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APPLYING IFRS 3 IN FINNISH LISTED COMPANIES

How acquirer's characteristics influence purchase price allocation?

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Abstract
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Applying IFRS 3 in Finnish Listed Companies - How acquirer's characteristics influence purchase price allocation?

Purpose of the study
New IFRS 3 enables a more profound analysis of purchase price allocation (PPA) decision made in business combinations. The purpose of the study is to examine PPA in acquisitions and to analyze how acquirer's characteristics impact the allocation. The focus is on goodwill and other intangible assets as well as in motives and opportunities for earnings management. In addition the paper aims to assess companies' opinions and attitudes towards adoption of IFRS 3.

Data
The analysis is based on Finnish publicly listed companies' official financial statements prepared in accordance with IFRS. The data set includes 134 financial statements from 2005. Additionally the study employs supplementary financial data from other sources and a survey to CFOs and CEOs of the companies.

Results
The paper shows evidence that technology, media and telecom companies allocate larger proportion of purchase price to goodwill than other companies. The study also finds support that acquirer's leverage has a negative relation with allocation to goodwill and positive relation with allocation to net tangible assets. The finding supports the idea that highly leveraged companies have net-tangible-asset-covenants in debt contracts and try to avoid default of the covenants by allocating purchase price to tangible assets instead of goodwill or other intangibles. This can be a signal of earnings management. However, the research doesn't provide consistent evidence that management manipulates reported earnings or assets with PPA decision.

The survey shows that although IFRS 3 may affect reported earnings, companies don't believe it has an impact on their market value or acquisition activity. In addition approximately 40% of survey's respondents believe intangible asset valuation affects purchase price. Consequently many companies believe that PPA reporting requirements of IFRS 3 really provides new and relevant information for investors about acquisitions.

Keywords
IFRS 3, business combinations, purchase price allocation, earnings management

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IFRS 3 standardin käyttöönotto suomalaisissa pörssiyhtiöissä – Miten ostajan ominaisuudet vaikuttavat yrityskaupan hankintahinnan jakautumiseen?

Tutkimuksen tavoitteet
Uusi IFRS 3 standardi mahdollistaa yrityskaupan hankintahinnan jakautumisen aiempaa syvemmän analysoinnin. Tämän tutkimuksen tavoitteena on tarkastella hankintahinnan jakautumista yrityskaupoissa sekä tutkia, miten ostajan ominaisuudet vaikuttavat jakautumiseen. Tutkielmassa keskitytään liikearvoon ja muihin aineettomiin eriin sekä tuloksen manipuloinnin motiiveihin ja mahdollisuuksiin. Lisäksi tutkimus pyrkii kartoittamaan yritysten mielipiteitä ja asenteita IFRS 3 standardin käyttöönottoa kohtaan.

Lähdeaineisto
Analyysi perustuu suomalaisten pörssiyhtiöiden virallisiin IFRS-tilinpäätöksiin. Lähdeaineisto sisältää 134 tilinpäätöstä vuodelta 2005. Lisäksi tutkimus hyödyntää täydentävää taloudellista tietoa muista lähteistä sekä yritysten talous- ja toimitusjohtajille tehtyä kyselytutkimusta.

Tulokset
Tutkimus löytää tukea oletukselle, että teknologia-, media- ja telekommunikaatioyritykset allokoivat suuremman osan hankintahinnasta liikearvolle kuin muut yritykset. Aineistossa myös ostajan velkaantuneisuudella on negatiivinen relaatio liikearvon suhteellisen osuuden kanssa hankintahinnan jakautumisessa ja positiivinen relaatio aineellisen nettovarallisuuden osuuden kanssa. Tämä löytö tukee oletusta, että hyvin velkaantuneilla yrityksillä on lainasopimuksissaan kovenantteja, jotka perustuvat aineellisen nettovarallisuuden määrään, ja että tällaiset yritykset pyrkivät välttämään kovenanttien rikkomista allokoimalla hankintahintaa aineellisiin hyödykkeisiin liikearvon tai muiden aineettomien erien sijaan. Kyseessä saattaa olla merkki kirjanpidon manipuloinnista. Tutkimus ei kuitenkaan löydä yhtenäistä tukea sille, että yritysjohto pyrkisi manipuloimaan tulosta hankintahinnan allokoinnin avulla.

Kyselytutkimus osoittaa, että vaikka IFRS 3 saattaa vaikuttaa raportoituun tulokseen, yritykset eivät usko sen vaikuttavan omaan markkina-arvoonsa tai yrityskauppa-aktiivisuutensa. Lisäksi noin 40% kyselyyn vastanneista uskoo aineettomien hyödykkeiden arvonmäärityksen vaikuttavan yrityskaupan hankintahintaan. Useat yritykset siis uskovat IFRS 3:n raportointivaatimusten todella antavan sijoittajille uutta, relevanttia tietoa yrityskaupoista.

Avainsanat
IFRS 3, yritysten yhteenliittymät, hankintahinnan jakautuminen, tuloksen manipulointi

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1. INTRODUCTION

1.1. Motivation

This paper studies purchase price allocation (PPA) in acquisitions made by Finnish listed companies in 2005. On March 2004 new IFRS 3 standard and refined standards IAS 36 and 38 came into force. These standards made essential changes to reporting for business combinations. Goodwill amortization was abandoned and impairment testing for goodwill was made compulsory. Pooling method was prohibited and purchase method is now only allowed consolidation technique. After the reform intangibles purchased and identified in acquisitions have to be recognized as assets. Financial statements for 2005 were the first official financial statements following the new standards.

Intangible assets have probably greater importance in companies' revenue creation and competitiveness than ever. Mergers and acquisitions are often reasoned with intangibles such as customer relationships, brands, trademarks and technologies. Thus identifying and utilizing them is crucial. In this study I examine how many companies recognize intangible assets in acquisitions, what are the most recognized intangibles and what kind of companies allocate most purchase price to intangibles.

The new reporting standards aim to improve also the quality and transparency of goodwill recognition. Since intangibles are recognized as separate assets in business combinations goodwill, instead of being only residual value, should now represent more accurately so called *real goodwill* including synergies and going concern value. Thus in addition to intangible assets my other focus is in allocation decision to goodwill.

1.2. Research problem and methods

My main research problem is: How acquirer's characteristics influence purchase price allocation? I examine how acquirer's industry and other characteristics such as leverage, R&D activity and growth prospects have impact on purchase price allocation. The study includes also analysis of what are the probable reasons for the observed behavior. The paper also discusses how specifically companies report acquired intangible assets. I employ t-tests and

basic regressions to analyze the sample including data from Finnish listed companies' official financial statements from 2005. In addition the study contains a survey to assess companies' opinions and attitudes towards adoption of IFRS 3.

1.3. Contribution to existing research

Current literature doesn't focus on reasons behind PPA decision. PwC (2004a and 2005) report average purchase price allocations made by US companies. The Finnish Financial Supervision Authority (FFSA 2006) studies IFRS financial statements of Finnish listed companies and also reports about PPA in overall level but doesn't go into much detail, doesn't include all reported acquisitions in the sample and doesn't aim to find any industrial characteristics explaining the allocation. Therefore I have not come across similar studies than this one of purchase price allocation. Earnings management studies have studied e.g. what factors influence goodwill impairment (such as Zang 2003, Rusila 2005, Sevin and Schroeder 2005) or amortization period (such as Hall 1993, Ojala 2001, Grönlund 2004, Astami, Hartadi and Tower 2006) but don't focus on initial goodwill recognition. Main contribution of my study is that I study how acquirer's industry and other characteristics impact the allocation decision and how allocation is used as earnings management tool. Thus the study adds knowledge for current literature of both purchase price allocation decision and earnings management.

1.4. Limitations of the study

This study focuses only on Finnish listed companies. Thus results should be interpreted carefully and can't be generalized as such to hold in other countries. The country focus also limits the sample size. With larger sample more significant results could be founded. The study also focuses on easily observable acquirer characteristics such as size and profitability and thus provides only a limited picture of reasons behind purchase price allocation decision. The allocation is mainly observed form acquirer's point of view and don't offer much evidence on how target's characteristics impact the allocation. To understand even better acquirer's influence on PPA, also target's characteristics should be analyzed.

1.5. Key findings

I find evidence that technology, media and telecom (TMT) companies allocate larger proportion of purchase price to goodwill than other companies. The finding is in line with PwC (2004a and 2005). My study gives support that also acquirer's growth prospects associate positively with proportionate allocation to goodwill. This finding is interesting and contradicts with theory of *nature of growth firms' goodwill* (such as Ojala 2001) suggesting growth firms carry less goodwill in their balance sheets than others.

Additionally acquirer's R&D activity seems to have positive relation with proportionate allocation to intangible assets. This is logical since often an intangible asset is a result of R&D project and it is probable that companies with high R&D activity tend to buy other similar companies with already developed intangible assets.

The study also provides support that acquirer's leverage has negative relation with allocation to goodwill and positive relation with allocation to net tangible assets. Possible reason for this is that leveraged companies have net-tangible-asset-covenants in debt contracts and try to avoid default of the covenants by allocating purchase price to net tangible assets instead of goodwill or intangibles. This can either be a signal of earnings management or might just show that highly leveraged companies choose targets with more tangible assets. To examine this further target's characteristics and acquirer's debt covenants should be more thoroughly analyzed. All in all I don't find consistent evidence that management manipulates reported earnings or assets by purchase price allocation decision.

The survey shows companies' belief that IFRS 3 don't have an impact on their market value or acquisition activity. Thus although the standard can impact the reported earnings respondents don't believe it influences on valuation since real cash flow remains unchanged.

Most of the respondents think that intangible assets can not be usually reliably valued. The answers also suggest that brands and trademarks are most difficult intangible asset to value and their valuation is most affected by subjective judgment. This finding is intuitively understandable since brands and trademarks are not concrete but very abstract even compared to other intangibles such as technologies or patents.

In addition approximately 40% of survey's respondents disagrees that intangibles are valued usually only for accounting purposes and the valuation does not have an impact on purchase price. This is very interesting since it means that many companies believe intangible asset valuation affects purchase price. Consequently IFRS 3 PPA reporting provides really new and relevant information for investors about the targets.

1.6. Structure of the thesis

Chapter 2 discusses about intangible assets and how they are classified, treated in accounting and valued by currently most used techniques. In chapter 3 I build hypotheses based on theories and earlier findings. Chapter 4 focuses on describing the data and methods employed in the study. Chapter 5 presents empirical results and chapter 6 concludes the study.

2. INTANGIBLE ASSETS IN LITERATURE

This chapter discusses first about classification of intangible assets. Then it gives a short review of how intangibles should be handled under new IAS and IFRS standards. After that it discusses about previous studies concerning intangible asset recognition. Then it talks about studies of intangible assets and goodwill in business combinations and summarizes recent related master's theses. The chapter ends with discussion of the valuation techniques of intangible assets. Discussion of goodwill is intentionally left pretty superficial since the focus is in other intangible assets.

2.1. Classification of intangible assets

Intangible assets have great importance in revenue creation for companies and have a crucial role in companies' competitiveness. They work hand in hand with tangible assets. Several companies and researches have made their own classifications of intangible assets. However there is not yet generally accepted classification for intangibles as there is for tangibles. According to Ahonen (2000) it is possible that unambiguous classification for intangible assets is never created because companies' and nations' varying cultures prevent it.

Eronen 1999 recognizes two main objectives of intangibles' classification. First classification aims to structure the difference between accounting valuations and usually higher market expectations. This classification helps to analyze the reasons why firm is more valuable than its accountable assets. New IAS/IFRS standards intend to reduce this gap by making recognition of significant intangibles compulsory in business combinations. Secondly Eronen 1999 argues that classification aims to offer managers framework for identifying and managing strategically relevant intangible assets of their organization. This is in line with Cañibano 1999 concluding that if management wants to be able to make efficient decisions it should have information system providing timely, relevant and reliable information on the existence of intangibles and their impact on the firm's future performance.

Intangibles can be classified in many different ways depending on the company, country and the user of this information. Johanson et al. 1999 specializing in human resources finds differing classifications of intangible assets for three different purposes: accounting, statistical and managerial purposes. The focus of this thesis is mainly on accounting purposes.

Smith and Parr 2000 (s. 16) classify intangibles more from accounting point of view. It finds four main categories.

1. *Rights*. This category includes rights which helps its operations or in some alternative way gives financial benefit for the company. Rights are usually based on written contracts such as contracts providing discount for purchases, franchising contracts or sales contracts.
2. *Relationships*. These are defined as non-contracted relationships with employees, customers and suppliers.
3. *Undefined intangibles*. This category includes the part of the company value that can not be defined or identified.
4. *Intellectual property*. All the intangible assets which the company utilizes continuously in operations and which give financial benefit are included in this category. Such intangibles are among others patents, trademarks, copyrights, trade secrets and know-how.

Regardless of varying classification methods different classifications usually have at least one similarity. According to Eronen (1999) and Sveiby (1997) intangibles are divided roughly into three categories:

1. *Individual competence of employees* including expertise and education
2. *Internal structure of the company* including management, legal structure, manual systems, attitude, R&D and software.
3. *External structure of the company* including customer and supplier relationships and brands.

For scope of this study it is reasonable to use more concrete classification. Intangible assets in business combinations are recognized in more specific classes to serve accounting purposes. As a base for my analysis I am going to use classification used in PwC (2004a and 2005) study. The classification is based on the asset classes recognized by US companies in acquisitions made in 2003 and 2004. It consists of five classes:

1. Customer related assets
2. Technology
3. Brands and trademarks
4. Supplier contracts, licenses and non-compete agreements

And

5. Other intangibles and intangibles recognized but not classified in financial statements

Theoretically this list is incomplete. However, it gives an idea of what intangibles can be reliably identified and valued. Other intangibles such as employees' expertise are harder or impossible to evaluate or even forbidden to recognize and thus left into goodwill.

2.2. Intangible assets in IAS 38

Previous chapter discuss what intangible assets are in theory and how they can be classified. This chapter discusses about the definition of intangible assets from IAS point of view. This is especially important for this study since listed companies in Finland have to follow IAS and IFRS and therefore they can only recognize intangibles as the standards define them.

To improve the quality of accounting principles for business combinations and to achieve closer international convergence International Accounting Standards Board (IASB) refined IAS 38 and published new standard IFRS 3 for business combinations. The new standards came into force on 31 March 2004. The standards however are likely to be only temporary.

The next development phase will seek to solve problems and fill issues which are still left open. In addition the objective is to still achieve closer convergence with US principles (US GAAP) and especially with Statement of Financial Accounting Standards 141 (SFAS 141).

IAS 38 gives definition for intangible assets. If an asset fits in the definition and meets the recognition requirements it must be recognized as an intangible asset. Therefore in theory the standard is tight and doesn't allow accountable to decide whether to recognize the item as an asset or as an expense. Next chapters discuss about the definition and recognition requirements.

2.2.1 Definition of intangible asset according to IAS 38

IAS 38 defines intangible asset as an identifiable non-monetary asset without physical substance. An asset is a resource that is controlled by the enterprise as a result of past events. Such past events are for example purchase or self-creation. In addition an intangible asset should provide future economic benefits. This means an asset should lead to future cash flows or to ownership of other asset. The objective of IAS 38 is to give accounting treatment principles for intangibles that are not specifically dealt with in another IAS standard. (KHT-Yhdistys 2004)

In certain cases intangible assets can be strongly linked with a tangible asset. A classical example is a computer program which is in a CD or a diskette. In such cases company should make a judgment is the asset more of tangible or intangible type. IAS 16 should be applied to tangible assets.

Recognition of an intangible asset is allowed only if it meets the definition of an intangible asset. Companies do have a lot of different intangibles as discussed in earlier chapter. However if the intangibles don't meet the criteria defined in IAS 38 they can not be recognized as an asset. In such case the cost of purchasing or creating the intangible should be recognized as an expense. An intangible must meet the following three IAS requirements. (IAS 38.11-17)

1. *Identifiability.* Intangible asset is required to be identifiable. In practice this means an intangible should be able to distinguish from goodwill. IAS 38 doesn't count goodwill as an intangible asset although goodwill is usually reported in balance sheet under intangible assets. An intangible asset meets the identifiability criteria if it is separable i.e. company can sell, transfer, license, rent or exchange it either individually or together with a related contract, asset or liability. Alternatively an asset can be separable if the identifiability arises from contractual or other legal rights regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.

2. *Control.* An entity controls an asset if the entity has the power to obtain the future economic benefits flowing from the underlying resource and to restrict the access of others to those benefits. Usually the control is based on a legal right that a company has. These rights are such as copyrights and patents. In the absence of such right it is more difficult to demonstrate control. However sometimes control criteria can be met without a legal right. These exceptions occur when for example future economic benefits are expected from employees, education or customer relationships. However according to Ahonen (2000) it is very rare that employee related future economic benefits are allowed to recognize as an asset.

3. *Future economic benefit.* An asset should also flow economic benefit for the company. Benefit can include revenue from sale of products or services or alternatively cost savings or other benefits resulting from the use of the asset by the company. Use of an intellectual property can for example cut future production costs instead of increase future revenues.

2.2.2. Requirements for recognition according to IAS 38

If an intangible asset meets the previous three criteria and can be defined as an intangible asset in accordance with IAS 38 the company has to assess whether the intangible asset meets the following two recognition requirements.

- It is probable that the future economic benefits that are attributable to the asset will flow to the company; and
- The cost of the asset can be measured reliably

The standard requires the company to recognize the intangible asset if, and only if, these criteria are met. The Standard seems straightforward. However, the determination of the cost of the asset and the probable future benefits can be challenging. The company has to assess the probability of expected future economic benefits using reasonable and supportable assumptions that represents management's best estimate of the set of economic conditions that will exist over the useful life of the asset (IAS 38:22). Therefore the process includes a lot of subjective judgment and the management is able to impact the outcome. Thus it is hard to question decisions if the recognition of an asset is based on the management's "best estimate", even if the estimate was wrong.

The standard assumes that the value of assets can be reliably measured. However, the valuation of intangibles is often difficult or impossible. This can lead to situation where companies don't separate intangible assets from goodwill. To fix this problem IASB published in 2005 a reform draft of IFRS 3. According to the draft intangible asset should be recognized in business combinations if it fits in the definition of an intangible asset even if its value couldn't be reliably measured. Thus IASB sees separation of unreliably valued intangibles improve transparency compared to current system where unreliably valued intangibles are included in goodwill. The reformed standard may come into force already in 2007.

2.3. Intangible assets in IFRS 3 Business Combinations

IFRS 3 Business Combinations was issued in March 2004 at the same time as refined IAS 38 and is applicable for business combinations for which the agreement date is on or after 31 March 2004. The objective of IFRS 3 is to achieve closer international convergence on the accounting for business combinations.

The main reforms IFRS 3 makes can be simplified into four points:

1. Purchase method has to be used in business combinations. Pooling method is no longer allowed.
2. Intangible assets must be more specifically recognized in business combinations. They are not anymore a part of goodwill.
3. Assets must be recognized at their fair values.
4. Goodwill is no longer amortized but tested for impairment.

These four points are in line with standard SFAS 141 regulating US firms in business combinations. Therefore US and international standards are to achieve closer convergence.

2.3.1. Definition of business combination according to IFRS 3

IFRS 3 defines a business combination as "the bringing together of separate entities or businesses into one reporting entity". IFRS 3 gives exceptions when the standard should not be applied:

- Business combinations in which separate entities or businesses are brought together to form a joint venture
- Business combinations involving entities or businesses under common control
- Business combinations involving two or more mutual entities
- Business combinations in which separate entities or businesses are brought together to form a reporting entity by contract alone without the obtaining of an ownership interest.

As a result of a business combination usually one entity, *the acquirer* obtains control over other entities or businesses, the *acquiree*. In this study I use word *target* to refer acquiree.

2.3.2. Requirement for purchase method

IFRS 3 requires use of purchase method in all business combinations. Pooling of interests method is no more acceptable. The purchase method views the business combination from the acquirer's perspective. The acquirer is the combining entity obtaining control as mentioned above. Similarly standard SFAS 141 regulating US firms in business combinations allows

only the use of purchase method. Already Kam (1990) reasoned purchase method as if it is an acquisition of one company by another it is reasoned to use similar approach as if the acquirer purchased any other asset.

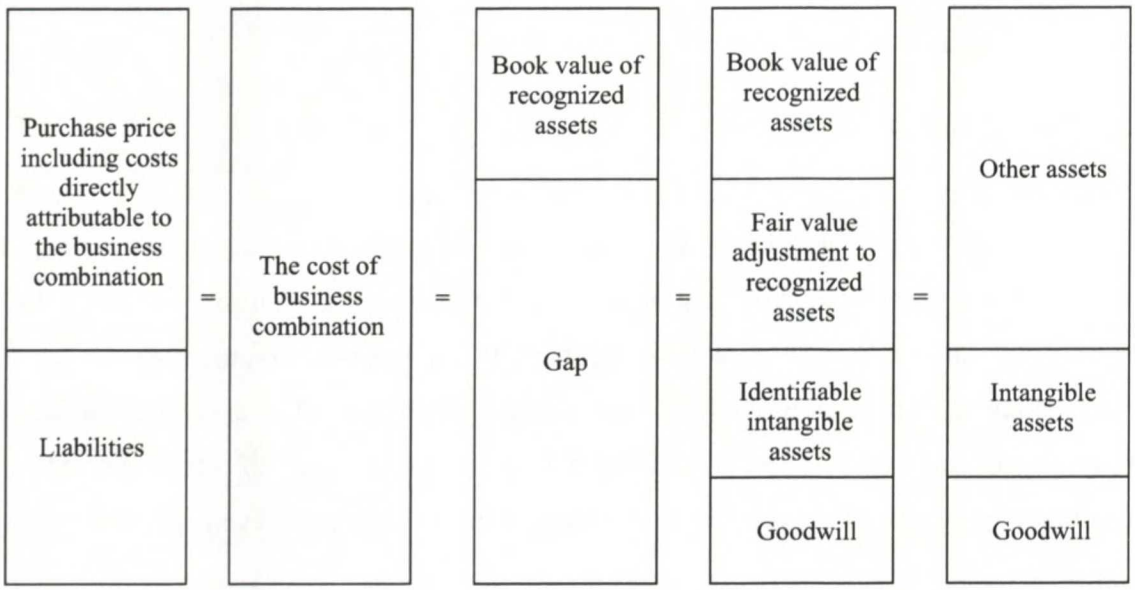
2.3.3. Purchase price allocation

IFRS 3 defines the purchase price or *the cost of a business combination* as the aggregate of the fair values of assets given, liabilities incurred and equity instruments issued by the acquirer plus any other costs directly attributable to the business combination. Other direct costs include such as fees to auditors, lawyers and consultants. The asset and liability and equity instrument values must reflect the fair value of the date of exchange. Also any adjustment to the cost of the combination, that is contingent on future events, is included.

