. & Duvall, L. 1996. The relation between accounting goodwill numbers and equity values. Journal of Business Finance and Accounting 23, 513–533.

Johnson, T. & Petrone, K. 1998. Is goodwill an asset? Accounting Horizons 12 (3), 293-303.

Järvenpää, M. & Pellinen, J. 2005. Teoria ja interventio suomalaisissa johdon laskentatoimen case- tai field-menetelmällä tehdyissä akateemisissa opinnäytteissä 1997-2005. Vaasan yliopiston julkaisuja. 65-108.

Lev, B. & Thiagarajan S. R. 1993. Fundamental Information Analysis. Journal of Accounting Research 31 (2), 190-215.

Lukka, K. 2005. Approaches to case research in management accounting: The nature of empirical intervention and theory linkage. In. (eds.) Jönsson, S. & Mouritsen, J. Accounting in Scandinavia – The Northern Lights, 375-399.

Lukka Kari, Case/field-tutkimuksen erilaiset lähestymistavat laskentatoimessa. 1999. Teoksessa Tutkija, opettaja, akateeminen vaikuttaja ja käytännön toimija: Professori Reino Majala 65 vuotta. Toimittanut Heli Hookana-Turunen. Turun kauppakorkeakoulun julkaisuja, Sarja C-1:1999, 129-150.

Lys, T., Vincent, L. & Yehuda, N. 2012. The Nature and Implications of Acquisition Goodwill. SSRN Working Paper Series, March 2012. http://dx.doi.org.ezproxy.jyu.fi/10.2139/ssrn.1802612

Ma, R. & Hopkins, R. 1988. Goodwill – An Example of Puzzle-Solving in Accounting. Abacus 24 (1), 75-85.

McCarthy, M. & Schneider, D. 1995. Market perception of goodwill: some empirical evidence. Accounting and Business Research 26, 69–81.

Owens, R. N. 1923. Goodwill in the Accounts. The University Journal of Business 1 (3), 282-299.

Ojala, H. 2007c. Does the reporting of goodwill impairment lag behind the economic impairment of goodwill under the impairment-only approach? Essays on the value relevance of goodwill accounting. Helsinki: Helsinki School of Economics.

PwC. 29.10.2012. Euroopan yritysjärjestelyiden määrä nousussa ensimmäistä kertaa kahteen vuoteen. [WWW document]. http://www.pwc.fi/fi/tiedotteet-2012/index.jhtml

Sahut, J-M., Boulerne, S. & Teulon, F. 2011. Do IFRS provide better information about intangibles in Europe? Review of Accounting and Finance 10 (3), 267-290.

Salmi, T. & Järvenpää, M. 2000. Laskentatoimen case-tutkimus ja nomoteettinen tutkimusajattelu sulassa sovussa. Liiketaloudellinen aikakausikirja 00 (2), 263-275.

Salmi, T. 1986. Laskentatoimen ja rahoituksen kvantitatiivinen tutkimusprosessi ja kytkeytyminen lähioppialoihin. The Finnish Journal of Business Economics 35 (1), 71-87.

Scapens, R. 1990. Researching Management Accounting Practice: The Role of Case Studies. British Accounting Review 22, 259-281.

Seetharaman, A., Sreenivasan, J., Sudha, R. & Ya Yee, T. 2005. Managing impairment of goodwill. Journal of Intellectual Capital 7 (3), 338-353.

Seetharaman, A., Balanchandran, M. & Saravanan, A. 2004. Accounting Treatment of Goodwill: Yesterday, Today and Tomorrow. Problems and Prospects in the International Perspective. Journal of Intellectual Capital 5 (1), 131-152.

Vallius, S. 2014. Liikearvon arvoa etsimässä – Liikearvon määrä ja arvonalentumiset sekä tuloskehitys pienteollisuustuotteet- ja palvelut – yrityksissä sekä teknologiayrityksissä vuosina 2007-2012. Jyväskylän yliopiston kauppakorkeakoulu. Laskentatoimen seminaarityö.

Vance, D. 2010. Return On Goodwill. The Journal of Applied Business Research 26 (2), 93-103.

Qureshi, M. & Ashraf, D. 2013. Is goodwill capitalisation value relevant? Some UK evidence. Accounting, Accountability & Performance 18 (1), 19-34.

Yritystutkimusneuvottelukunta ry. 2006. IFRS-tilinpäätöksen keskeiset periaatteet. [WWW dokumentti]. http://www.yritystutkimusneuvottelukunta.fi/?file=27

Yritystutkimus ry. 2011. Yritystutkimuksen tilinpäätösanalyysi. Gaudeamus Helsinki University Press. Helsinki: Hakapaino Oy .

