Deutsche Bank Research

Value intangibles!

Intangible capital can and must be valued – owners and valuers alike will benefit

October 19, 2005

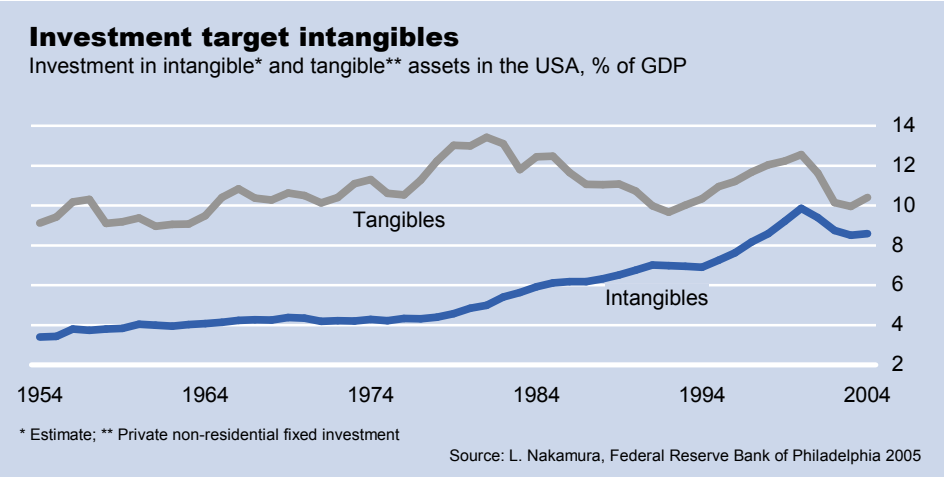
This is it, we are living in the knowledge society. Yet even now intangible capital, from employee training to brands, is scarcely valued systematically at all. That is a bad thing: The cost of capital is too high for knowledge-intensive companies, investors and lenders are missing out on potential earnings and the economy on potential growth. A lack of suitable methods is perceived as the key obstacle to more extensive valuation. However, on closer inspection we find:

Promising valuation models do already exist. Various methods of non-monetary and (by no means always necessary) monetary valuation of intangible assets are already available – and some of them tested in practice. We offer a brief overview.

These methods can optimise investment and lending. Each has its specific strong points, and each area of application certain requirements. The methods available can, some as stand-alones and some in combination, crucially improve the information base in many valuation situations, from internal resource planning through lending to M&A.

Companies should (be allowed to) report more on intangibles. Restrictive accounting rules, fear of divulging secrets and the absence of a common language are curbing reporting on intangibles. Cautious opening-up of mandatory reporting requirements and the development of voluntary reporting is needed to improve the level of knowledge on the capital market.

Takers and providers of capital alike can secure themselves a tangible competitive edge with more systematic measurement of intangible capital. For this they need experience and, most importantly, a close relationship with one another. This can be built up only slowly – often in the course of new business processes. The early bird catches the worm.



Author
Jan Hofmann
+49 69 910-31752
jan-p.hofmann@db.com

Editor
Stefan Schneider

Technical Assistant
Pia Johnson

Deutsche Bank Research
Frankfurt am Main
Germany
Internet: www.dbresearch.com
E-mail: marketing.dbr@db.com
Fax: +49 69 910-31877

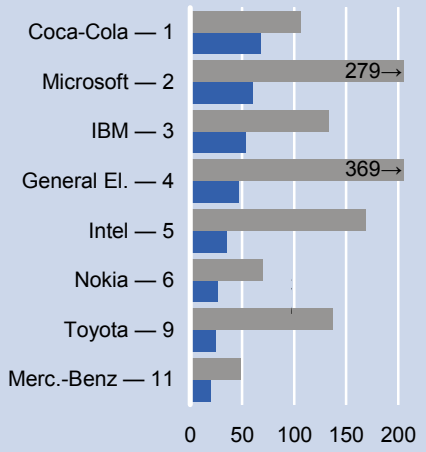
Managing Director
Norbert Walter

Contents

A Still a long way to go

Bitter are the roots of knowledge, but its fruit is sweet.
Marcus P. Cato, 234-149 BC

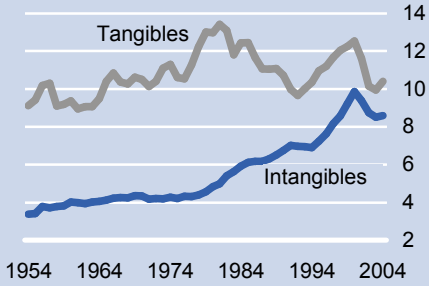
Expensive names
Ranking of the highest brand values*, in USD bn (grey: market capitalisation**)



* Present value for 2005 of future earnings traceable to the the brand; ** as of July 29, 2005

Sources: Interbrand, Business Week, Bloomberg 2005 **1**

Investment target intangibles
Investment in intangible* and tangible** assets in the USA, % of GDP



* Estimate (see text); ** private non-residential fixed investment

Source: L. Nakamura, Federal Reserve Bank of Philadelphia 2005 **2**

Nowadays the most important factors of production in developed economies are invisible. These intangible assets – staff skills, strategic and process quality, software, patents, brands, supplier and customer relationships etc. – are delivering a fast-growing contribution to corporate competitiveness. And massive investment is being made in these assets: Leonard Nakamura from the Federal Reserve Bank of Philadelphia puts the total for the USA in 2004 at USD one trillion, equivalent to about 9% of US GDP and fast approaching capital expenditure on tangibles (see chart 2)[1].

Even in the classical manufacturing sector, land, real property and machinery are becoming less important relative to intangible assets. But it is with research and development-(R&D)-intensive producers and knowledge-intensive service providers that intangibles play a really prominent part. And in the G6 (US, JP, DE, FR, GB, IT) the latter increased their share of value added between 1991 and 2002 by 5 percentage points to 26%[2]. Together with the research-intensive industries, in 2002 they already made up an average of one-third of macroeconomic output in the G6 and the EU-15. International trade in patents and licences is also growing apace (see chart 3[3]).

