

# VALUE ADD FINANCIAL MEASURES USED BY GERMAN DAX 30 CORPORATIONS AS PART OF HIGHLY PROFESSIONALIZED CORPORATE GOVERNANCE MANAGEMENT

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## ABSTRACT

**Purpose.** *This research paper shows which value add measures are used by German DAX 30 corporations in their 2015 annual reports. It explains how different measures like shareholder value, economical value add (EVATM), return on capital employed (ROCE), return on equity (ROE) and others are calculated and how they correlate. Corporate governance has been highly professionalized which clearly shows in the annual reports of all firms. The requirement for "sustainable creation of value" as stated in the German Corporate Governance Codex (Regierungskommission Deutscher Corporate Governance Kodex, 2015) is made transparent as a core element in the companies' annual reports.*

**Design.** *70% of the DAX 30 firms show value add data and some of them even highlight that value add has been made part of their corporate management approach. In turn this means that 30% of the firms are not showing value add data in a prominent way. The paper focuses on the 70% showing value add data and how EVA, company specific EVA-like measures or ROCE are the most used ones.*

**Findings.** *The paper shows that ROCE with a factor of 0,97 correlates best with EVA and in absence of an EVA calculation is the best measure to represent value creation.*

**Originality.** *As part of a dissertation the aim is to develop a best in class measurement system and comparison for corporate governance theoretical and empirical analyses. The paper has been presented at 21st European Scientific Conference of Doctoral Students - PEFnet2017 organized by the Faculty of Business and Economics of Mendel University in Brno, taking place on November 30, 2017 on the campus of Mendel University in Brno, Czech Republic.*

## 1. INTRODUCTION

The objective of the first theoretical part of this paper is to identify and analyze financial measures against their usefulness to show financial value added as part of professionalizing corporate governance. The second part's objective is to show, analyze and discuss which financial measures are actually used by the German DAX 30 corporations. An additional intention is to provide inputs from the learnings of this research to members of the board of directors or supervisory boards.

Claessens and Yurtoglu (2013) review research on corporate governance, with a special focus on emerging markets (Claessens, Yurtoglu, 2013). Claessens and Yurtoglu (2013) find that better corporate governance benefit firms through greater access to financing, lower cost of capital, better performance, and more favorable treatment of all stakeholders (Claessens, Yurtoglu, 2013). Lazonick and O'Sullivan (2000) provide an historical analysis of the rise of shareholder value as a principle of corporate governance, Lazonick and O'Sullivan (2000) consider the performance of the US economy, and raise questions about the relation between the maximization of shareholder value and the sustainability of economic prosperity (Lazonick, O'Sullivan, 2000).

Khan et. al., (2013) examine the relationship between corporate governance and the extent of corporate social responsibility (CSR) disclosures (Khan et. al., 2013). Khan et. al., (2013) results suggest that although CSR disclosures generally have a negative association with managerial ownership, such relationship becomes significant and positive for export-oriented industries (Khan et. al., 2013), (Michalski, 2016). Aguilera and Jackson (2003) develop a theoretical model to describe and explain variation in corporate governance among advanced capitalist economies (Aguilera, Jackson, 2003). Model of (Aguilera, Jackson, 2003) has strong implications for studying issues of international convergence (Aguilera, Jackson, 2003).

Liu and Zhang (2017) take Chinese companies in heavy-pollution industries the relationships among corporate governance, social responsibility information disclosure, and enterprise value (Liu, Zhang, 2017). (Liu, Zhang, 2017) find that there is a declining level of social responsibility information disclosure of listed enterprises in heavy-pollution industries (Liu, Zhang, 2017). Forbes and Milliken (1999) develop a model of board processes by integrating the literature on boards of directors with the literature on group dynamics and workgroup effectiveness (Forbes, Milliken, 1999).

Croci et. al., (2017) examine minority squeeze-outs and their regulation in Germany. According to Croci et. al., (2017) carry out the first detailed analysis of the German squeeze-out offers from the announcement to the outcome of post-deal litigation. Croci et. al., (2017) claim that large firms with foreign large shareholders are the most likely to be delisted (Croci et. al., 2017). Baysinger and Butler (1985) examined role of the board of directors in the theory of the firm and argue that the recognition of the governance and instrumental functions of individual

directors is an important element in developing a theory of corporate governance (Baysinger, Butler, 1985)

Al-Najjar, (2017) investigates the impact of board and CEO characteristics on CEO compensation (Al-Najjar, 2017). (Al-Najjar, 2017) indicate that board size, board independence and CEO age are important factors affecting CEO pay (Al-Najjar, 2017). Daily et. al., (2003) claims the field of corporate governance is at a cross-roads (Daily et. al., 2003).