APPENDIX 1 SELECTED COMPANIES

Company	Segment	Sector	Included
Affecto Oyj	Small Cap	Technology	Yes
Aspocomp Group Oyj	Small Cap	Industrials	Yes
Cencorp Oyj	Small Cap	Industrials	Yes
Componenta Oyj	Small Cap	Industrials	Yes
Comptel Oyj	Small Cap	Technology	Yes
Digia Oyj	Small Cap	Technology	Yes
Dovre Group Oyj	Small Cap	Industrials	Yes
Elektrobit Oyj	Small Cap	Technology	Yes
Etteplan Oyj	Small Cap	Industrials	Yes
Exel Composites Oyj	Small Cap	Industrials	Yes
Glaston Oyj Abp	Small Cap	Industrials	Yes
Incap Oyj	Small Cap	Industrials	Yes
Ixonos Oyj	Small Cap	Technology	Yes
Kesla Oyj	Small Cap	Industrials	Yes
Neo Industrial Oyj	Small Cap	Industrials	Yes
Revenio Group Oyj	Small Cap	Industrials	Yes
Solteq Oyj	Small Cap	Technology	Yes
Tecnotree Oyj	Small Cap	Technology	Yes
Teleste Oyj	Small Cap	Technology	Yes
Trainers' House Oyj	Small Cap	Technology	Yes
Tulikivi Oyj	Small Cap	Industrials	Yes
Turvatiimi Oyj	Small Cap	Industrials	Yes
Vaahto Group Oyj	Small Cap	Industrials	Yes
Wulff-Yhtiöt Oyj	Small Cap	Industrials	Yes
Efore Oyj	Small Cap	Industrials	No
Elecster Oyj A	Small Cap	Industrials	No
Geocentric Oyj	Small Cap	Technology	No
Innofactor Plc	Small Cap	Technology	No
Nurminen Logistics Oyj	Small Cap	Industrials	No
Okmetic Oyj	Small Cap	Technology	No
QPR Software Oyj	Small Cap	Technology	No
Raute Oyj A	Small Cap	Industrials	No
Scanfil Oyj	Small Cap	Industrials	No
Soprano Oyj	Small Cap	Technology	No
SSH Communication	Small Cap	Technology	No
Stonesoft Oyj	Small Cap	Technology	No
Takoma Oyj	Small Cap	Industrials	No
Yleiselektroniikka E	Small Cap	Industrials	No

APPENDIX 2 FUNDAMENTALS

GW = The amount of capitalised goodwill

Company	2007	2008	2009	2010	2011	2012	2013	2014
Affecto Oyj	84,196	72,614	69,415	72,866	73,102	74,651	72,166	62,814
Aspocomp Group Oyj	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Cencorp Oyj	2,028	2,028	2,966	2,967	2,967	2,967	2,538	0,441
Componenta Oyj	40,800	31,700	31,500	33,100	28,000	29,100	29,100	29,100
Comptel Oyj	10,832	19,027	19,355	19,626	10,832	2,646	2,646	2,646
Digia Oyj	86,932	89,649	65,545	65,545	44,543	51,105	44,550	44,550
Dovre Group Oyj	6,747	5,857	7,022	7,446	7,491	7,803	6,972	6,645
Elektrobit Oyj	19,597	18,258	18,503	18,519	19,264	19,295	19,319	19,343
Etteplan Oyj	29,426	33,207	31,184	36,028	36,331	39,930	39,131	38,642
Exel Composites Oyj	9,627	8,362	2,460	2,426	11,939	10,898	9,393	9,676
Glaston Oyj Abp	67,641	66,183	58,403	52,598	52,601	36,843	36,843	36,843
Incap Oyj	1,326	0,969	0,977	1,040	0,964	0,940	0,866	0,910
Ixonos Oyj	21,067	32,195	22,826	23,647	23,647	12,447	10,847	10,847
Kesla Oyj	0,360	0,360	0,360	0,360	0,360	0,360	0,360	0,280
Neo Industrial Oyj	4,527	4,587	3,520	3,624	3,477	3,484	3,252	3,252
Revenio Group Oyj	11,355	9,421	9,145	8,230	8,118	8,118	6,966	1,191
Solteq Oyj	8,086	8,286	8,286	6,199	6,199	12,728	12,730	12,730
Tecnotree Oyj	0,682	0,682	19,591	21,608	19,192	17,420	15,266	16,642
Teleste Oyj	12,686	13,865	31,657	30,959	31,277	31,350	33,252	33,121
Trainers' House Oyj	52,467	51,772	50,968	25,806	9,135	9,135	4,614	1,653
Tulikivi Oyj	4,266	4,266	4,174	4,174	4,174	4,174	4,174	4,174
Turvatiimi Oyj	12,261	11,973	11,973	16,054	16,054	15,493	15,493	15,493
Vaahto Group Oyj	1,702	1,702	1,702	1,702	1,702	1,692	1,692	1,583
Wulff-Yhtiöt Oyj	7,204	8,356	10,658	9,501	9,467	9,546	7,845	7,730