The accounting treatment for intangible assets has substantially changed as IFRS 3 and refined IAS 38 have been applied. According to IFRS 3 the acquirer must allocate the purchase price by recognizing the target's identifiable assets, liabilities and contingent liabilities at fair value at the acquisition date. This means that the gap between the book value of the target at acquisition date and the cost of business combination is allocated to the fair value adjustment of the individual recognized assets and liabilities and then any identifiable intangible assets. Any residual is recognized as goodwill. This rule evaluating goodwill reflects the top-down perspective by Johnson and Petrone (1998) explained earlier in this study. If business combination creates negative goodwill the values of assets, liabilities and contingent liabilities should be assessed again. If the reassessment doesn't change the situation the negative goodwill should be immediately recognized as profit in income statement. Thus companies can not have negative goodwill in their balance sheets. Picture 1 presents the allocation process.

Picture 1: Purchase price allocation process

The picture demonstrates how the cost of business combination is calculated and how it should be allocated according to IFRS 3.



The gap between cost of business combination and target's asset value should now be allocated much more accurately into different asset classes than according to earlier Finnish accounting standards. In practice this means that the allocation for intangibles is larger than earlier. A lot of value earlier recognized as goodwill should now be recognized as intangible assets. According to Troberg (2005) the allocation demands significantly subjective consideration and therefore gives companies an opportunity to "arrange" their financial statements to a certain extent to meet their own objectives.

2.3.4. IFRS 3 and taxes

If IFRS 3 had an impact on taxes it would also influence companies' cash flows. In such a case purchase price allocation decision would become more important and management could be able to affect taxes by manipulating the allocation. However, currently in Finland IFRS 3 has virtually no direct tax consequence and impacts only on reported earnings but not to cash flows. Most importantly depreciation and amortization are defined separately for accounting and taxation purposes. As IFRS 3 came into force the differences between the two systems became even larger. Report of the Working Group 2005 for Developing Business Taxation (2006) studies differences in financial reporting standards and Finnish taxation systems and aims to develop the corporate taxation system in such a way that the taxation system will not

act as an impediment to companies when preparing their financial statements in compliance with IFRS. If tax laws and regulations will be developed in the future more closely to financial reporting standards, IFRS 3 and purchase price allocation could have an influence on taxes and thus companies' cash flows.

2.3.5. Differences between IFRS 3 and US GAAP

US listed companies follow US GAAP and therefore standards *SFAS 141 Business Combinations* and *SFAS 142 Goodwill* and *Other Intangible Assets*, which are pretty much in line with IFRS 3 and IAS 38. There remains, however some significant differences in business combination accounting, which IASB and Financial Accounting Standards Board (FASB) are addressing in continuing convergence project. This chapter shortly introduces the main differences.

Definition of business

IFRS 3 defines *business* slightly more broadly than US GAAP. The following differences raise a business in IFRS 3 but not in US GAAP.

- IFRS 3 assumes that a transaction on which goodwill arises involves always a transfer of a business.
- US GAAP requires that business should be self-sustaining.
- US GAAP requires that a set of activities that has not begun principal planned operations is not assumed to be a business.

Thus some mainly small transactions are to be treated in accordance with IFRS 3 but not with SFAS 141.

Measurement date

According to IFRS 3 the cost of business should be measured at the date of acquisition i.e. when the control over the target is passed. Then again SFAS 141 requires measurement already at the consummation date i.e. when the transaction is publicly announced. According

to Deloitte (2004) the difference creates variance in cost of business combination especially where publicly traded equity instruments are issued as part of the consideration since the value of equity instruments often change between the date of announcement and the date the acquirer obtains control.

Contingent consideration

If purchase price includes contingent consideration, which is probable and can be measured reliably it must be according to IFRS 3 included in the cost of the business combination. On the other hand PwC (2004b) states that according to US GAAP contingent considerations are generally excluded from the initial purchase price and adjusted only after the contingency is resolved and becomes payable. Consequently in certain cases the purchase price can be higher if it is defined in accordance with IFRS 3. The immediate effect can be that there is a larger pie to allocate to assets. I assume that when the substance of the assets is not more valuable the additional price can be reflected as higher allocation to goodwill. However, the difference is most probably insignificant in overall level and it should be evaporated when the contingency becomes payable.

Restructuring provisions

Under IFRS 3 restructuring provisions are recognized if the target has at the acquisition date a liability for restructuring as defined in IAS 37. (PwC 2004b) SFAS 141 states that if certain conditions are met restructuring provisions are to be recognized even if management only begins to assess a plan of restructuring of the target. Therefore according Deloitte (2004) US GAAP allows recognition of some restructuring provisions that cannot be recognized in accordance with IFRS 3.

Minority interests

In accordance with IFRS 3 an entity must recognize the entire bought asset at fair value whereas under US GAAP the entity recognizes at fair value only the proportion the acquirer buys and recognize minority interest at its historical book value. (PwC 2004b and Deloitte 2004) Consequently recognized values might differ when the acquisition considers less than

100% of the target. Assuming fair values often exceed book values IFRS 3 then provides larger recoded assets than US GAAP.

Negative Goodwill

Both IFRS 3 and US GAAP require reassessment of acquired assets if negative goodwill arises when their fair values exceed the cost of business combination (here: purchase price). If negative goodwill remains IFRS 3 requires that it must be recognized immediately in profit or loss. (PwC 2004b) Then again US GAAP requires that the value of certain recognized non-monetary assets and liabilities must be reduced. US GAAP requires recognition as a gain only if all applicable assets are reduced to zero and negative goodwill still remains. (Deloitte 2004) Thus US accounts can show smaller allocation to these non-monetary assets if negative goodwill is to arise from an acquisition. However, fair value of recognized assets seldom exceeds purchase price. Thus I assume negative goodwill is rare and its impact on overall convergence is insignificant.

Allocation to IPR&D

In business combinations acquired in-process research and development must be included in purchase price allocation under both IFRS 3 and US GAAP. However, US standards require that the amount recognized must be written off immediately unless it has an alternative future use. According to IFRS 3 the amount recognized is to be carried in the balance sheet of the combined business and to be amortized over its useful life. Thus the difference between the standards should not have major direct impact on the initial allocation but on post-acquisition accounting of IPR&D's.

Other differences

In addition IFRS 3 and US GAAP have certain differences concerning impairment tests for goodwill and other intangible assets. These are out of the scope of this study focusing on the initial allocation. More information of these and other differences can be found from papers such as PwC (2004b) and Deloitte (2004).

Some of the changes mentioned here are to be removed when the new refined IFRS 3 will come to force. This will further improve the convergence between the standards and ease comparison between e.g. Finnish and US listed companies. The current differences can cause some divergence between results of this study and PwC (2004a and 2005). However, it is difficult to estimate and measure how exactly the allocations differ because of the differences in the standards. I assume the accounting differences are insignificant from this study's point of view.

2.4. Previous studies of intangible asset recognition

An important question in research of intangible assets is whether money spent on intangibles generates future earnings. Clear empirical evidence of the causality between current expenditure and future earnings would make recognition of intangibles more reasoned. Majority of studies concerning intangibles focuses on R&D projects because R&D expenditure has been only intangible already before IFRS 3 and SFAS 141 and 142 that could have been recognized as an asset in certain circumstances in many countries.

Lev and Sougiannis (1996) finds that choosing recognition of R&D expenditure as an asset instead of immediate expensing has a substantial effect on company's financial statements. They also suggest that relationship between R&D costs and future revenues exists. Similar evidence from Aboody and Lev (1998) suggest that the capitalized amount of software R&D expenditure helps to forecast future earnings. Barth et al. (1998) find that brand value estimates are positively related to operating margins and market shares. AAA (2003) criticizes these findings since firms chosen for these studies are growing through time and their asset bases are increasing. Thus it is natural to observe increases in earnings even if intangibles expenditures were unproductive. Hence although current expenditure is associated on average with future earnings there is no evidence of causality.

Lambert (1998) studies customer loyalty resources and find problems with choosing a reasonable measurement for customer satisfaction's impact on company performance. Using cost as the measurement basis it is hard to define which costs are created by the intangible assets since all aspects of the company's operations can impact the intangible assets such as customer loyalty. (AAA 2003). Lambert (1998) also states that, if fair value should be the

measurement basis, we are far away being able to value many intangibles. Chapter 2.7. discusses in more detail about currently most popular techniques to determine fair value for intangible assets.

Kothari, Laguerre and Leone (1998) study relative risk of investments in R&D projects. They use regressions to explain future earnings variability that proxy uncertainty of future benefits. They find evidence that R&D investments generate future benefits that are far more uncertain than benefits from investments in property, plant and equipment. Thus higher risk should be taken into account in intangible valuation.

Muller (1999) examines UK companies' managers' decisions whether to recognize brands bought in acquisitions. In those days in UK an alternative to the recognition was an immediate write-off of whole goodwill including brands. Muller (1999) finds two explanations impacting on management's decision. First, London Stock Exchange rules required shareholder approval for acquisitions which were above certain size limit based on book values. Muller (1999) suggests that firms which are likely to bear the largest costs of this requirement are less likely to recognize brand as an asset and thus minimize book values to avoid shareholder approval requirement. Second, Muller (1999) finds that firms with higher leverage are more likely to recognize brand as an asset to reduce book measure of leverage.

2.5. Previous studies of intangibles and goodwill in business combinations

Previous studies of asset recognition in business combinations focus mainly on goodwill. The concept of goodwill is old but the definition is still under argument. Johnson and Petrone (1998) give currently well-known views for goodwill. They approach goodwill from two perspectives. 1. A "top-down perspective" views goodwill as a component or subset of something larger. Goodwill is seen as acquirer's expectations about future earnings from the target and the combination. Goodwill is "left over" or gap between purchase price and recognizable acquired assets. Top-down perspective is also in line with Radebaugh and Gray (1997). They define goodwill as the value added of assets working together. 2. A "bottom-up perspective" views goodwill as the sum of the components that make it up. Johnson and Petrone (1998) present six probable components of goodwill.

1. Excess of the fair values over book values of the acquiree's recognized net assets
2. Fair values of other net assets not recognized by the acquiree
3. Fair value of the going concern element of the acquiree's existing business
4. Fair value of synergies from combining the acquirer's and acquiree's business and net assets
5. Overvaluation of the consideration paid by the acquirer
6. Overpayment (or underpayment) by the acquirer

Component 1) is not an asset as such but is sometimes included in goodwill if fair values of recognized assets are too difficult to measure. Component 2) includes assets which can not be recognized separately because of recognition requirements or other reasons. Component 3), going concern value, is the ability of the acquiree as a stand alone business to get higher return of net assets than would be expected if those assets and liabilities were separate. Component 4), synergy, originates in business combination and does not exist before. Components 3) and 4) form the real goodwill or core goodwill. Components E) and F) are not assets themselves but reflects the overpricing of the target.

According to Kam (1990) goodwill can be calculated by deducting the market value of all identified net assets from the purchase price. This idea is in line with top-down perspective. However, Kam (1990) sees this only as a valuation technique instead of a definition for goodwill. He argues that goodwill represents superior earning power such as special skills and knowledge, superior management team, social and business connections etc. This argument is more in line with bottom-up perspective.

As valuation of goodwill is generally accepted by using top-down method other intangible assets play significant role in goodwill valuation. When an intangible asset can be separated from goodwill and valued reliably it reduces the value of goodwill. Therefore intangible assets are usually handled in literature as a way to define goodwill. Not many academic researches focus on intangibles in business combinations. However since intangibles are considered as ultimate roots of company's success (Baglieri et al. 2001) a lot of literature have studied intangibles in company's strategy management and organization. Such as Hamel and Prahalad (1994) and Sanchez, Heene and Thomas (1996) studies competence based competition and Wernefelt (1984), Mahoney and Pandian (1992) and Montgomery (1995) studies resource based competition.

Since IFRS 3 and refined IAS 38 came into force very recently intangibles in business combinations is currently very much discussed topic but published studies concerning the results of its adoption are still quite rare. The main elements of IFRS 3 are similar to the provisions of the US accounting standards, SFAS 141 and 142. Since SFAS 141 and 142 came into force already in July 2001 their impacts have been more researched.

Report papers PwC (2004a and 2005) study purchase price allocation (PPA) of US companies after adoption of SFAS 141 and 142. The papers are not academic studies but more likely used for commercial purposes. The sample of PwC (2004a) includes 100 acquisitions from 2003 and PwC (2005) over 175 acquisitions from 2004 made by US listed companies. The sample acquisitions have purchase price over $ 250 million. The papers observe significant differences in the amount of information disclosed by acquirer in relation to the assets purchased and that very few disclosures went into detail on the nature of intangible assets recognized. PwC (2005) reports that on average 56% of purchase price is allocated to goodwill and 22% to intangible assets. *Technology, Media and Telecoms* sector recognize the largest share of goodwill. *Pharmaceuticals* firms recognize relatively smaller amount of goodwill but gives the largest allocation to intangible assets. Therefore information of intangibles is extremely important for those who invest in Pharmaceutical industry. (Troberg, 2005) PwC (2005) focuses on intangible assets and finds that the most common types of intangibles recognized include customer related (on average 6.2% of total purchase price), technology related (5.0%) and brands/trademarks (4.9%). The studies report average allocations but do not test the findings' statistical significance.

PwC (2004a) also studies whether the adopting of SFAS 141 lead to lower reported post deal earnings. The study assumes that all intangibles recognized would have been recognized as goodwill before SFAS 141 and amortized in 20 years. The paper compares the chosen amortization period to the hypothetical 20 year period and suggests that 35% of deals made in 2003 are earnings dilutive under the new standard.

The Finnish Financial Supervision Authority (FFSA 2006) study IFRS financial statements of Finnish listed companies. The study is not an academic study but mainly used for FFSA's task in financial statement supervision. However, it reports shortly about PPA in overall level. The sample consists of 39 Finnish listed companies from 2005. Using purchase price weighted

figures the paper reports that on average 41% of purchase price is allocated to goodwill and 28% to intangible assets. According to the study the most common types of intangibles recognized include brands and trademarks (on average 12% of purchase price) and customer related assets (8%). The results are dominated by the larger acquisitions because they get more weight in the sample. In addition the study states that in almost half of the acquisitions the allocation to intangible assets is less than 10%. The finding is somewhat surprising since intangibles of the target are often the reason of acquisition. One possible reason for the low level of intangibles can be the requirement that intangibles should be recognized as asset only if their value can be reliably measured. Acquirers can feel that the values can not be reliably measured and therefore include many intangibles in goodwill. Intangible asset recognition rules are more discussed in chapter 2.2. *Intangible assets in IAS 38.*

2.6. Previous related master's theses

International accounting standards and business combinations has been popular subject in recent master's theses. Meurman (2002) compares goodwill accounting of *Finnish national accounting regulations*, prior *IAS 22: Business Combinations* and US GAAP *SFAS 141: Accounting for Business combinations*. She also studies case company Stora Enso and finds its IAS adoption process has some problems in goodwill accounting. Additionally she states that the revised US GAAP goodwill statements were seen positively regardless of problems arising from new procedures such as impairment tests.

Nieminen (2002) compares Finnish national goodwill accounting regulations with IAS goodwill accounting and then still unpublished IFRS. She studies TietoEnator as case company and suggests that IAS and IFRS require from companies much more intensive control of goodwill as well as heavier recognition and valuation of acquired intangible assets. However, she believes this helps investors to get better picture of acquisitions and companies to become more familiar with their own operations.

Luokkala (2003) studies how goodwill is defined and how it is treated in the first succeeding financial statements after acquisition. She suggests that especially definition of acquired intangible assets will cause trouble to Finnish companies after adoption of IFRS. Luokkala

(2003) also reports how certain assets were fairly valued according to US GAAP and which were the greatest problems in valuation process in a case acquisition made by Outokumpu.

Rusila (2005) studies how management can use goodwill impairments as earnings management tool. He focuses on US IT, media and technology companies applying SFAS 142. Although he finds some support to certain earnings management hypotheses he does not find consistent evidence that management manipulates reported earnings with impairments.

Miihkinen (2006) examines Finnish listed firms' transition disclosure on the adoption of IFRS. He finds that firm size and growth prospects associate positively with voluntary disclosure and compliance. For financial leverage he finds negative relation.

Murtomäki (2006) analyzes IFRS standards' impact on financial statement reporting of intangible assets. He studies 69 Finnish listed companies and finds that the most important changes concerning intangible assets influencing on financial statement numbers are abandonment of goodwill amortization and capitalization of R&D expenditure. The new reporting procedures of intangible assets increase earnings in income statement and intangible asset values in balance sheet.

Vartiainen (2006) examines financial substance of goodwill. He finds that goodwill recognized in line with IFRS 3 has not as much financial substance as goodwill recognized in line with Finnish national accounting standards. However, he finds evidence that investors appreciate goodwill higher than its book value with both standards.

Niesniemi (2006) investigates whether IFRS standards make significant changes to Finnish oil company's financial ratios. She studies case company Neste Oil Oyj and finds that changes in financial instrument, financial leasing, pension obligation and stoppage cost accounting are most significant. Net income, return on equity, return on assets and liquidity ratios improves as Neste Oil begins applying IFRS.

Kivi (2006) examines how auditors assess whether impairment test is carried out in line with IFRS. She finds that auditor's responsibilities are challenging. She states that audit of impairment test is important since impairment test is based on management's estimates and is thus subjective and prone to manipulation.

The large amount of related theses tells that the subject is topical. However, as far as I can tell no thesis or other research has yet focused on the factors impacting on purchase price allocation. Thus my study complements the current continuously developing academic research.

2.7. Intangible asset valuation techniques

According to IFRS 3 purchase method must be used in all business combinations and acquirer should recognize all assets, liabilities and contingent liabilities with their fair values of the acquisition date. IFRS 3 defines fair value as the price of the asset in an arm's length transaction between two understanding and willing parties. US standard SFAS 157 published in September 2006 establishes a definition of fair value with a framework for fair value measurement for financial reports prepared in accordance with US GAAP. IASB decided to use SFAS 157 as the starting point for its own discussions. IASB published discussion paper on fair value measurements in November 2006 as a first stage of project to provide guidance in future on how entities should measure the fair value. (IASB 2006) However, the board does not give yet official tools for fair value measurement.

This chapter discusses about theories and currently most used techniques for fair value appraisal of intangible assets. Valuation techniques of intangible assets are interesting since they are not taught in basic finance courses in Finnish universities but they are still mainly based on the same principles as widely taught business enterprise valuation methods.

Valuation techniques can be divided into three general groups: market approach, income approach and cost approach. In *market approach* the value of an asset is determined by using directly quoted market price of identical asset or indirectly by comparing the asset with nearly similar quoted asset. The use of quoted market price of identical asset is preferred by the IFRS 3. However, since intangibles are usually more or less unique active markets for identical assets rarely exist. *Income approach* means that the value of an asset is determined as present value of the future economic income attributable to the asset over its remaining useful lifetime. In *cost approach* the value is determined by the cost that would incur if the asset would be reproduced.

2.7.1. Market approach

Using market approach valuation methods the intangible asset value is based on a quoted market value or on known transaction price of similar asset. Logically this valuation method is applicable only if transaction deals with adequately similar asset to the subject asset are known. Otherwise reasonable estimate of the fair value can not be obtained.

In active markets the assets transferred are typically homogenous, active buyers and sellers are easy to find and prices are commonly available. (KHT-Yhdistys 2006) However, this is not typical for intangible assets due to their unique nature. The exchange of intellectual property in the marketplace is typically made as part of exchange of an entire enterprise. (Smith and Parr 2000 and AICPA 2001) If market price for separate intangible asset is not available fair value can be determined based on the best knowledge of price of similar asset in an arm's length transaction between two understanding and willing parties. According to Reilly and Schweihs (1999) market value estimate should be derived by analyzing similar intangible assets that have recently been sold or licensed, and comparing these transactional intangible assets to the subject intangible asset. However, these guideline sales are often hard to identify.

The use of market approach can be difficult since intangible assets are often unique and transaction data from similar or nearly similar assets is not publicly available. In addition the price is hard to identify because intangible assets are typically transferred only as part of the sale of a whole business. Smith and Parr (2000) sums up the requirements for successful use of market approach:

1. The existence of an active market involving comparable property
2. Past transactions of comparable property
3. Access to price information at which comparable property exchanged
4. Arm's length transaction between independent parties

According to Reilly and Schweihs (1999) in practice, analysts sometimes ignore the market approach valuation since the research required in its application is too extensive.

2.7.2. Income approach

Income approach is based on future cash flows generated by subject intangible asset. The basic idea is pretty similar to discounted cash flow analysis employed in business enterprise valuation. Vital to the valuation is to estimate future cash flows and to define correct discount rate to calculate their present values. Reilly and Schweihs (1999) define three main differences in applying income approach to intangible assets valuation as compared to business enterprise valuation.

1. Finite useful lifetime
2. Greater risk
3. Identifying income subject to the asset

First, most intangibles have finite useful life time. As a consequence income approach analysis of an intangible asset involves a finite projection period. In contrary generally businesses are assumed to have perpetual life following going concern assumption and their valuation involve infinite projection period.

