Fair Value Measurement of Patented Technologies: A Survey of the German Certified Accountants

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Abstract

Intangible assets are regarded as the future value drivers of company performance. The increased economic importance requires an intensified analyst and investor awareness of (reported) intangible assets and their financial reporting quality. However, hardly anything is known about the actual importance and influence of different intangible asset classes in different industries. To fill this gap we accomplish a survey among the German Certified Public Accountants (CPAs) concerning intangible assets with a focus on patented technologies in order to determine the influence of intangible assets. We analyze the statements of the German CPAs with regard to intangible assets. Therefore we sent a standardized questionnaire to all 180 offices of the top ten (in terms of revenue) German auditing firms. Our results indicate that intangible assets have gained in importance. According to the German CPAs, the current influence of intangible assets on company performance is on a high level and even will increase during the next few years. The mostly used valuation approach for the fair value measurement of patented technologies is the income approach. Furthermore, the accounting standards leave options for accounting policy – a result which casts doubt on the reliability and quality of financial statements.

EFM classification code: 150, 210, 710

JEL-Classification: M40, O34

Keywords: Reporting Quality, Fair Value Measurement, IFRS, Intangible Assets, Patent, Technology

1 Introduction

The importance and the influence of intangible assets have significantly increased since the mid-1980s. This development has been driven by two fundamental developments – the intensified business competition due to the globalisation of trade and the deregulation in key economic sectors, such as financial services or telecommunication, and the advent of information technologies (Zingales, 2000; Lev, 2001). Nakamura (2003) documents that the annual investment in intangible assets in the U.S. is about one trillion dollars. The increased economic importance requires an intensified analyst and investor awareness of (reported) intangible assets and in this context financial reporting quality can improve investment decisions (e.g. Barth *et al.*, 2001). Since the financial statements of a company are a core source of information for both analysts and investors, the accounting and the valuation of intangible assets and goodwill have become much more important (Cohen, 2005; Fraser *et al.*, 2009).

Even though intangible assets are regarded as the future value drivers of company performance (Lev, 2001; Lev and Zambon, 2003; Bruns *et al.*, 2004; Anson and Suchy, 2005; Nakamura, 2009), hardly anything is known about the actual role of intangible assets in accounting. To fill this gap we accomplish a survey among the German Certified Public Accountants (CPAs) concerning intangible assets in order to derive insight about the influence of intangible assets and valuation methods. We analyse the statements of the German CPAs with regard to intangible assets. The analysis is based on a standardized questionnaire, which was sent to all 180 offices of the top ten (in terms of revenue) German auditing firms. From the survey results we find that intangible assets have gained in importance. The results indicate that the importance even will increase in the near future. However, the overall information content of the financial statements concerning intangible assets and their valuation increases only sparse. Furthermore the accounting standards leave options for accounting policy – a result which casts doubt on the reliability of financial statements concerning reported values of intangible assets.

Our study is structured as follows: in the following section we review the related literature. Then we describe our dataset and methodology and discuss the results of the questionnaire (Section 3). Section 4 concludes our paper.

2 Related Literature

International Accounting Standards define intangible assets as identifiable non-monetary assets without physical substance (IAS 38.9). A more general definition is given by Lev (2001): intangible assets are non-physical claims to future benefits. In general, intangible assets can be separated into three main categories depending on how they are generated: discovery (or innovation), organisational practices and human resources. But intangible assets can constitute a combination of the three main categories and are frequently embedded in physical assets or in labour thus leading to an interaction between tangible and intangible assets in the creation of value (Lev 2001, Kaplan and Norton 2004). For example, brands are often created by a combination of innovation and organisational structure. Common examples for intangible assets are patents, computer software, copyrights, motion picture films, customer lists, mortgage servicing rights, fishing licences, import quotas, franchises, customer or supplier relationships, customer loyalty, market share, and marketing rights (IAS 38.9). Reported goodwill can also be seen as an intangible asset. Goodwill acquired in a business combination is defined as a payment made by the acquirer in anticipation of future economic benefits from (intangible) assets that are not capable of being individually identified and separately recognised (IAS 38.8). Not only are intangible assets regarded as the future value drivers of company performance but also as potentially influential on other value drivers (Barron *et al.*, 2002).

In this article we accomplish a survey among the German CPAs concerning intangible assets with a focus on patented technologies. IFRS standards require or allow the use of fair value regarding intangible assts in four circumstances (e.g. Cairns 2006, Barlev and Haddad 2007): (i) for the measurement of transactions and the resulting intangible assets at initial recognition (IFRS 1, 3), (ii) for the recognition of the initial amount at which a transaction is recognized among its constituent parts (IFRS 3), (iii) for the subsequent measurement (IAS 38, 36), and (iv) in the determination of the recoverable amount (IAS 36). Fair value is defined as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction (IFRS 3, Appendix A). Patents as one of companies' most valuable intangible assets are granted by governments and provide legal protection for a fixed period of time (Anson and Suchy, 2005, p.74). They may be obtained for any new and useful process, new machine, manufacture or composition of matter, or any new or useful improvement thereof. The claimed invention must also be new, useful, and nonobvi-

ous, in relation to the prior art (Reilly and Schweihs, 1999, p. 23). Patent protection offers an incentive to a developer or innovator to work to perfect his or her innovation and then to offer it under protection of the law to other users. The value of patents is very much affected by the relative maturity of the technology. Technology is the application of knowledge to useful objectives. It is usually built on previous technology by adding new technology inputs or new scientific knowledge (Boer, 1999, p. 4).