In short, the long- and oft-heralded knowledge society is reality. One might be tempted to believe that this would be reflected in the valuation of companies and their projects, that their creditworthiness and attractiveness as an investment would rest in large (and increasing) measure on the analysis of their intangibles. But that would be very wide of the mark indeed. At present, intangible assets enter into company ratings – if on any notable scale at all – on a generally unsystematic basis, accorded rather superficial treatment and virtually impossible to compare.

Inevitably, therefore, many companies' performance is under- or overestimated. The consequence is misallocation on the capital market and ultimately passed-up growth. This study therefore examines methods for more intensive analysis of intangible assets, outlining obstacles and showing how financial services providers and their clients can secure a competitive lead.

Stepmotherly treatment

In a survey[4] of fund managers, private equity investors, venture capitalists and bank analysts dating from 2001 almost 90% of survey respondents considered a company's intellectual property an

1 Nakamura, Leonard (2003). A trillion Dollars a year in intangible investment and the New Economy. In John Hand and Baruch Lev (ed.), Intangible assets – values, measures, and risks, p. 19-47. Oxford University Press. Current data from the author. For the present, Nakamura arrives from various perspectives (spending on R&D, software and advertising; wages; profit margins) at an estimate of investment in intangible assets of around USD 1 trill. per annum. For the time series he uses investment.

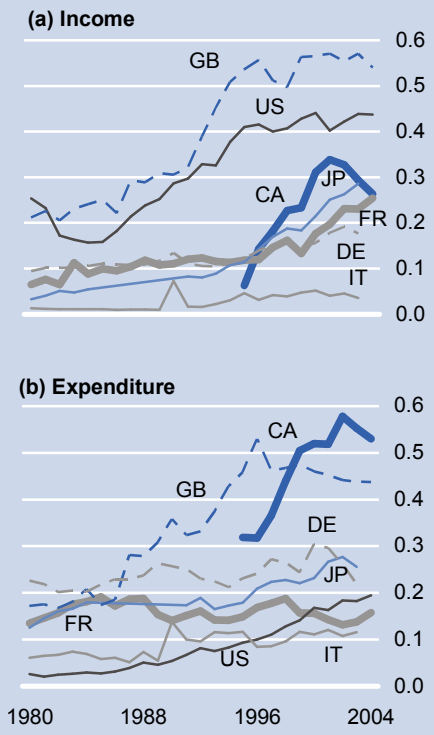
2 Excluding letting of dwellings. Schumacher, Dirk (2005). Marktergebnisse bei forschungsintensiven Waren und wissensintensiven Dienstleistungen im internationalen Vergleich. DIW Berlin.

3 Many thanks to Bernhard Gräf for editing the data.

4 Howrey (2001). A Survey of Investor Attitudes on IP Protection. (www.howrey.com/docs/UK_IP_Survey0102.pdf)

Brisk trade in intangibles

(a) Income from and (b) expenditure on patents and licences in international payments*, in % of GDP



* Incl. cross-border payments within groups of companies

Sources: IMF, DB Research 2005

3

important factor in their investment assessment. So why all the fuss? In the same study 70% of respondents felt convinced that the market lacked reliable tools to value intellectual property effectively. 56% even stated that the value of intellectual property could not be measured at all, leaving them no alternative but to rely on a subjective, inevitably unnuanced assessment hardly consistent with their own estimation of the significance of intellectual property in valuing a company.

The companies assessed and the political and academic community have also recognised the problem of distorting valuation. A wide-ranging research project[5] initiated by the European Commission was completed in 2003 on the increasing importance of intangible assets, on which experts from all three fields worked together. It complements the hitherto often rather theoretical research literature with practical surveys. One of the empirically well underpinned results of this project is that investors' and lenders' present valuation models are inadequately geared to the significance of intangible assets – and that the companies valued communicate far too little information on these assets. The participants in a forum of experts at the OECD arrived at similar conclusions in Autumn 2004[6].

US researchers Baruch Lev, Doron Nissim and Jacob Thomas deliver quantitative evidence of the miscalculation of intangible assets by the capital market. With an analysis of risk-adjusted share price developments they show that between 1983 and 2000 the US capital market systematically undervalued R&D-intensive companies[7]. In another study they find empirical evidence to suggest that in some US industries the capitalisation and amortisation of R&D expenditure, at present permissible only in exceptional cases, enables better forecasting of future movements in share prices[8].

Tangible benefits from knowing about intangibles

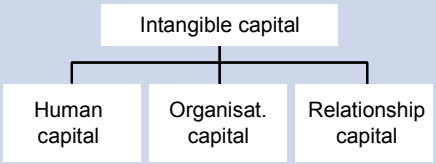
So *investors and lenders* evidently stand to gain a lot from more systematic valuation of intangible capital[9]. Investors could optimise their portfolios and increase their returns with more realistic company valuations. Suppliers of credit could lend their money on terms better in line with their risk. Besides boosting their average yield per loan they could also capture greater market share through better pricing – assuming they value intangible assets more efficiently and correctly than their competitors –, precisely in high-growth, knowledge-intensive segments. That would, moreover, give them an edge in an extremely interesting market in the medium term – securitised intangible assets, in tapping which the musician David Bowie played a pioneering role in 1997[10].

But *companies* themselves often lack information about the returns on investments in intangible assets. Individual misallocations are the result, or – even worse – misdirected investment strategies. What is more, companies are missing an important element of the image they wish to portray to investors, lenders and public sponsors

5 Eustace, Clark (2003). The PRISM Report 2003. European Commission.
6 Joint CIBE and CSTP Forum on Business Performance and Intellectual Assets. October 2004, OECD, Paris. (www.oecd.org/dataoecd/3/1/34462868.pdf)
7 Lev, Baruch (2004). Sharpening the Intangibles Edge. Harvard Business Review, June 2004, pp. 108-116.
8 Lev, Baruch, Doron Nissim and Jacob Thomas (2005). On the informational usefulness of R&D capitalization and amortization. Working paper, Columbia University.
9 Intangible capital = the total of all intangible assets.
10 In what is arguably the best-known deal of its kind Bowie issued bonds for USD 55 m using future royalties as security.

