ESTABLISHMENT AND USE OF A HOLISTIC CONTROLLING SYSTEM FOR LISTED GERMAN CORPORATIONS: A CONTRIBUTION TO THE CURRENT DISCUSSION ON THE "RIGHT" PROFIT

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Abstract

The recent discussions about the "right" profit in business administration have led to uncertainty in research and practice about which performance measures and business management concepts should be used to manage companies. The authors are of the opinion that this is only possible with the help of top financial ratios with regard to the shareholder value concept. Thereby, the methods of the weighted average cost of capital (*WACC*) approach and the capital asset pricing model (CAPM) should be used to determine the value of the company. In addition, non-financial goals should be included in the management processes with the help of the integrated balanced scorecard. Against this background, the authors develop a holistic controlling concept for listed companies, which can be used for strategic corporate management, taking into account the income tax effects relevant to decision-making.

Keywords: Shareholder Value Concept, Stakeholder Value Concept, Integrated Reporting, CAPM, WACC

Authors' individual contribution: Conceptualization — C.-Chr.F.; Methodology — C.-Chr.F.; Investigation — C.-Chr.F. and F.H.; Writing — Original Draft — C.-Chr.F. and F.H.; Writing — Review & Editing — C.-Chr.F. and F.H.; Supervision — C.-Chr.F. and F.H.; Project Administration — C.-Chr.F. and F.H.

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1. INTRODUCTION

In times of the COVID-19 pandemic, climate change and accounting and corruption scandals, the discussion about corporate responsibility has once again entered the social and political debate as well as business research and practice (Hutzschenreuter, 2021; Steinke & Losbichler, 2021). The debate focuses on the divergence between profit maximisation and corporate social responsibility and the question of how both maxims can be reconciled and integrated into strategic management (Weißenberger, 2020). In this context, it is stated that companies should not only fulfil an economic purpose, but also a social purpose and that their corporate activities should not only be oriented towards financial objectives (Lingnau & Beham, 2019; Weißenberger & Schattevoy, 2021).

Against this background, this paper aims to develop a holistic controlling concept for listed companies through which social, societal and environmental goals can be integrated into the strategic management of results with the help of top financial ratios. This makes it possible to avoid the conflict between profit maximisation and corporate social responsibility, as sustainability

goals are now included in strategic planning, control and management to an appropriate extent.

In the traditional sense of the shareholder value concept according to Rappaport (1981), companies should increase the value for their shareholders in the long term by maximising profits (Rappaport, 1981; Friedrich, 2012). To this end, all corporate decisions are aligned with the interests of the shareholders. Since they bear the financial risk of uncertain entrepreneurial action, the shareholders participate in the returns generated (Rappaport, 1986; Baden, 2001; Bühner, 1993; Noll, 2013). Strategic management thus focuses on maximising the value of the company in the long term and increasing the return on equity for the equity investors (Friedrich, 2012). Advocates of profit maximisation argue that this goes hand in hand with efficient use of resources, competitive advantages and high profitability (Weißenberger & Schattevoy, 2021).

However, this view of success, which focuses on profit or company value as the sole target, is increasingly being questioned and criticised with reference to the social responsibility of companies (Lingnau & Beham, 2019). A fixation on profit maximisation or increasing the value of the company for the owners ignores the interests of other stakeholders (Noll, 2013). The stakeholder value approach, based on this criticism and opposed to the shareholder value concept, expresses that companies are not only obliged to their shareholders, but to a larger group of addressees. This group of addressees includes all stakeholders of a company, such as employees, customers, business partners and the public. In order to do justice to the stakeholders, companies should orient their strategic corporate management in particular towards environmental, social and governance-related goals (ESG) and not only strive to achieve financial key figures (Homann, Lütge, & Pies, 2018). In doing so, companies can fulfil their role model function, for example, with regard to the use of natural resources (Weißenberger, 2018). On the other hand, steering purely according to financial indicators leads to decisions that only increase profits in the short term, while sustainable investments that make sense in the long term are sometimes omitted.

This effort is also reflected in the increasingly comprehensive reporting, especially by capital market-oriented companies. In particular, non-financial aspects of corporate performance and mandatory and voluntary disclosure have gained importance in recent years. Society's expectations of companies have led to non-financial performance indicators and their publication in integrated reporting becoming crucial competitive factors, the active management of which is essential to avoid potential reputational and financial risks (Freidank & Hinze, 2016). The integrated report is an overarching report that brings together the relevant information of the published report formats and shows their interdependencies (Freidank & Hinze, 2015). The framework of integrated reporting is not to be regarded solely as a reporting concept. Rather, an integrated report is to be understood as the result of integrated thinking and decision-making within the company (Lorson & Paschke, 2015). Corporate management should strive for a holistic, integrative approach that takes equal account of financial and non-financial management elements and integrates them into the relevant decision-making processes.

Against the background of the current discussions on the corporate purpose that ecological and social objectives can only be achieved at the expense of financial performance objectives (et vice versa) and that the stakeholder and shareholder value approaches are mutually exclusive (Weißenberger & Schattevoy, 2021; Weißenberger, 2018; Friedrich, 2012), the integrated approach suggests looking for a harmonisation of the two objective maxims (Simon, 2020). The prioritisation of one stakeholder group should not lead to the disadvantage of other stakeholder groups (von Werder, 1998). Corporate strategies that are based on only one or the other maxim will not be able to survive in the long term in an interdependent market economy (Noll, 2013). In particular, companies are dependent on the legitimacy of (potential) customers, employees, investors and other business partners in the capital, sales, labour, and procurement markets in order to achieve financial performance targets (Baumgartner, Ernst, & Fischer, 2021). The assumption that profit maximisation and thus the shareholder value approach always lead to the disadvantage of social stakeholders must be refuted with the argument that profit maximisation — in a functioning market economy — can only work if the needs of these stakeholders are taken into account. Companies that only focus on maximising their financial figures and neglect the demands of employees, business partners and society will lose the legitimacy of these interest groups in the long run. This would diminish the companies' market position and in turn reduce their attractiveness to (potential) equity investors (Horváth, 2021).

Ultimately, it must be taken into account that the sustainable existence of a company is in the interest of all stakeholders. However, this can only be ensured through successful corporate development in the monetary sense. Only those companies that achieve long-term profits and are convincing on the capital market can build up financial reserves which they can fall back on in times of crisis and which can thus secure the long-term survival of the company (Simon, 2020). Corporate management should therefore be based on an approach that can ensure long-term financial profitability while incorporating sustainable objectives. This concept should be further established in the company with the help of multidimensional performance measurement systems (Weißenberger, 2020), which use top financial indicators with recourse to the shareholder value concept and at the same time take non-financial aspects as a basis in the management process. These enable the company's management to take complex objectives into account in its corporate management and thus to ensure its long-term existence and legitimacy (Weißenberger & Schattevoy, 2021).

The article is structured as follows: Following the introduction in Section 2, the previous literature on the shareholder value concept and business valuation is presented. Section 3 describes the WACC approach and the CAPM as basic methods

of company valuation, taking into account income tax effects and the circularity problem. Following on from this, Section 4 is devoted to management using value-based indicators, which are then integrated into the management concept of the Integrated balanced scorecard in Section 5. In Section 6, the limitations of the integrated management concept are discussed. The paper concludes with a summary of the findings in Section 6.