The valuation of patented technology is more difficult than the valuation of tangible assets. The reasons therefore are (i) the public trading markets that exist for financial or physical assets do not exist for patents, (ii) the terms and conditions of patent transfers vary widely, (iii) patented technologies are inherently dissimilar, and the dissimilarity is required by law, and (iv) the details of patent transfers are rarely made available to the public (Hagelin, 2002). The tree basic valuation methods for the fair value measurement of patented technologies within the framework of International Accounting Standards (IFRS) are the market, the income, and the cost approach (IFRS 3; IAS 36). The market approach to valuing intangibles is a process by which a market price in an active market for the intangible asset can be determined or a market value estimate is derived by analyzing similar intangibles that have recently been sold or licensed, and then comparing these transactional intangibles to the subject intangible. Under the income approach the following methods can be used: methods using direct cash flow forecasts, the Relief-from-Royalty Method, the Multi-Period Excess Earnings Method, and the Incremental Cash Flow Method. The three principal components of the income approach are the estimations of the economic income, the projection period, and the appropriate income capitalization rate. The cost approach is based upon the economic principles of substitution and price equilibrium. The most common methods are the reproduction costs method and the replacement costs method (Anson and Suchy, 2005; Razgaitis, 2003; Boer, 1999; Reilly and Schweihs, 1999).

Analyzing the influence of intangible assets and innovation several studies (see e.g. Sougiannis 1994, Lev and Sougiannis 1996, Chan *et al.*, 2001; Chambers *et al.* 2002, Eberhart *et al.*, 2004; Amir *et al.*, 2003; Lantz and Sahut 2005; Huang *et al.*, 2006) find a significant relationship between research and development (R&D) expenditures and company performance as expressed by stock market valuation. In practice, R&D expenditures often lead to the reporting of (internally generated) intangible assets in the annual report. Ahmed and Falk (2006) demonstrate that the capitalization of expenditures can be regarded as a positive signal by (potential) investors. But intangibles can also be ac-

quired separately or result from a business combination. In addition, reported goodwill includes further intangible assets that do not meet the identifiability criteria. The acquired intangible assets that are reported as single intangibles or as goodwill in the annual report and their influences e.g. on company performance have not been analysed so far.

Galbreath and Galvin (2008) examine the influence of industry-specific and firmspecific factors on the variation in company performance. They show that only intangible assets can explain these variations which to some extend indicates influence of intangible assets on company performance. Barth *et al.* (2001) analyse the relationship between analyst coverage and firms' intangible assets. They find that firms with substantial intangible assets cause more information asymmetry between managers and investors and more inherent uncertainty about firm value than do other firms. They also find that analysts expend greater effort to follow firms with more intangible assets. Their findings suggest that there is an influence of (reported) intangible assets on company performance (see also Amir *et al.*, 2003). In addition, Arikan (2002) states that theoretically intangible assets are more likely to create the potential for growth opportunities and that firms which acquire intangible assets try to buy growth potential. The study of Carmeli (2001) supports the insight of a resource differential between high and low-performance firms. High-performance firms emphasize resources such as organisational strategy, ability to manage changes, managerial competence, and organisational culture as core intangible resources. Megna and Mueller (1991) analyse why profit rates differ so dramatically across firms and industries. One of the many explanations offered for this phenomenon is the (potential) failure of conventional accounting methods to adjust for intangible capital stocks. Villalonga (2004) uses a dynamic panel data regression model on 1,641 U.S. public corporations between 1981 and 1997 and finds that intangibles play an effective role in sustaining a firm's competitive advantage. Greenhalgh and Longland (2005) find comparable relations by analysing UK manufacturing firms. In their study Aboody and Lev (1998) analyse 163 US companies and find a significant correlation between reported software R&D expenditures and future earnings. Following the idea of Aboody and Lev, Heiens *et al.* (2007) analyse 1,657 companies of the manufacturing industry and find empirical evidence for a positive correlation between intangible assets and shareholder value. Further studies on the relationship between intangible assets and shareholder value or company performance are provided by Huang et al. (2006), Kohlbeck and Warfield (2007) and Morrow (2001).

Most studies on the accounting and valuation of intangible assets in Germany are descriptive analyses of annual or consolidated financial statements (see Fülbier *et al.*, 2000; Küting and Zwirner, 2001; Ranker *et al.*, 2001; Küting and Dürr, 2003; d'Arcy *et al.*, 2004; Hager and Hitz, 2007; Frey and Oehler, 2009) or they only analyse special groups of intangible assets (for R&D expenditures: see Leibfried and Pfanzelt, 2004; and for trademarks see: Völckner and Pirchegger 2006). In addition there are general surveys of auditing firms about the valuation of intangible assets of German companies (KPMG, 2008; PwC, 2008).