Nuthall and Old (2017) observe that family farming has been the dominant ownership and governance system in primary production. Nuthall and Old (2017) hypothesised that the farmers' personal characteristics play a major part in the choice, and continuance, of current ownership and governance systems. Core et. al. (1999) find that measures of board and ownership structure explain a significant amount of cross-sectional variation in CEO compensation and (Core et. al., 1999) suggest that CEOs earn greater compensation when governance structures are less effective. (Core et. al., 1999) find that firms with weaker governance structures have greater agency problems and greater compensation is paid to CEOs at firms with greater agency problems (Core et. al., 1999).

La Porta et. al. (2000) describe the differences in laws and the effectiveness of their enforcement across countries (La Porta et. al., 2000), they also assess potential strategies of corporate governance reform. La Porta et. al. (2000) argue that the legal approach is a more fruitful way to understand corporate governance (La Porta et. al., 2000). Shleifer and Vishny (1997) surveyed research on corporate governance, with special attention to the importance of legal protection of investors and of ownership concentration in corporate governance systems around the world (Shleifer, Vishny 1997). In similar manner (Shleifer, Vishny, 2007) surveyed research on corporate governance, with special attention to the importance of legal protection of investors and of ownership concentration in corporate governance systems around the world (Shleifer, Vishny, 2007).

Liu et. al., (2017) find that the media can play a role in corporate governance by influencing the value of CEOs' human capital (Liu et. al., 2017). Jensen and Meckling (1976) integrates elements from the theory of agency, the theory of property rights and the theory of finance to develop a theory of the ownership structure of the firm (Jensen, Meckling, 1976). They define the concept of agency costs, show its relationship to the control and separation issue, (Jensen, Meckling, 1976) made research on the nature of the agency costs generated by the existence of debt and outside equity. Apart from that Jensen and Meckling (1976) demonstrate who bears costs agency and investigate the Pareto optimality of existence agency costs during corporate governance process (Jensen, Meckling, 1976).

Kalodimos (2017) found that the effect of internal governance on performance is potentially economically significant but may be difficult to identify. Kalodimos (2017) claims that there is a case because of confounding external disciplinary mech-

anisms and the endogenous choice of internal governance (Kalodimos, 2017). Study of Kalodimos (2017) addresses those difficulties by using nonprofit (Svidroňová et. al., 2016) hospitals (Soltés, Cavurova, 2016) as an economic environment with muted external disciplinary mechanisms and instrumenting for internal governance using governance spillovers of geographically local public firms (Kalodimos, 2017). Gompers et. al. (2003) constructed a Governance Index by which they defined the level of shareholder rights at large firms. Gompers et. al. (2003) have found that investment strategy that bought firms to situation with strongest rights. In opposite manner sold firms were found as these which have weakest rights. That second group would have earned abnormal returns of 8.5 percent per year during the sample period. Gompers et. al. (2003) have found that firms with stronger shareholder rights had higher firm value growth and lower capital expenditures (Gompers et. al., 2003).

Hayat and Kabir Hassan, (2017) study the effect of an Islamic label on corporate governance. According to observation of Hayat and Kabir Hassan (2017) listed firms with an Islamic label are characterized by low leverage (Hayat, Kabir Hassan 2017). If leverage can act as a substitute for good governance according to Hayat, Kabir Hassan (2017), and it means to them that it is basis for expectation that these Islamic firms will have better governance than their non-Islamic peers (Hayat, Kabir Hassan 2017), although there is no significant difference in overall governance between Islamic and non-Islamic firms (Hayat, Kabir Hassan 2017). and there is no significant effect of an Islamic label. Hayat and Kabir Hassan (2017) find that an Islamic label adds to governance quality, as measured by the score, but that is effect rather political correctness wishing thinking but not related to leverage or real differences (Hayat, Kabir Hassan 2017).