Second, greater risk is usually involved in investment in an intangible asset as compared to investment in a business enterprise. This additional risk should reflect in higher discount rate. Obviously the assumption of greater risk is case-specific and some intangible assets can involve less risk than the whole enterprise. According to KHT-Yhdistys (2006) discount rate is in practice usually defined as weighted average cost of capital (WACC).

$$WACC = \left(\frac{E}{K}\right) \times r_e + \left(\frac{D}{K}\right) \times r_d \times (1 - t_c)$$

where:

E = total equity

D = total debt

K = total capital invested

r_e = required rate of return on equity

r_d = required rate of return on debt

t_c = corporate tax rate

Worth to mention is that according to IAS 36[1], discount rate should not be dependent on the organization's capital structure. Therefore according to KHT-Yhdistys (2006) a peer group is usually a base to determine typical capital structure i.e. $\left(\frac{E}{K}\right)$ and $\left(\frac{D}{K}\right)$. Peer group usually consists of quoted companies in the same industry. Similarly required rate of return on equity, r_e, is usually based on a peer group. All in all discount rate should be asset specific (KHT-Yhdistys 2006 and Reilly and Schweihs 1999) and reflect the risk of the asset instead of the risk of the whole enterprise.

Third, according to Reilly and Schweihs (1999) perhaps the most important consideration in income approach is that the measure of economic income should represent only the income that relates to the subject intangible asset. This means that regardless how the economic income is defined it should not include income generated by any other asset or the overall business enterprise in which the subject intangible asset operates. In business enterprise valuation all income generated by the business is included in income approach analysis regardless of what assets generate that income.

Attributable to intangible assets' unique nature generalized valuation method is not defined that should be applied in all intangible assets. Following shortly describes currently most discussed and used income approach techniques employed in intangible asset valuation: *direct cash flow projection, relief from royalty, multi-period excess earnings* and *incremental revenue* methods. Described techniques are not intended to represent an extensive list but to familiarize the most common ones. With the survey introduced later in this paper I study for which intangible assets these valuation methods are applied in practice.

Direct cash flow projection

Under the direct cash flow projection method the cash flows directly due to the intangible asset are discounted to present value using asset specific risk-adjusted discount rate as described earlier. Although the method seems simple in theory according to KHT-Yhdistys (2006) it can rarely be used in separate asset valuation. The method is more useful to value whole businesses.

[1] IAS 36 is standard for impairment of assets. Finnish listed companies should apply this standard.

Relief from royalty

The idea behind relief from royalty method is to treat the asset as it was owned by third party and leased by the company. Since the asset is actually owned by the company it saves money which would hypothetically be spent on royalties to lease the subject intangible asset. According to AICPA (2001) the key challenge in applying the method is to determine a royalty rate that is comparable to ownership of the specific asset i.e. a rate that empowers to worldwide, exclusive, rights to use that asset in perpetuity in any manner.

Use of the relief from royalty method requires that information concerning sufficiently comparable intangible assets that have been regularly licensed at arm's length between knowledgeable, willing and independent parties is available. Such assets can include e.g. brands, trademarks, patents and technologies. (Smith and Parr 2000, AICPA 2001 and KHT-Yhdistys 2006)

The classification of relief from royalty method is not totally clear. Among others Smith and Parr (2000), AICPA (2001) and KHT-Yhdistys 2006 refer it as income approach method. However, it can be also seen as market approach method since hypothetical lease cost should be based on market information. Reilly and Schweihs (1999) classifies relief from royalty method in market approach and states that it is sometimes also referred to as cost approach method, since the value of the subject intangible asset is estimated by reference to the royalty *cost* the owner is relieved. Yet, however the method is classified it should not affect the result of the fair value estimate.

Multi-period excess earnings

The multi-period excess earnings method is a specific application of the discounted cash flow method. The principle behind the method is that the value of an intangible asset equals to present value of the after-tax cash flows due to the subject intangible asset. (AICPA 2001) Under the method cash flows generated only by the intangible asset are separated from total cash flow. Then present value of this cash flow is determined. According to (AICPA 2001) the multi-period excess earnings method is the most common method used by valuation specialists in estimating the fair value of intangible assets acquired to be used in R&D activities.

Usually an intangible asset generates cash flow only in combination with other intangible or tangible assets. (KHT-Yhteisö 2006) These other assets are often called *contributory assets.* To calculate the relevant net cash inflows the cash flows generated by an intangible in combination with other assets is deducted by notional cash outflows to the contributory assets. These cash outflows are called *contributory asset charges*. (KHT-Yhteisö 2006 and AICPA 2001) Thus in multi-period excess earnings method contributory assets are treated as they were leased from third party. Noteworthy is that notional charges should also be taken into account for the value of workforce although it is prohibited to recognize workforce as a separate asset. All in all contributory asset charges should include:

1. Depreciation/amortization of the fair value of the contributory asset
2. Reasonable return on the fair value of the contributory asset

It is also important to notice that contributory asset charges should be taken into account only to the extent they are not already reflected in other cash flows of business enterprise. KHT-Yhteisö (2006) mentions an example that depreciation can already be taken into account in business plan based on asset's historical cost. In this case the depreciation should be replaced by depreciation based on the asset's fair value instead of historical cost. Tax shield of amortization is then added to this present value.

Taxes paid by the entity should be deducted from the cash flows before deduction of the contributory asset charges and from the contributory asset charges themselves. The residual net cash flow is then discounted using the asset specific discount rate usually based on WACC as described earlier.

According to KHT-Yhteisö (2006) multi-period excess earnings method is used only to an intangible asset or asset group having great impact on cash flows. Thus the contributory assets are in fact only contributory. If the method is used for several intangible assets care must be taken to assure that the same cash flows are not allocated to more than one specific asset.

Incremental cash flow

Incremental cash flow method also called as *incremental income analysis*, *incremental economic income method, premium profit method or cost savings method* is based on future cash flow comparison between entity which owns the subject intangible asset and comparable entity without the asset. Method assumes that the comparable entity does not use the subject asset at all. The incremental cash flow can result from generation of additional cash inflows or from cost savings by the subject intangible asset. (Reilly and Schweihs 1999, AICPA 2001 and KHT-Yhteisö 2006)

The difference of cash flows between two entities represents the incremental cash flow attributable to subject intangible asset. The incremental cash flow is discounted to present value using asset specific discount rate. To determine fair value for the asset tax shield of amortization is added up to the present value.

According to KHT-Yhteisö (2006) applying the incremental cash flow method requires that an entity without the intangible asset can truly be identified to ensure the reliability of determination of incremental cash flows.

2.7.3. Cost approach

If market approach can not be used the cost based approach is an alternative to determine the fair value. The cost approach is more in line with the traditional accounting valuation of tangible assets such as valuation of property, plant and equipment. To simplify the fair value is determined as replacement cost of new asset less depreciation. I.e. cost approach methods are based on the idea that fair value of an asset is the cost to reproduce similar asset or asset providing similar benefits. According to AICPA (2001) since cost approach tells how much it would cost to get substitutive asset, no one should be willing to pay more of the asset. Thus replacement cost gives the maximum value to the fair value estimate or

$$\text{Fair value} \leq \text{Replacement cost}$$

This principle following *make versus buy* pattern is applicable only if perfect substitute can be internally produced. However, since intangible assets have often unique characteristics or are

proprietary they might be impossible to reproduce or substitute. AICPA (2001) believes that this is the reason why cost approach is rarely appropriate in valuing R&D projects.

Another problem of cost approach is that historical costs of an asset creation can differ significantly from its future income potential. (KHT-Yhdistys 2006) In these cases costs incurred may not reflect reasonable picture of the value of the asset. AICPA (2001) gives example of R&D projects. Sometimes they can go for years at great expense without ever generating commercially rational product. In that case the historical cost of the project can overestimate the value and as a consequence would not determine fair value. On the other hand great inventions can be made for little expenditure. In this case the reproducing cost may underestimate the value of the resulting invention.

According to AICPA (2001) however, the cost approach may be the only applicable approach in cases where real substitution can be developed. Sometimes reliable estimates of future earnings do not exist and income approach can not be employed. If markets for comparable assets do not exist market approach can not be used either. Under these circumstances cost approach might be the only way to determine reasonable reliable estimate for fair value.

The separation of cost approach from other approaches may not be clear. Reilly and Schweihs (1999) sees elements of market approach in cost approach. For example, supply and demand in material and labor markets determine the current cost of reproducing an intangible asset. In addition Reilly and Schweihs (1999) suggest that cost approach include elements of income approach as well since lost income should be taken into account in the form of an opportunity cost when estimating the cost of implementing development project of an asset.

In general according to Smith and Parr (2000) the cost approach is not as comprehensive as market or income approach. The most desirable approach is to use one or both of the other valuing approaches along with the cost approach to support the valuation. (Smith and Parr 2000 and KHT-Yhdistys 2006)

Table 1 summarizes the discussed valuation techniques for intangible assets.

Table 1: Summary of intangible asset valuation techniques

This table summarizes currently most discussed intangible asset valuation techniques and tells what is the basic idea behind the value in each. In addition the table tells shortly what is special in each technique.

Approach / method	Fair value based on	Special
Market approch	**Market price**	**Compares similar assets that have recently been sold or licensed to the subject asset**
Income apprach	**Future income or cost savings**	**Needs asset specific discount rate**
Direct cash flow projection	Direct cash flows attributable to the asset	Works rarely with separate assets
Relief from royalty	Hypothetical royalty payments of leasing the asset	Requires information of licensed comparable assets
Multi-period excess earnings	Cash flows generated only by the intangible asset	Involves subtracting of contributory asset charges
Incremental cash flow	Cash flow difference between entity owning the subject asset and entity without the asset	Requires identification of an entity without the asset
Cost approch	**Replacement cost**	**Tells maximum fair value**

3. HYPOTHESES BUILDING

In this chapter I discuss about the hypothesis and research problems of the study. The first objective of the study is to describe how different intangible assets are recognized and how accurately they are reported in official financial statements. This point of view produces descriptive information of the data set. Second I will analyze the purchase price allocation focusing on goodwill and other intangible assets by analyzing acquirer's characteristics' impact on allocation. The study aims to add knowledge for current earnings management studies by examining one possible way of using allocation decision as earnings management tool.

3.1. Most recognized intangible asset

FFSA (2006) finds that allocation to brands and trademarks is larger than to other specific intangible assets in Finland 2005. Due to the purchase price weighted averages the result is dominated by the largest acquisitions and does not necessarily represent allocation of "an average acquisition". Evidence from US (PwC 2004a and 2005) suggests that customer related intangibles were recognized more often than other intangibles. Using equal weights they also count for largest allocation of intangibles on average. Customer related assets play especially big role in Technology, Media and Telecom sector and in Financial Services sector. Due to large amount of acquisitions in these industries in Finland I also assume customer related assets are most recognized intangibles in Finland as well. Since I use equally weighted average allocations my first hypothesis is

H1. Allocation to customer related assets is larger than to other specific intangible assets

3.2. Impact of industry

PwC (2004a and 2005) find that in acquisitions in Technology, Media and Telecoms sector the proportionate allocation to goodwill is larger on average than if the acquirer operates in another sector. Although the significance of the difference is not statistically tested this suggests that either the targets in this sector have usually more unidentifiable assets or they are acquired with larger premium. E.g. usually employees' competence can not be recognized as asset but must be recognized as goodwill. Therefore a reason for large goodwill among other things can be that employees are more valuable "asset" to these firms than to others. Assuming this feature is not typical only in US market but in the whole industry it should apply also to Finnish Technology, Media and Telecoms companies. Thus my second hypothesis is:

H2. Allocation to goodwill is higher if acquirer operates in Technology, Media and Telecoms sector than if it operates in another sector.

I search if there are differences between industries and analyze if industry is related to goodwill allocation.

PwC (2005) reports also differences between industries in proportional recognition of intangible assets. It finds that allocation is largest on average with pharmaceuticals firms and second largest with Technology, Media and Telecoms sector. Significance of the differences is not statistically tested. I search if there are differences between different industries in Finland and analyze if industry have relation to proportionate intangible allocation. None acquisition was reported by listed Finnish pharmaceutical company. Therefore I assume Technology, Media and Telecoms sector companies' allocation to intangibles is largest.

H3. Allocation to intangible assets is higher if acquirer operates in Technology, Media and Telecoms sector than if it operates in another sector.

3.3. Impact of R&D

R&D expenditure tells about company's development. Companies with high R&D expenditure operate in rapidly developing sectors. Often as a result of development project is an intangible asset. E.g. it can be in form of new technology, computer software or patent to new product. Consequently I assume intangible assets play more significant role for companies in rapidly developing sectors. Therefore companies with high R&D activity also should have more intangible assets although they might not be recognized as assets. Further I assume companies with high R&D activity also tend to acquire other companies with high R&D activity or already developed intangible assets. This is not definitely the case every time, but Finnish listed companies seem to buy mainly companies in same industry or with similar business logic. These developed intangible assets are then recognized as asset at latest when the company is acquired. Therefore I hypothesize:

H4. The more R&D activity acquirer has the larger the allocation to intangible assets

3.4. Allocation decision as earnings management tool

Studies concentrating on factors influencing purchase price allocation decision have not been made earlier as far as I know. PwC (2004a and 2005) studies how allocation is made in different industries but don't try to find other reasons for allocation differences. Academic

research has been mainly concentrating on decisions of goodwill amortization period (such as Hall 1993, Ojala 2001, Grönlund 2004, Astami, Hartadi and Tower 2006) or level of goodwill impairment (such as Zang 2003, Rusila 2005, Sevin and Schroeder 2005).

When goodwill is amortized or impaired its book value decreases. Grönlund (2004) and Rusila (2005) provide evidence that the proportional goodwill/impairment is negatively correlated with goodwill's proportion of assets. They provide evidence for the intuitively reasonable idea that the same reasons which drive goodwill amortization and impairment decisions simultaneously drive goodwill to assets ratio.

Goodwill originates in mergers and acquisitions. Therefore it is natural to study mergers and acquisitions or *business combinations* to find out how goodwill is initially accumulated in balance sheet. In my study I try to find out if the same reasons impacting on goodwill amortization, impairment and goodwill-assets ratio also impacts on initial purchase price allocation to goodwill.

I classify two main things effecting purchase price allocation and thus creation of goodwill:

1. Company characteristics of acquirer and target that defines how the allocation should be done objectively in theory
2. Company characteristics of acquirer and target affecting acquirer's management's decision to define how the allocation is eventually done

As mentioned earlier studies for company characteristics' impact on management's decision mainly explain the amortization period, impairment size and goodwill's proportion of assets. In this study I try to find out do these theories also explain the initial purchase price allocation to goodwill.

I assume that the allocation decision is made by the acquirer's management. It can choose in certain level how to allocate the purchase price as Troberg (2005) states. Hence I choose to analyze the allocation from acquirer's point of view.

Before IFRS 3 other intangible assets were mainly a part of goodwill but now they should be separated. In addition goodwill previously included some part of tangible assets, which were

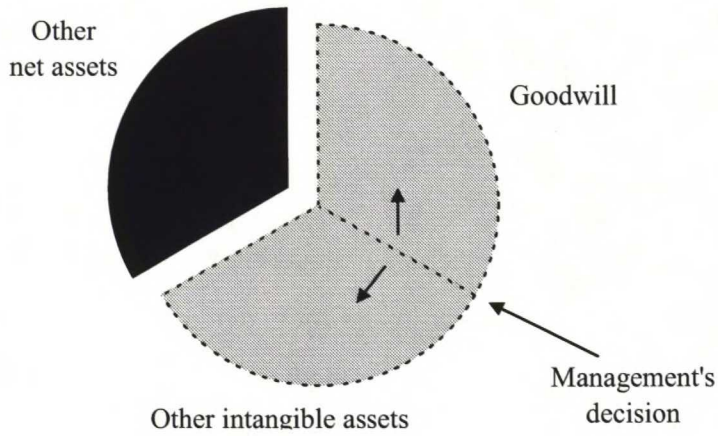
not recognized at fair values. There may be not that much freedom in allocation to tangible assets because tangibles are more regulated and standardized and do not need as much subjective judgment in valuation. However, also tangible assets need recognition at fair value. This means that also tangibles' valuations most likely involve future forecasts and thus are subject to bias in certain extent.

Nevertheless I assume the real challenge is in intangible asset valuation. Nwogugu (2004) studying US SFAS 141 and 142 standards, which are pretty similar to IFRS 3, states that in many instances, accurate market value measurement of intangible assets is not possible. Use of market approach techniques can be difficult or impossible for patents, trademarks and brands with sufficient accuracy. When use of market approach valuation methods is impossible firms can use income approach methods. Then according to Nwogugu (2004) companies are permitted to use their own assumptions to determine fair value of intangible assets and goodwill and thus earnings and asset values can be easily manipulated. Only a small change in the assumptions used in valuation can significantly affect estimated fair values.

Since management can affect intangible asset values it can affect also the residual value of purchase price i.e. goodwill. I assume that management can make a decision in certain level whether to allocate purchase price to goodwill or in other intangible assets. This assumption is illustrated in picture 2. It has to be remembered that this simplification can be criticized and has not yet clear evidence. Also management can have influence to the sharing of the whole pie i.e. it can also have an impact on other net assets. However, I assume that valuation of intangible assets is more dependent on subjective judgment and therefore management has an opportunity to greater impact on it. In this theory I also assume that the purchase price or the size of "the pie" is decided earlier and management can not any more impact on it but only on how the pie is divided. To get more evidence for this I ask from Finnish listed companies in a survey introduced later in this study that does intangible asset valuation have an impact on the purchase price or is it only done for accounting purposes.

Picture 2: Management's decision in purchase price allocation

This picture illustrates the idea that management is able to impact on the purchase price allocation by manipulating intangible asset valuation and thus influencing the residual value of goodwill. The idea assumes that the purchase price i.e. the size of the pie and the allocation to other net assets i.e. the black slice are fixed.



My main assumption is that larger allocation to goodwill increases reported earnings and assets in short term. This assumption is based on that goodwill's lifetime is in theory indefinite and is not amortized but only impaired when necessary. Therefore in short term before any impairments its value doesn't decrease. Then again I assume large allocation to other intangible assets means shifting reported earnings to future and showing smaller profits in current period. This is because intangibles are mainly amortized in pretty short period of time i.e. their book values decrease more rapidly. Therefore allocation decision can be used as earnings management tool similarly as amortization period or impairment size.

Above assumption must be considered with caution since no evidence from this is yet published. Theory's most vulnerable assumption is that impairments are not made in short term. Also different intangible asset classes have very different amortization periods. E.g. some computer software might be amortized in 2 years whereas trademarks can have indefinite lifetime. Intangibles having indefinite life time are also subject to impairment tests like goodwill. In addition for certain industries it is natural to have large allocation to both goodwill and other intangible assets. I try to control this with analyzing also the industry's impact on allocation.

Since goodwill is more studied area in academic literature, theories discussed below are mainly explaining goodwill accounting. Same theories might explain allocation to intangibles

as well if allocation decision is a tradeoff between allocations to goodwill and other intangible assets. The next sub chapters discuss about some previously stated theories which have been employed to explain goodwill amortization and impairment as well as goodwill to assets ratio. The theories aim to explain why the acquirer's management tries to influence goodwill accounting.

3.5. Impact of size

Large companies are politically more sensitive than smaller companies (Watts and Zimmerman 1986). The larger the company the more it gets attention from politicians. Political process theories suggest that accounting figures are used in political process. E.g. politicians can use large reported earnings as evidence of company's monopolistic position. Since it is costly or time consuming to estimate real reason for large earnings, common people or voters decide often to remain ignorant. (Watts and Zimmerman 1986) This creates jealousy and feel of inequality among voters. Then according to Watts and Zimmerman (1986) politicians propose solution to the "crises" caused by large profits. They might suggest some additional wealth transfers from the company to society. These wealth transfers are called political costs. Lately e.g. so called windfall profits have accelerated discussion of additional taxes to companies who have made unexpected profits arisen from causes not controlled by the company. Public is especially interested in the largest and most profitable companies. Therefore if a company is subject to potential wealth transfer in political process its managers have incentive to reduce the transfer by reporting smaller profits.

Political costs are usually hypothesized to reflect as shorter amortization period of goodwill (Hall 1993, Ojala 2001, Astami, Hartadi, and Tower 2006) or as larger impairments (Zang 2003, Sevin and Schroeder 2005). I.e. companies with high potential political costs tend to shift profits from this period to future. However, empirical results of the studies are contradictory. Hall (1993) and Zang (2003) find evidence examining US companies and Astami, Hartadi, and Tower (2006) for Australian and Asian companies but Ojala (2001) and Grönlund (2004) studying Finnish companies' goodwill amortization period do not find evidence for political cost hypothesis.

Watts and Zimmerman (1986) hypothesize that the larger the firm, the more likely the manager is to choose accounting procedures that defer reported profits from current to future period. Therefore larger firm would allocate less purchase price to goodwill to avoid reporting very positive result and allocate price to other assets to instantly get depreciation or amortization opportunity. The fifth hypothesis is:

H5. The larger the acquirer the smaller the allocation to goodwill

3.6. Impact of leverage

To guarantee lender's rights loan agreements often try to limit borrower company's actions to take risk. Such debt covenants include restrictions to dividend payments, share buybacks, acquisitions, divestitures or more leverage taking. These restrictions are often based on official financial statement numbers. Breaking the covenants is usually expensive for the company. Therefore according to Watts and Zimmerman (1986) management has incentive to choose the accounting procedures, which increase assets and revenues and decreases debts and costs.

Begley (1990) states that the debt-equity hypothesis is actually a joint hypotheses containing:

1. The debt-equity ratio is positively related to closeness to accounting-based debt covenants
2. Closeness to covenants is positively related to probability of default on covenants
3. As the probability of covenant default increases, managers are more likely to choose income increasing accounting methods to avoid default

Although additional leverage may not take all companies close to covenant restrictions the generalization that it does simplifies studying. Duke and Hunt (1990) empirically study this problem using a random sample of U.S. firms. They find that debt-equity ratio captures the existence and tightness of retained earnings restrictions and the existence of net tangible asset and working capital restrictions. Thus financial statement ratios describing leverage can be used as a proxy for closeness to covenants.