3 Empirical Analysis

3.1 Dataset and Methodology

We analyse the results of a survey among the German CPAs in order to detect expert opinion about intangible assets. Moreover, according to the CAPs the valuation methods most commonly used to determine the fair value of patented technologies and the suitability of these methods can be identified. For this purpose, we sent a standardized questionnaire to the offices of the top ten auditing firms in Germany ranked by revenue [1]. We choose the German CPAs because of their expertise in accounting and valuation of intangible assets and their insight into many companies. The main focus is on the fair value measurement of patented technologies using IFRS as accounting standard. Besides goodwill and trademarks patented technologies are in general the most valuable intangible assets (Lev, 2001; Anson and Suchy, 2005; KPMG, 2008). After a pretest which was made to test the comprehensibility and the unambiguousness of the questionnaire we sent the standardized questionnaire to all 180 auditing offices. The response rate was 21.7% which corresponds to a total number of 39. All of the mentioned auditing firms returned at least one questionnaire and the number of returned questionnaires per auditing firm approximately corresponds to the proportion of total revenue. Considering an increasing reluctance to respond to standardized questionnaires, the actuality and controversy of this topic, and the non-existence of IDW-standards [2] to patented technologies the response rate is still satisfying. In general, response rates of postal surveys lie in between 10% and 20% (Diekmann, 1995). A related study accomplishes a response rate of 11.9% (Völckner and Pirchegger, 2006).

The questionnaire is divided into four sections. The first section includes personal questions about the individual range of responsibility as a CPA and his position. The second section deals with questions about the current and expected influence of intangible assets on company performance in different industries. Analysing the statements of the CPAs, we expect a strong influence of intangible assets on company performance. The intention of the third section is to identify the valuation methods most commonly used to determine the fair value of patented technologies and to evaluate the suitability of these methods. The fourth section deals with the question whether the selection of the valuation method influences the degree to which accounting policy can be used to exert influence on the reported value of intangible assets. We expect that accounting policy is indeed a relevant matter in this context.

Questions with scaled response options always consist of six categories from 1 to 6 to avoid a midway bias and to force the CPAs to make an estimation or decision. Only the extrema of the response options are labelled.

3.2 Survey Results

To analyse the estimations of the future influence we accomplished the survey among the CPAs. The returned questionnaires were mainly replied by CPAs employed in the audit division (44%) and the advisory division (26%). These divisions are mainly responsible for the valuation of intangible assets. The remaining responses were given by the following divisions: Corporate Finance (14%), Tax (10%), and others (6%). 41% of all interviewed CPAs are in the position of a Partner in their auditing firms. The other CPAs are employed as Director (5%), Senior Manager (18%), Manager (23%), Consultant (5%), Professional or Business Analyst (3%). The great interest of the high management level (Partner, Director and (Senior) Manager) reflects the actuality and controversy of this topic. Even the International Accounting Standard Board identified the importance of this topic and issued an exposure draft concerning the fair value measurement (IASB, ED 2009/5).

For the second section, which includes the questions about the current and expected influence of intangible assets on company performance, we define four industries: finance, services, manufacturing, and high-tech. The CPAs had to choose between 1, i.e. very low, and 6, i.e. very strong current influence of intangible assets on company per-

formance. The frequency distribution and the median (bold and italic) are illustrated in Figure 1. The strongest influence is assumed for the high-tech (median value: 6) and manufacturing industry (median: 5). The response behaviour is significantly different as tested by applying the Mann-Whitney *U* test except for the service and manufacturing industry.

Take in Figure 1 about here.

According to the German CPAs the current influence of intangible assets on company performance is on a high level and even will increase during the next few years (Figure 2). In particular in the manufacturing and in the high-tech industry the influence will increase despite the already high current levels reported above. In the finance and service industry the influence will be solid or slightly decrease. The response behaviour between all industries is significantly different (Mann-Whitney *U* test).

Take in Figure 2 about here.

Take in Table 1 about here.

Based on these results we conclude that intangible assets influence company performance which supports our expectations.

In the next step we classify five different groups of intangible assets: marketing, customer, art, technology, and contract-related intangible assets (see IFRS 3 IE 18 2007; IFRS 3 IE 23 2007; IFRS 3 IE 32 2007; IFRS 3 IE 34 2007; IFRS 3 IE 39 2007). Regarding the median of all answers we thereby can identify the most important intangible assets for each industry. The results are presented as box plots, which graphically depict the smallest observation, lower quartile, median, upper quartile, largest observation, and outliers (Figure 3). The surveyed accountants state that in the finance and service industry the customer-related intangible assets and in the manufacturing and in the high-tech industry the technology-related intangible assets are the most important ones. Contract-related intangible assets have a strong influence in all industries. Art-related intangible assets only play a marginal role. The response behaviour especially for the high-tech industry is significantly different from the other industries (Mann-Whitney *U* test).

Take in Figure 3 about here.

Take in Table 2 about here.