GWNS = Goodwill divided by net sales

Company	2007	2008	2009	2010	2011	2012	2013	2014
Affecto Oyj	0,864	0,552	0,674	0,639	0,574	0,560	0,543	0,512
Aspocomp Group Oyj	0,116	0,145	0,228	0,160	0,127	0,128	0,155	0,143
Cencorp Oyj	0,100	0,130	0,486	0,232	0,137	0,192	0,766	0,524
Componenta Oyj	0,064	0,047	0,105	0,073	0,049	0,053	0,057	0,059
Comptel Oyj	0,131	0,224	0,258	0,252	0,141	0,032	0,032	0,031
Digia Oyj	0,821	0,728	0,545	0,501	0,365	0,509	0,447	0,457
Dovre Group Oyj	0,132	0,094	0,116	0,105	0,102	0,083	0,071	0,067
Elektrobit Oyj	0,136	0,106	0,120	0,114	0,130	0,104	0,097	0,086
Etteplan Oyj	0,235	0,205	0,316	0,344	0,304	0,297	0,304	0,293
Exel Composites Oyj	0,085	0,088	0,035	0,033	0,140	0,143	0,136	0,122
Glaston Oyj Abp	0,251	0,245	0,385	0,352	0,439	0,319	0,301	0,296
Incap Oyj	0,016	0,010	0,014	0,018	0,014	0,015	0,034	0,049
Ixonos Oyj	0,356	0,429	0,340	0,278	0,290	0,219	0,325	0,453
Kesla Oyj	0,008	0,007	0,014	0,011	0,008	0,009	0,008	0,006
Neo Industrial Oyj	0,072	0,039	0,051	0,043	0,034	0,033	0,039	0,041
Revenio Group Oyj	0,460	0,209	0,305	0,280	0,378	0,320	0,516	0,074
Solteq Oyj	0,290	0,273	0,290	0,230	0,228	0,326	0,334	0,311
Tecnotree Oyj	0,010	0,009	0,368	0,356	0,308	0,237	0,207	0,225
Teleste Oyj	0,101	0,128	0,223	0,184	0,170	0,162	0,172	0,168
Trainers' House Oyj	1,750	1,170	1,844	1,657	0,583	0,687	0,456	0,207
Tulikivi Oyj	0,061	0,064	0,079	0,075	0,071	0,082	0,095	0,106
Turvatiimi Oyj	0,453	0,434	0,438	0,496	0,407	0,407	0,409	0,425
Vaahto Group Oyj	0,019	0,023	0,022	0,048	0,056	0,041	0,053	0,078
Wulff-Yhtiöt Oyj	0,097	0,110	0,143	0,102	0,096	0,106	0,094	0,104

GWTA = Goodwill divided by total assets

Company	2007	2008	2009	2010	2011	2012	2013	2014
Affecto Oyj	0,520	0,495	0,509	0,510	0,504	0,505	0,004	0,503
Aspocomp Group Oyj	0,043	0,086	0,096	0,089	0,183	0,153	0,168	0,201
Cencorp Oyj	0,116	0,171	0,287	0,073	0,086	0,159	0,137	0,096
Componenta Oyj	0,082	0,070	0,081	0,079	0,064	0,063	0,064	0,062
Comptel Oyj	0,147	0,229	0,234	0,257	0,151	0,039	0,039	0,034
Digia Oyj	0,581	0,584	0,581	0,568	0,507	0,553	0,535	0,554
Dovre Group Oyj	0,218	0,220	0,235	0,242	0,222	0,193	0,171	0,187
Elektrobit Oyj	0,083	0,101	0,116	0,148	0,167	0,135	0,134	0,116
Etteplan Oyj	0,406	0,421	0,505	0,533	0,554	0,523	0,525	0,512
Exel Composites Oyj	0,128	0,141	0,043	0,043	0,209	0,212	0,194	0,185
Glaston Oyj Abp	0,245	0,231	0,258	0,270	0,281	0,233	0,293	0,286
Incap Oyj	0,024	0,020	0,025	0,024	0,025	0,032	0,055	0,063
Ixonos Oyj	0,451	0,513	0,438	0,417	0,446	0,373	0,420	0,495
Kesla Oyj	0,012	0,011	0,014	0,013	0,012	0,013	0,010	0,008
Neo Industrial Oyj	0,043	0,043	0,037	0,034	0,036	0,055	0,069	0,073
Revenio Group Oyj	0,318	0,326	0,344	0,336	0,328	0,325	0,307	0,062
Solteq Oyj	0,367	0,376	0,392	0,360	0,357	0,470	0,501	0,508
Tecnotree Oyj	0,007	0,006	0,165	0,197	0,192	0,213	0,213	0,222
Teleste Oyj	0,163	0,184	0,288	0,266	0,235	0,261	0,267	0,250
Trainers' House Oyj	0,466	0,543	0,660	0,491	0,294	0,343	0,238	0,129
Tulikivi Oyj	0,068	0,065	0,069	0,070	0,074	0,081	0,076	0,088
Turvatiimi Oyj	0,648	0,660	0,706	0,650	0,703	0,698	0,737	0,746
Vaahto Group Oyj	0,033	0,041	0,034	0,044	0,047	0,056	0,072	0,119
Wulff-Yhtiöt Oyj	0,170	0,212	0,233	0,206	0,213	0,230	0,223	0,222