2. LITERATURE REVIEW: SHAREHOLDER VALUE CONCEPT AND COMPANY VALUATION

The model of value-based corporate management with the overall objective of increasing shareholder value in the long term and its contribution to securing a sustainable existence can be illustrated using Rappaport's (1981) shareholder value network. Then, in a first step, the abstract quantity shareholder value can be decomposed into the three valuation components free cash flow, cost of capital and market value of debt. In a second step, these factors can be further broken down into their underlying value drivers. The value drivers of a company's operating and investment activities, for example, influence free cash flow. In detail, these are sales growth, the profit margin, the profit tax rate, the duration of value enhancement as well as investments in current and fixed assets.

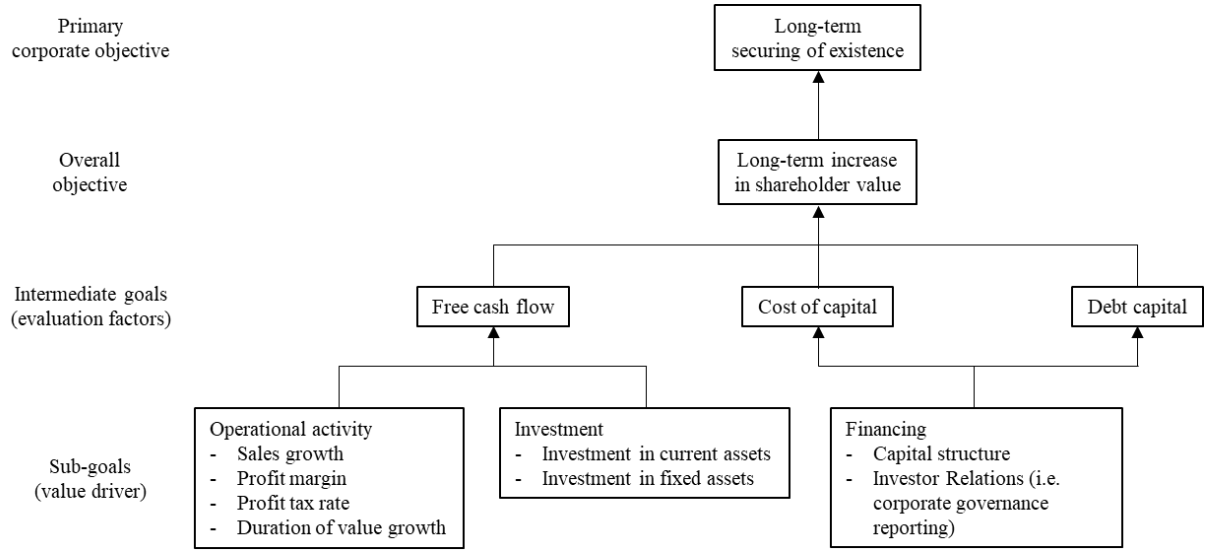
The central value drivers of the cost of capital and the market value of debt capital include in particular the choice of the optimal capital structure as well as investor relations, which also includes corporate governance reporting (Freidank & Ceschinski, 2018). The aforementioned value drivers (sub-goals) are in a direct and immediate middle-purpose relationship with the respective valuation factors (intermediate goals) and therefore allow conclusions to be drawn about the development of shareholder value (overall goal). As Figure 1 shows, the result is a hierarchically structured system of objectives specifically geared towards increasing shareholder value and securing a sustainable existence.

Based on the increase in the company's value, which is defined as the overall objective in the corporate hierarchy and which should be measured with the help of cash flow-oriented key figures, further, sub-objectives are to be broken down in the context of corporate policy with regard to subordinate sub-policies and their achievement is to be monitored and controlled. Thus, within the framework of the downstream procurement, production and/or sales policy, performance targets that can be measured in the form of revenues and/or costs for the purposes of operational, but also strategic corporate management (performance measurement) play a prominent role.

Against this background, the management bodies of German listed companies (usually the board of directors) have the elementary task of controlling the available resources with the help of the value-oriented management system in such a way that a constant increase in the company value, understood as the future success value, is achieved. This approach is based on the view that the potential for success captured in the enterprise value is reflected in the cash flows of later periods. The shareholder value approach is therefore a concept of strategic corporate management with the aim of maximising the company value for the owners in the long term by exploiting and realising value-enhancing and eliminating value-destroying activities, investments, business areas, etc. This does not contradict the stakeholder value concept, as the long-term maximisation of corporate value also corresponds to the interests of stakeholder groups other than the owners (Hinterhuber, 2015).

The explanations make it clear that for the purpose of corporate management, a permanent determination of the corporate value must be carried out by controlling in order to determine whether the overall objective of a long-term increase in shareholder value is being met. In this context, planning, monitoring and control measures at all strategic and operational levels of the company must ensure that the intermediate and sub-goals listed in Figure 1 are achieved.

Figure 1. Target system of a company based on the shareholder value concept



Analogous to the principles of proper accounting (*Grundsätze ordnungsgemäßer Buchführung* (GoB)), principles of proper business valuation (*Grundsätze der ordnungsgemäßen Unternehmensbewertung* (GoUB)) can be understood as generally recognised purpose-oriented rules of business valuation (Freidank & Velte, 2013). Nonetheless, the still inconsistent opinions in the relevant literature and case law as well as the lack of codification by the legislator or international standard setters indicate that there is (still) no system of recognised and generally applicable principles of proper business valuation.

However, the Institute of Public Auditors in Germany (*Institut der Wirtschaftsprüfer in Deutschland e. V.* (IDW)) has been stating its opinion on the principles of proper business valuation for quite some time. These pronouncements represent guidelines for appropriate business valuations in order to protect the valuers from the consequences of errors and the parties affected by the valuation from disadvantages that can result from an erroneous business valuation. Since other professional groups (e.g., tax and management consultants) and institutions (e.g., investment companies, banks, public administration and courts) now also use the standards on business valuation developed by the IDW, they have the character of non-codified principles of proper business valuation, the application of which is now accepted beyond the borders of the German legal area.

In the event of (legal) disputes about inaccurate and erroneous consultations and appraisals as well as liability issues in the context of company valuations, the commissioned experts will generally be able to exculpate themselves. Provided they succeed in proving the proper application of the aforementioned valuation principles, although they do not have the character of a legal norm, in the fulfilment of the tasks assigned to them. Against this background, those responsible for controlling should also be guided by the IDW's pronouncements on business valuation when setting up and using a value-oriented management system.

3. WACC APPROACH AND CAPM AS BASIC METHODS

3.1. Inclusion of income tax effects

The most common variant of company valuation in science and practice is the weighted average cost of capital (*WACC*) approach (Freidank & Ceschinski, 2019; IDW, 2018). The *WACC* is used to discount payments to both equity and debt providers, which must be reduced beforehand by adjusted income taxes and interest on borrowed capital. When reverting to the free cash flow approach, corporate taxes are treated in the same way as for purely equity-financed companies, i.e., the free cash flows are not adjusted for the income tax benefit from debt (tax shield). However, this procedure is corrected by assuming an interest rate after income taxes when calculating the cost of capital (*WACC*) by including the factor (1 - *s*). This lowers the discount factor and thus takes into account the income tax advantage from the debt through a higher enterprise value. Thus, the following relationships apply to the free cash flow approach for finite (1) or infinite consideration (2):

$$V = \sum_{t=1}^{T} \frac{CF_t}{(1+WACC)^t} - M_D = M_E \quad (1)$$

$$V = \sum_{t=1}^{T} \frac{CF_t}{(1+WACC)^t} + CF_t \cdot \frac{1}{WACC \cdot (1+WACC)^T} - M_D = M_E \quad (2)$$

with:

$$\text{WACC} = i_E \cdot \frac{M_E}{M_E + M_D} + i_D \cdot \frac{M_D}{M_E + M_D} \cdot (1 - s) \quad (3)$$

- CF_t free cash flow in period *t*;
- i_E cost of equity;
- i_D cost of debt;
- M_E market value of equity;
- M_D market value of debt;
- *s* income tax rate of the company;
- *t* period index;
- *T* period total with *t* = 1, 2, …, *T*;
- *V* company value.