Watts and Zimmerman (1986) states that the larger firm's debt/equity ratio, the more likely the firm's management is to choose accounting procedures that shift reported earnings from future periods to the current period. I assume higher allocation to goodwill would probably increase future impairments but make the result at present moment look better. Thus current covenant default would be easier to avoid. Muller (1999) studying UK firms and acquisitions finds that firms with higher leverage are more likely to recognize voluntarily brand as an asset when another alternative is an immediate write off. Since brand recognition increases book value of assets it decreases leverage ratio calculated from book values and moves asset based covenants further.

In contrary to the theories more recent paper Astami, Hartadi, and Tower (2006) studying Australian and Asian companies before IFRS 3 finds that the higher a company's financial leverage ratio the more company managers prefer to write off goodwill immediately against income or to capitalize and amortize it in a shorter period of time.

Also net asset covenant may not take goodwill into account as an asset since it is often riskier than other assets. Then management would also try to avoid allocation to goodwill. If covenant is net-tangible-asset covenant management would try to allocate more on tangible assets if possible.

All in all evidence of leverage's impact on goodwill accounting is contradictory. Assuming Watts and Zimmerman and (1986) and Begley (1990) theories hold the more the firm is leveraged, the more likely the firm's management is to choose accounting procedures that shift reported earnings from future periods to the current period. Thus my hypothesis is:

H6. The more leveraged the acquirer the larger the allocation to goodwill

3.7. Impact of profitability

Management compensation programs can be connected with accounting figures or with company's market value performance. Also market value performance is in some extent influenced by accounting figures. Therefore manager's have incentive to manage earnings.

Earnings management has been widely studied e.g. by Healy (1985), Holthausen, Larcker, and Sloan (1995), Gaver, Gaver, and Austin (1995).

According to Watts and Zimmerman (1986) managers of firms with bonus plans are more likely to choose accounting procedures that shift reported earnings from future periods to current period. Healy and Wahlen (1998) conclude that academic studies' evidence suggests that at least some managers manage earnings to increase bonus awards or to increase their job security.

Assuming management aims to maximize company's accounting profits, it might try to shift reported earnings from future periods to the current period. Thus allocating to goodwill a large sum today, will cause larger impairments in the future but look better in accounting today. This kind of earnings management should be related to firm's long term profitability. Then according to Gaver, Gaver, and Austin (1995) management tries to increase earnings in poor performance years and decrease in good performance years to avoid increase in their target for the following year. This theory is called earnings smoothing.

This theory can be criticized since it is a rough simplification. Management compensation programs vary a lot. To study them more thoroughly one should take into account company specific details of compensation programs. E.g. bonus system often involves steps. If management believes it can not reach the next step, it would try to shift additional earnings to next year. Competing theory suggests big bath charges. I.e. companies with relatively low current year earnings are more likely to record large extraordinary losses while companies with unusually high earnings are more likely to report extraordinary gains. (Sevin and Schroeder 2005, Kirshenheiter and Melumad 2002, Walsh, Craig, and Clarke 1991) Also Gore, Fauziah, and Taylor (2000) and Astami, Hartadi, and Tower (2006) suggest that when there is management compensation schemes based on accounting profits, influenced by goodwill accounting, there will be preference for methods not impacting adversely on reported profit.

Consequently evidence and theories of profitability's impact on goodwill accounting is contradictory. My hypothesis are based on earnings smoothing theory stating that management tries to increase earnings in poor performance years and decrease in good performance years to avoid increase their target for the following year.

H7. The more profitable the acquirer the smaller the allocation to goodwill

3.8. Impact of growth prospects

Firms with high growth prospects are assumed to have certain similarities. Three potential explanations support theory why growth prospects could be an important factor in goodwill accounting in general and in choice of goodwill allocation. Theories suggest the growth companies should less goodwill or amortize it more rapidly. These explanations are signaling, auditor's liability reduction and the nature of growth firms' goodwill.

Signaling

According to Gibbins et al. (1992) companies in growth industries are expected to be more active disclosers. They try to reduce agency costs and adverse selection by active disclosing. Signaling theory claims that managers attempt to mitigate information asymmetry between agent and principal. (e.g. Cheng and Coulombe 1996) Investors are assumed to interpret a change from initial reporting strategy to more rapid expensing as a good signal and evaluate the company upwards. Cheng and Coulombe (1996) Since management has usually incentive to boost company valuation it can choose a reporting strategy with more rapid expensing. In this case it means smaller allocation to goodwill and more to other assets.

Auditor's liability reduction

Another theory of growth prospects is reasoned with auditor's liability reduction. Holthausen and Watts (2001) suggests that overstatement of assets or earnings is far more likely to generate a law suit against auditor as understatement. Consequently auditors have incentive to reduce their risk by suggesting to management conservatism in reporting assets and earnings. This applies especially with growth firms since their future earnings are more uncertain.

The nature of growth firms' goodwill

Ojala (2001) suggests that a possible explanation of the nature of growth firms' goodwill refers to limited time window to exploit the purchased goodwill. The time is short to exploit the goodwill in rapidly developing growth businesses. Growth firm's management should either exploit the benefits without delays or the benefits will disappear and purchased goodwill becomes worthless. (Ojala 2001) As goodwill can no longer be amortized it could be more rapidly impaired or initially less goodwill could be recognized.

All in all signaling, auditor's liability reduction and the nature of growth firms' goodwill theories suggest that growth firms' allocation to goodwill should be smaller. Therefore my eighth hypothesis is:

H8. The more growth prospect acquirer has the smaller the allocation to goodwill

4. DATA AND METHODS

This chapter introduces data and methodology used in the study. It first discusses about gathering of the data. Then it explains how I define the purchase price and its allocation decision. Further the chapter focuses on giving descriptive information of the data and presenting the statistical methods used to find support for my hypotheses. The chapter ends with introduction to a survey made to assess attitudes towards IFRS 3.

4.1. Data gathering

I gathered official financial statements of year 2005 of companies listed in the Helsinki Stock Exchange (HEX). Publicly listed companies were required to report their 2005 statements in accordance with IFRS for the first time. The study includes all the financial statements publicly available on September 14th, 2006.

Altogether 134 financial statements were available; 105 from main list companies, 18 from I-list, 10 from NM-list and 1 from BL-list[2]. The list of companies is in Appendix A. I exclude the list of Swedish shares although some were traded in HEX already in 2005. Depending on the point of view it can be reasonable to either include or exclude the Swedish shares. My study examines only Finnish companies. Therefore I exclude the Swedish shares traded in HEX.

The sample represents 96% of Finnish listed companies. Five companies are missing of which four Efore, Suomen Helasto, Turkistuottajat and Vaahto Group were not yet released IFRS financial statements on September 14th, 2006 since their financial year was not calendar year. In addition SSK Suomen Säästäjien Kiinteistöt was excluded since its financial statements were not easily available. I checked have these excluded companies make acquisitions by examining Talouselämä's and Bloomberg's merger and acquisition databases. Neither database includes info concerning acquisitions made in 2005 by any of these five excluded companies. Therefore I expect the excluded companies did not make major acquisitions in the fiscal year 2005 and consequently excluding them does not have a significant impact on the results of the study.

Altogether 66 companies reported that they have made acquisitions in the fiscal year 2005. This represents almost a half of HEX listed companies. Most active were main list companies of which 55% reported acquisitions. This suggests that the largest companies tend to make acquisitions more actively than others. For now on I limit the study to the 66 companies, which reported acquisitions. Table 2 below summarizes the acquisition activity.

[2] In October 2006 the classification of OMX lists changed. Old classification including Main List, I-list, NM-ML- and Swedish Shares list ceased to exist and all shares from Helsinki, Stockholm and Copenhagen exchanges were combined under one Nordic list. The new classification is made according to companies' market capitalization (Small Cap, Mid Cap and Large Cap) and industry.

Table 2: Number of HEX listed firms reporting acquisitions in 2005

This table shows the number of firms reporting acquisitions in their official financial statements. The companies are divided by the list in which their main share is trading. In addition the companies are divided by their main industry. The %-figure tells the number in a portion of the total firms in the sample.

List/Industry	Number of firms in sample	Number of firms reported acquisitions	%
Classification by share list			
Main List	105	58	55%
I-List	18	4	22%
NM-List	10	4	40%
BL-Market	1	0	0%
Total	134	66	49%
Classification by industry			
Financial	16	9	56%
Technology, media, telecoms	45	22	49%
Other consumer or industrial products	56	27	48%
Other	17	8	47%
Total	134	66	49%

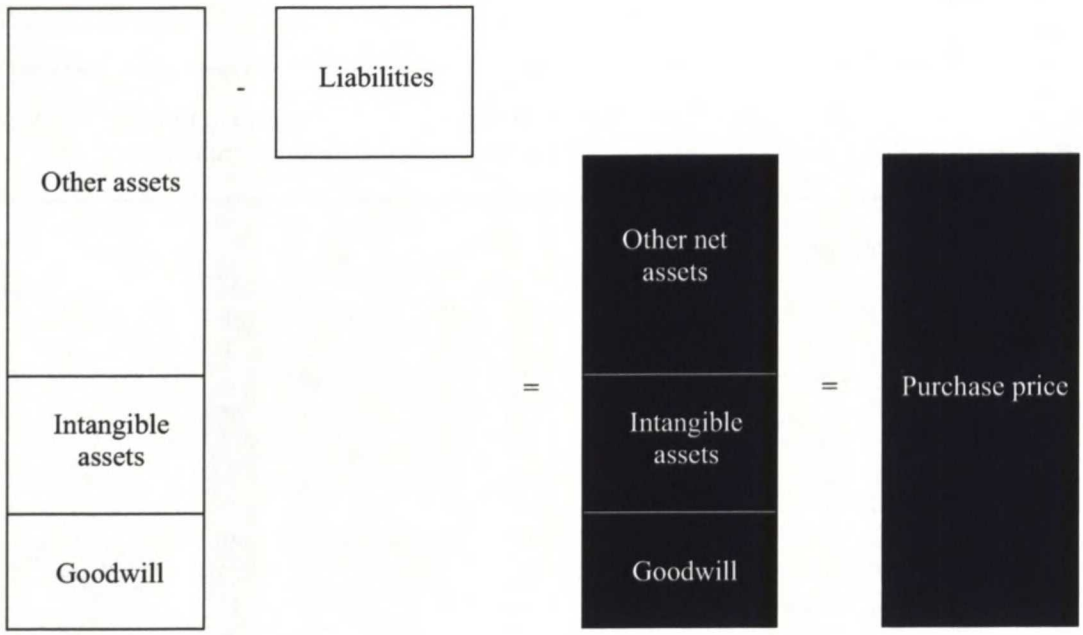
For the 66 companies which made acquisitions I collected historical financial data from Thomson Financial Worldscope database. For a couple of firms for which all needed data was not available in the database I collected the missing data from their financial statements.

4.2. Definition of purchase price

The purchase price is the price reported in official financial statements. It includes cash, shares or other sorts of payment. I define *purchase price* as *equity value* i.e. *value of stockholders' claims*. This price does not include liabilities of the acquired company. PwC (2004a) used equity value as purchase price and therefore using the same definition enables the comparison with US results. Also FFSA (2006) defines purchase price as equity value. I use term *enterprise value* to refer the whole firm value. Picture 3 demonstrates the formation of purchase price. In this study I focus on the black colored items. The picture is continuation to Picture 1.

Picture 3: Purchase price and allocation in the thesis

The picture demonstrates how purchase price is defined in the thesis and into which items companies allocate it. Minority interests are virtually zero in most acquisitions. In this picture they are included in liabilities. The thesis focuses on the black colored items.



4.3. Definition of purchase price allocation

I gather acquisition data in two different categories:

i. Acquisition specific data
ii. Annual level data

Companies should report purchase price allocation of financially significant acquisitions separately. PwC (2004a and 2005) use this kind of acquisition specific data. This means that price allocations of individual deals is gathered and analyzed. In line with this study I also analyze acquisition specific data. Deal specific data enables making a description of an average deal.

To calculate each asset's relative share of purchase price I first calculate the relative allocation of each acquisition. Then I calculate equally weighted average of acquisitions' allocations. Since objective of acquisition specific data is to describe a typical acquisition

rather than to describe Finland as one entity equal weight is justified. This method is also in line with PwC (2004a and 2005) and is presented in formula (1).

$$\text{Share of asset i} = \frac{\sum_{j=1}^{n} \frac{a_{ji}}{P_j}}{n} \qquad (1)$$

where

a_{ji} = value of asset i in acquisition j

P_j = purchase price of acquisitions j

n = number of acquisitions

Acquisition specific data is preferred to describe an average acquisition. On the other hand *annual level data* is better to describe acquisitions in Finland as a whole. Since all acquisitions are not reported separately a lot of smaller acquisitions are excluded in acquisition specific data. To get more complete picture of acquisitions in total I also analyze companies' annual level data. Annual level data means that companies have summed up all the acquisitions and reported the price allocation of the lump sum. Annual level data is more often reported than acquisition specific since many individual acquisitions are concerned as not financially significant. Thus using annual level data the sample includes larger share of acquisitions made by Finnish listed companies.

To calculate assets' relative shares of purchase price I calculate equally weighted average of all reported annual level allocations. Therefore all acquisition made firms have equal weight. The average allocation using annual level data is defined in formula (2).

$$\text{Share of asset i} = \frac{\sum_{j=1}^{n} \frac{a_{ji}}{P_j}}{n} \qquad (2)$$

where

a_{ji} = sum of asset i's values in firm j's business combinations in 2005

P_j = sum of purchase prices of firm j's business combinations in 2005

n = number of firms reporting acquisitions

Because the most of the deals in both samples i) and ii) are the same the results are not assumed to differ significantly. The main idea of the use of the annual level data is to collect more complete data and to grow the sample.

I further analyze the allocations by dividing them into industrial sectors. I use same sector classification as PwC (2004a and 2005) consisting of:

- Financial services
- Technology, media and telecoms
- Pharmaceutical and biotech
- Other consumer or industrial products
- Other

I gathered data concerning business combinations and found that the extent of the disclosed data varies considerably between the companies. Some companies' financial statements have pretty detailed description of the business combinations and the purchase price allocation while many companies only mention names of targets. The next chapter tells how extensively companies report allocation decision.

4.4. Data description

4.4.1. Acquisition specific data

38 companies representing 58% of acquisition made companies reported purchase price allocation of at least one specific deal. Therefore according to the financial statements other companies have not made any financially significant acquisitions. Other probable conclusion is that other companies also made significant acquisitions but their reporting principles were not yet fully in line with IFRS standards.

Altogether purchase price allocations of 57 individual acquisitions were reported. 68% of these (39 deals) recognized intangible assets i.e. allocated a part of the price to intangibles.

Specific intangibles were recognized rarely. Most of the statements didn't mention into which intangible asset classes the recognition was made. Only in 16 deals some specific intangible asset class was named. In the rest 23 acquisitions intangibles were reported only as one item called *Intangible assets*. In pretty many of these acquisitions the item *Intangible assets* was however proportionally and in absolute figures significant. This suggests that intangibles should have been further classified and all companies do not yet meet the reporting requirements. FFSA (2006) made similar finding.

Customer related assets were the most recognized intangible assets. They were recognized in 12 acquisitions. Technology and computer programs were recognized in 8 acquisitions and brands and trademarks in 6 acquisitions. Other recognized intangible assets were agreements prohibition of competition, licenses and rights.

Highest reported purchase price was € 1,774 million in OKO's acquisition of Pohjola's shares. This specific deal is huge compared to others reported. In the second largest deal Amer Sports bought Salomon with € 475 million. Median purchase price of all reported acquisitions was € 9 million and average € 82 million. Since the average is far above median the most of the deals were small. In fact 75% of the reported deals have purchase price below € 50 million. Table 3 shows more detailed distribution of purchase price in reported acquisitions.

Table 3: Purchase price distribution of acquisitions made by HEX listed companies in 2005

This table shows the distribution of purchase prices paid in acquisitions made by HEX listed companies in 2005. The purchase price is defined as equity value of the target reported in official financial statements of the acquirer.

Purchase price € million	Number of acquisitions	% of acquisitions	Cumulative % of acquisitions
<10	29	51%	51%
10-50	14	25%	75%
50-100	3	5%	81%
100-500	10	18%	98%
> 500	1	2%	100%

4.4.2. Annual level data

The reporting principles concerning business combinations of Finnish listed companies are pretty varying. Most of the companies (92% of acquisition made companies) report at least an annual level allocation combining all the acquisitions made in 2005. The remaining 8% consisting of 5 firms tell about acquisitions but do not report any sort of allocation of the purchase price.

76% of the firms recognize intangible assets in business combinations. However, again most of the firms do not report more accurately into which intangible asset classes they have allocated the purchase price. Only 16 companies representing one fourth of the sample reported certain intangible asset classes in purchase price allocation. Table 4 describes the reporting accuracy in more detail.

It seems that companies in technology, media and telecoms (TMT) industry reports intangibles most specifically whereas other consumer or industrial product (CIP) companies reports least specifically. Therefore it seems intuitively reasonable that intangibles are most important to TMT companies and consequently this sector also makes largest allocation in intangibles as H3 suggests.

Table 4: Number of HEX listed firms reporting purchase price allocation in 2005

This table shows the number of firms, which have reported their acquisition price allocation in a yearly level in their official financial statements. This means that a firm reports aggregate numbers combining all acquisitions made during the year. Also the table shows how many firms have recognized intangible assets in their acquisitions. In addition the table tells how many companies have specificially named certain intangible assets e.g. customer relationships instead of just reporting the lump sum of all intangible assets. The companies are divided by the list in which their main share is trading. The BL-list is excluded since the only company in the list Soprano did not report any acquisitions. In addition the companies are divided by their main industry. The %-figure tells the number in a portion of the firms reported acquisitions. I.e. 100% means all the companies, which made one ore more acquisitions according to their financial statements.

Industry	Number of firms reported purchase price allocation in annual level	%	Number of firms recognized intangible assets in business combinations	%	Number of firms reported certain intangible assets in business combinations	%
Classification by share list						
Main List	53	91%	43	74%	13	22%
I-List	4	100%	3	75%	1	25%
NM-List	4	100%	4	100%	2	50%
Total	61	92%	50	76%	16	24%
Classification by industry						
Financial	7	78%	5	56%	2	22%
Technology, media, telecoms	22	100%	19	86%	8	36%
Other consumer or industrial products	25	93%	21	78%	4	15%
Other	7	88%	5	63%	2	25%
Total	61	92%	50	76%	16	24%

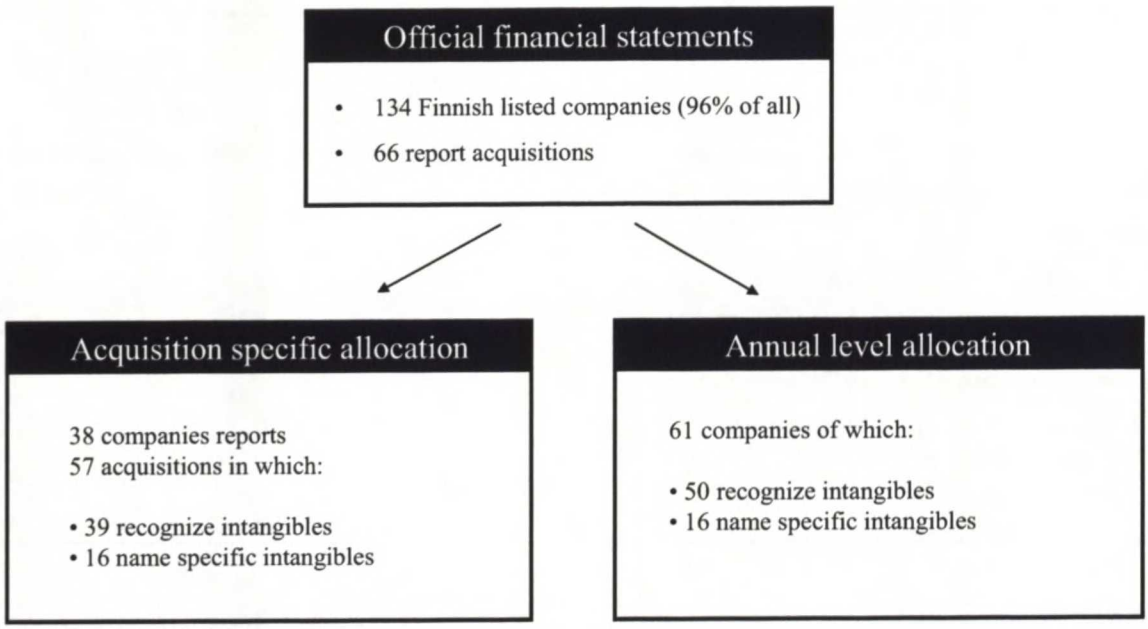
Customer related intangible assets are the most recognized intangible assets in business combinations also with annual level data. 13 of the 16 companies recognized them in some form mainly as *customer relationships* or *customer contracts*. *Technology* and *computer programs* were recognized by 7 companies and *brands* and *trademarks* by 6 firms.

4.4.3. Conclusion of data sets

To conclude I gathered two data sets. One includes 57 specific acquisitions made by Finnish listed companies and another 61 Finnish listed acquirers. Picture 4 summarizes the formation of the data sets. I use both data sets in similar statistical tests to find support to my hypotheses. The tests are introduced in the next chapter.

Picture 4: Allocation data samples

The picture summarizes what the two samples *acquisition specific* and *annual level* allocation data sets include. Acquisition specific data includes data of specific named acquisitions. Annual level data includes data reported by acquirer concerning all the acquisitions made in 2005. The data set includes 96% of Finnish listed companies.



4.5. Tests for acquirer impact

In addition to data description I test acquirer's industry's and financial characteristics' impact on proportionate allocation of goodwill and intangible assets. I use basic OLS-regressions assuming normal distributed variables to test how well acquirer characteristics explain the allocation. I form several regressions using slightly different explanatory variable sets. I test bivariate correlations between explanatory variables and try to avoid multicollinearity by using uncorrelated explanatory variables in each set.

4.5.1. Dependent variables

I carry out regressions with three different dependent variables:

1. Percentage allocation to goodwill deducted by average percentage allocation to goodwill

2. Percentage allocation to other intangible assets deducted by average percentage allocation to other intangible assets
3. Percentage allocation to other net assets deducted by average percentage allocation to other net assets

Goodwill is taken directly from companies' reports. *Other intangible assets* is a sum of all intangible assets except goodwill. *Other net assets* is a sum of tangible assets deducted by reported debt. The regressions are performed separately to annual level data and to acquisition specific data. Chapter 4.3. discusses in more detail about calculation of allocation.