Corporate governance has become more and more important over the past 15 years. Following local corporate governance guidelines and codices has become a de facto standard. This is made fully transparent in annual and corporate governance reports in today's world of stock market listed firms. On top of that more and more firms not only document compliance, they use certain financial measures to make transparent their success of adding value to the company. Having stated that the immediate question arises which is the most appropriate approach and which financial measures are best suited to reflect value add. While shareholder value in the meantime has a somewhat negative touch in the sense of being short-term and capital focused only, Economic Value Added (EVA)™ seems to be the best known and often used measure applied by firms in recent years. The author believes that while EVA™ on the one hand side is well if not best suited but on the other hand due to its constraints has limitations. Therefore, that's the hypothesis, there is not one consistent metric used between the firms yet.

Corporate governance was institutionalized in the early 2000's in several countries like in the United States with the Sarbanes-Oxley-Act 2002 ("Sarbanes-Oxley Act," 2002) or in Germany with the German Corporate Governance Codex (GCCG).

The Sarbanes-Oxley Act of 2002 (often shortened to SarbOx or SOX) is a legislation passed by the U.S. Congress to protect shareholders and the general public from accounting errors and fraudulent practices in the enterprise, as well as improve the accuracy of corporate disclosures. The U.S. Securities and Exchange Commission (SEC) administers the act, which sets deadlines for compliance and publishes rules on requirements. The German Corporate Governance Code ".... presents essential statutory regulations for the management and supervision (governance) of German listed companies and contains internationally and nationally recognized standards for good and responsible governance. The Code aims to make the German Corporate Governance system transparent and understandable. Its purpose is to promote the trust of international and national investors, customers, employees and the general public in the management and supervision of listed German stock corporations.

The Code clarifies the obligation of the Management Board and the Supervisory Board to ensure the continued existence of the enterprise and its sustainable creation of value in conformity with the principles of the social market economy (interest of the enterprise).

A dual board system is prescribed by law for German stock corporations." Furthermore "The Code clarifies the obligation of the Management Board and the Supervisory Board to ensure the continued existence of the enterprise and its sustainable creation of value in conformity with the principles of the social market economy (interest of the enterprise)." (Regierungskommission Deutscher Corporate Governance Kodex, 2015)

This paper focuses on the so called "sustainable creation of value" and especially how it can be measured from a financial point of view.

Already in the mid nine-tees of the previous century Joel Stern developed the Economical Value Added (EVA)<sup>TM</sup> approach (Joel Stern et al., 1996) which was trademarked by Stern Stewart & Co. This measure has been adopted by many companies ever since, however there are several other financial measures which are being used and need to be considered in this context.

In this paper in the first step different financial measures EVA<sup>TM</sup> are being identified, explained and evaluated including literature search. Other considered financial measures besides EVA<sup>TM</sup> are without particular order Shareholder Value, Return On Assets ROA, Return On Net Assets RONA, Return On Equity ROE, Return On Capital Employed ROCE, Return on Investment ROI, Cash flow, free cash flow, Tobin's Q as well as Financial Value Add and Value Add.

In a second step the annual reports of some of the German DAX listed corporations are evaluated in order to find out whether a financial value add measure is used and if so which one it is.

Thereafter these measures are being discussed before a future outlook from the author concludes the paper.

## 2. FINANCIAL MEASURES

The paper aims to judge financial measures towards their usefulness for the corporate governance objective to grow the financial value of a firm in a sustainable way. It intends to take the view from a board of director's member who's duty is to make sure value is added. It is not meant to provide a complete analysis of financial measures used in corporate balance sheets. Also the author takes it as common knowledge that a singular financial measure cannot be reflective of the financial health of a company, which means even with a proper financial value add measure additional financial indicators need to be considered in order to get a full picture and judgement of a firm's financial constitution at any given time (Becker, 2013; Brealey et al., 2015; Wöhe, 2016).

### 2.1. Economical Value Added EVA™

As mentioned before EVA™ has been developed by Joel Stern and trademarked by Stern Stewart & Co. Stern raises high expectations stating that "... EVA ... is not just a performance measure. When fully implemented it is the centerpiece of an integrated financial management system that encompasses the full range of corporate financial decision making ...." (Joel Stern et al., 1996). While it might be a bit ambitious it at least has made its way into many corporate finance departments and boards as measure and indicator for financial value add throughout the years until today which we will see in the empirical research later in this paper. Another author in an article claims "Economic value added (EVA) uses accounting information to improve decisions and motivate employees." (unknown, 2008), furthermore Joel Stern emphasizes "EVA is not a metric but a way of thinking, a mindset." (Joel Stern et al., 1996)

German Professor Stefan Hilbert in an article xx says that while the shareholder value approach in principle is well suited as corporate management instrument, it has constraints as it is rather mathematical and difficult to communicate (Hilbert, n.d.). Therefore, he claims that EVA™ as the more practical approach has been more successful.