The language of intangibles

The sum of all "intangible assets" or "intangible resources" in an organisation makes up its "intellectual capital" or "knowledge capital". Roughly, at least – whether, for instance, a brand (undoubtedly an "intangible asset") forms part of "knowledge capital" is debatable. In literature on the subject there is as yet no clear terminology. For the purposes of this study we use the terms "intangible assets" (like the International Accounting Standards Board) and, in conformity, "intangible capital". The following categorisation is customary:



Human capital comprises, for example, staff skills and recruitments; organisational capital covers corporate structures; and relationship capital is taken to mean i.a. networking with customers and partners.

(leading to inordinately high costs of capital for knowledge-intensive service providers and R&D-intensive goods manufacturers in particular), to customers (to whom innovation or cost leadership could be communicated more transparently) and to the labour market (which is often especially receptive to a company's "soft values"). And last but not least, companies aware of the value of their intellectual property can better trade these assets or licences.

Finally, from a *welfare point of view* more systematic valuation of intangible assets should lead to more growth: (1) Capital could be channelled more reliably to its most efficient uses. This would, among other things, create a better access to equity and dept for fledgling, knowledge-intensive companies – a pivotal innovation driver. (2) Improved information on intangible assets would render capital markets less volatile, and investors and companies would have more faith in them. This, in turn, could increase the proportion of equity at Germany's traditionally credit-financed small and medium-sized *Mittelstand* companies. (3) Given that more appropriate valuation requires better corporate reporting on intangible assets, at least part of the present-day information asymmetry between wholesale and retail investors could be alleviated (see section *Private equity investors have home advantage*). From the point of view of big investors, some of whom are already extremely well informed, this would admittedly have less appeal, but in terms of perceived fairness on the capital market as a whole – and hence its efficiency – it would presumably be beneficial.

Not all plain sailing

Companies say too little about their intangible capital…

Given the advantages to all concerned, what is preventing greater recognition of intangible capital in corporate valuation? First, *companies say too little about their intangible assets,…*

— *… because of the shackles imposed on them by accounting regulations*. Without the appropriate information from within a company, an outsider is unable to analyse its intangible assets. However, with very few exceptions, accounting in accordance with US-GAAP und IFRS prohibits the capitalisation of intangible assets (see section *Speaking up*). The lion's share of the money sunk into the development of intangible assets has to be expensed immediately, instead of being written off over years like investment in other productive assets. In accounting terms a punch press is treated for years as a productive asset, whereas online distribution software developed in-house loses its value by the next fiscal year.

— *… because they do not want to divulge any competitive advantages*. Companies fear disclosing competitive advantages by publishing information on intangible assets. They are loath to pass on details to their competitors of new organisational processes, production methods or customer retention models.

— *… because there is still no generally received vocabulary for intangibles*. Even if companies were prepared to publish more information on intangibles, in many cases there is still no common language – both in communication between the company and the capital market and between capital market participants.

… and even with sufficient information, valuing intangible capital is difficult

Second, *valuers and the capital market are out of their depth,…*

— *… because it is often virtually impossible to compare intangibles*. The value of a tangible good becomes apparent when it is sold. Buyer and seller estimate the value of the good to them, based on experience with similar or at least roughly comparable goods. Furthermore, liquid and transparent markets allow them to estimate what value others attach to this good. But both mechanisms stall when it comes to intangibles: It is precisely its uniqueness that defines intellectual property, making empirical values difficult to find. Staff skills and organisational processes unfold their value only in the context of a specific company, so that comparisons are difficult. And precisely because of this lack of comparability, liquid and transparent markets for intangibles so far exist only in isolated cases.

— *… because intangibles are often particularly risky.* Even if comparative values do exist when, say, purchasing a patent similar to another or investing in a similar R&D project to a rival, the future value of an investment in intangible assets, although potentially higher, is usually far more uncertain than that of an investment in tangible goods.

— *… because they lack knowledge of valuation methods*. Notwithstanding this inauspicious baseline scenario, there already exist a raft of methods for valuing intangibles. However, they are not very familiar – indeed, often downright unknown – to many takers and providers of capital. What is more, varying methods are suited to different fields of application.

— *… because the capital market still lacks faith.* As a result of insufficient experience of valuing intangibles, as well as inadequate inclusion of these subjects in training for analysts, for instance, there is still very little confidence on the capital market in the results of these valuations.

Method knowledge is the pivotal driver of more intangible capital valuation

Greater influence of intangibles on company analysis hinges on authoritative knowledge of how to value intangible assets. Without tested and generally established methods, confidence will not be created in these assets on the capital market, they will not receive greater recognition in accounting regulations, and no liquid markets that would have facilitated their valuation will emerge.

B Company valuation 2.0

Categorising methods

Value measure used distinguishes method groups

On critical examination, the method of estimating a company's intangible assets already in common use – determining goodwill, i.e. the difference between the market and book value – does not appear very suitable, as is immediately apparent from the often high volatility of this indicator owing to market fluctuations. That hardly makes it an appropriate means of modelling values such as staff skills, process knowledge and customer relations, which tend to develop slowly over time[11]. Intangible asset valuation models less widespread at present than goodwill – some of which, however, look far more promising – can be categorised according to various criteria:

[11] Moreover, this is like comparing apples with pears: The market value is based on expectations of future earnings, the book value on historical data. Equally as problematic as goodwill, and for the same reasons, is the market-to-book ratio.

Pricing intangibles

In principle, monetary valuation of intangibles, like that of other assets, can be carried out using the cost approach (what would production of the asset analysed cost today?), the market approach (what does a liquid and transparent market pay for comparable assets?) and the income approach (what is the current value of the potential earnings stream or cash flow from the asset?). But which approach is the most suitable?

— The *cost approach* seldom makes sense for intangible assets. Their historical production costs (or their replacement costs) correlate only weakly with the potential benefit, if only because of the high earnings risk. Just supposing, as a thought experiment, that R&D department A were to develop model a to simplify its internal processes and R&D department B an identical model b at half the development costs. Applying the cost approach, b would be worth half of a – although the process cost reductions anticipated from both a and b (and the probability of their materialising) would be identical and, moreover, b would have been produced more efficiently.