The regressions explaining allocation to goodwill are directly employed to find evidence for hypotheses H5-H8. Whereas, the regressions explaining allocation to other intangibles and other net assets can support indirectly the hypotheses or reveal other interesting dependencies between acquirer's characteristics and allocation decision.

4.5.2. Explanatory variables

Impact of industry

I use industry dummies to describe acquirer's industry and other variables to describe acquirer's financial characteristics. Industry classification contains four classes: 1. *technology, media or telecoms*, 2. *other consumer or industry products, 3. financial* and 4. *other.* For regressions including financial explanatory variables I exclude companies operating in financial industry because their reporting characteristics differ significantly from other industries. Industry variables are:

TMT – Dummy variable equals one if the acquirer operates in technology, media or telecoms sector. Otherwise equals zero.

CIP – Dummy variable equals one if the acquirer operates in other consumer or industry products sector. Otherwise equals zero.

FIN – Dummy variable equals one if the acquirer operates in financial sector. Otherwise equals zero.

Impact of R&D

I employ a R&D to sales variable as a proxy of company's research and development activity. The aim is to capture how important development is to the company and also to estimate how much intangible resources the company has developed.

$$\text{R\&DTOSALES} = \text{2001-2005 average of } \frac{\text{R \& D expense}}{\text{Sales}}$$

Impact of size

Often used proxies for company size are such as sales, total assets, market capitalization and number of employees. Total assets and sales would most probably create serious multicollinearity since I use them in other explanatory variables. I choose natural logarithm of market capitalization to proxy company size and thus political costs.

$$\text{MARKETCAP} = \ln(\text{2005 year end market capitalization})$$

Impact of leverage

I use average of 2004 and 2005 year end leverage to proxy how close the acquirer is to debt covenants. I use this time period to capture the average situation in 2005 and to find if company has been close to its debt covenants especially in the year of acquisition.

$$\text{LEVERAGE} = \text{2004-2005 average of } 1-\frac{\text{Equity}}{\text{Total assets}}$$

Impact of profitability

I use return on assets to proxy the company's profitability in the year of acquisition.

$$\text{PROFITABILITY} = \frac{\text{Earnings before interest and taxes (2005)}}{\text{Total assets (2005)}}$$

Impact of growth prospects

I employ price to book ratio of the 2005 year end to proxy the growth prospects of the acquirer.

$$\text{PRICETOBOOK} = \frac{\text{Market Cap (2005)}}{\text{Equity (2005)}}$$

4.6. Survey

To support my study I send a questionnaire by email to 134 Finnish listed companies. The purpose is to describe views and attitudes towards adoption of IFRS 3. I send the questionnaire primarily to companies' CFOs. For companies I can not fid CFO's contact information I send it to CEO. The questionnaire is shown in Appendix C. Below is brief motivation to each question.

First 9 questions are in form of statements. Respondent can choose answer in scale of 1 to 5. Answer describes how strongly he/she agrees with the statement. 1 means "totally agree" and 5 means "totally disagree".

1. *It is reasonable to separate intangible assets from goodwill.*

   According to IFRS 3 Intangible assets must be recognized separately from goodwill. The reform has been criticized due to the uncertainty of intangible assets' fair values. Acquirer's management has responsibility of the valuation and thus they might have an opportunity to arrange their financial statement as Troberg (2005) suggests.

2. *Goodwill amortization should still be an alternative to impairment.*

   Goodwill amortization has been considered as vague procedure since usually amortization period has been more or less randomly chosen and has not reflected real lifetime of goodwill. IFRS 3 prohibits goodwill amortization. Instead it requires regular impairment tests. Impairment has been criticized by many companies stating that impairment testing only adds bureaucracy but doesn't provide more accurate information. Some parties have suggested that amortization should still be an alternative to impairment. However, to improve convergence it is better when the

procedure is the same for every company so that financial statements are more comparable with each other.

3. *Intangible asset values can be usually reliably determined.*

Chapter 2.7. discusses about currently most used intangible asset valuation techniques. In theory the requirement of fair values should make asset's book values more informative and closer to their real market values. However, the valuation requires substantially subjective judgment. Especially income approach techniques using projections of future cash flows are dependent on subjective forecasts. Consequently values are dependent on the person who makes the valuation and thus their reliability is endangered.

4. *It is justified that most intangibles cannot be recognized as assets if they are internally created although they have to be if they are bought outside.*

As discussed, IFRS 3 requires recognition of intangible assets in business combinations. However, current accounting regulations still forbid recognition of most internally created intangible assets. E.g. company can not recognize its brand as an asset but if it acquires its competitor it has to recognize the competitor's brand as an asset. Thus the situation is contradictory and balance sheet comparison between two companies can be complicated.

5. *The benefits of adopting IFRS 3 are greater than the troubles it creates.*

The transition to IFRS 3 causes a lot of work to companies and their advisors. The standard's purpose is to make comparison between companies easier. However, new accounting policies also require that investors and other stakeholders reading the financial statements learn to understand them. The purpose of question 5 is to evaluate companies' general attitude towards the standard.

6. *Investors get now better information of goodwill as they did before adoption of IFRS3.*

Goodwill should present now more accurately so called real goodwill including synergies and going concern value because other assets are separated from goodwill. IFRS standards also require information concerning impairment testing. Thus investors should have now an opportunity to get better or more precise information of goodwill.

7. *Investors get now better information of other intangible assets as they did before adoption of IFRS 3.*

   Investors could get more information about intangible assets since they are now more specifically separated. However, as valuation of intangibles is influenced by subjective judgment there is a danger that the quality of the information is not high and at least in a short term the convergence can even become weaker.

8. *IFRS 3 does not harm investors.*

   IFRS 3 along with other IFRS standards changes financial reporting of companies. Thus investors have to learn how to interpret the new financial statements and understand the limitations and problems they have. This might be time consuming. However, investors should benefit from the standards since they aim to increase companies' transparency and help to compare companies.

9. *Valuation of intangible assets is usually made only for accounting purposes but does not impact on acquisition purchase price.*

   IFRS 3 requires valuation of intangible assets. Therefore it has to be done at least for accounting purposes. However, it is interesting to know is the intangible valuation done already before the decision of the purchase price and can it really have an impact on the purchase price or is it only done because the standard requires it.

For questions 10. and 11. respondent can answer in scale of 1 to 5, in which 1 means "increases significantly" and 5 means "decreases significantly"

10. *How do you think IFRS 3 impacts on your company's market value?*

In theory IFRS 3 should not affect market value since it only impacts on accounting procedures but not on cash flows. However, it has been discussed that many investors only focus on accounting earnings and thus accounting procedures can have an impact market valuation. Before IFRS 3 amortization period of goodwill was often very long. Now significant part of the goodwill has to be allocated to intangibles, which are amortized in shorter time period. Thus IFRS 3 dilutes accounting earnings for many companies. In addition since the remaining goodwill should be tested against impairment at least annually, irregular impairments can increase the volatility of earnings and thus impact market valuation. This means that failure of an acquisition will be more transparent and is likely to be seen as a quick impairment. On the other hand the new standard aims to increase transparency. Thus companies may be seen as less riskier investments which may increase their valuation.

11. *How do you think IFRS 3 impacts on the number of acquisitions made by your company?*

If IFRS 3 impacts on market valuation companies might have an incentive to increase or decrease the number of future acquisitions. Also if IFRS 3 requirements are very demanding they can decrease companies' willingness to make acquisitions. Nevertheless, these impacts are probably so insignificant that IFRS 3 does not have an impact on acquisition activity.

For questions 12 to 15 I ask the respondent to consider the latest acquisition made by his/her company in which IFRS 3 was applied. With these questions I try find out which of the intangibles are easy or hard to value and which are most affected by subjective judgment. I ask to give answer with one intangible asset class: *Customer related, Technologies or computer software, Brands or trademarks, Rights, licenses or non-compete agreements* or *Other*.

12. *What was the easiest intangible asset class to value?*
13. *What was the hardest intangible asset class to value?*

14. *What do you think is the one intangible asset of which valuation was most affected by use of subjective opinions?*
15. *If you used external consultant in intangible asset valuation, in which item your opinion of the fair value differentiated the most from the consultant's opinion.*

In questions 16 to 20 I ask the respondent to consider the latest acquisition made by his/her company in which IFRS 3 was applied. With these questions I try to find out which valuation techniques are used in certain intangible assets. I ask to give answer with one intangible asset valuation technique: *Market approach, Cost approach, Direct cash flow, Relief from royalty, Multi-period excess earnings, Incremental cash flow* or *Other*.

16. *What was the most important method used in valuing customer related intangible assets?*
17. *What was the most important method used in valuing technologies or computer software?*
18. *What was the most important method used in valuing brands or trademarks?*
19. *What was the most important method used in valuing supplier contracts, licenses or non-compete agreements?*
20. *What was the most important method used in valuing other intangible assets?*

For each question respondent could choose alternative "Can't tell" if he/she couldn't or didn't want to answer.

5. RESULTS

This chapter presents the results of the study. It shows first descriptive information of purchase price allocation. Then it tells results of the regression models testing acquirer's impact on allocation decision and concludes the results supporting my hypotheses. The chapter ends with presentation and analysis of the survey's results.

5.1. Purchase price allocation

This chapter focuses on the companies reporting acquisitions in 2005. I first show the average allocations using annual level data and deal specific data and compare if the results differ somehow between these two methods. Then the study presents comparison between Finnish and US results and in the end of chapter 5.1. an allocation comparison between different industry groups.

5.1.1 Average allocations

I examine if there are any differences between annual level data and acquisition specific data. Since the data sets are from same population I assume there should not be significant differences. Annual level data gives description of acquisition market in Finland as a whole. FFSA (2006) provides pretty similar description but includes smaller sample and thus my data set gives more complete picture. In addition FFSA (2006) use purchase price weighted averages. This study employs equal weights to avoid over-domination of largest acquisition and to describe better an average acquisition.

Altogether € 2.4 billion (representing 44% of total purchase price) has been allocated to goodwill, € 1.4 billion (26%) to intangible assets and € 1.7 billion (30%) to other net assets. Acquisition specific data describes more accurately allocation of an average transaction. Its allocation to intangible assets (22%) is slightly less than using annual level data and allocation to other net assets (33%) slightly higher. Compared to my findings the results of FFSA (2006) show slightly lower allocation to goodwill (41%), larger to other intangibles (28%) and approximately equal to other net assets (30%). The difference is mainly attributable to the weighting difference and can be interpreted so that in larger acquisitions allocation to goodwill is smaller and allocation to other intangibles larger.

Table 5 below shows the accurate results of purchase price allocation analysis using annual level and acquisition specific data. There are some small differences in the two samples. However, using Student's two-tailed t-test to analyze the significance of differences I find that as assumed the differences are insignificant. Therefore either set would be possible for comparison with US results.

Table 5: Average purchase price allocations in Finland 2005

This table shows the allocation of purchase price in acquisitions made by Finnish listed companies in 2005. The purchase price is defined as equity value of the target reported in official financial statements of the acquirer. Annual level data includes data reported by acquirer concerning all the acquisitions made in 2005. Acquisition specific data includes data of specific named acquisitions. T-stat shows wether the difference between annual level data and acquisition specific data is significant. ***, * and * denote statistical significance of difference at 1%, 5% and 10% levels respectively.

	Annual level Mean	Acquisition specific Mean	T-stat
Intangible assets			
Customer related	5.0 %	5.3 %	-0.11
Technology	0.8 %	1.2 %	-0.72
Brands and trademarks	1.3 %	1.2 %	0.09
Supplier contracts, licenses, non-compete agreements	2.1 %	1.2 %	0.53
Other or not classified intangibles	16.8 %	13.2 %	0.76
Intangible assets total	26%	22%	0.76
Goodwill	44%	45%	-0.05
Other net assets	30%	33%	-0.31
Sample size	61 companies	57 acquisitions	
Total purchase price (€ billion)	5.5	4.7	

Intangible assets such as customer relationships, customer contracts, trademarks or technologies are often important drivers of acquisitions. Therefore the quite high allocation to intangibles, 22% to 26%, is not surprise. Slightly surprising is the amount of other or not classified intangible assets. Over half of all recognized intangibles are not specified and fall into this class.

Customer related assets is the largest specified intangible asset class. This finding is interesting and supports H1 stating *"Allocation to customer related assets is larger than to other specific intangible assets"*. The result is in line with PwC (2004a and 2005) studying US acquisitions. However, it contradicts with FFSA (2006) studying similarly Finnish listed companies in 2005 finding that allocation to brands and trademarks is larger than to other specific intangible assets. In their study customer related assets comes second. The main reason for the difference is probably the different weight measurement, and thus it seems that in biggest acquisitions allocation to brands and trademarks is larger whereas allocation to customer related assets is smaller. In addition to alternative calculation methods difference

might be caused by this study's larger sample which represents better all Finnish listed companies.

Reported allocation to customer related assets in Finland is approximately 5%, which means that Finnish listed companies paid last year circa $ 275 million of customer related assets such as customer relationships and customer contracts. The real amount paid of customer related assets can be higher since item *other and not classified intangible assets* can actually include customer related assets, which are just not reported in public financial statements. Also goodwill can still include customer related assets if companies have not been able to assess their value reliably and thus haven't recognized them separately.

Appendix B reports purchase price allocation of enterprise value instead of equity value. It also shows more specific classification of tangible assets. *Property, plant & equipment* is the largest tangible asset with allocation of 16.9% to 20.7%. Inventory is the second largest with 14.2 to 14.9%.

5.1.2 Comparing Finnish data with US data

Table 6 presents the same results from both annual level and acquisition specific data and US 2004 data from PwC (2005) as a comparison. Student's two-tailed t-tests are employed to evaluate significance of differences between Finnish and US allocations. The most interesting facts which are common for both data sets can be stated in two points:

- Allocation to other or not classified intangible assets is bigger than in US
- Allocation to goodwill is smaller than in US

Table 6: Average purchase price allocations in Finland 2005 and US 2004

This table shows allocation of purchase price in acquisitions made by Finnish listed companies in 2005 and US companies in 2004. Purchase price is defined as equity value of target reported in official financial statements of acquirer. Annual level data includes data reported by acquirer concerning all acquisitions made in 2005. Acquisition specific data includes data of specific named acquisitions. US 2004 data is from PwC (2005). T-stat shows wether the difference between Finnish data and US data is significant. ***, * and * denote statistical significance of difference at 1%, 5% and 10% levels respectively. Signs "<" and ">" show whether the allocation of item on average is larger in Finland 2005 or in US 2004.

	Annual level Finland 2005		Acquisition specific Finland 2005			Acquisition specific US 2004
	Mean	T-Stat	Mean	T-Stat		Mean
Intangible assets						
Customer related	5.0 %	-0.7	5.3 %	-0.5	<	6.2 %
Technology	0.8 %	1.0	1.2 % ***	-6.9	<	5.0 %
Brands and trademarks	1.3 %	1.3	1.2 % ***	-5.1	<	4.9 %
Supplier contracts, licenses, non-compete agreements	2.1 %	0.5	1.2 %	-0.2	>/<	1.4 %
Other or not classified intangibles	16.8 % **	3.7	13.2 % **	2.7	>	4.1 %
Intangible assets total	26%	1.1	22%	0.0	>/=	22%
Goodwill	44% *	-1.6	45% *	-1.6	<	56%
Other net assets	30%	1.0	33%	1.4	>	22%
Sample size	61 companies		57 acquisitions			175 acquisitions
Total purchase price (€ billion)	5.5		4.7			n.a.

Allocation to other or not classified intangible assets

Allocation to other or not classified intangible assets is significant. The fact that only a few companies report specific intangibles has already been discussed in chapter 4.4. Further specification is not required if intangible assets are insignificant. However, it is probable that all companies do not yet report intangibles as specifically as they should. This assumption is in line with FFSA (2006) claiming that in some acquisitions not-classified intangible asset class was both in absolute terms and in its relation to purchase price so significant that more specific classification should have been reported.

Overall allocation to intangible assets does not significantly differ between Finland and US. This tells that on average Finnish companies allocate purchase price to intangible assets as much as US companies.

Some differences between specific intangible asset classes exist. It looks like allocation to every class: *Customer related, Technology, Brands and trademarks and Supplier contracts, licenses, non-compete agreements* is smaller in Finnish acquisitions than in US acquisitions. Differences in *Technology* and *Brand and trademarks* are even statistically significant in

acquisition specific data. This can be interpreted so that Finnish companies don't report allocation into these specific intangible asset classes as much in their financial statements as US companies do. However, it doesn't necessarily mean that there are differences in the real allocations since significant amount of intangibles are reported in *Other or not classified intangibles* and we don't know what specific intangibles are include in that class.

Thus although there is evidence of differences in reporting, differences in allocations can not be fully proved since the amount of other or not classified intangible assets is considerable in Finnish acquisitions. It totals 13.2% to 16.8% of purchase price compared to 4.1% in US acquisitions. Therefore the main difference in intangibles' recognition seems to be that Finnish companies don't report specific intangible asset classes as actively as US companies. This can be caused by the fact that the US 2005 data consists of only large acquisitions in which purchase price exceeds $ 250 million whereas my Finnish data includes also smaller and therefore less significant acquisitions. Also the set of US acquisitions in PwC (2005) study is not necessarily representative sample of all large US acquisitions since it may not be collected completely randomly. It is possible that acquisitions without specific purchase price allocation data are intentionally excluded.

Allocation to goodwill and other net assets

Allocation to goodwill is smaller in Finland than it is in US 2004. In Finland the allocation is 44% to 45% whereas in US 2004 it is as high as 56%. Contrary allocation to other net assets is bigger in Finland than it is in US. In Finland the allocation is 30% to 33% whereas in US 2004 it is only 22%.

The differences can be caused by different accounting regulations or by the real difference in goodwill's proportion. US companies must use SFAS 141 and 142 standards in their accounting, which are comparable to IFRS 3. The main differences between the standards are related to definition of business, minority interest and in-process R&D recognition and to impairment testing requirements. However, I assume these differences can not alone explain the difference in initial allocation. Thus I believe that US companies buy more goodwill or decide to allocate more in it. Some possible explanations for this are as follows:

- US companies are able to get more synergies from their acquisitions

- US companies pay more premium for their acquisitions and this premium is initially allocated to goodwill
- US data consists of larger proportion of acquisitions from industries which typically recognize more goodwill such as technology, media and telecom sector.
- US data is from 2004 and Finnish data from 2005. There might be some difference between these years. However, it is hard find reason explaining why in 2005 companies would have allocated significantly less to goodwill than in 2004.

5.1.3. Comparing allocation between different industries

Table 7 below shows purchase price allocations classified by acquirer's industry. The differences of averages between industries are tested with Student's two-tailed t-tests. The table shows which allocations significantly differ from other industries' average allocation.

Table 7: Average purchase price allocations by industry in Finland 2005

This table shows allocation of purchase price in acquisitions made by Finnish listed companies in 2005. Purchase price is defined as equity value of target reported in official financial statements of acquirer. Sample consists of acquisition specific data including data of specific named acquisitions. Annual level data includes data reported by acquirer concerning all acquisitions made in 2005. Acquisitions are classified by acquirer's industry. ***, * and * denote t-test's statistical significance of difference from other indusries' average at 1%, 5% and 10% levels respectively.

	Financial services		Technology, media and telecoms		Consumer and industrial products		Other	
	Acquisition specific	Annual level	Acquisition specific	Annual level	Acquisition specific	Annual level	Acquisition specific	Annual level
Intangible assets								
Customer related	15%	12%	5%	4%	5%	3%	0%**	10%
Technology	3%	3%	1%	1%	1%	1%	0%**	0%**
Brands and trademarks	2%	1%	%	0%	3%	3%	0%	0%
Supplier contracts, licences, non-compete agreements	0%	0%	3%	2%	%	3%	0%	1%
Other not classified intangibles	16%	16%	15%	16%	15%	20%	0%***	11%
Intangible assets total	35%	33%	23%	22%	24%	29%	0%***	22%
Goodwill	35%	29%	58%*	64%**	44%	37%	1%***	22%*
Other net assets	29%	38%	18%*	14%*	33%	34%	99%***	57%
Number of acquisitions (companies)	5	6	23	22	20	25	6	7
Total purchase price (€ billion)	2.0	2.1	1.1	1.5	1.4	1.6	0.2	0.2

Two most important findings are as follows:

1. *Technology, media and telecoms* (TMT) sector allocates more on goodwill than *Financial service*s (FIN) and *Consumer and other industrial products* (CIP).
2. TMT allocates less on other net assets than FIN and CIP.

Both of the above mentioned results are in line with PwC (2005) study of US acquisitions. I also study the statistical significances of differences between specific industry's allocation and other industries' allocations using t-test. TMT's allocation to goodwill was statistically significantly larger than other industries' allocations. This finding supports H2 stating *"Allocation to goodwill is higher if acquirer operates in Technology, Media and Telecoms sector than if it operates in another sector"*. Also allocation to *other net assets* was statistically significantly smaller than other industries' allocations.

Allocation differences in intangible assets are pretty small and statistically insignificant. Therefore I don't find evidence to support H3 stating *"Allocation to intangible assets is higher if acquirer operates in Technology, Media and Telecoms sector than if it operates in another sector"*. It is notable that although insignificantly TMT's allocation to intangible assets is actually the smallest of the three industries. This is in contrast with US evidence of PwC (2005) finding that TMT's allocation is larger than FIN's and CIP's.

Chapter 4.4. told that companies in TMT sector reported most actively specific intangible assets. Therefore it is surprising to notice that this sector seems to allocate the smallest amount of purchase price to intangible assets. Intuitively it would be logical that industry with most importance of intangibles and largest allocation would also report them most specifically. Possibly due to the industry characteristics TMT companies' management feel that future economic benefits from acquired intangibles are too uncertain and therefore their values can not be reliably measured. Consequently TMT companies might not separate all intangibles from goodwill.