The third section of our questionnaire is included in order to identify the valuation methods that are most commonly used to determine the fair value of patented technologies and to evaluate the suitability of these methods. First, we determine the mostly used valuation approach. The frequency distribution and the median values are illustrated in Table 3. For every valuation approach the relative and absolute frequency and the median value are given. The mostly used valuation approach for the fair value measurement of patented technologies is the income approach (with a median of 6), followed by the market approach (median: 3) and the cost approach (median: 2). We assume that this result directly reflects the fact of a typical non-existence of an active market [3] for intangible assets, which, in turn, does not support the application of the hierarchy given in IFRS 38 (1. market approach, 2. income approach, 3. cost approach). A revision of the relevant accounting standards would be appropriate.

Take in Table 3 about here.

Next, we determine the – according to the CPAs – mostly used valuation methods for each valuation approach (Table 4). For the market approach the valuation based on comparable transactions is the mostly used valuation method (median: 4), followed by quoted market prices in active markets (median: 2). Among the methods allowed under the income approach the ranking is as follows: Relief-from-Royalty Method (median: 5), methods using direct cash flow forecasts (median: 4), Multi-Period Excess Earnings Method (median: 3), and Incremental Cash Flow Method (median: 2). Within the cost approach the replacement cost method is primarily used.

Take in Table 4 about here.

The German CPAs also hold that only four of the analysed valuation methods are intersubjectively comprehensive for investors. Their ranking is as follows: market prices in

active markets, the Relief-from-Royalty Method, methods using direct cash flow forecasts, and comparable market transactions.

Furthermore we wanted to know from the CPAs whether the accounting standards leave options for accounting policy to exert influence on the reported value of intangible assets. Most German CPAs (87%) state that accounting policy is indeed a relevant matter in this context and thereby support our expectation. The income approach, according to the German CPAs the mostly used valuation approach (see above), leaves the largest room to influence the valuation results. In particular the Relief-from-Royalty Method and methods using direct cash flow forecasts are the best suited methods for accounting policy aims (Figure 4), because these methods and the income approach in general heavily rely on individual estimations of the valuation parameters, such as future cash flows or discount rates. These facts cast doubt on the reliability of the value of reported intangible assets and – at least to some extend – of the financial statements and reporting quality as a whole. Therefore, the analysts and investors as well regulators should always scrutinize reported values of intangible assets. Furthermore, a specification of the relevant accounting standards should be made by the standard setters.

Take in Figure 4 about here.

4 Conclusions

Intangible assets are regarded as the future value drivers of company performance. However hardly anything is known about the actual importance and influence of intangible assets. To fill this gap we accomplish a survey among the German CPAs concerning intangible assets in order to determine their influence. Besides a gain in importance and influence, we find that information on the valuation of intangible assets is still scarce. Furthermore, accounting policy can be used in this context.

Because of the results we find we can conclude that the role of (German) CPAs will increase. They have to value intangible assets, evaluate the valuations done by companies and provide reliable (consolidated) financial statements and therefore are responsible for reporting quality. As quoted by Moxter (1979), intangible assets probably will be the everlasting "problem child" of accounting. Nevertheless, questions about the accounting and valuation of intangible assets are current and future core areas of account-

ing research and practice. We would expect similar results for other countries and companies applying international accounting standards like US-GAAP and IFRS. The implementation of mandatory reporting requirements concerning intangible assets and their valuation within the framework of accounting standards would improve reporting quality and information asymmetry could be reduced. The exposure draft of the Management Commentary (IASB, ED/2009/6) should be revised and an improved Intellectual Capital Statement should be implemented in financial statements.

Potential investors should not only analyse traditional accounting ratios but also the value drivers and especially reported intangible assets and goodwill. Based on our results, there also seems to be a current influence of intangible assets on company performance; it is likely that it will even increase over the next few years. Based on the results intangible assets have to be considered as main value drivers. But hardly anything is known about the precise influence of intangible assets on corporate performance, capital structure, and the cost of capital. For these reasons intangible assets and their interrelation and effects on companies have to be analysed. Above all, intangible assets should play a major role in theories and methods for corporate valuation and should be integrated in valuation methods.

Notes

[1] Top ten (ranked by revenue) auditing firms in Germany: 1. Pricewaterhouse Coopers AG, 2. KPMG AG, 3. Ernst & Young AG, 4. Deloitte & Touche GmbH, 5. BDO Deutsche Warentreuhand AG, 6. Rödl & Partner Gruppe, 7. RölfsPartner Gruppe, 8. Dr. Ebner, Dr. Stolz & Partner Gruppe, 9. RSM Hemmelrath GmbH, 10. Warth & Klein Gruppe. See the study of Lünendonk GmbH (September, 6 2007).

[2] The Institut der Wirtschaftsprüfer in Deutschland e.V. (Institute of Public Auditors in Germany, Incorporated Association IDW) is a privately run organisation established to serve the interests of its members who comprise both individual German Public Auditors and German Public Audit firms. Their members issue concepts, statements, and standards about actual accounting and valuation problems or questions. The IDW S 5 (June 12, 2007) deals with questions concerning the valuation of intangible assets. But patented technologies are not a part.