— The *market approach* would be the ideal solution. So far, though, there are not sufficient liquid and transparent markets.

— This leaves the *income approach*, which is partly retrospective (based on historical earnings data) and partly prospective (based on forecast earnings)*. But since future earnings potential is of relevance for most valuation purposes, the spectrum is narrowed down to the prospective methods. These are usually based on a discounted cash flow (DCF) analysis, with only that part of the future cash flow being discounted that is ascribed to intangibles. This cash flow splitting, in addition to forecasting the cash flow itself and estimating an adequate discount rate, is one of the most difficult steps in a DCF analysis.

** In reality, even for earnings forecasts historical earnings data are usually taken as the starting point. In addition, however, estimates of future changes on the past in output, processes and framework conditions (respectively alterations in their rates of change) are entered into the equation: new products, altered production processes, a different competitive situation etc. In addition, intangible assets are, of course, already included in the forecast even now, but in general not very systematically.*

— *Objective*. Is a company seeking a loan? Are there plans to invest in the company? Is it up for sale?

— *Granularity.* Are individual intangibles (e.g. specific patents or bundles of patents), knowledge-intensive projects, business divisions including their intangible assets, or entire companies being valued?

— *Perspective.* Does the company's management value its intangible assets itself, or are they valued by an external player (a lender, a private equity or venture capital company, a fund manager, rating agency or private investor)?

— *Measure.* Does the analysis set out to deliver a monetary value? Or is a non-monetary indicator, but one which still permits comparisons, sufficient as a value metric (e.g. an industry benchmark)? Or are pure-play statistical readings without a measure of value (e.g. the average number of hours' training per employee and year) adequate?

The latter distinction is particularly important. Whether monetary valuation is necessary or an alternative value metric will suffice depends on the valuation objective. However, a model merely recording purely statistical measurements is of only very limited use. Who can judge, without a standard metric to go by, whether a certain number of hours' training is sufficient? Yet in a recent comparative study[12] nine of the 25 methods examined delivered measurements only without a benchmark – among them the best-known, the "Skandia Navigator" developed by insurers Skandia and used in a major trial at over 200 Swedish companies[13].

Monetary yardstick…

But twelve of the models analysed do at least attempt a monetary valuation, which can basically be made according to the cost, market or income approach (see box *Pricing intangibles*). For intangibles – as so often for other assets, too – the income approach turns out to be the most suitable. Particularly interesting is the Intangibles Scoreboard[14] from Baruch Lev, Professor of Accounting and Finance at New York University. With his method, based on an expanded discounted cash flow analysis, a company's intangible assets can be valued in monetary terms as an aggregate on the basis of publicly available information. Lev

— … calculates *annual normalised earnings*, i.e. an average of historical earnings and consensus earnings forecasts by analysts,

— … subtracts from these the contributions of the company's physical and financial assets (he deducts their current book values multiplied by their historical average returns[15]) to obtain an approximate value of the contribution of intangible assets to the company's normalised earnings, defined as *intangible-driven earnings, IDE*,

[12] Andriessen, Daniel. (2004). Making Sense of Intellectual Capital. Elsevier.
[13] In a more advanced form and under the name IC Rating™.
[14] see e.g. Lev, Baruch (1999). "Seeing is believing: a better approach to estimating knowledge capital." CFO Magazine; Lev, Baruch (2004). Sharpening the intangibles edge. Harvard Business Review, June 2004, pp. 108-116.
[15] Lev uses 7% for physical assets and 4.5% for financial assets as after-tax rates of return. The return on physical assets is an average of all US companies with physical assets stored in databases and should be adjusted from sector to sector.

Monetary valuation of intangible capital is possible, as a rough estimate…

— … *forecasts these IDE* with a three-stage model for the rate of growth of aggregate earnings[16],

— … calculates the *net present value* of the forecast IDE as the monetary appraiser of the company's aggregate intangible capital. For this he uses a discount rate which reflects the above-average riskiness of IDE.

This approach has its snags. Choice of the proper discount rate is more of an art than a science[17]. Also, the entire analysis is based on the assumption of the clear separability of returns on physical, financial and intangible capital. In reality, however, this is not so – earnings are generated precisely through their interaction. And finally, Lev's determination of intangible capital is based on analysts' estimates of future aggregate earnings – to which, as explained above, the company's intangible assets generally tend to make a rather unsystematic contribution. For these reasons Lev's method can only produce a rough approximation.

…and also seems promising for share price forecasts

Even so, it could still prove very useful. Together with his colleague Feng Gu, Lev produces empirical evidence to suggest that the intangible capital calculated using his method, when added to the book value, is a good indicator of the extent of under- or over-valuation of a share[18]. Lev's approach is therefore not only suitable for valuations in the course of company mergers and acquisitions[19], but also for optimising investment portfolios (see graphic *Method modules for the valuation of intangible capital* on the next page).