The planned free cash flows (CF_t) for the individual forecast periods should be derived indirectly from the income and expense accounts, since the company to be valued usually keeps an income statement but not a cash inflow and outflow statement. This can be done in accordance with the incremental approach (Köppen, 2004) on the basis of the free cash flow approach method as shown below in abbreviated form (IDW, 2008, Note 30).

Planned annual result for period *t*:

+ interest on borrowed capital;

- tax shield;

- non-cash income (e.g., write-ups, reversal of provisions);

+ non-cash expenses (e.g., depreciation, formation of provisions);

- investment disbursements;

+ disinvestment inflows;

± decrease/increase in net current assets (working capital)[1];

= planned free cash flow for the period *t* (CF_t).

The cost of debt capital (i_D) can be determined, for example, on the basis of contractual loan agreements, effective interest payments or current market conditions. In addition, it is also possible to derive the cost of debt capital from the national or international financial statements by adding the interest expenses, ancillary financing costs and discounts, etc., shown there and relating them to the stock of noncurrent debt capital. By integrating the income tax rate (*s*) into the *WACC* formula, the deductibility of borrowing costs from the company's trade and corporation tax assessment bases should be approximately taken into account. For corporations, for example, a combined income tax rate can be calculated in a simplified manner with regard to the effect of trade tax and corporate income tax, as shown below.

First of all, the factor for trade tax (*Gewerbesteuer* = *sg*) must be calculated taking into account the federal tax rate (*Steuermesszahl* = *m*) for

[1] Working capital = inventories and trade receivables – trade payables.

the trade income (section 11 para. 2 German Trade Tax Law (*Gewerbesteuergesetz*, GewStG)), the assessment rate (*Hebesatz = h*) of the local municipality (section 16 para. 1 GewStG) and the prohibition of the deductibility of trade tax as a business expense from its own assessment basis (section 7 sentence 1 GewStG in conjunction with section 4 para. 5b German Income Tax Law (*Einkommensteuergesetz*, EStG)).

$$sg = m \cdot h \tag{4}$$

With regard to corporate income tax (*Körperschaftsteuer*), it is advisable to use the definitive tax rate (*sd*) (section 23 para. 1 German Corporate Tax Law (*Körperschaftsteuergesetz*, KStG)) plus the solidarity surcharge (*soli*) as a basis. Taking into account the prohibition of the deductibility of trade tax as a business expense from the corporate income tax base (section 8 para. 1, sentence 1 KStG in conjunction with section 4 para. 5b EStG) and the integration of the solidarity surcharge levied on corporate income tax (section 2 no. 3, section 3 para. 1 no. 1 and 2, section 4 sentence 1 German Solidarty Surcharge Law (*Solidaritätszuschlaggesetz*, SolzG)), the combined income tax rate at the corporate level (*s*) can be calculated:

$$s = sg + (1 + soli) \cdot sd \tag{5}$$

It follows from the above considerations that, in addition to the effects of corporate taxes, those of the company owners' personal income taxes must also be taken into account when determining the interest on borrowed capital, unless this has already been done in the cash flow calculation (IDW, 2018). Thus, in the free cash flow approach, the *WACC* formula shown in equation (3) must be expanded as follows (*se* = income tax factor).

$$WACC = i_E \cdot \frac{M_E}{M_E + M_D} + i_D \cdot \frac{M_D}{M_E + M_D} \cdot (1 - s) \cdot (1 - se) \tag{6}$$

The market value of equity (M_E) in the *WACC* model thus results from the sum of the cash flows of the planning horizon discounted with the help of the *WACC*. However, the determination of the *WACC* presupposes the market value of the equity, which results in a circularity problem for the determination of the enterprise value, if the planning of the enterprise to be valued is based on an autonomous financing policy. In this case, the planning of the future debt capital stock is carried out independently of the enterprise value in absolute terms, although a variable capital structure is assumed. The exceptional case of a value-oriented financing policy, on the other hand, is when the future debt capital stock is not planned in absolute terms, but rather the future capital structure is planned on the basis of market value, depending on the enterprise value (Enzinger & Kofler, 2011).

3.2. CAPM

Furthermore, it has become widely accepted, that in order to determine the cost of return on equity, the capital asset pricing model (CAPM) is used (Sharpe, 1964; IDW, 2018). As the following equation shows, the cost of equity is basically calculated from the risk-free, non-tax-adjusted capital market interest rate of an alternative investment (*i*) plus the risk premium, which in turn is the product of the risk premium *[EV(R) - i]* and the factor for the relative risk measure (β) of the analysed security.

$$i_{EK} = i + [EV(R) - i] \cdot \beta \tag{7}$$

The risk premium, which concerns systematic risk, describes the fluctuations in the return of the security under consideration compared to the market portfolio as an expression of the return development of the overall capital market and represents the general market risk. Systematic risks, such as price increases, economic fluctuations, legal reforms and the capital structure, are included in the CAPM and are remunerated to the investor. Not included in the CAPM, on the other hand, is the non-systematic (individual) risk of the company, which is reflected, for example, in the quality of the employees, the strategic conception and the competitive situation and is not remunerated to the investor (Franken, Schulte, Brunner, & Dörschell, 2020). While systematic risks are beyond the investor's control, unsystematic risks can be reduced or completely avoided through appropriate investment decisions (e.g., through diversification).

The risk premium corresponds to the difference between the expected return of the market portfolio *[EV(R)]* and the risk-free return (*i*) in the form of the capital market interest rate, which is usually determined by the interest rate of safe, long-term financial investments (usually government bonds) as an alternative investment. For the market portfolio, often represented by stock indices such as the German Stock Index (DAX) or the Dow Jones Index, and the capital market interest rate, historical data are usually available. In order to obtain an average value for the risk premium, the arithmetic or geometric mean is used, whereby the results often differ depending on the capital markets and economic sectors considered.

The relative risk measure (β), also referred to as the "risk-weighting factor" or "corporate beta", is intended to capture systematic risk and thus describe how much the return of the security being valued deviates from the return of the market as a whole[2]. The greater the beta, the more uncertain the return, which means that the risk premium must increase. This expresses the fact that investors are only willing to hold security with a high beta risk if they can expect a corresponding return. The beta can be determined empirically through a regression analysis (Franken et al., 2020; Perridon, Steiner, & Rathgeber, 2017) by assuming a linear relationship between the stock and overall market development, which finds expression in the form of a CAPM straight line. Since the relationship is monocausal, i.e., the influence of the stock index on the individual security is much stronger than vice versa, the least squares method can be used to calculate the regression (Freidank & Sassen, 2020). This means that with a beta of 0, the fluctuations have no effect on the price of the shares so that there is no risk premium at all. With a beta of 1, they

[2] The risk-weighting factor captures the effects of market portfolio volatility on the share price of the considered stock when determining the cost of equity. In this context, the company beta describes the general market risk assumed with an investment or financing.

would be identical and with a beta greater or smaller than 1, the fluctuation and thus the systematic risk is greater or smaller than the development of the market portfolio. Consequently, the company beta (β) can move in the following value ranges (Günther, 1997):

- $\beta = 0$: No effect of the fluctuations of the market portfolio on the share price of the security under consideration.
- $\beta = 1$: Fluctuations of the market portfolio correspond to those of the share price of the security under consideration.
- $\beta < 1$: Fluctuations of the market portfolio are greater than those of the share price of the security under consideration.
- $\beta > 1$: Fluctuations of the market portfolio are smaller than those of the share price of the security under consideration.