[3] In order to use the market approach an active market is required. According to IFRS 38.8 an active market is a market in which all the following conditions exist: (a) the items

traded in the market are homogeneous; (b) willing buyers and sellers can normally be found at any time; and (c) prices are available to the public.

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Figure 1

Current influence of intangible assets on company performance

We present the current influence – according to CPAs – of intangible assets on company performance. We define four industries: finance, services, manufacturing, and high-tech. For each industry the CPAs had to choose between 1, i.e. very low, and 6, i.e. very strong current influence of intangible assets on company performance. For each industry there are n = 39 responses. For each industry the frequency distribution is given. The location of median value is highlighted bold and italic.

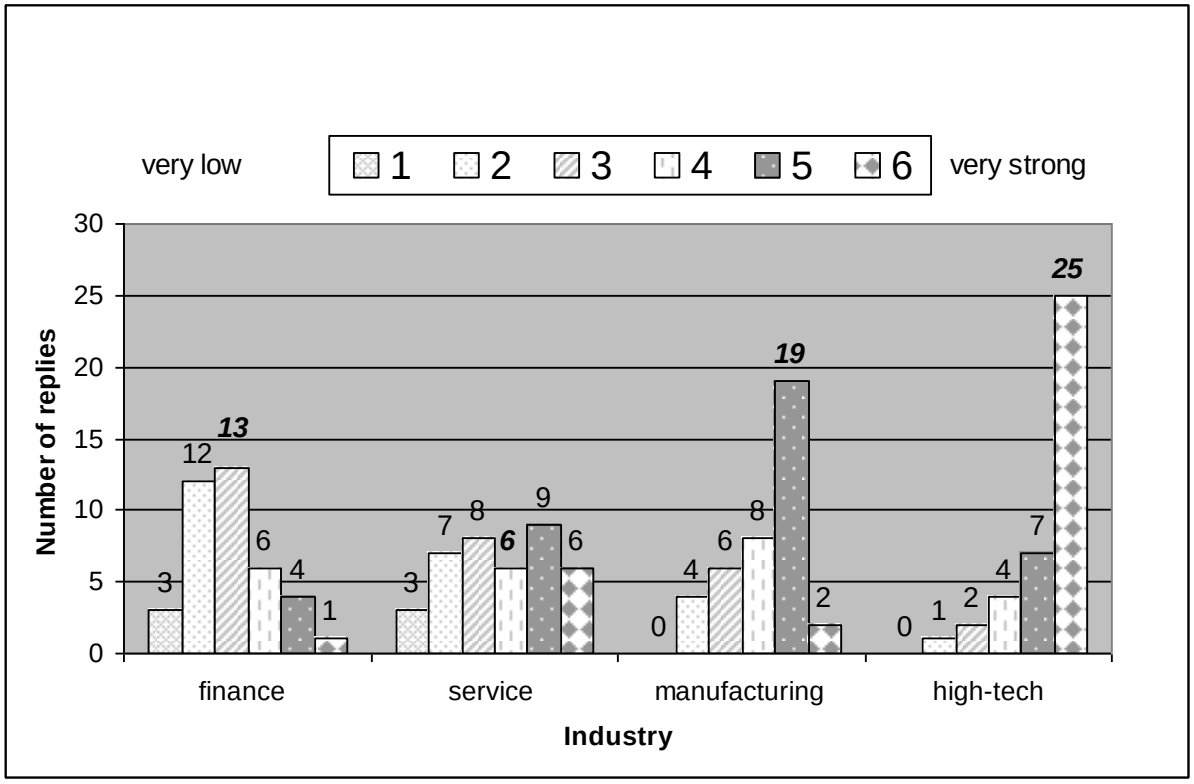

Figure 2

Trend of the influence of intangible assets on company performance

We present the expected future influence – according to CPAs – of intangible assets on company performance. We define four industries: finance, services, manufacturing, and high-tech. For each industry the CPAs had to choose between 1, i.e. decrease, and 6, i.e. increase of the influence of intangible assets on company performance. For each industry there are n = 39 responses. For each industry the frequency distribution is given. The location of median value is highlighted bold and italic.