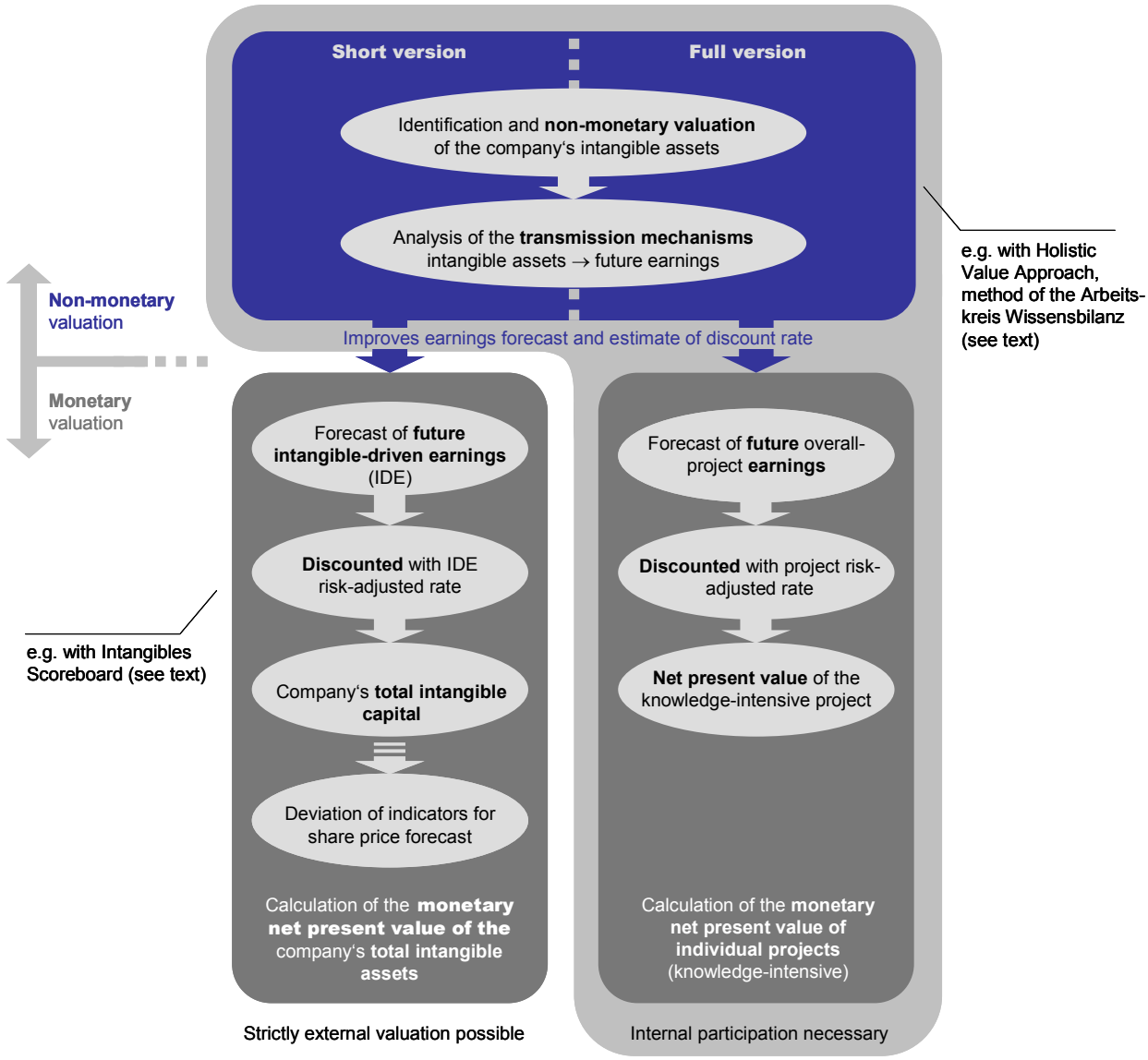
[16] Years 1-5: analysts' forecasts of the rate of growth in aggregate earnings; years 6-10: converging the forecasts to the long-term growth of the economy; years 11+: the long-term growth rate of the economy.

[17] Moreover, for this choice the key (company-specific) transmission mechanisms between intangible assets and earnings driven by them should be known. But these are not usually visible to people outside the company.

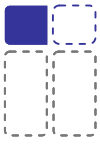
[18] He uses the ratios comprehensive value / market capitalisation (C/M). The comprehensive value is the total of the company's intangible capital according to Lev and its book value. For the years 1989-1999 Gu and Lev group approx. 2,000 companies by ascending C/M (i.e. rising undervaluation) into five portfolios. The portfolio returns in the three years subsequent to portfolio formation do indeed increase monotonically with the increase in C/M – and more steeply so than with a portfolio formed according to ascending book-to-market value (see Gu, Feng and Baruch Lev (2002). Intangible assets: measurement, drivers, usefulness). It is admittedly difficult to reconcile these findings with the theory of efficient markets, but this theory has, anyway, been called increasingly into question in the past few years.

[19] Here the monetary valuation of intangible capital can in itself provide additional helpful information for the classic Discounted Cash Flow (DCF) analysis. Or Lev's method is used to nuance the discount rate in the classic DCF analysis: IDE are discounted at a different rate than the rest of the forecast earnings.

Method modules for the valuation of intangible capital...



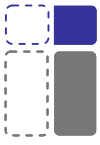
...and their application for typical valuation purposes



Credit rating
- Monetary valuation not necessary
- Full version of non-monetary valuation (usually) too costly

M&A, major investment
- Monetary valuation decisive
- Non-monetary preparation possible owing to close contact with the company

Minor/medium-sized investment
- Monetary valuation desired
- Information for non-monetary valuation often not available



In-house planning
- Monetary valuation customary
- Full version of non-monetary valuation sensible, as it can be put to many uses

Valuing patents

Like other intangible assets, patents can be valued using both monetary and non-monetary approaches:

— *Monetary patent valuation:* Here, again, the cost, market and income approaches are all possible. In terms of their suitability, the statements made in the box *Pricing intangibles* also apply, the income approach being used most frequently. But the cost approach is certainly also used in the case of patents (e.g. for financial accounting and tax purposes). Econometric approaches are also being tested for the monetary valuation of entire patent portfolios, geared to their value as loan collateral (for the general role played by intangibles in loan collateralisation, however, see the section *From the secured loan to more secure default forecasting*).

— *Non-monetary patent valuation.* This type of analysis is mostly applied to internal patent management and resource planning for R&D departments. Some valuations encompass a broad range of factors influencing the future benefit of the patent (i.a. the breadth of patent protection, its legal security, the company's human resources and technical abilities to make an economic success of the patent, the share of the patented technology in future product earnings, market growth, market position). Nowadays, econometric models are also employed for non-monetary patent valuation, usually on the basis of citation rate data (how valuable is a patent for other technologies?) or patent renewal data (is the patent worth the costs of re-registration?). But these econometric methods are mainly used in highly aggregated analyses for political planning or scientific and academic purposes.