In the case of corporations that are not listed on the stock exchange and therefore do not have an individual share price or partnerships, there is the alternative of including comparable (capital market-oriented) companies (so-called peer group) in the regression analysis. This enables a (substitute) benchmark-oriented determination of the company beta and thus of the company-specific, adjusted cost of equity possible.

3.3. Tax CAPM

Even though no tax effects are included in the above basic formula for calculating the cost of equity (i_E), the literature assumes a calculation of the calculation interest rate according to personal income taxes (income and church taxes taking into account the solidarity surcharge) (IDW, 2008, Note 120/122; IDW, 2018). In the direct method, the personal income taxes are both deducted from the absolute amount of the cash flows to be discounted and taken into account when determining the interest rate (IDW, 2008, Note 93). This approach is based on the view that the capitalisation interest rate must reflect the return on an alternative investment on the capital market, the tax effects of which are to be recorded by adjusting the same. In this way, the different taxation of the alternative investment is to be recorded according to the relevant tax system. By including the personal income tax rate (*se*), the above basic formula can now be extended to the tax CAPM (IDW, 2018).

Since a rational investor will decide in favour of an investment in private assets, since under German tax law there is then no burden of trade tax, only the effects of income tax are to be recorded at this personal tax rate. For this purpose, from an objective point of view, a standard (average) income tax rate within the meaning of section 32a EStG can be assumed, which takes into account the circumstances of a shareholder resident in Germany with unlimited tax liability, including church tax and solidarity surcharge. In this case, the generally accepted view is to use an income tax rate of 35% as a basis for the typification (IDW, 2008, Note 93).

If one assumes with regard to the personal tax burden that since January 1, 2009, in principle all income from capital assets pursuant to section 20 EStG (e.g., interest, dividends as well as realised capital gains) is recorded pursuant to section 32d para. 1 sentence 1 EStG with a uniform final withholding tax rate (*sa*), then taking into account the solidarity surcharge (*soli*) pursuant to section 2 no. 1 and 2, section 3 para. 1 no. 1, section 4 sentence 1 SolzG (*se* = income tax factor) applies (Freidank, 2016)[3]:

$$se = (1 + soli) \cdot sa \tag{8}$$

If church tax is still included, it must be noted that according to section 32d para. 1 sentence 3 EStG, the final withholding tax is reduced by 25% of the church tax due on the investment income and the solidarity surcharge must also be calculated from the flat-rate reduced final withholding tax. Thus, in the case of church tax liability (*sc* = church tax factor):

$$se = sa \cdot (1 + soli + sc) \cdot (1 - 0.25 \cdot sc) \tag{9}$$

Thus, the cost of equity after personal income taxes can be calculated using the CAPM approach as follows, assuming that income tax has a full impact on the capital market return:

$$i_E = i \cdot (1 - se) + [EV(R) - i] \cdot \beta \cdot (1 - se) \tag{10}$$

or

$$i_E = (1 - se) \cdot \{i + [EV(R) - i] \cdot \beta\} \tag{11}$$

If the tax burden at shareholder level[4] is taking into account in the formula for recording the income tax burden at company level:

$$s = sg + (1 + soli) \cdot sd \tag{12}$$

Then, in consideration of equations (4) and (5) a combined income tax rate (*sge*) can be calculated, which records the total of corporation, trade, income and church tax when the alternative investment is held as business assets of an individual corporation:

$$sge = 1 - \{1 - [sg + (1 + soli) \cdot sd]\} \cdot [1 - sa \cdot (1 + soli + sc) \cdot (1 - 0.25 \cdot sc)] \tag{13}$$

This gives for the tax- and risk-adjusted cost of equity rate:

$$i_E = (1 - sge) \cdot \{i + [EV(R) - i] \cdot \beta\} \tag{14}$$

Despite many objections to the CAPM, it must be taken into account that there is currently no better explanatory approach accepted by theory and practice that would be able to capture risks in the form of bonuses in a quantitative and intersubjectively comprehensible way (Perridon et al., 2017; Günther, 1997; IDW, 2008, Note 118–122). If the capital structure risk is taken into account as a systematic risk in the beta factor, there is a leveraged beta (IDW, 2018). This is always the case if the beta factor is obtained from empirical

[3] The exemption limit and mitigation zone of the solidarity surcharge for natural persons pursuant to section 3 para. 3 sentence 1, section 4 sentence 2 SolzG applicable since January 1, 2021, are not taken into account in the following. For reasons of simplification, a full levy of the solidarity surcharge is assumed for natural persons.

[4] It is assumed that the shareholders of the corporation are natural persons who hold the share in the corporation as private assets. The tax exemption of distributions to corporations under section 8b para. 1 sentence 1 KStG in conjunction with section 7 sentence 1 GewStG and the mandatory application of the partial income procedure for distributions to partnerships are therefore not taken into account.

data derived from indebted companies. In contrast, there is talk of an unlevered beta if the beta factor only refers to the operational risk, such as the exogenous market risk and the endogenous performance risk (IDW, 2018). This constellation exists, for example, in the case of purely equity-financed companies. The transition from an unlevered beta (β_u) to a leveraged beta (β_1) can be made according to the following standard formula if it is assumed that the tax benefits from debt financing are certain (Ernst, Amann, Großmann, & Lump, 2012; IDW, 2018).

$$\beta_l = \beta_u \cdot [1 + \frac{M_D}{M_E} \cdot (1 - s) \cdot (1 - se)] \quad (15)$$

$$\beta_u = \frac{\beta_l}{[1+\frac{M_D}{M_E} \cdot (1-s) \cdot (1-se)]} \quad (16)$$

Equation (15) illustrates that the transfer process in turn requires the market value of equity, which, however, is the result of the company valuation according to equation (1). Thus, a further circularity problem arises by including the indebted beta via equation (3) in the *WACC* in the case of an autonomous financing policy.

3.4. The circularity problem and its solution

If, when applying the *WACC* approach, it is not the debt capital stock that is planned in absolute terms, but the future capital structure on a market value basis, the *WACC* and thus the enterprise value (*V*) are to be determined as the market value of the equity (M_E) of the company to be valued on a progressive and circularity-free basis (Enzinger & Kofler, 2011). In the case of an (autonomous) financing policy determined by corporate planning, however, a circularity problem arises, since individual components of the *WACC* approach depend on the valuation result sought due to the interdependencies that now exist. Lines in Figure 2 in the case of a finite approach mark the interdependencies of the valuation model according to the free cash flow approach with recourse to the CAPM (based on Enzinger and Kofler, 2011)[5].