CR = Current Ratio

Company	2007	2008	2009	2010	2011	2012	2013	2014
Affecto Oyj	1,080	1,333	1,236	1,130	1,172	1,232	1,238	1,281
Aspocomp Group Oyj	0,814	1,957	1,498	1,109	1,818	1,862	2,299	1,840
Cencorp Oyj	1,515	1,023	1,232	1,126	0,705	0,504	0,292	0,159
Componenta Oyj	0,757	1,013	0,708	0,943	0,503	0,771	0,294	0,365
Comptel Oyj	2,806	1,921	1,604	2,141	2,159	1,414	1,342	1,298
Digia Oyj	1,896	0,581	1,114	1,248	1,113	0,854	0,864	0,783
Dovre Group Oyj	1,479	1,454	1,410	1,761	1,924	1,774	2,079	1,871
Elektrobit Oyj	2,601	2,927	2,584	1,862	1,721	1,266	1,372	1,518
Etteplan Oyj	1,271	0,969	0,837	0,893	0,792	0,806	0,768	0,769
Exel Composites Oyj	1,579	1,679	2,139	2,318	2,426	2,511	1,157	1,704
Glaston Oyj Abp	1,291	1,150	0,888	0,721	1,022	0,571	1,116	1,070
Incap Oyj	1,438	1,378	1,050	1,029	0,733	0,764	0,912	0,852
Ixonos Oyj	1,075	0,761	0,891	1,135	1,080	0,496	0,313	0,216
Kesla Oyj	2,495	2,492	2,267	2,071	2,093	1,979	1,800	1,991
Neo Industrial Oyj	3,395	1,938	1,887	1,084	0,702	0,874	1,008	0,984
Revenio Group Oyj	1,164	1,359	1,287	1,265	1,741	1,714	1,831	3,098
Solteq Oyj	0,688	0,942	1,098	0,607	0,660	0,829	0,763	0,768
Tecnotree Oyj	5,092	2,960	3,195	3,107	1,808	1,186	1,932	0,936
Teleste Oyj	1,796	1,821	1,368	1,410	1,413	1,260	1,362	1,414
Trainers' House Oyj	2,729	1,469	1,002	0,822	1,539	1,146	1,384	0,966
Tulikivi Oyj	1,590	2,019	1,879	1,847	1,455	1,702	1,840	1,597
Turvatiimi Oyj	0,352	0,481	0,349	0,425	0,381	0,354	0,280	0,293
Vaahto Group Oyj	1,136	1,098	0,910	0,823	0,890	0,561	0,785	0,338
Wulff-Yhtiöt Oyj	2,133	2,123	1,594	1,495	1,492	1,490	1,295	1,253