Daniel Andriessen, author of the comparative study quoted above, adds tools to Lev's Discounted Cash Flow analysis with which it can be better prepared and the intangible capital calculated broken down roughly into its company-specific parts (assignment to core competencies)[20]. However, this requires insider knowledge and considerably greater input, making in-house application domains such as resource allocation and strategy development seem more sensible than external valuation. In these in-house areas a combination of Lev's model or other Discounted Cash Flow methods with the real option approach could also be meaningful[21].

The Discounted Cash Flow method is also often used to assign a cash value to individual intellectual property (IP) rights, notably patents or bundles of patents (see box *Valuing patents* for an overview of the methodologies). The future earnings from these ownership rights are derived i.a. from market royalties. Many market players, such as large technology companies and valuation service providers, have already acquired extensive experience in this field, in contrast to the valuation of general intangible assets. In a survey carried out in 2004[22] 38% of the 300 big European companies interviewed said they valued their intellectual property (although only 19% had done so within the previous year). 12% enlisted the aid of external service providers for the purpose. The fields of use for these valuations ranged from remuneration for inventors and the allocation of R&D investment through trading in patents to the valuation of technology-centred spin-offs.

… or broad benchmarking

Measures of value other than cash use models such as the Intellectual Capital Audit[23], the Holistic Value Approach[24], Inclusive Value Methodology[25] and a method developed by the *Arbeitskreis Wissensbilanz*[26] with the support of the German economics and labour ministry. All of these

— *… are based on a comprehensive analysis of the company's individual intangibles.* Individual assets may take the form of process efficiency or staff motivation, or partial aspects thereof. Selection and granulation of the individual assets is company-specific and critically hinges on the valuer's viewpoint. For this reason alone these methods are incapable of delivering a universally valid valuation of a company's intangible capital.

— *… value the individual assets relative to an "ideal state".* This ideal state must be filtered from historical or, if available, industry benchmarks. Here, too, the perspective is crucial – even with the same values different stakeholders may consider different specificities ideal, assessments may differ from an operative and strategic angle etc.

---

20 "Weightless wealth tool kit", see Andriessen, Daniel (2004). op. cit. Andriessen also reports on experiences with consultancy projects in which his method was used.

21 See e.g. Putten, Alexander B. and Ian C. MacMillan (2004). Making real options really work. Harvard Business Review, December 2004.

22 DLA Piper Rudnick Gray Cary (2004). European intellectual property survey.

23 Brooking, Annie (1996). Intellectual Capital: core asset for the third millennium. International Thomson Business Press.

24 Pike, Stephen and Göran Roos (2000). Intellectual capital measurement and Holistic Value Approach (HVA). Works Institute (Japan), 42.

25 M'Pherson, Philip K. und Stephen Pike (2001). Accounting, empirical measurement and intellectual capital. Journal of Intellectual Capital 2(3), pp. 246-260.

26 www.akwissensbilanz.org

— *… provide a good overview through integration of the individual valuations.* Either the individual valuations are combined into one overall indicator, calling for a circumspect methodological approach owing to the heterogeneity of the measures; or the individual valuations are depicted graphically with such skill as to create an intuitive overall impression – which can often have greater informative value than a number.

Non-monetary valuation methods involve considerable effort…

— *… are complex and can scarcely be carried out externally*. Finding, filtering, assessing and integrating the individual values is laborious – and impossible to achieve without intimate knowledge of the company.

… and are hence more suitable for internal purposes,…

Above all, therefore, these methods are a good way of allocating resources more efficiently within the company. In this function they can contribute towards in-depth preparation for classical monetary project valuation (see the figure *Method modules for the valuation of intangible capital*). In addition, a non-monetary analysis of this kind creates a basis for credible external communication of the company's intangible assets (for the purpose of raising loans or canvassing partners, clients and staff etc.)[27]. As a rule, valuation by experts outside the company – which is, anyway, possible only with internal support – will be too costly, at least if the methods are employed to the full.

… but are also a meaningful complement, in lean form, for external valuation

However, the application of non-monetary methods in external valuation is indeed conceivable and meaningful in a slimmed-down version ("short version" in the figure *Method modules for the valuation of intangible capital*). Although financial valuation is often uppermost in this case, slimmed-down non-monetary methods can nevertheless (1) be used as signposts for talks with the management of the valued company to enable more informed use of interpretative scope in the *classical* overall monetary valuation, or (2) serve for more structured preparation of the monetary valuation of *intangible* assets. And finally, simpler versions like this can also be extremely useful to lenders.

From the secured loan to more secure default forecasting

Essentially, banks rate their customers' creditworthiness with reference to two criteria: the counterparty risk (*probability of default)* and the loss to the bank in the event of non-payment (*loss given default*). Collateral such as real estate, plant facilities and securities is included in assessment of the loss given default. The more such collateral the borrower puts up that the bank could liquidate quickly to minimise its loss if needs may be, the more likely it is that the loan will be granted (or the lower the interest charged).

Intangible capital seldom used as loan collateral at present

Research from the EU, the USA und Japan shows intangible assets currently playing a minor role as collateral[28]. This is mainly because most intangibles can only unfold their full benefit within a certain context. To obtain revenues from a patent, for example, the user requires specific know-how, special technologies etc., which considerably narrows down the number of potential buyers for the patent in the event that it reverts to the lending bank following a

[27] In this context non-monetary valuation of patents can also be useful, see box *Valuing patents*.

[28] A notable exception are the more than 250 loans secured by intellectual property that the Development Bank of Japan has extended to Japanese start-ups. See OECD (2005). Intellectual property as an economic asset: Key issues in valuation and exploitation.

default. The risk to the bank of not being able to sell the intangible collateral quickly enough, or of not obtaining a satisfactory price for it, is arguably higher than with tangible security.