TMT also allocates less on other net assets than others on average. The difference is statistically significant at 10% level. The result is logical suggesting that tangible assets are not as important to TMT sector as to others. Intangible resources, which can be included in goodwill or other intangible assets, are more important to technology, media and telecom sector. E.g. employee competence or computer software is usually more important to TMT than to other more capital intensive sectors.

Samples for each industry are pretty small (5 to 25 observations). Therefore the results must be interpreted with caution. They probably don't tell the whole truth and their distribution

may not be close to normal. Especially statistical significances in industry group *Other* can not be generalized, since the group is small, very heterogenic and allocations are not normally distributed.

5.2. Tests for acquirer impact

Industry analysis in previous chapter suggested that TMT sector allocates larger amount of purchase price to goodwill and smaller amount to other net assets. In this chapter I carry out a series of OLS regressions to find more evidence of acquirer's industry's and other characteristics' impact on allocation.

5.2.1. Multicollinearity

Table 8 reports pairwise Pearson correlations between the continuous explanatory variables.

Table 8: Pairwise correlation between continuous explanatory variables

This table presents pairwise Pearson correlations for OLS regression continuous variables. Sample consists of all Finnish listed companies reporting acquisition in 2005. Variables describe acquirers' characteristics. MARKETCAP is 2005 year end market capitalization. LEVERAGE is defined as 2004-2005 year end average of 1-Equity/(Total assets). Profitability is 2005 return on assets. PRICETOBOOK is 2005 year end price to book ratio. R&DTOSALES is defined as 2001-2005 average of R&D expenditure divided by sales. Upper table shows correlations between acquisition specific variables and lower table shows correlation between annual level variables. * denotes statistical significance of the correlation coefficient at 5% significance level.

Acquisition specific variables	MARKTCAP	LEVERAGE	PROFITABILITY	PRICETOBOOK	R&DTOSALES
MARKTCAP	1.00				
LEVERAGE	0.20	1.00			
PROFITABILITY	-0.19	0.07	1.00		
PRICETOBOOK	-0.24	-0.12	-0.25	1.00	
R&DTOSALES	-0.12	-0.35*	-0.15	0.44*	1.00

Annual level varaibles	MARKTCAP	LEVERAGE	PROFITABILITY	PRICETOBOOK	R&DTOSALES
MARKTCAP	1.00				
LEVERAGE	0.21	1.00			
PROFITABILITY	-0.12	0.07	1.00		
PRICETOBOOK	-0.14	-0.06	-0.12	1.00	
R&DTOSALES	-0.15	-0.08	-0.07	0.30*	1.00

Negative correlation between R&DTOSALES and LEVERAGE is statistically significant in acquisition specific data set. This can be interpreted that the more leveraged a company the less it spends on research and development. Further positive correlation between R&DTOSALES and PRICETOBOOK is statistically significant. This seems intuitively logical since companies with active research and development processes should have future growth prospects. To avoid multicollinearity I form the regressions in a way that I don't use significantly correlated explanatory variables in the same model.

5.2.2. Regressions explaining allocation to goodwill

I run 5 regressions with acquisition specific data and another 5 with annual level data to assess factors influencing proportionate allocation to goodwill. Model 1 uses acquisition specific data and correspond to regression 6 which uses annual specific data. Model 2 corresponds to model 7 and so on. To avoid multicollinearity I don't use R&DTOSALES in same model with LEVERAGE or PRICETOBOOK. Companies operating in financial sector are excluded from models 1 to 4 and 6 to 9 since financial sector's financial information has different characteristics. In models 5 and 10 I use companies from every sector but don't use financial characteristic variables.

Regression models give interesting results as table 9 shows. TMT, LEVERAGE and PRICETOBOOK variables get statistically significant coefficients. Goodness of fit is mainly higher in models with LEVERAGE and PRICETOBOOK variables as implied by higher R Square values.

Table 9: Multivariate OLS regression analysis of factors influencing purchase price allocation to goodwill

This table presents results of OLS regression analysis. Sample consists of all Finnish listed companies reporting acquisition in 2005. Dependent variable is defined as proportionate allocation of purchase price to goodwill minus average proportionate allocation of purchase price to goodwill. Explanatory variables describe acquirers' characteristics. MARKETCAP is 2005 year end market capitalization. LEVERAGE is defined as 2004-2005 year end average of 1-Equity/(Total assets). Profitability is 2005 return on assets. PRICETOBOOK is 2005 year end price to book ratio. R&DTOSALES is defined as 2001-2005 average of R&D expenditure divided by sales. Regressions from 1 to 5 are carried out with acquisition specific data and regressions from 6 to 10 with annual level data. T-statistics are presented in parentheses below the estimated coefficients. ***, ** and * denote statistical significance at 1%, 5% and 10% level respectively.

Explanatory Variable	Exp Sign	Acquisition specific data					Annual level data				
		1	2	3	4	5	6	7	8	9	10
TMT	+	0.55		0.67		**0.61** **	0.15		0.45		**0.45** *
		(1.28)		(1.6)		(2.59)	(0.57)		(1.55)		(1.94)
CIP	?	0.36		0.37		0.40	0.17		0.08		0.14
		(0.86)		(0.89)		(1.67)	(0.68)		(0.29)		(0.6)
FIN	?					0.46					0.25
						(1.39)					(0.74)
MARKETCAP	-	0.07	0.06	0.07	0.04		0.03	0.03	0.02	-0.01	
		(1.42)	(1.14)	(1.46)	(0.81)		(0.69)	(0.72)	(0.37)	(-0.14)	
LEVERAGE	+	-0.51	**-0.82** *				**-1.14** **	**-1.16** ***			
		(-0.9)	(-1.69)				(-2.19)	(-2.72)			
PROFITABILITY	-	0.03	-0.27	0.02	0.67		0.03	-0.07	-0.12	-0.24	
		(0.08)	(-1.17)	(0.06)	(-1.63)		(0.12)	(-0.26)	(-0.37)	(-0.82)	
PRICETOBOOK	-	0.01	0.03				**0.15** ***	**0.14** ***			
		(0.14)	(0.6)				(2.88)	(3.1)			
R&DTOSALES	?			-0.43	-0.37				-0.80	0.91	
				(-0.23)	(0.38)				(-0.38)	(0.47)	
CONSTANT		-0.62	0.05	-0.91	-0.17	-0.45	-0.17	0.28	-0.29	0.06	-0.24
		(-0.89)	(0.1)	(-1.58)	(0.53)	(-2.15)	(-0.36)	(0.7)	(-0.7)	(0.17)	(-1.21)
N		53	53	53	53	57	57	57	57	57	61
R Square		0.19	0.15	0.18	0.09	0.13	0.27	0.26	0.10	0.02	0.09
F-value		1.57	1.90	1.75	1.42	**2.32***	**2.77****	**4.17*****	1.03	0.32	1.74

TMT dummy gets significantly positive value in regressions 5 and 10 which have only industry dummies as explanatory variables. It gets also positive but insignificant values in other regressions. The positive coefficient suggests that companies in technology media and telecoms sector allocate purchase price more to goodwill than average company. Reason for this can be that TMT companies get more synergy benefits from their acquisitions or pay higher premium for purchase. Also intuitively it seems probable that employees are more important asset to TMT companies than to average company. Since employees' competence can not usually be recognized as an asset it belongs to goodwill. TMT dummy's positive value is in line with H2 stating *"Allocation to goodwill is higher if acquirer operates in Technology, Media and Telecoms sector than if it operates in another sector"* and with US findings by PwC (2005). The result is also consistent with findings described in previous chapter.

Coefficients of other industry dummies do not significantly differ from zero. Therefore I find no evidence that industries CIP or FIN have impact on purchase price allocation to goodwill. The result is not surprising after the results of previous chapter. However, all industry dummies are positive in every model. This gives modest evidence that companies in other industries than TMT, CIP or FIN allocate considerably less to goodwill.

Unlike hypothesized LEVERAGE variable has significantly negative value in models 2, 6 and 7 and also negative although insignificant in model 1. This result gives support opposite to H6 stating "*The more leveraged the acquirer the larger the allocation to goodwill*". Thus the higher the leverage and the closer the debt covenants the smaller part of purchase price companies seem to allocate to goodwill. It is possible that allocating to goodwill instead of other intangibles doesn't actually shift future earnings to current period as I assumed and thus theories explaining leverage's impact on earnings management can not be applied here. However, as discussed evidence of leverage's impact on goodwill accounting is contradictory and e.g. a fresh study Astami, Hartadi, and Tower (2006) finds also evidence opposite to covenant closeness theory.

Probable explanation for negative relation between leverage and goodwill allocation could be that balance sheet based debt covenants are often in form of net-tangible-asset-covenants and thus don't take into account goodwill or other intangible assets. In this case management of leveraged firm would have an incentive to allocate purchase price more to tangible assets (here: to *other net assets*) than to goodwill or other intangibles. Alternatively if management has not enough power to influence allocation decision as such it can choose to acquire only companies with high level of tangible assets. Examining this further would require more complete analysis of target's characteristics and acquirer's debt covenants.

PRICETOBOOK variable is used as a proxy for acquirer's growth prospects. It gets positive value at 1% significance level in models 6 and 7. It gets also positive although insignificant values in other models. The result suggests that the more growth prospects the larger the allocation to goodwill. This is opposite to H8 stating "*The more growth prospect acquirer has the smaller the allocation to goodwill*". The hypothesis was based on three theories, signaling, auditor's liability reduction and the nature of growth firms' goodwill. The signaling theory can be also used in opposite way. If company recognizes large goodwill it might signal to investors that the company's management really believes its opportunities to benefit from

the acquisition in the future. According to Ojala (2001) goodwill of growth firms is assumed to have short lifetime. However, the theory actually doesn't tell anything about the initial allocation. Thus the finding is not directly contradictory to the theories.

Assuming companies with high growth prospects tend to buy other growth companies a reason for PRICETOBOOK coefficient's positive value can be that growth industries are often unconsolidated and thus there can be significant potential for synergies through consolidation. In acquisitions these synergies can be capitalized and recognized as goodwill. Also it is probable that all target's growth prospects are not valued in fair values of other assets. Therefore they might be left to goodwill.

Other explanatory variables MARKETCAP, PROFITABILITY or R&D to sales don't significantly differ from zero in any regression model.

MARKETCAP as a proxy of size has various insignificant values both positive and negative in the regression models. Thus I don't get evidence to support H5 stating "*The larger the acquirer the smaller the allocation to goodwill*". The finding is in line with Ojala (2001) and Grönlund (2004) studying Finnish companies' goodwill amortization period. They do not find evidence for political cost hypothesis either. My belief is that market capitalization is a good proxy for size and political costs since it has been used in this function in several studies earlier. I also carry out regressions with sales and total assets as a proxy of size but don't find significantly differing results that way. Therefore it seems that either large companies don't try to avoid political costs by shifting earnings to future or they can't shift earnings by allocating less to goodwill.

PROFITABILITY variable also has mixed positive and negative values and none of them is statistically significant. Hence the tests don't give evidence to support H7 stating "*The more profitable the acquirer the smaller the allocation to goodwill*". This finding is not especially surprising since theories concerning profitability's impact on earnings management are contradictory or at least complicated. Earnings smoothing theory suggests companies aim to shift earnings from very profitable years to less profitable (Gaver, Gaver, and Austin 1995) whereas big bath theory suggests that companies with unusually high earnings are more likely to report extraordinary gains and companies with low profit extraordinary losses (Sevin and Schroeder 2005, Kirshenheiter and Melumad 2002, Walsh, Craig, and Clarke 1991).

According to Kirschenheiter and Melumad (2002) both theories can co-exist in certain scale. I assume my PROFITABILITY variable defined as return on assets is not able to fully capture the essence of both phenomena.

In addition I use R&DTOSALES variable to examine possible impact of R&D activity on goodwill allocation. Variable gets positive and negative values and none of them is statistically significant. This finding is not especially surprising.

5.2.3. Regressions explaining allocation to other intangible assets

To explain allocation to other intangible assets I carry out similar regression models as for goodwill. The purpose is to find more factors explaining allocation decision. Regression analysis results are presented in table 10. TMT, CIP and R&DTOSALES variables get statistically significant coefficients. Unlike in explaining allocation to goodwill goodness of fit is mainly higher in models with R&DTOSALES variable and without LEVERAGE and PRICETOBOOK variables. Therefore it seems that allocation to goodwill and other intangible assets can not be well explained with same financial characteristics. Thus I get no support to the assumption that allocation decision is a tradeoff between goodwill and other intangibles.

Table 10: Multivariate OLS regression analysis of factors influencing purchase price allocation to other intangible assets

This table presents results of OLS regression analysis. Sample consists of all Finnish listed companies reporting acquisition in 2005. Dependent variable is defined as proportionate allocation of purchase price to other intangible assets minus average proportionate allocation of purchase price to other intangible assets. Explanatory variables describe acquirers' characteristics. MARKETCAP is 2005 year end market capitalization. LEVERAGE is defined as 2004-2005 year end average of 1-Equity/(Total assets). Profitability is 2005 return on assets. PRICETOBOOK is 2005 year end price to book ratio. R&DTOSALES is defined as 2001-2005 average of R&D expenditure divided by sales. Regressions from 1 to 5 are carried out with acquisition specific data and regressions from 6 to 10 with annual level data. T-statistics are presented in parentheses below the estimated coefficients. ***, ** and * denote statistical significance at 1%, 5% and 10% level respectively.

Explanatory Variable	Exp Sign	Acquisition specific data					Annual level data				
		1	2	3	4	5	6	7	8	9	10
TMT	+	0.23		0.12		**0.25** *	0.06		-0.06		0.07
		(1.02)		(0.57)		(1.97)	(0.45)		(-0.43)		(0.56)
CIP	?	0.18		0.15		**0.23** *	0.03		0.02		0.11
		(0,83)		(0.74)		(1.8)	(0.25)		(0.12)		(1.00)
FIN	?					0.27					0.15
						(1.52)					(0.84)
MARKETCAP	+	0.01	0.01	0.01	0.01		0.03	0.02	0.03	0.03	
		(0.46)	(0.27)	(0.51)	(0.55)		(1.07)	(1.05)	(1.19)	(1.48)	
LEVERAGE	-	0.16	0.07				0.27	0.22			
		(0.54)	(0.27)				(1.00)	(0.98)			
PROFITABILITY	+	-0.05	-0.19	-0.06	-0.16		-0.15	-0.18	-0.16	-0.15	
		(-0.25)	(-1.59)	(-0.33)	(-1.49)		(-0.99)	(-1.31)	(-1.06)	(-1.2)	
PRICETOBOOK	+	0.01	0.01				0.01	0.01			
		(0.21)	(0.48)				(0.38)	(0.53)			
R&DTOSALES	+			**2.15** **	**2.13** **				**1.79** *	**1.50** *	
				(2.47)	(2.61)				(1.86)	(1.73)	
CONSTANT		-0.35	-0.07	-0.23	-0.09	-0.21	-0.34	-0.27	-0.17	-0.21	-0.08
		(-0.97)	(-0.32)	(-0.84)	(-0.62)	(-1.91)	(-1.39)	(-1.45)	(-0.91)	(-1.43)	(-0.83)
N		53	53	53	53	57	57	57	57	57	61
R Square		0.10	0.08	0.21	0.20	0.08	0.10	0.10	0.14	0.13	0.02
F-value		0.78	0.93	**2.22***	**3.61****	1.41	0.85	1.26	1.47	**2.30***	0.42

TMT dummy gets mixed results. Most models give positive but model 8 gives negative value. Only statistically significant value at 10% level is positive in model 5. Positive coefficient suggests that companies in technology media and telecoms sector allocate purchase price more to other intangible assets than average company. This is in line with US findings by PwC (2005) and can be caused by importance of technologies, software, licenses and patents to TMT companies.

CIP dummy has similarly significantly positive value at 10% level in model 5. It has also positive but insignificant value in other models. Thus the evidence is weak but positive values suggest that companies in other consumer and industrial products sector allocate more on other intangible assets than average company. Also FIN has positive but insignificant values. The most important reason for this seems to be that companies in other industry than TMT,

CIP or FIN allocate very small amount of purchase price to intangible assets. The same finding was already presented in table 7.

R&DTOSALES is the only explanatory variable which is statistically significant at least at 10% level in every model in which it is employed. This means that the larger the R&D to sales ratio the larger the allocation to other intangible assets. I.e. companies with high research and development activity recognize more intangible assets in acquisitions than companies with low R&D activity. This finding supports H4 stating "*The more R&D activity acquirer has the larger the allocation to intangible assets*". Often an intangible asset is a result of R&D project. It is probable that companies with high R&D activity tend to buy other similar companies with already developed intangible assets.

None of the variables MERKETCAP, LEVERAGE, PROFITABILITY or PRICETOBOOK has statistically significant coefficient. These variables are employed to examine reasons for management's allocation decision. Thus it seems that allocation is not simply tradeoff decision between goodwill and other intangible assets. Either the allocation decision can not be used as earnings management tool in this way or management just doesn't use the opportunity.

5.2.4. Regressions explaining allocation to other net assets

In addition I run the same regression models for allocation to other net assets. As mentioned other net assets denote tangible assets deducted by debt. Thus I am able to analyze if company characteristics also have an impact on tangibles. Table 11 shows that coefficients of TMT, CIP, FIN, LEVERAGE, PROFITABILITY and PRICETOBOOK have statistically significant values in some of the models. Goodness of fit measured by R Square is mainly higher in models using acquisition specific data. Also F-values of models 1 to 7 are statistically significant. This suggests that there is relation between explanatory variables and allocation to other net assets.

Table 11: Multivariate OLS regression analysis of factors influencing purchase price allocation to other net assets

This table presents results of OLS regression analysis. Sample consists of all Finnish listed companies reporting acquisition in 2005. Dependent variable is defined as proportionate allocation of purchase price to other net assets minus average proportionate allocation of purchase price to other net assets. Explanatory variables describe acquirers' characteristics. MARKETCAP is 2005 year end market capitalization. LEVERAGE is defined as 2004-2005 year end average of 1-Equity/(Total assets). Profitability is 2005 return on assets. PRICETOBOOK is 2005 year end price to book ratio. R&DTOSALES is defined as 2001-2005 average of R&D expenditure divided by sales. Regressions from 1 to 5 are carried out with acquisition specific data and regressions from 6 to 10 with annual level data. T-statistics are presented in parentheses below the estimated coefficients. ***, ** and * denote statistical significance at 1%, 5% and 10% level respectively.

Explanatory Variable	Exp Sign	Acquisition specific data					Annual level data				
		1	2	3	4	5	6	7	8	9	10
TMT	?	**-0.78** *		**-0.79** *		**-0.86** ***	-0.22		-0.39		**-0.52** **
		(-1.7)		(-1.8)		(-3.38)	(-0.74)		(-1.27)		(-2.04)
CIP	?	-0.53		-0.51		**-0.64** ***	-0.20		-0.10		-0.25
		(-1.22)		(-1.19)		(-2.45)	(-0.74)		(-0.32)		(-1.02)
FIN	?					**-0.73** **					-0.40
						(-2.05)					(-1.07)
MARKETCAP	?	-0.08	-0.06	-0.08	-0.05		-0.06	-0.06	-0.05	-0.03	
		(-1.56)	(-1.19)	(-1.63)	(-1.02)		(-1.15)	(-1.16)	(-0.86)	(-0.49)	
LEVERAGE	?	0.35	0.75				0.87	**0.95** **			
		(0.58)	(1.44)				(1.55)	(2.03)			
PROFITABILITY	?	0.02	**0.46** *	0.04	**0.53** **		0.12	0.24	0.28	0.39	
		(0.05)	(1.84)	(0.09)	(2.22)		(0.37)	(0.86)	(0.81)	(1.28)	
PRICETOBOOK	?	-0.01	-0.05				**-0.16** ***	**-0.16** ***			
		(-0.23)	(-0.78)				(-2.84)	(-3.11)			
R&DTOSALES	?			-1.73	-2.81				-0.99	-2.41	
				(-0.91)	(-1.51)				(-0.44)	(-1.17)	
CONSTANT		0.96	0.03	1.13	0.27	0.67	0.52	0.28	0.46	0.15	0.32
		(1.32)	(0.06)	(1.9)	(0.78)	(2.95)	(0.99)	(0.7)	(1.04)	(0.44)	(1.5)
N		53	53	53	53	57	57	57	57	57	61
R Square		0.26	0.20	0.27	0.19	0.20	0.26	0.25	0.12	0.07	0.08
F-value		**2.32***	**2.62****	**2.97****	**3.37****	**3.86****	**2.62****	**3.88*****	1.23	1.19	1.58

All industry dummies TMT, CIP and FIN get significantly negative coefficients in model 5. This suggests that companies in these industries allocate less to other net assets than companies on average. I.e. companies in other industries than in TMT, CIP or FIN allocate more than average. This finding is in line with previously presented results in table 7. Using acquisition specific data companies in other industries allocated as much as 99% of purchase price to other net assets on average. However, this has to be interpreted with caution. The main reason for this statistical finding is most probably the small sample size (6) of companies in other industries than TMT, CIP or FIN. The industry dummies tell mainly that companies in TMT sector allocate less than average to tangible assets. This is logical since the same companies allocate more than average to goodwill and other intangibles.

In model 7 LEVERAGE has positive coefficient, which is statistically significant at 5% level. In other models the coefficient is also positive although insignificant i.e. the larger the leverage the larger the allocation to other net assets. Similar coefficients were negative in models explaining allocation to goodwill. Thus it seems the higher the leverage the more company allocates to net tangible assets instead of goodwill. This finding supports the idea that leveraged companies have net-tangible-asset covenants in debt contracts and thus try to avoid default of covenants by allocating purchase price to tangible assets (here: to *other net assets*). Consequently either management can actually impact the allocation to tangible assets or at least it can decide what kind of firms to acquire.