Figure 2. Circularity under the free cash flow method with autonomous financing policy

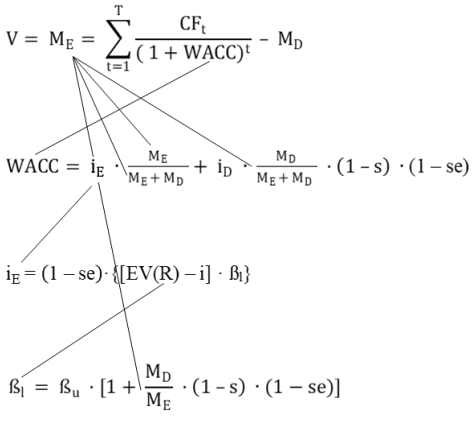


Figure 2 above illustrates that two circularities exist. On the one hand, the leverage ratio based on market values ($M_D : M_E$) is necessary for the determination of the cost of equity (i_E) with regard to the indebted company. On the other hand, the weighting factors of the equity and debt cost rate with regard to the determination of the *WACC* depend on the market value of the equity sought.

For the iterative solution of the circularity problem, the following basic procedure, which corresponds to a trial and error procedure, is suitable (Ernst et al., 2012)[6]:

- Estimation of the market value of equity.
- Determination of the preliminary *WACC* based on the estimated market value of equity.
- Determine the market value of equity by discounting the relevant cash flows using the preliminary *WACC*.
- If the result differs from the estimated market value of equity, a further iteration must be performed with a market value of equity that lies between the original estimate and the first result (adjusted market value of equity).
- Perform as many iterations as necessary until the market value resulting from discounting the relevant cash flows with the adjusted *WACC* corresponds to the adjusted market value of equity.

Another solution to the circularity problem is to either base the internal company valuation on a target capital structure or to derive the exact capital structure for each planning period, e.g., from the annual financial statement planning, and to calculate period-specific *WACCs* (Ernst et al., 2012). The alternative solution is preferred by practitioners, whereby the *WACC* is to be determined with regard to the free cash flow method on a period-specific basis as follows (Zwirner & Lindemayr, 2017):

$$WACC_t = i_E \cdot \frac{M_{E_{t-1}}}{M_{E_{t-1}} + M_{D_{t-1}}} + i_{FK} \cdot \frac{M_{D_{t-1}}}{M_{E_{t-1}} + M_{D_{t-1}}} \cdot (1 - s) \cdot (1 - se) \quad (17)$$

The need to determine a specific *WACC* for each planning period considerably increases the computational effort required to determine the enterprise value, which can, however, be kept within economic limits through the use of standard software programmes (Schüler, 2016).

4. MANAGEMENT WITH VALUE-ORIENTED KEY FIGURES

Rappaport's (1981) reflections on the shareholder value approach have inspired the conception of further methods regarding quantitative strategy evaluations and value-oriented key figure formulations. In particular, the more advanced approach of the Boston Consulting Group (cash flow return on investment (*CFROI*)) and the model of the consulting firm Stern, Stewart & Co (economic value added (*EVA®*))[7] are to be mentioned in this context. These methods represent fundamental

[5] In capturing the cost of equity, it is assumed that the effects of income tax and church tax are to be taken into account as personal income taxes of the shareholders.

[6] The circularity problem can also be solved with all discounted cash flow methods using the roll-back method (Casey, 2004; Enzinger & Kofler, 2011; Schwetzler & Darijtschuk, 1999). This method is based on a backward-looking calculation technique in that it starts from the value of the perpetuity and determines the enterprise value backwards on a period-by-period basis.

[7] *EVA®* is a registered trademark of Stern, Stewart & Co.

extensions or refinements of the shareholder value model, usually by modifying the basic parameters used in the calculation: free cash flow, *WACC* including CAPM and capital or investment. Since the methods focus on the differences between capital market-oriented and accounting-based earnings figures, they are also referred to in the literature as residual profit methods. Due to their increasing importance for business practice, the *EVA®* is presented below as an example[8].

EVA® captures the difference between the return on invested equity and interest-bearing debt (return on capital employed (*ROCE*)) and *WACC* and applies it to invested capital (capital employed (*CE*)). Thus:

$$EVA® = (ROCE - WACC) \cdot CE \quad (18)$$

with

$$ROCE = \frac{NOPAT}{CE} \quad (19)$$

or

$$EVA® = NOPAT - WACC \cdot CE \quad (20)$$

Net operating profit after tax (*NOPAT*) represents an accounting ratio that can be derived from the company's income statement under commercial law, as Table 1 shows. In principle, *NOPAT* represents the already taxed profit that can be distributed to equity and debt providers. In order to establish correspondence with the company valuation and comparability with the *WACC*, the personal income taxes of the company owners (e.g., the income tax for partnerships and the final withholding tax for corporations), calculated from the gross free cash flows and must be deducted from the net income for the year. This necessary correction is neglected by the relevant literature with regard to the determination of the *NOPAT*. For taking into account the tax advantage from debt financing, it is proposed to also subtract the tax shield from the net profit (Horváth et al., 2020). The resulting value is referred to in the literature as net operation profit less adjusted taxes (*NOPLAT*). In this case, however, it must be ensured that the income tax advantage from debt financing is taken into account as a reduction when determining the cost of capital (*WACC*) according to the free cash flow method. Thus, a positive *EVA®* results as a period-related control variable if the *NOPAT* exceeds the cost of equity and debt capital, i.e., the return is higher than the weighted cost of capital. In principle, a positive *EVA®* means that a company earns the cost of capital as a minimum return requirement (hurdle rate) and generates an increase in assets. Thus, three basic measures for increasing *EVA®* can be distinguished within the framework of internal corporate management (Hostettler, 1995):

- Increase in operating profit for the same amount of capital employed.
- Investing additional capital in projects whose expected return is higher than the weighted average cost of capital (*WACC*).
- Withdraw capital tied up in activities or assets whose return does not cover the weighted average cost of capital (*WACC*).

A negative *EVA®* indicates that the use of capital employed in another company with a comparable capital and risk structure would have led to a higher return.

Table 1. Derivation of net operating profit after tax (*NOPAT*) and net operating profit less adjusted taxes (*NOPLAT*) from the total cost method

	Statement of income drawn up in line with the German commercial code
	Sales revenue
±	Own work capitalised/change in inventories
+	Other operating income
=	Total output
−	Cost of materials
−	Personnel expenses
−	Other operating expenses
=	*EBITDA* (earnings before interest and tax, depreciation and amortisation)
−	Depreciation and amortisation
=	*EBIT* (earnings before interest and tax)
±	Financial result
=	*EBT* (earnings before tax)
−	Taxes on income
=	Net profit for the year
+	Interest expenses
–	Personal income taxes of the company owner
=	*NOPAT* (net operating profit after tax)
–	Corporate tax savings (tax shield)
=	*NOPLAT* (net operating profit less adjusted taxes)