NPL = Net Profit or Loss

Company	2007	2008	2009	2010	2011	2012	2013	2014
Affecto Oyj	0,072	0,065	-0,069	0,008	0,042	0,057	0,042	-0,013
Aspocomp Group Oyj	-2,493	0,016	-0,190	0,036	0,307	0,164	-0,092	-0,095
Cencorp Oyj	-0,195	-0,294	-0,828	-0,272	-0,348	-0,865	-2,114	-14,750
Componenta Oyj	0,034	0,020	-0,096	-0,017	-0,005	-0,044	-0,030	-0,058
Comptel Oyj	0,132	0,078	-0,029	0,060	0,095	-0,155	0,031	0,064
Digia Oyj	0,055	0,060	-0,114	0,088	-0,184	0,040	-0,041	0,029
Dovre Group Oyj	-0,023	-0,002	-0,012	0,033	0,044	0,030	0,036	0,003
Elektrobit Oyj	-0,048	-0,287	-0,013	-0,097	-0,034	0,018	0,155	0,056
Etteplan Oyj	0,067	0,050	-0,033	0,041	0,039	0,042	0,034	0,047
Exel Composites Oyj	0,018	-0,031	0,085	0,093	0,093	0,027	0,044	0,072
Glaston Oyj Abp	0,026	-0,034	-0,353	-0,214	-0,137	-0,158	0,011	0,009
Incap Oyj	-0,013	-0,058	-0,096	-0,083	-0,057	-0,077	-0,331	0,030
Ixonos Oyj	0,053	0,047	-0,089	0,038	0,011	-0,387	-0,372	-0,345
Kesla Oyj	0,075	0,041	-0,064	0,044	0,044	0,003	0,019	0,003
Neo Industrial Oyj	0,018	-0,042	-0,056	-0,127	-0,061	-0,056	-0,014	0,022
Revenio Group Oyj	0,230	0,059	-0,027	-0,017	0,099	0,180	0,321	-0,043
Solteq Oyj	0,040	0,029	0,033	-0,137	0,033	0,043	0,043	0,046
Tecnotree Oyj	0,124	0,132	-0,304	-0,181	-0,250	-0,232	-0,034	-0,126
Teleste Oyj	0,075	0,051	0,003	0,029	0,034	0,035	0,042	0,043
Trainers' House Oyj	0,161	0,031	-0,254	-1,041	-1,173	-0,018	-0,471	-0,715
Tulikivi Oyj	0,005	0,021	-0,044	-0,015	-0,041	-0,012	-0,101	-0,067
Turvatiimi Oyj	-0,138	-0,148	-0,046	-0,132	-0,036	-0,101	-0,029	-0,035
Vaahto Group Oyj	0,044	0,004	-0,034	-0,086	-0,135	-0,204	-0,127	-0,163
Wulff-Yhtiöt Oyj	0,043	0,010	-0,009	-0,004	0,008	0,010	-0,047	0,008

ROE = Return on Equity

Company	2007	2008	2009	2010	2011	2012	2013	2014
Affecto Oyj	0,111	0,145	-0,133	0,017	0,088	0,113	0,083	-0,026
Aspocomp Group Oyj	-3,405	-0,262	-0,080	0,188	0,717	0,268	-0,141	-0,187
Cencorp Oyj	-1,656	-2,407	-1,873	-0,165	-0,275	-1,010	-0,904	-0,114
Componenta Oyj	0,215	0,188	-0,423	-0,106	-0,075	-0,288	-0,183	-0,257
Comptel Oyj	0,206	0,126	-0,047	0,089	0,179	-0,485	0,104	0,162
Digia Oyj	0,086	0,103	-0,235	0,170	-0,565	0,096	-0,113	0,078
Dovre Group Oyj	-0,075	0,010	-0,055	0,139	0,137	0,103	0,060	0,038
Elektrobit Oyj	-0,121	-0,432	-0,030	-0,216	-0,098	0,030	0,081	0,131
Etteplan Oyj	0,285	0,302	-0,133	0,158	0,227	0,231	0,174	0,214
Exel Composites Oyj	0,085	-0,176	0,232	0,208	0,226	0,065	0,250	0,192
Glaston Oyj Abp	0,050	-0,075	-0,773	-0,810	-0,308	-0,590	0,025	0,022
Incap Oyj	-0,058	-0,409	-1,043	-0,870	-3,049	-0,247	-16,490	0,106
Ixonos Oyj	0,146	0,140	-0,312	0,114	0,032	-2,934	-3,388	-0,114
Kesla Oyj	0,075	0,041	-0,158	0,122	0,149	0,010	0,065	0,011
Neo Industrial Oyj	0,020	-0,082	-0,081	-0,273	-0,507	-0,688	-0,158	0,190
Revenio Group Oyj	0,312	0,151	-0,052	-0,037	0,129	0,311	0,197	0,310
Solteq Oyj	0,115	0,090	0,094	-0,705	0,151	0,168	0,149	0,162
Tecnotree Oyj	0,112	0,122	-0,210	-0,152	-0,315	-0,492	-0,115	-0,551
Teleste Oyj	0,201	0,119	0,021	0,095	0,114	0,111	0,124	0,120
Trainers' House Oyj	0,079	0,022	-0,137	-0,462	-1,105	-0,015	-0,702	-2,861
Tulikivi Oyj	0,013	0,052	-0,044	-0,015	-0,289	-0,071	-0,211	-0,147
Turvatiimi Oyj	-0,890	-0,471	-0,171	-0,539	-0,190	-0,423	-0,156	-0,224
Vaahto Group Oyj	0,262	0,022	-0,034	-0,086	-0,708	-0,247	-0,138	-0,041
Wulff-Yhtiöt Oyj	0,155	0,038	-0,036	-0,025	0,048	0,050	-0,304	0,044