PRICETOBOOK coefficient has significantly negative value at 1% level in models 6 and 7. It has significantly positive value in same models explaining allocation to goodwill. Thus growth companies allocate purchase price to goodwill instead of tangible assets. As suggested earlier this can be due to that growth industries are often unconsolidated and there might be more potential for synergies through consolidation. Acquirer pays for these synergies and recognizes them as goodwill. Also assuming growth companies acquire mainly other growth companies they have to pay for the growth prospects. Growth prospects are not likely to be generated by tangible assets as much but by intangible resources. Thus growth prospects are mainly included in values of goodwill and other intangible assets instead of values of tangible assets.

As discussed earlier I do not find support that PROFITABILITY has an impact on allocation to goodwill or other intangible assets. However, it gets significantly positive coefficient in models 2 and 4 explaining allocation to other net assets. Therefore it seems that the more profitable year an acquirer had in 2005 the more it allocated to tangible assets. The models 2 and 4 don't include industry dummies. Thus the reason can be in industry characteristics. There might be more value companies in classical industries. These value companies can be more profitable and more dependent on tangible assets than companies in e.g. TMT industry.

MARKETCAP and R&DTOSALES coefficients don't significantly differ from zero. Similarly I do not find impact of size or R&D activity on allocation to goodwill. All in all pretty same variables explain both allocation to *goodwill* and allocation to *other net assets*. Therefore the allocation seems to be more a tradeoff between these two items than tradeoff between *goodwill* and *other intangible assets*.

5.3. Conclusion of hypotheses results

Table 12 presents results to my hypotheses. To conclude I find support that allocation to customer related assets is larger on average than to other specific intangibles in Finland. Tests also give support that allocation to goodwill is larger if acquirer operates in TMT sector but don't give support to that allocation to other intangible assets is larger then as well. Additionally I find positive relation between acquirer's R&D activity and allocation to intangible assets.

Table 12: Hypotheses results

This table presents conclusion of evidence for hypotheses. 'Support' denotes that I find support to the hypothesis; 'No support' denotes that I don't find support to the hypothesis and 'Opposite support' denotes that I find evidence opposite to the hypothesis.

H1	Allocation to customer related assets is larger than to other specific intangible assets	Support	Table 4
H2	Allocation to goodwill is higher if acquirer operates in Technology, Media and Telecoms sector than if it operates in another sector	Support	Table 6
H3	Allocation to intangible assets is higher if acquirer operates in Technology, Media and Telecoms sector than if it operates in another sector	No support	Table 6
H4	The more R&D activity acquirer has the larger the allocation to intangible assets	Support	Table 9
H5	The larger the acquirer the smaller the allocation to goodwill	No support	Table 8
H6	The more leveraged the acquirer the larger the allocation to goodwill	Opposite support	Table 8
H7	The more profitable the acquirer the smaller the allocation to goodwill	No support	Table 8
H8	The more growth prospect acquirer has the smaller the allocation to goodwill	Opposite support	Table 8

The study aims to add knowledge for current earnings management literature by examining a new possible way of moving earnings from one period to another. The tests don't provide support to my assumption that management increases current reported earnings and assets in certain situations by allocating purchase price more to goodwill instead of other intangible assets. Thus I don't find expected evidence for hypotheses H5 to H8. However, I find that leverage has negative relation with goodwill and positive relation with other net assets. The result is in line with current covenant theories suggesting that more leveraged firms have more net-tangible-asset covenants. It is logical that these firms aim to keep their tangible asset level sufficient by allocating more purchase price to tangibles. Nevertheless, this isn't

necessarily evidence for manipulation of allocation decision but may just show that more leveraged companies tend to acquire firms with higher tangible asset levels.

Also I get support that growth prospects have positive relation with goodwill and negative relation with other net assets. Therefore allocation decision is more likely a tradeoff between goodwill and tangible assets than between goodwill and other intangible assets. To understand the drivers of this tradeoff the characteristics of target should be analyzed as well.

5.4. Survey

Summary of results for the survey questions are presented in Appendix E. In this chapter I analyze results of the survey more thoroughly. First I shortly discuss about potential selection bias of the survey.

5.4.1. Respondents and selection bias

I sent the survey to 134 companies, primarily to CFOs and if I couldn't find contact information then to CEOs. For two companies[3] I was not able to find email address of either CFO or CEO and they were therefore excluded. Altogether 29 companies answered to the survey. Thus response rate is 22%, which is satisfactory. List of answered companies is in Appendix D. Concerning the sample there are two major risks that might affect the reliability of the results.

1. Self-selection bias – sample may not represent the population
2. Answer bias – answers may not represent the real opinions of respondents

Self-selection bias

There is a risk of self-selection bias in the survey. Answering to the survey is voluntary and thus respondents may not represent the whole population i.e. all Finnish listed companies. Ideally the respondents should be similar to the population but in reality there can be systematic or unsystematic difference between the sample and the population. For example it is possible that people with strong opinions or knowledge of IFRS 3 are more willing to

[3] SSK Suomen säästäjien kiinteistöt and Nordea Bank

answer the survey and thus results may show overweight in extreme answers. Alternatively it is possible that people frustrated to IFRS 3 are unwilling to answer the survey since they find it unpleasant and thus result would be over positive or in contrary only people with negative experience may answer since they are willing to complain. Consequently it is hard to estimate how the results are biased. The following describes some easily measurable characteristics of respondents' companies and analyzes the possible impacts on results.

Table 13 summarizes characteristics of companies which answered to the survey and shows as a comparison the same characteristics for all Finnish listed companies. The proportion of large companies (market capitalization over € 1 000 million) is 31% in answering companies but only 22% in all listed companies. Then again the proportion of companies with market cap from € 150 million to €1 000 million is larger in all listed companies. IFRS 3 can cause less trouble to large companies, since it is relatively less expensive for them to adopt the new reporting requirements. Thus the overweight of large companies can make survey's results slightly over positive.

Table 13: Characteristics of companies answered to the survey vs. all listed companies

This table shows characteristics of companies answered to the survey and all Finnish listed companies. Market Cap is defined as market capitalization at 13 December 2006. TMT stands for technology, media and telecoms sector, CIP for other consumer and industrial products and FIN for financial secrtor. Class "Other" includes companies in other industries.

		Companies answered	All listed companies
Market Cap € million	< 30	21%	22%
	30-150	28%	28%
	150-1000	21%	28%
	> 1000	31%	22%
Industry	TMT	48%	37%
	CIP	41%	37%
	FIN	7%	11%
	Other	3%	14%
Reports acquisitions in 2005		48%	49%
n		29	136

The sample also overweighs TMT and CIP. Companies in these sectors recognized less intangibles and more goodwill in acquisitions as table 7 earlier shows. Thus it is possible that respondents are more familiar with goodwill than with other intangible assets. This can influence answers but probably insignificantly. However, the proportion of companies reporting acquisitions in 2005 is virtually same in the sample as in the population.

All in all I believe the self-selection bias is insignificant and the sample represents in a satisfactory manner Finnish listed companies. However, results has to be interpreted carefully since the sample represents only 21% of Finnish listed companies and the answers reflect respondents' personal opinions. In addition results are not to be directly interpreted to apply in other countries than Finland.

Answer bias

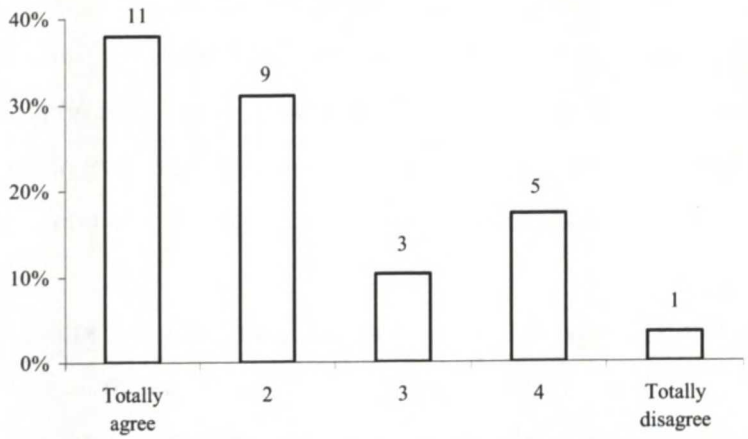
In addition answers may be biased since respondents may not give answers that really represent their opinions. Respondents can answer dishonestly or carelessly. To avoid answer bias I try to make the answering as easy as possible by forming multiple choice questions. In addition I try to be totally objective so that respondents wouldn't feel that any specific answer is better or more desired than others. Since I promise not to report any specific respondent's answers but to report the results only in overall level respondents can stay anonymous and thus answer more freely. Consequently I try to avoid answer bias but it is difficult or impossible to measure how it really affects. All in all I assume that the survey's results are not significantly affected by answer bias.

Next chapters discuss about the results of the survey.

5.4.2. General statements

First 9 questions are in form of statements and study general opinions and attitudes towards adoption of IFRS 3.

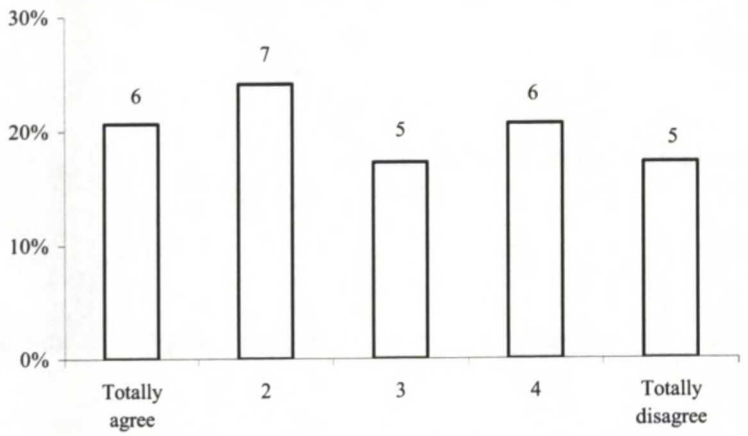
Figure 1: Question 1 - It is reasonable to separate intangible assets from goodwill



The question was sent to Finnish listed companies. Respondents were asked to comment the statement in scale of 1 to 5. 1 means "Totally agree" and 5 means "Totally disagree". Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

Question 1 shows that majority of respondents think that it is reasonable to separate intangible assets from goodwill. Thus IFRS 3 in principle gives desired reform to accounting procedures. However, some opposing respondents comment that separation is not necessary since intangibles' value could be tested as part of goodwill anyway if their lifetime wasn't reliably determined.

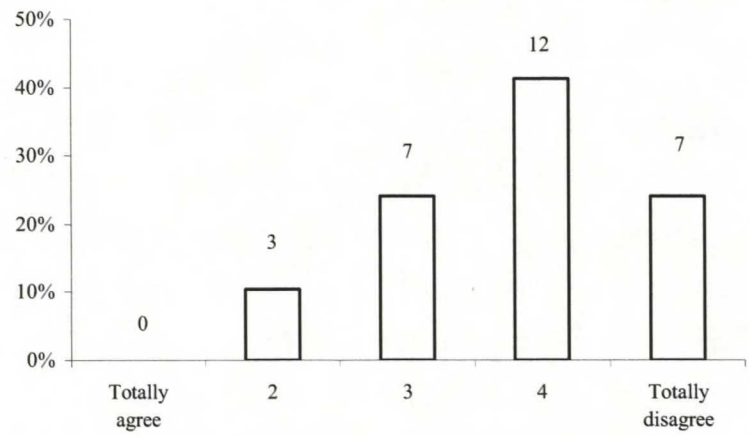
Figure 2: Question 2 - Goodwill amortization should still be an alternative to impairment



The question was sent to Finnish listed companies. Respondents were asked to comment the statement in scale of 1 to 5. 1 means "Totally agree" and 5 means "Totally disagree". Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

IFRS 3 prohibits goodwill amortization opportunity. Instead it makes goodwill impairment testing compulsory. This has been criticized and as can be seen from figure 2 this reform divides opinions. Approximately as many respondents agrees and disagrees with statement that amortization should still be an alternative to impairment. Respondents criticize amortization since it gives too much freedom to choose the lifetime for goodwill. Mechanic amortization wouldn't give correct view of goodwill. On the other hand some respondents argue that impairment testing requires too much subjective opinions and is thus unreliable procedure. Some respondents think that it is most important to have same procedure for every company whether it is amortization or impairment since if companies could choose their procedure comparison between companies would be more difficult.

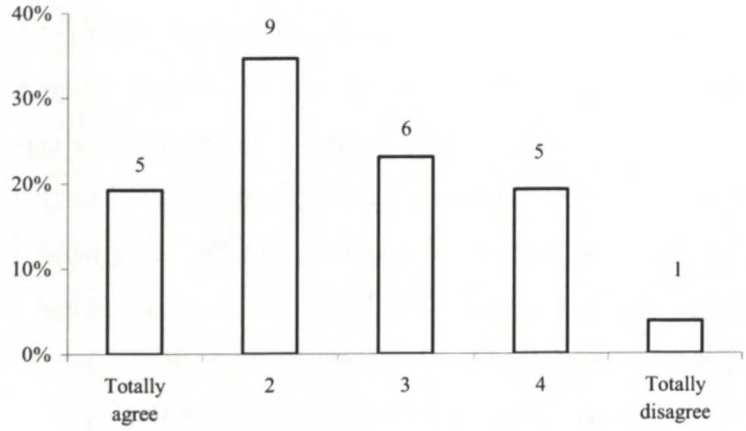
Figure 3: Question 3 - Intangible asset values can be usually reliably determined



The question was sent to Finnish listed companies. Respondents were asked to comment the statement in scale of 1 to 5. 1 means "Totally agree" and 5 means "Totally disagree". Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

As discussed earlier fair value requirement makes intangible asset valuation dependent on subjective judgment in certain level. As can be seen in figure 3 no respondent totally agrees with the statement that intangible asset values can be usually reliably determined. Majority of the respondents disagree with this statement. Some comment that valuation calculations can give any desired result since assumptions has critical role in valuation.

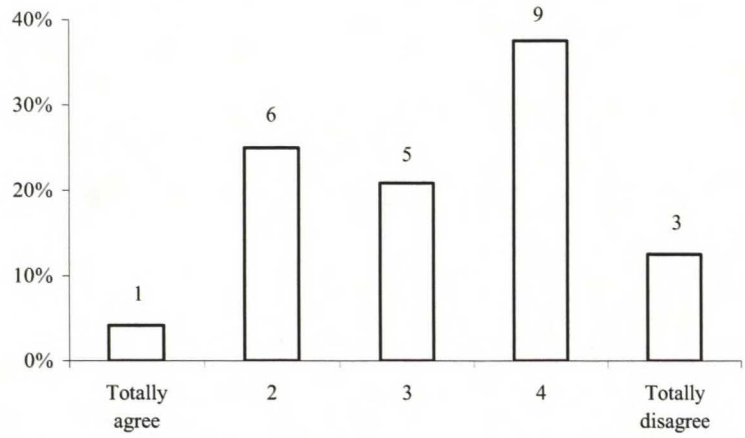
Figure 4: Question 4 - It is justified that most intangibles cannot be recognized as assets if they are internally created although they have to be if they are bought outside



The question was sent to Finnish listed companies. Respondents were asked to comment the statement in scale of 1 to 5. 1 means "Totally agree" and 5 means "Totally disagree". Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

IFRS 3 requires recognition of intangible assets in business combinations but current accounting regulations still forbid recognition of most internally created intangible assets. This contradictory situation has been criticized since it makes comparison between organically growing companies and companies expanding through acquisitions more difficult. The current system divides opinions as figure 4 shows. Slight majority agrees that it is justified that most intangibles cannot be recognized as assets if they are internally created although they have to be if they are bought outside. Some respondents thought that financial statements should include as little as possible assumptions and mainly concrete facts. Therefore internally generated intangibles should not be recognized as assets. Then again some respondents think that there is no logic in the current contradictory situation.

Figure 5: Question 5 - The benefits of adopting IFRS 3 are greater than the troubles it creates



The question was sent to Finnish listed companies. Respondents were asked to comment the statement in scale of 1 to 5. 1 means "Totally agree" and 5 means "Totally disagree". Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

Question 5 assessing general attitude towards IFRS 3 also divide opinions. Adoption of the standard requires additional work from companies and studying from investors. Slight majority of respondents disagrees that the benefits of adopting IFRS 3 are greater than the troubles it creates. One respondent says it is debatable what these benefits actually are.

Figure 6: Question 6 - Investors get now better information of goodwill as they did before adoption of IFRS 3

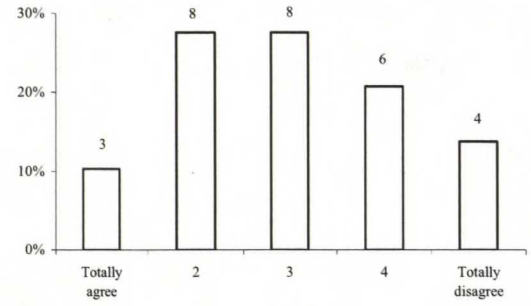
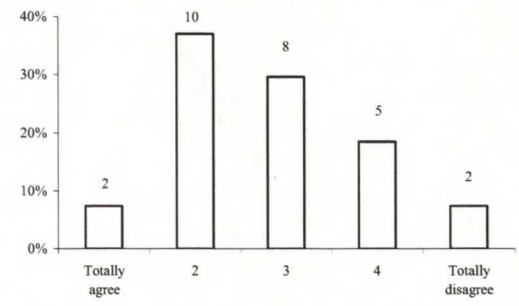


Figure 7: Question 6 - Investors get now better information of goodwill as they did before adoption of IFRS 3

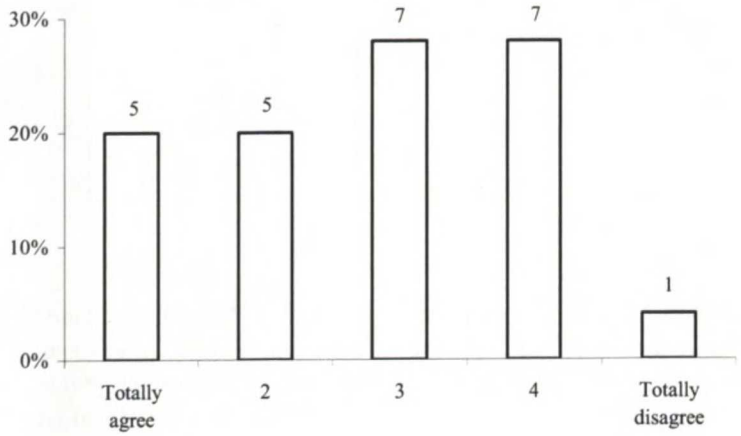


The questions were sent to Finnish listed companies. Respondents were asked to comment the statements in scale of 1 to 5. 1 means "Totally agree" and 5 means "Totally disagree". Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

Opinions of statements 6 and 7 are diverse. Some think investors get now after adoption of IFRS 3 better information of goodwill and other intangible assets. Some disagree commenting that information and valuations are only views of management and don't provide more precise information. One respondent comment that investors get now more information

concerning goodwill but the info should be presented in a better way to really improve its quality.

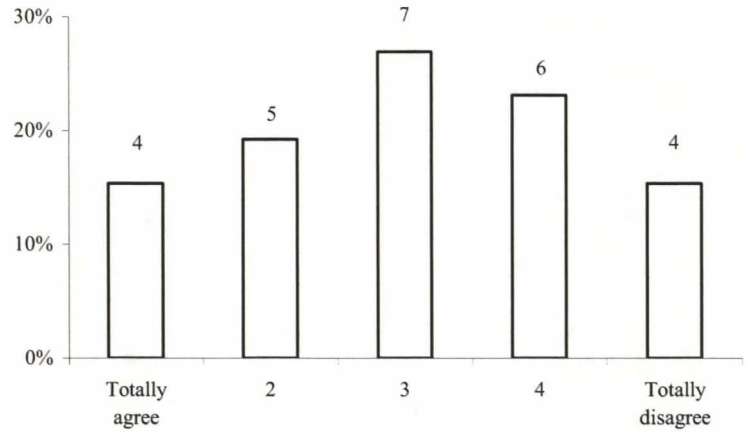
Figure 8: Question 8 - IFRS 3 does not harm investors.



The question was sent to Finnish listed companies. Respondents were asked to comment the statement in scale of 1 to 5. 1 means "Totally agree" and 5 means "Totally disagree". Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

Answers to question 8 are also varying. There is no consensus among respondents about whether or not adoption of IFRS 3 harms investors. If investors want to benefit from the new standard they have to put effort for understanding it. In addition some respondent believe that optimistic management might avoid impairments and thus balance sheet can include worthless assets. Consequently investors might get incorrect information and comparison between companies gets more difficult.

Figure 9: Question 9 - Valuation of intangible assets is usually made only for accounting purposes but does not impact on acquisition purchase price



The question was sent to Finnish listed companies. Respondents were asked to comment the statement in scale of 1 to 5. 1 means "Totally agree" and 5 means "Totally disagree". Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

According to question 9 approximately 40% disagrees at least slightly that intangibles are valued usually only for accounting purposes and the valuation does not have an impact on purchase price. The finding is very interesting. It means that many companies believe intangible asset valuation influences purchase price. Thus allocation reporting provides relevant information for investors about capital markets, which was one of the standards initial objectives. To support this one respondent comments that valuation of intangibles should not be only an accounting procedure since acquirer should know what it buys and what it is paying for. In contrary another respondent comments that purchase price is usually defined by comparable multiples and eventually decided in negotiations. Therefore valuation of intangibles doesn't have important role in price decision. All in all opinions vary but there is evidence of information relevance of the new reporting standard.

5.4.3. Company value and acquisition activity

Figures 10 and 11 summarize the answers for questions 10 and 11. Virtually every respondent believes that IFRS 3 has no impact on his/her company's valuation or acquisition activity. This is mainly justified by the fact that the standard should not have any impact on generated cash flows. It is also possible that the impact on reported profits is insignificant and thus don't have an influence. Only one respondent think IFRS 3 could decrease company valuation since

it decreases the reported earnings which is often in investors' focus. As discussed, goodwill amortization period before IFRS 3 was often long. Now large part of the goodwill is allocated to other intangible assets, which are amortized in shorter time period. Thus IFRS 3 can decrease accounting earnings for many companies.

Figure 10: Question 10 - How do you think IFRS 3 impacts on your company's market value?