The criticism of the *EVA®* method is, on the one hand, that it derives a historical, accounting-based ratio (*NOPAT*) from the figures of the operational accounting system. This has to be adjusted, e.g., hidden reserves and non-operating assets and compares this in the context of corporate management with a future, capital market-oriented ratio taking into account the CAPM (*WACC – CE*), whose basic values are highly uncertain (Botta, 2007). On the other hand, the *EVA®* amount determined in this way represents a period-related valuation figure whose control and comparison variables are not compatible from a theoretical and application-oriented point of view. Moreover, they do not provide any information about the enterprise value (Botta, 2007), which according to prevailing opinion can only be determined by discounting future earnings or cash flows over a forecast period (Ballwieser & Hachmeister, 2013). However, it is possible to calculate the market value added (*MVA*) by forming an *EVA®* series to be discounted with the *WACC*. This can be understood as the market value increase or also derivative goodwill of the company in the entire forecast period. In the case of an infinite approach, the *MVA* can be determined as follows:

$$MVA = \sum_{t=1}^{T} \frac{EVA_t}{(WACC)^t} + EVA_{T+1} \cdot \frac{1}{WACC \cdot (1+WACC)^T} \quad (21)$$

Furthermore, it is suggested in the literature to add to the *MVA* the invested capital (*CE*) at time $t = 0$ and to subtract the market value of the debt capital in order to then calculate the market value of

[8] For other value-based indicators, see Coenenberg and Schultze (2002), Horváth, Gleich, and Seiter (2020), Lachnit and Müller (2012), Troßmann (2013).

the equity capital as the enterprise value (*V*) as shown below (Gladen, 2014; Hoke, 2002; Lachnit & Müller, 2012).

$$V = M_E = MVA + CE - M_D \quad (22)$$

However, if *NOPAT* is determined on the basis of budgeted balance sheets and budgeted income statements, *EVA®* or *MVA* are no longer needed as target performance indicators, because in this case a company valuation can be carried out according to the free cash flow method. For the above reasons, the authors conclude that the *EVA®* concept, as well as other residual profit methods, are only of significance as plausibility methods in the context of an internal company valuation[9].

5. MANAGEMENT WITH THE INTEGRATED BALANCED SCORECARD

5.1. Consideration of integrated thinking

Based on the current developments in corporate reporting towards integrated reporting, the concept of a balanced scorecard is presented below, drawing on the capital concept of the International Integrated Reporting Council (IIRC) as an instrument for implementing integrated management and reporting (Freidank & Hinze, 2015; IIRC, 2021). The integrated report is to be understood as a superordinate top-level report that bundles the essential statements from the multitude of published report formats and shows their interdependencies. By combining the information from the previously isolated report contents of the various publication formats, integrated reporting is intended to help overcome so-called "silo thinking". "Silo thinking" is the isolated consideration of individual subject areas and the associated separate reporting. An integrated report is thus able to provide a concise overview of the information that is useful for decision-making and thus significantly increase the communication efficiency of the corporate publication system. The IIRC refrained from a detailed specification of specific report contents in favour of a principle-based approach. The postulate of information linkage forms one of seven reporting principles to which the integrated report is to be aligned according to the IIRC. Other principles anchored in the framework are strategic focus and future orientation, stakeholder orientation, materiality, conciseness, reliability and completeness as well as consistency and comparability (IIRC, 2021, Note 3.1.). In addition, the framework provides eight reporting elements that the IIRC believes an integrated report should contain: organizational overview and business environment, governance, business model, risks and opportunities, strategic objectives and resource allocation plans, performance, outlook, and basis of report preparation and presentation (IIRC, 2021, Note 4.1.). The principle-based approach of the framework allows for a company-specific adaptation of the report content to the aspects relevant to the respective company or its stakeholders and thus simplifies the intended international applicability of the framework.

In addition, the IIRC highlights the following six types of capital to be addressed in the reporting process (IIRC, 2021, Note 2.15.):

- financial capital, e.g., equity and debt;
- manufactured capital, e.g., buildings, equipment, infrastructure, products for sale;
- intellectual capital, e.g., patents, licenses, know-how, organizational structures and processes;
- human capital, e.g., employee experience, motivation, loyalty;
- social and relationship capital, e.g., reputation, relationship and exchange of information with (important) stakeholders and communities; and
- natural capital, e.g., raw materials, air, water, biodiversity.

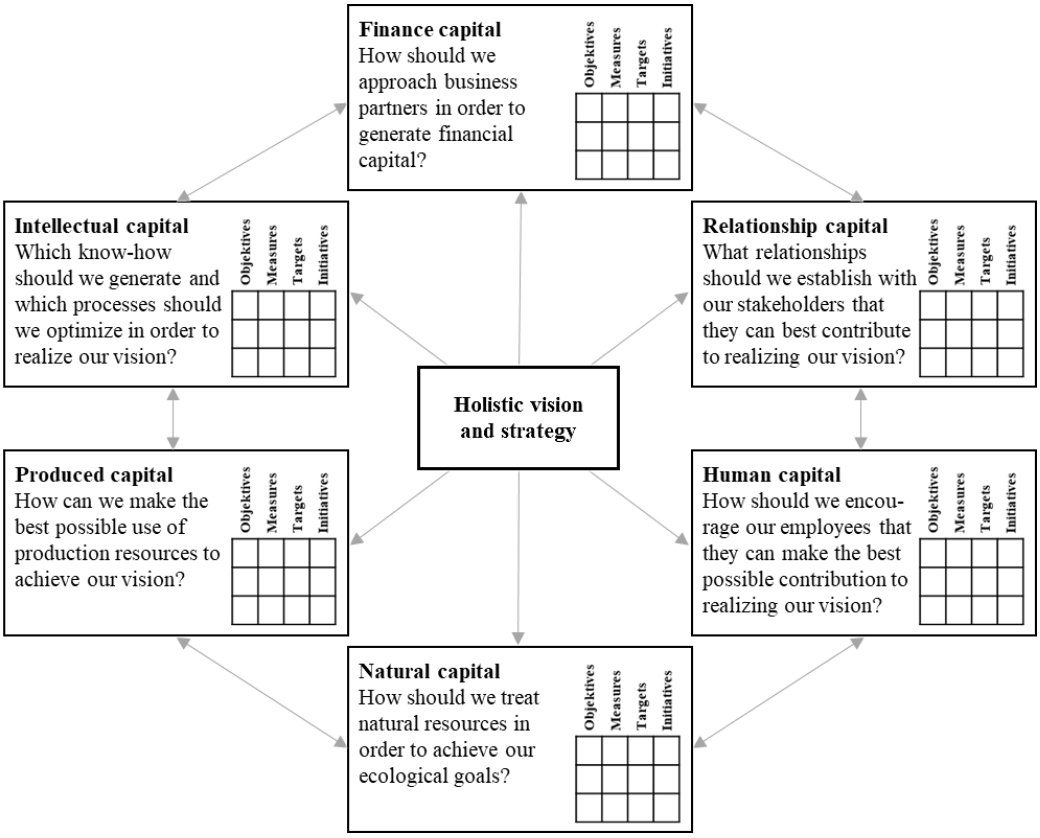
These capitals represent stores of value that are used by the company as input factors and transformed within the framework of the business model (IIRC, 2021). Even if the categorization presented is not to be followed obligatorily, it is intended to underline the complex understanding of values of the IIRC. This view is accompanied by an expansion of the traditional definition of capital, which should also be reflected in a corresponding expansion of management's sense of responsibility. The framework of integrated reporting, therefore, does not only have the character of a reporting concept. Rather, an integrated report is to be understood as the result of integrated thinking and decision-making within the company (Lorson & Paschke, 2015). It should reflect the management's ability to implement the integrated approach within the framework of the company's organizational structure and processes and thus to take the complexity of value creation into account appropriately in planning, controlling and steering. The IIRC thus strives for further development of corporate management towards a holistic, integrative approach that takes equal account of financial and non-financial management elements and integrates them into the relevant decision-making processes.