ER = Equity Ratio

Company	2007	2008	2009	2010	2011	2012	2013	2014
Affecto Oyj	0,388	0,400	0,393	0,392	0,417	0,455	0,482	0,484
Aspocomp Group Oyj	0,079	0,162	0,100	0,106	0,616	0,730	0,706	0,713
Cencorp Oyj	0,136	0,160	0,261	0,518	0,510	0,251	-0,069	-1,309
Componenta Oyj	0,202	0,164	0,175	0,168	0,094	0,181	0,188	0,237
Comptel Oyj	0,708	0,622	0,560	0,644	0,583	0,394	0,426	0,430
Digia Oyj	0,458	0,470	0,516	0,584	0,453	0,455	0,433	0,457
Dovre Group Oyj	0,452	0,482	0,458	0,543	0,605	0,568	0,623	0,604
Elektrobit Oyj	0,702	0,638	0,704	0,580	0,582	0,484	0,566	0,560
Etteplan Oyj	0,405	0,342	0,384	0,434	0,309	0,323	0,342	0,381
Exel Composites Oyj	0,313	0,281	0,446	0,571	0,616	0,610	0,471	0,567
Glaston Oyj Abp	0,507	0,433	0,306	0,203	0,284	0,196	0,403	0,395
Incap Oyj	0,353	0,270	0,162	0,133	0,033	-0,103	0,034	0,099
Ixonos Oyj	0,461	0,401	0,368	0,502	0,556	0,225	0,142	-0,056
Kesla Oyj	0,405	0,401	0,411	0,436	0,438	0,425	0,372	0,353
Neo Industrial Oyj	0,562	0,474	0,474	0,317	0,127	0,138	0,158	0,211
Revenio Group Oyj	0,507	0,608	0,592	0,592	0,664	0,590	0,660	0,624
Solteq Oyj	0,441	0,436	0,472	0,306	0,342	0,372	0,427	0,468
Tecnotree Oyj	0,819	0,703	0,651	0,657	0,495	0,422	0,303	0,225
Teleste Oyj	0,599	0,617	0,424	0,434	0,415	0,504	0,527	0,534
Trainers' House Oyj	0,553	0,649	0,665	0,668	0,536	0,616	0,350	0,163
Tulikivi Oyj	0,439	0,412	0,394	0,370	0,332	0,351	0,380	0,385
Turvatiimi Oyj	0,213	0,479	0,438	0,322	0,328	0,371	0,338	0,281
Vaahto Group Oyj	0,284	0,329	0,218	0,202	0,158	-0,071	-0,265	-0,646
Wulff-Yhtiöt Oyj	0,487	0,510	0,394	0,365	0,386	0,426	0,366	0,367

APPENDIX 3 CHANGES IN STOCK PRICES

	R_{2007i}	R_{2014i}	$(R_{2007i} - R_{2014i})/R_{2007i}$
Affecto Oyj	0,008487	0,003419	-0,597153
Aspocomp Group Oyj	-0,016807	0,009662	-1,574870
Cencorp Oyj	-0,022473	-0,693147	29,843751
Componenta Oyj	-0,021531	0,043172	-3,005156
Comptel Oyj	0,005510	0,107631	18,534916
Digia Oyj	0,008734	-0,011215	-2,284117
Dovre Group Oyj	-0,024693	0,028171	-2,140863
Electrobit Oyj	0,004751	0,002981	-0,372579
Etteplan Oyj	0,008208	0,009917	0,208268
Exel Composites Oyj	-0,000736	-0,007126	8,687689
Glaston Oyj Abp	0,014218	0,026668	0,875635
Incap Oyj	-0,020203	-0,154151	6,630199
Ixonos Oyj	-0,019376	-0,154151	6,955639
Kesla Oyj	-0,002296	0,011834	-6,153904
Neo Industrial Oyj	-0,015922	0,045810	-3,877130
Revenio Group Oyj	-0,035091	-0,009576	-0,727112
Solteq Oyj	0,007117	-0,014926	-3,097045
Tecnotree Oyj	0,028171	-0,068993	-3,449085
Teleste Oyj	-0,013537	0,011451	-1,845893
Trainers' House Oyj	0,019803	-0,405465	-21,475319
Tulikivi Oyj	0,005464	-0,048790	-9,928578
Turvatiimi Oyj	-0,064539	-0,095310	0,476795
Vaahto Group Oyj	0,001092	0,098440	89,121878
Wulff-Yhtiöt Oyj	-0,028731	0,010257	-1,356981