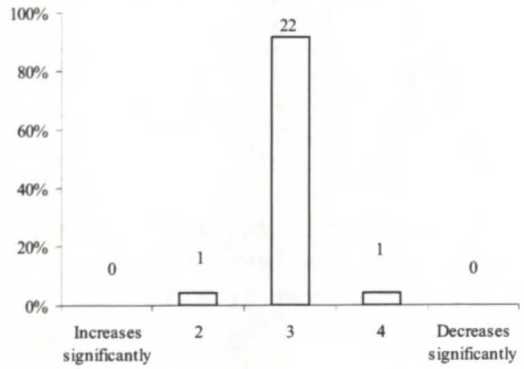
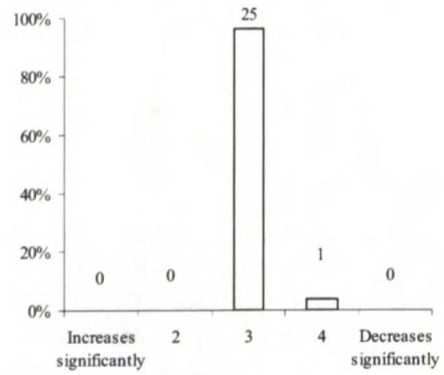


Figure 11: Question 11 - How do you think IFRS 3 impacts on the number of acquisitions made by your company?

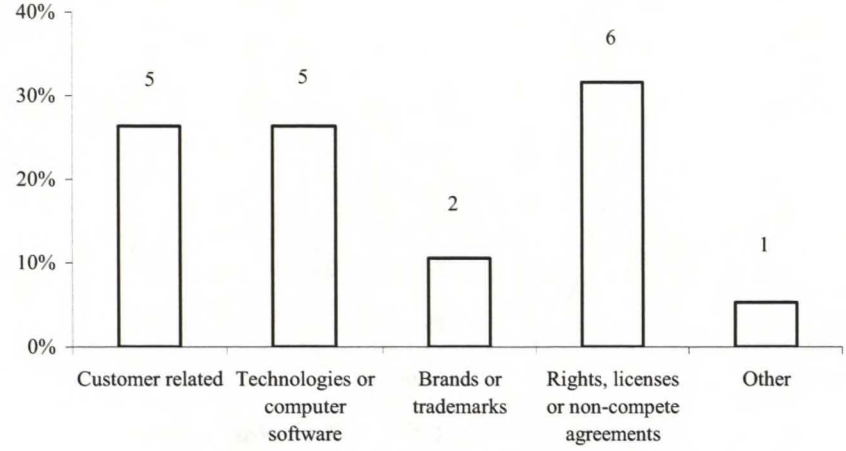


The questions were sent to Finnish listed companies. Respondents were asked to answer the questions in scale of 1 to 5. 1 means "Increases significantly" and 5 means "Decreases significantly". Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

5.4.4. Valuation of intangible assets

Figure 12 presents the results for question 12 assessing, which intangible asset class is easiest to value. Answers vary a lot and differences are pretty small. All in all *rights, licenses or non-compete agreements*, *customer related* assets and *technologies or computer software* are most often thought as easiest intangibles to value. Valuation of customer related assets is felt easy when customer relationships are long and stable. However, ease of valuation is company and asset specific. For example same company can have licenses which are relatively easy to value and non-compete agreements which are difficult to value.

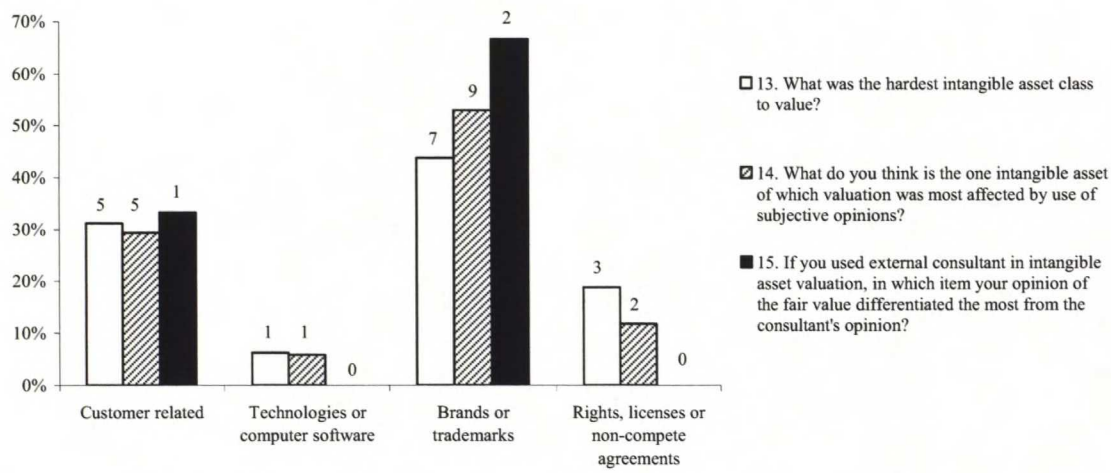
Figure 12: Question 12 - What was the easiest intangible asset class to value?



The question was sent to Finnish listed companies. Respondents were asked to answer the question with one intangible asset class. Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

Questions 13 to 15 assess which intangible asset class companies feel most difficult to value and which assets require most subjective opinions and create greatest opinion difference with external consultant of the fair value. Figure 13 summarizes the results. Since the number of answers is quite small, 16, 17 and 3, results must be interpreted carefully. However, the finding supports that valuation of *brands and trademarks* is usually most challenging. It is seen as the hardest intangible asset to value and it is most affected by subjective opinions.

Figure 13: Most challenging intangible assets to value



The questions were sent to Finnish listed companies. Respondents were asked to answer the questions with one intangible asset class. Vertical axis shows the proportion of respondents giving a certain answer. The figure on top of a column represents the absolute number of respondents giving a certain answer.

Table 14 shows results for questions 16 to 20. Number of respondents answered in these questions is pretty low and no clear consensus can be seen from the answers. Therefore interpretations must be made carefully. However, interesting point is that every valuation technique presented in chapter 2.7. is considered as the most important valuation method in some intangible asset in someone's answer.

Also interesting finding is that income approach methods overall have been most important valuation methods in customer related assets and brand and trademarks. Only one of 15 respondents sees cost approach as most important method to value customer related and none of the respondents sees it as most important method to value brands and trademarks. The finding suggests that the fair value of customer relationships or brands can not be reliably measured by costs but valuation requires forecasting future cash flows. Thus it is subject to management's beliefs. This is in line with question 14 showing that valuation of these assets is most influenced by subjective opinions.

Then again cost approach has been the most used method in technology and computer software valuation. This suggests that there are not often active markets for these assets and forecasting of their future cash flows is too difficult. Therefore replacement cost may be only justifiable value estimation.

Table 14: Summary of answers to enquiry questions 16 - 20

This table presents summary of answers. Respondents were asked to consider the latest acquisition made by his/her company in which IFRS 3 was applied and to choose one intangible asset valuation technique as an answer. N denotes number of respondents answered to the question. "Can't tell" answers and empty answers are excluded.

Intangible asset valuation methods	Market approach 1	Cost approach 2	Direct cash flow 3	Relief from royalty 4	Multi-period excess earnings 5	Incremental cash flow 6	Income approach total 3-6	Other 7	Mode	N
16 What was the most important method used in valuing customer related intangible assets?	27%	7%	33%	0%	13%	20%	67%	0%	3	15
17 What was the most important method used in valuing technologies or computer software?	21%	50%	7%	7%	0%	7%	21%	7%	2	14
18 What was the most important method used in valuing brands or trademarks?	18%	0%	36%	9%	9%	18%	73%	9%	3	11
19 What was the most important method used in valuing supplier contracts, licenses or non-compete agreements?	17%	33%	25%	0%	0%	8%	33%	17%	2	12
20 What was the most important method used in valuing other intangible assets?	15%	23%	46%	0%	0%	15%	62%	0%	3	13

6. CONCLUSIONS

In this study I examine Finnish listed companies' purchase price allocations in 2005. The allocations were made first time in accordance with IFRS 3. The focus of the research is in studying how acquirer's characteristics impact the proportionate allocation decision.

The study shows evidence that technology, media and telecom (TMT) companies allocate larger proportion of purchase price to goodwill than other companies. This is in line with earlier studies of US allocation (PwC 2004a and 2005). I get support that also acquirer's growth prospects associate positively with proportionate allocation to goodwill. This is interesting and contradicts with *nature of growth firms' goodwill* theory (such as Ojala 2001) suggesting growth firms carry less goodwill than others. These findings together give evidence that there are more unidentifiable assets in TMT and growth firms. Faint consolidation, high synergy potential and importance of employee competence for industries of this nature can explain these results.

I find also support that leverage has negative relation with allocation to goodwill and positive relation with allocation to net tangible assets. The finding is interesting and supports the idea that leveraged companies have net-tangible-asset-covenants in debt contracts and try to avoid default of the covenants by allocating purchase price to tangible assets instead of goodwill or other intangibles. This can be a signal of earnings management or it just shows that highly leveraged companies decide to acquire companies with more tangible assets. Examining this further would be interesting. It requires more thorough analysis of target's characteristics and acquirer's debt covenants. All in all I don't find consistent evidence that management manipulates reported earnings or assets by purchase price allocation decision.

A result of an R&D project is often some sort of intangible asset. When the intangible is acquired as part of business combination acquirer has to recognize it as an asset. In my sample of Finnish companies acquirer's R&D activity has positive relation with proportionate allocation to intangible assets. Since no company reports allocation to in-process research and development projects the finding suggests that R&D active companies acquire companies with already developed intangible assets.

In addition I carry out a survey for Finnish listed companies to assess opinions and attitudes towards IFRS 3. There is a lot of variation in opinions but some interesting points are evident. Companies don't believe that the new standard impacts on their market value or acquisition activity. Although the standard impacts on the reported earnings respondents don't believe it influences on valuation since cash flow remains unchanged.

Slightly contradicting results are that majority of respondents thinks the separation between goodwill and other intangible assets is reasonable but still most believes intangible assets can not usually be reliably valued. The answers suggest that brands and trademarks is the most difficult intangible asset class to value and its valuation is most affected by subjective opinions. This is not surprising since brands and trademarks are pretty abstract even compared to other intangibles.

Approximately 40% of survey's respondents disagrees that intangibles are valued usually only for accounting purposes and the valuation does not have an impact on purchase price. This is very interesting since it means that many companies believe intangible asset valuation actually affects purchase price. Therefore PPA information reported in accordance with IFRS 3 provides really relevant information for investors about the business combinations. Consequently the standard has reached at least in some extent its objective to provide additional knowledge of capital markets.

Logical extension for this study would be to research other countries as well. It would be more convenient to assess factors impacting on allocation to specific intangible assets using larger sample. However, as long as allocation decision can be found only from the notes to the financial statements data collection will be time consuming. Also it would be interesting to add target's characteristics' influence in analysis of allocation decision. Additionally deeper analysis of differences between IFRS and SFAS standards can give more explanations for allocation differences between US and other countries. Furthermore it would be interesting to more profoundly evaluate mangers' other earnings management opportunities in purchase price allocation.

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Appendix A – List of companies included in the study

Main List

AffectoGenimap
Aldata Solution
Alma Media
Amanda Capital
Amer Sports
Aspo
Aspocomp Group
Atria
Basware
Beltton Yhtiöt
Brika Line
CapMan
Cargotec
Cencorp
Citycon
Componenta
Comptel
E.ON Finland
Elcoteq
Elektrobit
Elisa
eQ
Etteplan
Evox Rifa Group
Exel
Finnair
Finnlines
Fiskars
Fortum
F-Secure
HK-Ruokatalo
Huhtamäki
Ilkka-Yhtymä
Interavanti
Jaakko Pöyry
Julius Tallberg - Kiinteistöt
KCI Konecranes
Kemira
Kemira GrowHow
Keskisuomalainen
Kesko
Kone
Kyro
Lassila & Tikanoja
Lemminkäinen
Leo Longlife
Lännen Tehtaat
Marimekko
Metso
M-real
Neomarkka
Neste Oil
Nokia
Nokian renkaat
Nordea Bank
Nordic Aluminium
Norvestia
Okmetic
OKO
Olvi
OMX
Orion
Outokumpu
Perlos
PKC Group
Pohjola-Yhtymä
Ponsse
Raisio
Rakentajain Konevuokraamo
Ramirent
Rapala
Raute
Rocla
Ruukki
Sampo
SanomaWSOY
Saunalahti Group
Scanfil
Sponda
SSH
Stockmann
Stonesoft
Stora Enso
Stromsdal
Suominen Yhtymä
SysOpen Digia
Talentum
Tamfelt
Technopolis
Tecnomen
Tekla
Teleste
TeliaSonera
TietoEnator
TJ Group
Tulikivi
UPM-Kymmene
Uponor
Vacon
Vaisala
Viking Line
Wärtsilä
YIT-yhtymä
Ålandsbanken

I-List

Benefon
Elecster
Evia
Honkarakenne
Incap
Kasola
Kekkilä
Kesla
Kylpyläkasino
Larox
Martela
Panostaja
Pohjois-Karjalan Kirjapaino
Puuharyhmä
Ruukki Group
Suomen Spar
Turvatiimi
Yleiselektroniikka

NM-List

Biohit
Biotie Therapies
Done Solutions
Endero
Proha
QPR Software
Satama Interactive
Sentera
Solteq
Tieto-X

BL-List

Soprano

Appendix B – Average enterprise value allocations in Finland 2005

This table shows the allocation of purchase price in acquisitions made by Finnish listed companies in 2005. The purchase price is defined as enterprise value of the target reported in official financial statements of the acquirer. Annual level data includes data reported by acquirer concerning all the acquisitions made in 2005. Acquisition specific data includes data of specific named acquisitions.

	Annual level Mean	Acquisition specific Mean
Intangible assets		
Customer related	3.2%	3.2%
Technology	0.4%	0.7%
Brands and trademarks	0.8%	0.7%
Supplier contracts, licenses, non-compete agreements	1.6%	0.9%
Other or not classified intangibles	11.2%	8.2%
Intangible assets total	17.2%	13.8%
Tangible assets		
Property, plant & equipment	16.9%	20.7%
Inventories	8.3%	6.9%
Cash and equivalents	8.9%	6.5%
Financial Investments	4.7%	8.9%
Receivables	14.2%	14.9%
Other tangibles	2.2%	0.0%
Tangible assets total	55.2%	57.9%
Goodwill	28.3%	28.8%
Sample size	61 companies	57 acquisitions
Total enterprise value (€ billion)	12.5	11.1

Appendix C – Questionnaire

You can answer either in this sheet or in the other sheet in which the questions are in Finnish.
Please, answer every question from 1 to 20 by ticking one of the alternatives.
Please, answer by your personal opinion.
If you can't or don't want to answer, please tick the "Can't tell" alternative.
Feel free to add any comments on the comment cells.

General statements	Totally agree 1 2 3 4 5 Totally disagree	Can't tell	Comments
1 It is reasonable to separate intangible assets from goodwill.	☐☐☐☐☐	☐	Please, type additional comments here…
2 Goodwill amortization should still be an alternative to impairment.	☐☐☐☐☐	☐	Please, type additional comments here…
3 Intangible asset values can be usually reliably determined.	☐☐☐☐☐	☐	Please, type additional comments here…
4 It is justified that most intangibles cannot be recognized as assets if they are internally created although they have to be if they are bought outside.	☐☐☐☐☐	☐	Please, type additional comments here…
5 The benefits of adopting IFRS 3 are greater than the troubles it creates.	☐☐☐☐☐	☐	Please, type additional comments here…
6 Investors get now better information of goodwill as they did before adoption of IFRS 3.	☐☐☐☐☐	☐	Please, type additional comments here…
7 Investors get now better information of other intangible assets as they did before adoption of IFRS 3.	☐☐☐☐☐	☐	Please, type additional comments here…
8 IFRS 3 does not harm investors.	☐☐☐☐☐	☐	Please, type additional comments here…
9 Valuation of intangible assets is usually made only for accounting purposes but does not impact on acquisition purchase price.	☐☐☐☐☐	☐	Please, type additional comments here…

Company value and acquisition activity	ncreases significantly 1 2 3 4 5 Decreases significantly	Can't tell	Comments
10 How do you think IFRS 3 impacts on your company's market value?	☐☐☐☐☐	☐	Please, type additional comments here…
11 How do you think IFRS 3 impacts on the number of acquisitions made by your company?	☐☐☐☐☐	☐	Please, type additional comments here…

Valuation of intangible assets
Please, consider the latest acquisition made by your company in which you have been involved and answer the following questions. If IFRS 3 standard was not applied in the acquisition you don't need to answer questions from 12 to 15.

	Customer related	Technologies or computer software	Brands or trademarks	Rights, licenses or non-compete agreements	Other	Can't tell	Comments
12 What was the easiest intangible asset class to value?	☐	☐	☐	☐	☐	☐	Please, type additional comments here…
13 What was the hardest intangible asset class to value?	☐	☐	☐	☐	☐	☐	Please, type additional comments here…
14 What do you think is the one intangible asset of which valuation was most affected by use of subjective opinions?	☐	☐	☐	☐	☐	☐	Please, type additional comments here…
15 If you used external consultant in intangible asset valuation, in which item your opinion of the fair value differentiated the most from the consultant's opinion.	☐	☐	☐	☐	☐	☐	Please, type additional comments here…

Intangible asset valuation methods
Please, consider the latest acquisition made by your company in which you have been involved and answer the following questions. If IFRS 3 standard was not applied in the acquisition you don't need to answer questions from 12 to 15.

	Market approach methods	Cost approach methods	Direct cash flow	Relief from royalty	Multi-period excess earnings	Incremental cash flow	Other	Can't tell	Comments
16 What was the most important method used in valuing customer related intangible assets?	☐	☐	☐	☐	☐	☐	☐	☐	Please, type additional comments here…
17 What was the most important method used in valuing technologies or computer software?	☐	☐	☐	☐	☐	☐	☐	☐	Please, type additional comments here…
18 What was the most important method used in valuing brands or trademarks?	☐	☐	☐	☐	☐	☐	☐	☐	Please, type additional comments here…
19 What was the most important method used in valuing supplier contracts, licenses or non-compete agreements?	☐	☐	☐	☐	☐	☐	☐	☐	Please, type additional comments here…
20 What was the most important method used in valuing other intangible assets?	☐	☐	☐	☐	☐	☐	☐	☐	Please, type additional comments here…

Thank you very much for answering the questionnaire. Please save the file and send it as email attachment to tuomas.rantsi@student.hse.fi

- END OF QUESTIONNAIRE -

Appendix D – List of companies answered to the survey

AffectoGenimap
Aldata Solution
Atria
Basware
Done Solutions
Elektrobit
eQ
Honkarakenne
Kemira
Lassila & Tikanoja
M-real
Neste Oil
Oral Hammaslääkärit
Orion
Outokumpu Technologies
Pohjois-Karjalan Kirjapaino
Salcomp
SanomaWSOY
Scanfil
Solteq
Stonesoft
Stora Enso
Tecnomen
Tulikivi
UPM-Kymmene
Uponor
Wärtsilä
Yleiselektroniikka
Ålandsbanken

29 companies

Appendix E – Answers to the survey

	Totally agree				Totally disagree		
General statements	1	2	3	4	5	Median	N
1 It is reasonable to separate intangible assets from goodwill.	38%	31%	10%	17%	3%	2	29
2 Goodwill amortization should still be an alternative to impairment.	21%	24%	17%	21%	17%	3	29
3 Intangible asset values can be usually reliably determined.	0%	10%	24%	41%	24%	4	29
4 It is justified that most intangibles cannot be recognized as assets if they are internally created although they have to be if they are bought outside.	19%	35%	23%	19%	4%	2	26
5 The benefits of adopting IFRS 3 are greater than the troubles it creates.	4%	25%	21%	38%	13%	4	24
6 Investors get now better information of goodwill as they did before adoption of IFRS 3.	10%	28%	28%	21%	14%	3	29
7 Investors get now better information of other intangible assets as they did before adoption of IFRS 3.	7%	37%	30%	19%	7%	3	27
8 IFRS 3 does not harm investors.	20%	20%	28%	28%	4%	3	25
9 Valuation of intangible assets is usually made only for accounting purposes but does not impact on acquisition purchase price.	15%	19%	27%	23%	15%	3	26

	Increases significantly				Decreases significantly		
Company value and acquisition activity	1	2	3	4	5	Median	N
10 How do you think IFRS 3 impacts on your company's market value?	0%	4%	92%	4%	0%	3	24
11 How do you think IFRS 3 impacts on the number of acquisitions made by your company?	0%	0%	96%	4%	0%	3	26

Valuation of intangible assets	Customer related 1	Technologies or computer software 2	Brands or trademarks 3	Rights, licenses or non-compete agreements 4	Other 5	Mode	N
12 What was the easiest intangible asset class to value?	26%	26%	11%	32%	5%	4	19
13 What was the hardest intangible asset class to value?	31%	6%	44%	19%	0%	3	16
14 What do you think is the one intangible asset of which valuation was most affected by use of subjective opinions?	29%	6%	53%	12%	0%	3	17
15 If you used external consultant in intangible asset valuation, in which item your opinion of the fair value differentiated the most from the consultant's opinion.	33%	0%	67%	0%	0%	3	3

Intangible asset valuation methods	Market approach 1	Cost approach 2	Direct cash flow 3	Relief from royalty 4	Multi-period excess earnings 5	Incremental cash flow 6	Income approach total 3-6	Other 7	Mode	N
16 What was the most important method used in valuing customer related intangible assets?	27%	7%	33%	0%	13%	20%	67%	0%	3	15
17 What was the most important method used in valuing technologies or computer software?	21%	50%	7%	7%	0%	7%	21%	7%	2	14
18 What was the most important method used in valuing brands or trademarks?	18%	0%	36%	9%	9%	18%	73%	9%	3	11
19 What was the most important method used in valuing supplier contracts, licenses or non-compete agreements?	17%	33%	25%	0%	0%	8%	33%	17%	2	12
20 What was the most important method used in valuing other intangible assets?	15%	23%	46%	0%	0%	15%	62%	0%	3	13