5.2. Expansion to six types of capital

The transformation of strategy into operational targets is considered one of the most important capabilities of a company. In particular, the transformation of non-financial goals into operational targets, which is necessary within the framework of integrated thinking, will present many companies with major challenges. Against this background, Figure 3 shows an integrated balanced scorecard (Freidank & Hinze, 2016), which, based on the basic model of the balanced scorecard (Kaplan & Norton, 1996; Kaplan & Norton, 1992), should enable a balanced consideration of the different types of capital and thus an effective implementation of the integrated thinking approach.

[9] For example, there is no reference in IDW (2008) to the application of residual profit methods, in particular the *EVA®* method. See also Horváth et al. (2020) for criticism of the *EVA®* concept.

Figure 3. Concept of the integrated balanced scorecard



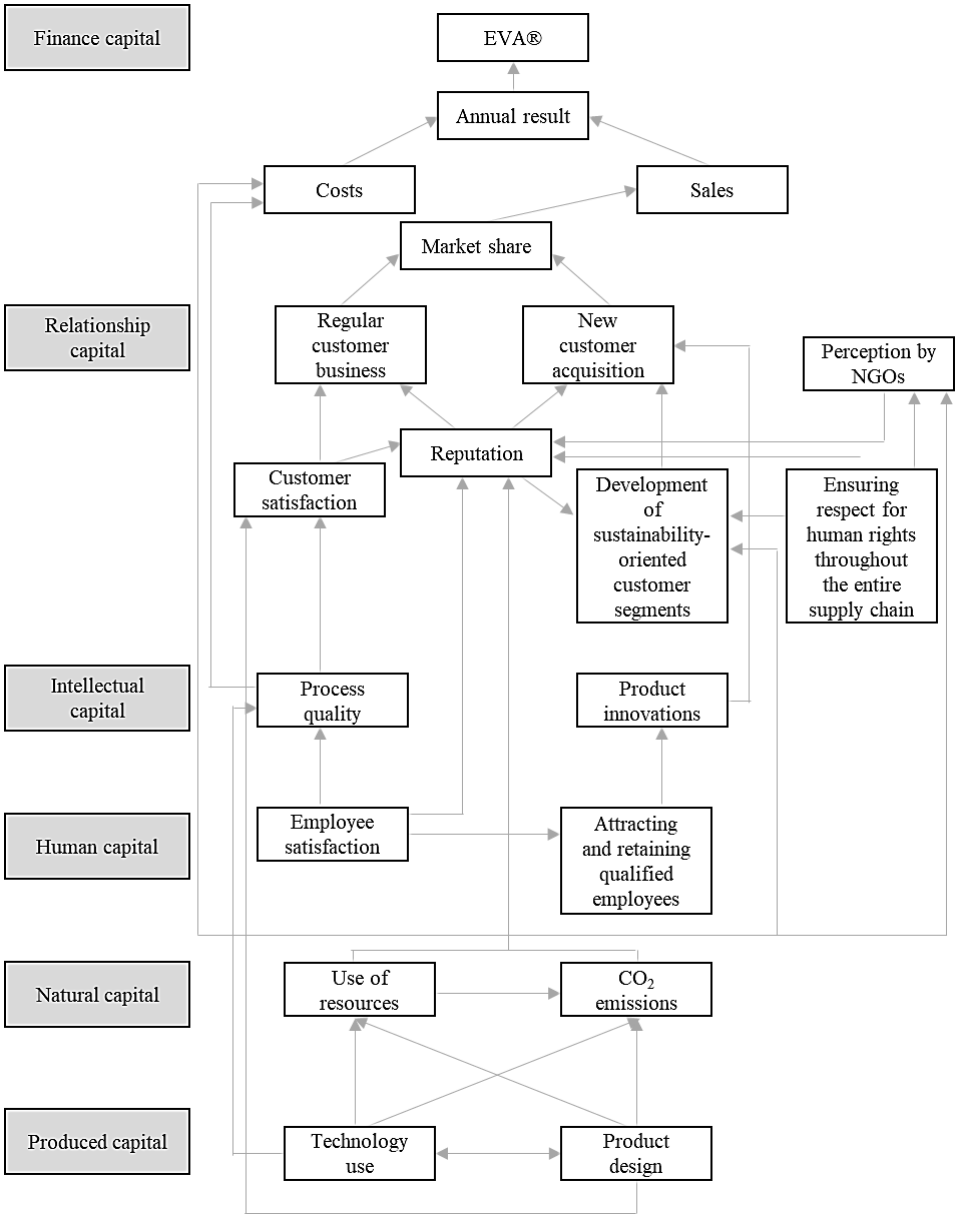
While the traditional financial perspective is retained in the form of financial capital, the other five types of capital replace the non-financial perspectives. However, there are overlaps between the new capital perspectives and the original non-financial dimensions. The customer dimension is taken into account within the framework of relationship capital, with customers as the most important stakeholders of a company. The human capital perspective covers the learning and development perspective, which includes above all the qualification and motivation of employees, in particular. However, the innovation potential of a company, which is also subsumed under the learning and development perspective, is assigned to intellectual capital. In addition to patent developments and the development of expertise, this also includes the quality of the company's internal processes and thus reflects the contents of the internal process perspective. Natural and produced capital are thus included in the consideration of the corporate strategy as completely new performance aspects, i.e., sometimes input factors of the corporate value creation process, which as common goods are not associated with direct financial costs for the company (e.g., air, infrastructure). However, the use of these resources may be associated with disadvantages for society, which should also be taken into account in line with the broader understanding of value advocated by the IIRC. In line with the extended corporate responsibility associated with this, relational capital also covers numerous other stakeholders (e.g., political parties) and their interests in addition to customers, who, in contrast to customers, may only have an indirect connection to the corporate value creation process.

At the centre is a holistic vision, i.e., one that encompasses both financial and non-financial aspects, and the corresponding corporate strategy. The structure makes it possible to look at the company's performance from six different perspectives and thus contributes to the concretization of the strategy to be pursued. In doing so, the objectives in relation to the respective types of capital can be aligned with the strategy and thus an operationalization of the non-financial objectives can be carried out. By breaking down the overall strategy into operational plans, the integrated balanced scorecard is able to contribute to overcoming the discrepancy between strategy formulation and implementation (Horváth, Gleich, & Seiter, 2020). Within the perspectives, a restriction to only a few key figures has to be made, which promotes a strong selection and thus also a focus on the essential value drivers.

5.3. Relationships between the types of capital

As with the traditional balanced scorecard, financial capital is defined as the top target achievement level, as the main purpose of an integrated report according to IIRC is to provide information to financial capital providers (IIRC, 2021, Note 1.7.). No clear hierarchical relationship can be established between the other types of capital; rather, a variety of cause-and-effect relationships between the capitals is conceivable. Figure 4 shows examples of possible causal relationships between the types of capital.

Figure 4. Examples of cause-effect chains between the capital dimensions



Economic value added (*EVA®*) is a financial, value-oriented key figure, which, with reference to accounting ratios, is able to measure deviations from the required minimum return on equity and debt capital employed. In addition, it can provide management with indications for strategic control measures. It can be seen that the cause-effect relationships between the capitals do not show a clear direction of influence. The ranking of the types of capital chosen here does not represent a hierarchy between the five non-financial capital items. CO_2 emissions, as an ecological indicator of the natural capital dimension, can be used, for example, to show the strong interconnectedness of the capitals. The level of CO_2 emissions is determined, among other things, by the technologies used in production, the design of the product and the resources used in production. The level of CO_2 emissions, in turn, has a direct impact on the company's reputation as a publicity-intensive ecological indicator. Furthermore, high emission levels can cause conflicts with non-governmental organizations (NGOs), which in turn have a negative impact on the company's reputation.