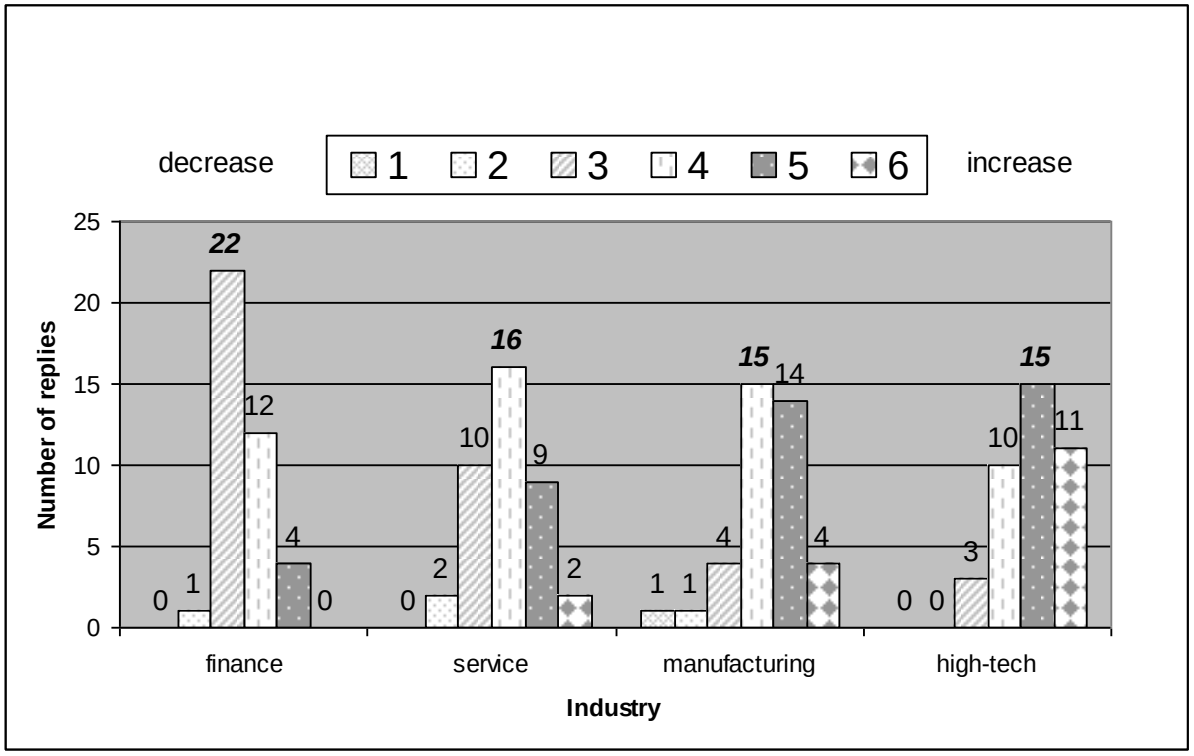

Figure 3

Current influence of different groups of intangible assets on company performance

We present the current influence of different groups of intangible assets on company performance. We define four industries: finance, services, manufacturing, and high-tech. In each industry we classify five groups of intangible assets: marketing, customer, art, technology, and contract-related. For each industry the CPAs had to choose for every group of intangible assets between 1, i.e. very low, and 6, i.e. very strong current influence on company performance. For each valuation method there are n = 39 responses. The results are presented as box plots, which graphically depict the smallest observation, lower quartile, median, upper quartile, largest observation, and outliers.