Focus on the probability of default with loans to knowledge-intensive companies,…

But an ever larger number of prospering companies owe their success precisely to their intangible assets. Lenders unable to extend credit to such businesses on the basis of these assets are closing the door on large parts of the credit market of the future. In cases like these it therefore seems logical to *base the credit rating far more strongly than before on assessment of the probability of default* – focusing heavily on intangibles. The following procedure would seem appropriate:

… concentrating on intangibles with the greatest influence on value added…

1. *Identification and analysis of the intangible assets of particular relevance to the company-specific value-added processes.* This slimmed-down non-monetary analysis focuses on the intangibles that have the greatest bearing on the probability of default on the loan. The evaluation should, however, be geared to one of the methods discussed above, since they offer dependable instructions for this unfamiliar terrain and increase the comparability of the individual credit analyses. Ideally, the individual assessments obtained will be combined into one single indicator, for which the above methods again offer approaches.

… and analysing the mechanisms for their transformation into revenues

2. *Analysis of the transmission mechanisms by means of which the central intangible assets are transformed into future revenues*. Key to the probability of default, besides the central intangibles themselves, are the mechanisms through which these assets are translated into revenues. How well are internal training and external research networking synchronised with the R&D department's technological roadmap? Have the insights from the company's own market research found their way into the roadmap and the sales department's recruitment plan? Is the roadmap conducive to realisation of the general corporate strategy? Here, too, as in (1.), industry benchmarks should be used for the assessment, and here, too, integration into one single indicator would be ideal – even if this is more challenging than in (1.).

Follow-up ratings are less complex

3. *Simplified follow-up evaluations.* As in classical credit risk analysis, the difference to the initial review is the most relevant factor in follow-up evaluations. The analysis profile developed in (1.) and (2.) – possibly including integration into one indicator each – can be applied. The considerably simplified follow-up ratings in which this results put the costs of the initial rating into perspective.

Credit rating on the basis of intangible capital creates a competitive edge

Together, these three steps can complement the classical credit risk review – which naturally also includes factors external to the company such as the development in demand – to a variable extent, thereby making lending possible to particularly knowledge-intensive companies (see the figure *Method modules for the valuation of intangible capital*). It is convenient that the lack of confidence in the valuation of intangibles still prevalent on the market is of little consequence in this instance: Banks publicise neither their credit ratings nor the underlying assessment methods, except to report them to the supervisory authorities. From this it also follows that, moving forward, banks will be able to set themselves apart from their competitors with proprietary credit assessment models for intangibles – and hence with pricing better attuned to risk.

Intangibles get encouragement from Basel

Basel II also requires consideration of qualitative information in counterparty risk assessment

The new capital adequacy requirements for lenders (Basel II Revised International Capital Framework) gradually coming into force from the end of 2006 also support the valuation of intangibles in credit analysis. Lenders opting under Basel II for the Internal Rating-Based Approach (IRB) are required to include "qualitative information" – also on intangible assets – in their assessment of the counterparty risk, in addition to balance sheet data. In principle the so-called Advanced Internal Rating-Based Approach in the Basel II regulations even permits the recognition of intellectual property as *collateral*. However, the demands of the relevant bank's experience with the valuation and realisation of such collateral are very high.

If, on the other hand, a bank opts instead for the Standardised Approach under the new capital rules, it must resort to external ratings by rating agencies[29]. This, of course, means that it cannot secure itself a competitive edge through the intelligent valuation of intangible capital.

New business models for the loan factory

It is evident that close personal contact with the borrower – going far beyond the occasional meeting with its top management – will become more important than ever for the credit assessment approach focusing on the probability of default previously outlined. This will call not only for new skills and mutual commitment, but quite simply also for the requisite capacities, particularly on the part of the lender. There are two obvious business models:

For the valuation of intangible capital, lenders can rely on their own first-hand appraisal…

Core competence customer proximity. As basic credit appraisal tasks are increasingly outsourced (and offshored), so capacities are freed up with lenders. Instead of a large number of back office analysts, they chiefly employ in situ appraisers and confidence-building officers skilled in conducting interviews at various levels of the company being appraised. This shift along the value chain either requires extensive training or new staff. The first-mover advantages can be considerable: For one, experience in this new area is far more important than factual knowledge, for another it takes time to built up customers' confidence in the new (proprietary) assessment approaches.

… or on the involvement of intermediaries and lean processes

Core competence lean processing. If lenders do not conduct the new in situ analyses themselves, intermediaries specialising in the evaluation of intangibles will emerge. Given that the more basic credit appraisal tasks will probably be outsourced in this model, too, lenders will reduce their function to providing capital and efficiently linking up the few remaining internal processes with the external. It is questionable whether this business model offers lenders sufficient scope to set themselves apart from their competitors, particularly since the intermediaries will make the same services available to the lenders' competitors.

Under no circumstances, however, will lenders be able to implement the new evaluation approaches overnight – the cost of their in-

[29] Experts in the European Commission's PRISM project are of the opinion that intangibles have so far played a minor role In the agencies' rating approaches: "[…] there is surprisingly little evidence of any explicit consideration of intangibles in [the ratings agencies'] corporate ratings products." See Mørck, Frede, Mike Hall und Edward Vali (2003). Banking and venture capital metrics. Project PRISM (Policy research into innovation and measurement practice in the intangible economy), p. 49. European Commission.

tegration into existing evaluation methods, organisational processes and IT systems are high.

Private equity investors have home advantage

Wholesale investors – notably general public, pension, venture capital and private equity funds – and selected sell-side analysts[30] have already geared their business models more strongly to personal contact with the companies assessed. With mergers and acquisitions this task is generally assumed by consultants from investment banks (or their advisors). Many of them conduct more extensive first-hand analysis than lenders' business models currently permit; and most of them communicate more intensively with the top management of the company being assessed[31].

Many wholesale investors are better prepared for intangible capital valuation than lenders…

On the basis of their established business models they are therefore better prepared than lenders and retail investors for the valuation of intangible capital – and hence for future company evaluation in general. Nowadays intensive contact with top management is the main channel of information on a company's intangible assets to the outside world, as a study by John Holland, professor of accounting at Glasgow University, demonstrates[32]. But even better-informed investors must subject the often non-monetary information gathered through these channels to structured analysis if they want to obtain a more realistic picture of the company's intangible capital.