	R_{2007m}	R_{2014m}	$(R_{2007m} - R_{2014m})/R_{2007m}$
OMX_Helsinki_Small_Cap_GI	0,014798	0,011040	-0,253970

R_i = daily logarithmic returns of a stock *i*

R_m = daily logarithmic returns of a market index *m*

APPENDIX 4 THE MARKET BETA

BT = The Market Beta

Company	2007	2008	2009	2010	2011	2012	2013	2014
Affecto Oyj	0,7301	1,1177	0,7833	1,0050	0,7197	0,7228	0,3855	0,8031
Aspocomp Group Oyj	1,3330	1,2342	1,4326	1,1072	1,6089	0,9078	0,2383	0,3702
Cencorp Oyj	1,0878	0,7733	2,3001	1,0616	1,4913	3,2604	2,5413	6,1051
Componenta Oyj	1,2101	1,5169	1,0334	1,5541	0,8940	0,4961	0,3487	0,9130
Comptel Oyj	0,9576	0,8660	1,2797	0,9236	0,8659	1,0519	0,3573	1,0122
Digia Oyj	0,9302	1,1030	0,5926	0,8078	1,5247	1,0121	0,5432	0,7394
Dovre Group Oyj	0,5623	0,9466	0,5479	0,9119	1,1260	0,9025	0,4266	0,9641
Elektrobit Oyj	0,5715	0,9346	1,5248	1,6024	0,8832	1,5352	2,2964	1,5951
Etteplan Oyj	1,2803	1,2998	0,7167	0,6235	0,7610	0,8716	0,3136	0,2781
Exel Composites Oyj	0,5688	0,9618	1,1625	1,0005	1,1490	0,6227	0,2965	0,6562
Glaston Oyj Abp	0,6313	0,7152	0,8959	1,0332	1,2975	1,7638	0,7845	1,1576
Incap Oyj	1,0810	0,9835	0,9517	0,5818	1,0330	0,6886	0,4994	-0,5977
Ixonos Oyj	1,0858	1,5351	0,9548	1,1532	1,3499	0,9368	1,3590	1,8413
Kesla Oyj	1,1989	1,3740	0,7797	1,6707	1,4877	0,8323	0,3359	0,4716
Neo Industrial Oyj	0,1544	0,5909	0,2104	0,2216	0,5460	0,5709	1,1935	0,7475
Revenio Group Oyj	1,9061	1,4066	0,9339	0,6934	1,1921	0,7457	1,0443	1,4711
Solteq Oyj	0,6120	0,4900	0,6354	0,6286	0,7996	0,5009	0,3397	0,3450
Tecnotree Oyj	0,5571	0,9487	0,5498	1,0423	1,3652	1,4402	0,8350	1,8916
Teleste Oyj	1,2272	1,2460	1,3785	1,3645	1,0856	0,8840	0,2939	0,7578
Trainers' House Oyj	1,0665	0,4767	1,0238	0,6806	0,7474	1,0557	-0,5371	0,8011
Tulikivi Oyj	0,4359	1,0270	1,1542	1,2386	0,9871	0,8645	0,1081	0,9289
Turvatiimi Oyj	0,9184	0,3855	0,6244	0,6486	0,7411	1,6708	-0,0922	1,6275
Vaahto Group Oyj	0,5184	0,3141	0,2426	0,0131	0,1880	-0,0344	0,5362	0,9530
Wulff-Yhtiöt Oyj	0,3864	0,2313	0,7390	0,8585	0,1551	-0,0147	0,0879	0,3422

APPENDIX 5 CORRELATIONS

	=
GW	= the amount of capitalised goodwill
GWTA	= goodwill divided by total assets
GWNS	= goodwill divided by total assets
CR	= Current Ratio
NPL	= Net Profit or Loss
ROE	= Return on Equity
ER	= Equity Ratio
BT	= Market Beta

1	= 2007
2	= 2008
3	= 2009
4	= 2010
5	= 2011
6	= 2012
7	= 2013
8	= 2014

GW

		CR_2
GW_1	Pearson Correlation	
	Sig. (2-tailed)	
GW_2	Pearson Correlation	-.417 *
	Sig. (2-tailed)	.043
GW_3	Pearson Correlation	
	Sig. (2-tailed)	
GW_4	Pearson Correlation	
	Sig. (2-tailed)	
GW_5	Pearson Correlation	
	Sig. (2-tailed)	
GW_6	Pearson Correlation	
	Sig. (2-tailed)	
GW_7	Pearson Correlation	
	Sig. (2-tailed)	
GW_8	Pearson Correlation	
	Sig. (2-tailed)	