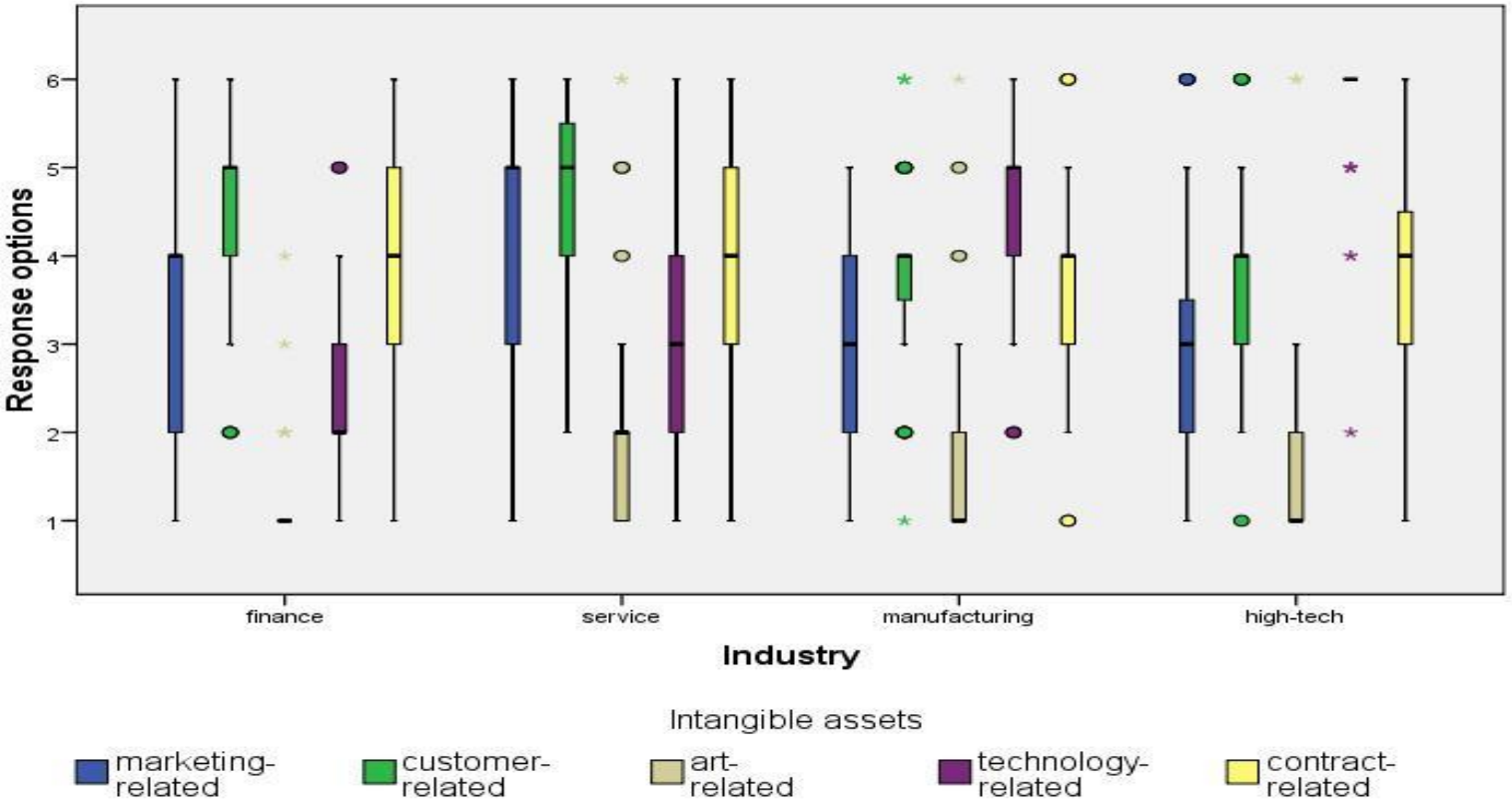

Figure 4

Options for accounting policy when applying different valuation methods

We present the results to what extent – according to the CPAs – the selection of the valuation method influences the degree to which accounting policy can be used to exert influence on the reported value of intangible assets. For each valuation method the CPAs had to choose between 1, i.e. accounting policy is not possible, and 6, i.e accounting policy is possible. For each valuation method there are n = 39 responses. The results are presented as box plots, which graphically depict the smallest observation, lower quartile, median, upper quartile, largest observation, and outliers.