In addition, low-emission production compared to competitors can help to open up sustainability-oriented customer segments and thus acquire new customers. Furthermore, within the framework of emissions certificate trading, a direct effect of the level of CO_2 emissions on financial capital is also conceivable. Overall, it can be seen that corporate reputation, as an element of relational capital, is one of the key variables catalysing the impact of non-financial performance on financial ratios. Reputation is influenced by numerous factors. For example, the quality of relationships with different stakeholders, such as customers, NGOs and suppliers, has a significant impact on the public perception of the company.

The treatment of employees, who are regarded as an independent type of capital due to their special position and are not subsumed under

the stakeholders in the relationship capital, can also have an impact on reputation. This, in turn, influences the profitability of the future and the loyalty of current employees and thus indicators of human capital. As one of the central determinants of purchasing decisions, reputation also affects customer behaviour and thus has a considerable influence on the financial capital level.

The analysis of the various causal relationships between the capital perspectives enables a discussion of the mutual dependencies of the individual capitals and thus creates the necessary basis for a successful consideration of the principle of information linkage demanded by the IIRC. Furthermore, the consideration of the sub-goals within the different perspectives, which are necessary for successful strategy implementation, can contribute to highlighting the importance of the individual capitals within the framework of the value creation process and thus to identifying the most essential types of capital for an organization. Thus, the integrated balanced scorecard serves as a central instrument for the implementation of integrated thinking and supports the creation of a corresponding integrated reporting. The connection between internal and external management reporting is made through the concept of the management approach, according to which external reporting draws on the data generated internally for corporate management purposes and is taken into account by the management body in the decision-making processes.

6. LIMITATIONS AND THE HOLISTIC CONTROLLING CONCEPT

Since the holistic controlling approach is embedded in the recognised business management concepts (value-oriented corporate management, corporate valuation, the balanced scorecard and integrated reporting), there should in principle be no limitations to its successful application in corporate practice. However, it must be taken into account that the influences of social, societal and ecological goals on the top financial indicator economic value added (*EVA®*) can only be recorded with sufficient accuracy if the diverse interdependent cause-effect relationships between the six types of capital are taken into account completely and precisely. Thus, those responsible for controlling must ensure that the cause-effect relationships in question are meticulously planned and adjusted to new developments on a rolling basis, both in the creation and in the updating of the integrated balanced scorecard. However, it should be noted that even the approach of value-based management underlying the holistic management concept cannot solve the forecasting problem of planning, since both the planning of cash flows and *EVA®* as well as the cause-effect relationships between the types of capital are uncertain for longer periods. In addition, the strong dependence of *EVA®* on the book values of the company is a point of criticism for its use as a top ratio.

The integrated balanced scorecard, which represents the central area of the holistic controlling concept, contains the linking of goals and measured variables of certain perspectives within the overall system. This means that there are multi-causal cause-effect relationships between the individual types of capital, which, due to their complexity, must be determined and mapped with IT support by coordination-oriented controlling within the framework of a digitalisation strategy. In this context, it must be taken into account that it is possible to fall back on existing IT structures and IT solutions within strategic corporate management, which must be further developed accordingly. This provides the opportunity to realise fast, cost-effective and tangible solutions by first successively digitising the existing analogue business model of the company with the inclusion of verified business management findings. Building on this experience, it is necessary to develop a comprehensive digital holistic control concept, if appropriate with reference to artificial intelligence applications, into which the findings for the step-by-step digitalisation of the analogue business model must then flow (Freidank, 2019b). This approach can largely avoid dangers in the use of digitisation innovations, which can lead to overreactions to short-term fluctuations in results, restrictions on the rationality of management because of information overload, a decreasing willingness to innovate or wrong decisions due to the processing of inaccurate training data from artificial intelligence systems (Abel & Nevries, 2019).

7. CONCLUSION

It was made clear that the strategic management of listed corporations must be carried out by means of a value-oriented controlling system that is based on the shareholder value network and incorporates sustainable objectives. According to this holistic management concept, the primary corporate goal is to secure the company's long-term existence, which is to be achieved through a long-term and permanent increase in shareholder value as the overall objective. The market value of equity is used as a measure of shareholder value, which corresponds to the value of the company taking into account the risks of the capital market. Its change is to be measured with the help of cash flow-oriented ratios, the company's cost of capital and debt capital. It follows from this that controlling must permanently determine the market value of the company, understood as the value of future success, in order to determine whether the available funds are being used in such a way that the goal of a long-term increase in shareholder value is met. For this purpose, company values determined at different reporting dates are to be compared.

In determining the value of a company, the methods of the *WACC* approach and the CAPM should be used, which have in the meantime become established at all levels of science and practice. In order to avoid wrong decisions and wrong taxation, income taxes at both company and shareholder level must be included in the concepts for determining the company value. As has been shown, the relevant income tax effects can be recorded quickly (Rose, 1986; Rose, 1979; Scheffler, 1991), clearly and with sufficient certainty and accuracy using the instrument of partial tax accounting, despite its simplifications, without

having to resort to an elaborate casuistic assessment simulation.

In addition, it was shown how the circularity problem that arises when resorting to the free cash flow approach in the case of an autonomous financing policy could be solved.

An important control parameter in the context of value-oriented controlling is the *WACC*, which expresses the targeted minimum return on the equity and debt capital employed. In order to measure whether the company has earned the cost of capital as a minimum return requirement (hurdle rate) and generated an increase in assets, the *EVA®* is primarily used in business management practice. This value-oriented top ratio compares the *WACC* with the return on capital achieved by the company and provides indications for the strategic management of cash flows, the cost of capital and the use of capital. Based on this approach, further financial and non-financial sub-targets in the area of operating activities, investment and financing are to be broken down in terms of downstream sub-policies within the framework of corporate policy and their achievement is to be monitored and controlled.

Due to the increasing importance of non-financial performance indicators and the associated development towards integrated reporting, companies are increasingly confronted with the need to consider non-financial aspects of their business activities within the framework of corporate strategy and to actively manage them. Since the operationalization of the associated non-financial goals, in particular, can present companies with great challenges, the use of the integrated balanced scorecard might be an appropriate option. This should enable companies to translate their non-financial targets into operational targets within the framework of a holistic strategy and, building on the capital concept of the IIRC, to manage them according to the top financial indicator *EVA®*. Furthermore, the concept of the integrated balanced scorecard proves to be extremely flexible for recording financial and non-financial performance indicators for the purpose of corporate management. In the context of acquisition processes, for example, it is possible to control the effect of genuine synergy effects that arise between the buyer and target companies in a targeted manner in all phases of the transaction process (Freidank, 2019a).

Finally, the holistic management approach presented offers indications for the implementation of digitisation strategies. Here, taking into account the proposals developed, the establishment of specific programme structures is recommended, which are to be successively integrated into the analogue business model of the listed corporation. At the end of the entire digital transformation process, however, there must be the development and networked implementation of a holistic digital business model including digital products with an integrated digitalisation of controlling, accounting, financial reporting and corporate taxation based on artificial intelligence applications.

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