… but can also benefit from non-monetary valuation methods

For this purpose they can apply similar methods to those we proposed for lenders. Here, too, slimmed-down versions of the original models are preferable. The methodology and costs should be scaled with the investment volume, but at all events both the intangible assets themselves and the transmission mechanisms into future earnings should be considered. Together they deliver valuable input on the two key elements of any monetary – classical or intangibles-based – corporate evaluation: forecast cash flow and discount rate (see the figure *Method modules for the valuation of intangible capital*).

C More communicativeness, if you please

Speaking up

Accounting standards gradually opening up to intangibles

Notwithstanding wholesale investors' information edge, at present scarcely any outsider possesses sufficient information for the comprehensive valuation of a company's intangibles. Either the participation of company staff in the appraisal is necessary or extensive external reporting by the company on its intangibles (likewise involving internal analyses based on the methods outlined above or similar models). Pivotal to the improvement of this reporting is the adaptation of corporate accounting standards. Steps have been made in the right direction of late, albeit tentatively.

— In accordance with US Generally Accepted Accounting Principles (US-GAAP), as of 2002 goodwill and other intangible assets assigned an "indefinite life" are no longer amortised, but subject instead to a regular impairment test.

---

30 Analysts engaged chiefly in research for investment by their clients rather than for investment by their own employer (e.g. bank, broker).

31 Mørck, Frede et al. (2003). op. cit.

32 Holland, John (2001). Corporate Value Creation, Intangibles and Disclosure. Working Paper 2001/3, University of Glasgow.

— The International Financial Reporting Standards (IFRS, previously IAS) mandatory for listed companies in the EU since the beginning of 2005 also regulate for the first time the treatment of a broad spectrum of intangible assets. However, staff skills, research projects, and most internally generated intangible assets such as brands, for example, are still not recognised as assets in principle or fact[33].

Voluntary reporting on intangibles trialled in various countries

Initiatives have also been rolled out in various countries to promote the voluntary communication of information on intangible capital. The precursors were Sweden and, a little later, Denmark. In the late 1980s they began developing guidelines for company reporting of this kind, using them in pilot projects at many businesses[34]. Other countries followed suit with broadscale initiatives (e.g. NL, GB and US at the end of the 1990s; JP and DE later), also presenting guidelines of their own (JP and DE in 2004[35]), most of which were developed jointly by the public and corporate sectors.

Bring on a new language

For better reporting on intangibles…

These approaches and experiments are highly laudable, but that is still not to say that reporting on intangibles is widespread or intensive yet. To encourage this kind of reporting, we consider the following measures crucial.

… accounting standards must be further opened and converged,…

1. *Opening up accounting standards.* IFRS and US-GAAP should permit the step by step capitalisation of a growing spectrum of intangibles. One interesting proposal is to allow the capitalisation of R&D projects once they have successfully undergone a technical feasibility test[36].
2. *Combining accounting standards.* Additionally, intangible assets could form a starting point for the generally overdue convergence of IFRS and US-GAAP: In an as yet little-defined area, why not apply the same concepts from the outset? Many players see the OECD in the role of coordinator[37].

… incentives to voluntary reporting – and reporting efficiency – increased…

3. *Making the benefits of voluntary reports more transparent.* When deciding whether to present additional voluntary reports on their intangible capital, companies will weigh the costs incurred (mainly for internal analysis of their intangible capital) against the potential benefits. However, they are evidently not sufficiently aware of the possible breadth of these benefits (e.g. for raising capital, staff recruitment or brand formation).
4. *Developing efficient voluntary reporting standards.* Companies should minimise overlapping with existing voluntary reporting. Additionally, industry-specific standards should be developed to accommodate the very different significance of the various intangibles from sector to sector.
5. *Agreeing on a silent zone.* It is also important to establish a quasi standard of information whose publication should not be mandated. The more clearly this line is drawn, the less companies

---

33 IAS 38, “Intangible Assets”. See Achleitner, Ann-Kristin und Giorgio Behr (2000). International Accounting Standards, pp. 123-133. Verlag Franz Vahlen.

34 See. www.ll-a.fr/intangibles, also for initiatives in other countries.

35 www.videnskabsministeriet.dk/cgi-bin/theme-list.cgi?theme_id=100650&_lang=uk (DK); www.meti.go.jp/english/information/downloadfiles/cIPP0403e.pdf (JP); www.akwissensbilanz.org/Infoservice/Infomaterial/Leitfaden_deutsch.pdf (DE)

36 See Andriessen, Daniel (2004). op. cit., p. 89.

37 Joint CIBE and CSTP Forum on Business Performance and Intellectual Assets (2004). op. cit.

need fear excessive information requirements and the easier it is for lenders to see where information is being held back.

… and valuers better prepared for intangibles analysis

6. *Motivating and training protagonists.* The professional bodies of the people playing the key roles in auditing and company rating should foster an appreciation among their members of reporting on intangible capital. Relevant rating models should be integrated into their qualification programmes.

Consideration should also be given to the timely integration of a technical efficiency enhancer into these measures – the Extensible Business Reporting Language (XBRL)[38]. This tags every reporting detail electronically, simplifying report comparisons and their processing in the financial services providers' fast-expanding rating databases.

Leeway for linguistic evolution

Leave room for experiments on the development of new standards

But this standardisation on many fronts must not be rushed. In many areas it is still not clear what should be elevated to benchmark status in the first place. Scope for experiments is still needed to identify the right reporting and valuation concepts in an evolutionary process. All the players involved must take part in this, from takers and providers of capital through valuation specialists, auditors and regulators to supranational organisations like the EU or OECD. Most of these will, anyway, aspire to active roles in this process: Too great is the pressure to act, with too much to be gained – and too much to be lost.

Jan Hofmann (+49 69 910-31752, jan-p.hofmann@db.com)

[38] XBRL International is a consortium of around 300 companies and government and other organisations. XBRL is an open, freely licensed standard. www.xbrl.org

Printed by: Druck- und Verlagshaus Zarbock GmbH & Co. KG

ISSN Print: 1612-314X / ISSN Internet and e-mail: 1612-3158