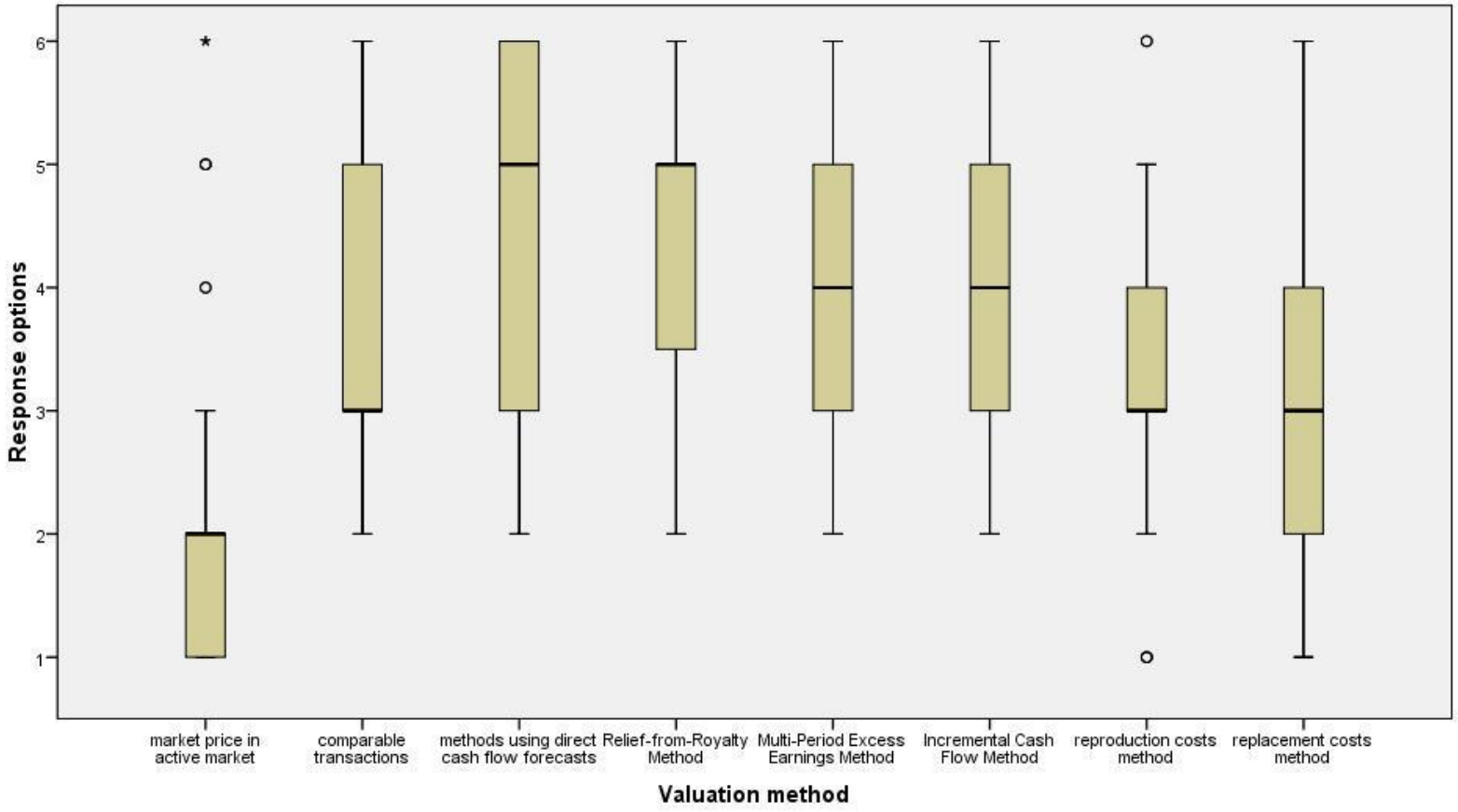

Table 1

Results Mann-Whitney *U* test Section 2 – First Part

We test the response behaviour of the CPAs in the first part of section 2 of our survey applying the Mann-Whitney *U* test. *, **, *** represent significance at the 10 percent, 5 percent, and 1 percent levels.

Section 2, Question 1	**median**	**services**	**manufacturing**	**high-tech**
finance	3	0.028 **	<0.001 ***	<0.001 ***
services	4		0.192	<0.001 ***
manufacturing	5			<0.001 ***
high-tech	6			
Section 2, Question 2				
finance	3	0.019 **	<0.001 ***	<0.001 ***
services	4		0.080 *	<0.001 ***
manufacturing	4			0.033 **
high-tech	5			

Table 2

Results Mann-Whitney *U* test Section 2 – Second Part

We test the response behaviour of the CPAs in the second part of section 2 of our survey applying the Mann-Whitney *U* test. *, **, *** represent significance at the 10 percent, 5 percent, and 1 percent levels.

n=39	**median**	**services**	**manufacturing**	**high-tech**
art related				
finance	1	<0.001 ***	0.098 *	0.221
services	2		0.285	0.128
manufacturing	1			0.664
high-tech	1			
customer related				
finance	5	0.301	0.033 **	0.005 ***
services	5		0.002 ***	<0.001 ***
manufacturing	4			0.350
high-tech	4			
marketing related				
finance	4	0.028 **	0.276	0.240
services	5		0.002 ***	0.007 ***
manufacturing	3			0.780
high-tech	3			
technology related				
finance	2	0.088 *	<0.001 ***	<0.001 ****
services	3		<0.001 ***	<0.001 ***
manufacturing	5			<0.001 ***
high-tech	6			
Contract-related				
finance	4	0.985	0.212	0.327
services	4		0.201	0.318
manufacturing	4			0.768
high-tech	4			

Table 3

Most commonly used valuation approaches to determine the fair value of patented technologies

We present the most commonly used – according to the CPAs – valuation approaches to determine the fair value of patented technologies. The CPAs had to choose between 1, i.e. the approach is hardly used, and 6, i.e. the approach is mostly used. For each valuation approach there are n = 39 responses. The values present the relative frequency. Values in parentheses give the absolute frequency. The rightmost column contains the median value.

	hardly used					**mostly used**	**median**
	1	*2*	*3*	*4*	*5*	*6*	
Market Approach	21% (8)	13% (5)	23% (9)	26% (10)	15% (6)	3% (1)	**3**
Income Approach	0% (0)	3% (1)	3% (1)	15% (6)	26% (10)	54% (21)	**6**
Cost Approach	15% (6)	41% (16)	21% (8)	13% (5)	5% (2)	5% (2)	**2**

Table 4

Most commonly used valuation methods to determine the fair value of patented technologies

We present the most commonly used – according to the CPAs – valuation methods to determine the fair value of patented technologies. The CPAs had to choose between 1, i.e. the method is hardly used, and 6, i.e. the method is mostly used. For each valuation method there are n = 39 responses. The values present the relative frequency. Values in parentheses give the absolute frequency. The rightmost column contains the median value.

	hardly used					**mostly used**	**median**
	1	*2*	*3*	*4*	*5*	*6*	
Market Approach							
Market prices in active markets	33% (13)	26% (10)	21% (8)	8% (3)	10% (4)	3% (1)	**2**
Comparable transactions	13% (5)	18% (7)	13% (5)	26% (10)	26% (10)	5% (2)	**4**
Income Approach							
Methods using direct cash flow forecasts	15% (6)	5% (2)	18% (7)	23% (9)	26% (10)	13% (5)	**4**
Relief-from-Royalty Method	5% (2)	5% (2)	10% (4)	8% (3)	36% (14)	36% (14)	**5**
Multi-Period Excess Earnings Method	13% (5)	21% (8)	23% (9)	33%(13)	8% (3)	3% (1)	**3**
Incremental Cash Flow Method	18% (7)	33% (13)	36% (14)	10% (4)	0% (0)	3% (1)	**2**
Cost Approach							
Reproduction Costs Method	21% (8)	33% (13)	13% (5)	13% (5)	15% (6)	5% (2)	**2**
Replacement Costs Method	26% (10)	18% (7)	18% (7)	13% (5)	21% (8)	5% (2)	**3**