GWTA

		CR_2	CR_3	CR_4	CR_5	CR_6	CR_7
GWTA_1	Pearson Correlation	-.667 **	-.580 **	-.490 *			
	Sig. (2-tailed)	.000	.003	.015			
GWTA_2	Pearson Correlation	-.650 **	-.578 **	-.477 *			
	Sig. (2-tailed)	.001	.003	.018			
GWTA_3	Pearson Correlation	-.575 **	-.529 **	-.447 *			
	Sig. (2-tailed)	.003	.008	.029			
GWTA_4	Pearson Correlation	-.528 **	-.481 *				
	Sig. (2-tailed)	.008	.017				
GWTA_5	Pearson Correlation	-.548 **	-.453 *				
	Sig. (2-tailed)	.008	.026				
GWTA_6	Pearson Correlation	-.570 **	-.448 *	-.410 *			
	Sig. (2-tailed)	.004	.028	.046			
GWTA_7	Pearson Correlation	-.560 **	-.440 *				
	Sig. (2-tailed)	.004	.031				
GWTA_8	Pearson Correlation	-.574 **	-.444 *	-.407 *	-.420 *	-.418 *	-.410 *
	Sig. (2-tailed)	.003	.030	.048	.041	.042	.046

GWNS

		CR_2	CR_5	CR_6	CR_7	CR_8	NPL_3	NPL_4	NPL_5	NPL_6	NPL_7	NPL_8	ROE_2	ROE_3	ROE_8	ER_3	BT_6	BT_8
GWNS_1	Pearson Correlation	-.410 *						-.672 **	-.699 **						-.737 **			
	Sig. (2-tailed)	.047						.000	.000						.000			
GWNS_2	Pearson Correlation							-.602 **	-.653 **						-.685 **			
	Sig. (2-tailed)							.002	.001						.000			
GWNS_3	Pearson Correlation							-.825 **	-.828 **						-.861 **			
	Sig. (2-tailed)							.000	.000						.000			
GWNS_4	Pearson Correlation							-.797 **	-.800 **						-.851 **	-.408 *		
	Sig. (2-tailed)							.000	.000						.000	.048		
GWNS_5	Pearson Correlation	-.420 *						-.444 *	-.436 *						-.451 *			
	Sig. (2-tailed)	.041						.030	.033						.027			
GWNS_6	Pearson Correlation	-.505 *						-.513 *	-.536 **						-.527 **			
	Sig. (2-tailed)	.012						.010	.007						.008			
GWNS_7	Pearson Correlation	-.570 **	-.441 *	-.520 **	-.498 *	-.507 *	-.564 **				-.509 *	-.570 **	-.448 *	-.426 *			.574 **	.600 **
	Sig. (2-tailed)	.004	.031	.009	.013	.011	.004				.011	.004	.028	.038			.003	.002
GWNS_8	Pearson Correlation						-.449 *			-.430 *	-.437 *	-.420 *					.507 *	.475 *
	Sig. (2-tailed)						.028			.036	.033	.041					.012	.019

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

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

APPENDIX 6 REGRESSIONS

Y_1 = amount of capitalised goodwill

Model 1	Regression coefficient	t-value	Sig.	Tolerance
(constant)		2.464	.024	
Current Ratio (CR)	-.697	-2.671	.016	.525
Net Profit or Loss (NPL)	-.165	-.366	.741	.148
Return on Equity (ROE)	.166	.864	.399	.966
Equity Ratio (ER)	.975	2.439	.025	.224
Market Beta (BT)	.214	.513	.614	.205
F	1.999			
R^2	.357			
Adjusted R^2	.178			

Y_2 = goodwill divided by net sales

Model 2	Regression coefficient	t-value	Sig.	Tolerance
(constant)		3.239	.005	
Current Ratio (CR)	-.736	-3.247	.004	.525
Net Profit or Loss (NPL)	-.354	-.827	.419	.148
Return on Equity (ROE)	-.015	-.087	.932	.966
Equity Ratio (ER)	.777	2.237	.038	.224
Market Beta (BT)	.497	1.372	.187	.205
F	3.817			
R^2	.515			
Adjusted R^2	.380			

Y_3 = goodwill divided by total assets

Model 3	Regression coefficient	t-value	Sig.	Tolerance
(constant)		3.953	.001	
Current Ratio (CR)	-.909	-3.924	.001	.525
Net Profit or Loss (NPL)	.034	.078	.939	.148
Return on Equity (ROE)	.127	.743	.467	.966
Equity Ratio (ER)	.951	2.678	.015	.224
Market Beta (BT)	.391	1.055	.305	.205
F	3.502			
R^2	.493			
Adjusted R^2	.352			