### 2.2. EVA calculation

$$EVA = (ROCE - WACC) \times NOA \tag{1}$$

alternatively

$$EVA = (NOPAT - WACC) \times NOA \tag{2}$$

in which

ROCE = Return On Capital Employed

WACC = Weighted Average Cost of Capital

NOA = Net Operating Assets

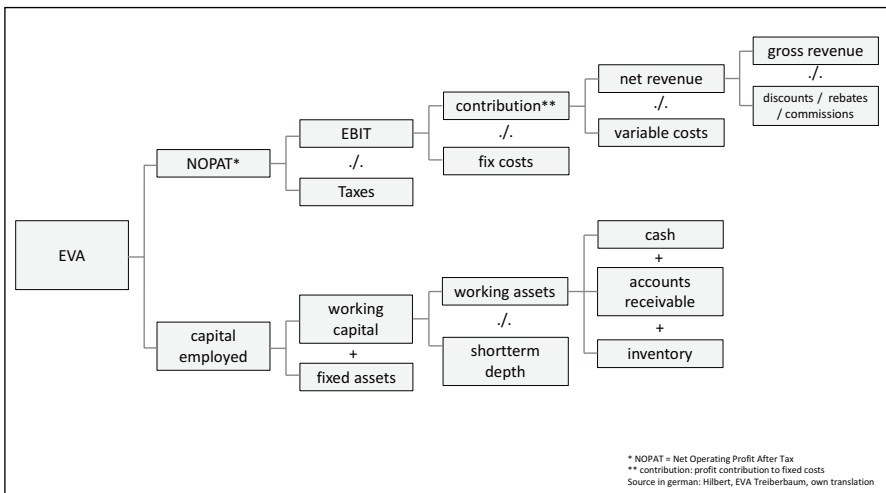
NOPAT = Net Operating Profit after Taxes

The delta between ROCE and WACC is the so called spread which if positive says that value was created, as then the return of the employed capital was higher than the costs to finance. Prof. Hilbert cautions to simply use balance sheet data to calculate as it should be mandatory to use current market conditions for valuation to eliminate balance sheet effects for calculating asset values.

NOPAT is a company’s potential cash earnings if it had no depth. Therefore, NOPAT is a more accurate look at operating efficiency for companies with depth, as it does not include the tax savings many companies get because of existing debt.

Nevertheless, EVA can be used as value based management system for a firm or even within a firm for individual business units to compare performance. In order to do so the so called EVA decision tree as shown in below graph 1 serves as a very transparent instrument.

Figure 1.: EVA decision tree



Source: Authors.

The downside of the EVA calculation and approach is that in order to boost EVA mid- to longterm investments can be reduced or abandoned resulting in short term actions and mindset with the risk of harming mid- and longterm term success. In addition the formula might show limited viability for companies with high intangible assets, such as small to mid- size high tech firms with several patents and high intellectual property (IP). Knowing these shortcomings EVA still might be of very good use and an instrument also for the board of directors or supervisory board in combination with additional means and measures. This could be for example the governed execution of a strategic plan ensuring a balanced approach between short-, mid- and longterm investments.



### 2.3. Shareholder value

Alfred Rappaport often is seen as intellectual founder of shareholder value (Rappaport, 1986). Already in 1983 he published " ... the experience of companies that have implemented the shareholder value contribution criterion ... is not only a conceptionally appealing performance standard, but a wholly operational one as well. .... Should improve companies opportunities for creating economic value ...." (Rappaport, 1983)

With Jack Welch's increasing success as CEO of General Electric Corporation shareholder value became the synonym for financial success in corporate America in the 90's and early 2000's. In the meantime "...in vogue to dismiss the idea that creating shareholder value should be a CEO's guiding objective." (Mauboussin, 2011): He says that it is "a profound misunderstanding" that shareholders value management is all about optimizing the stock price for the short term. In opposite it is "to create value and then let the stock price reflect the value" (Mauboussin, 2011). In his eyes "A CEO's job is about resource allocation .... figuring out how to allocate human and financial capital to its best and highest use for the long term. Value creation, by means of maximizing long-term free cash flow, provides the appropriate approach to judge alternative strategies and subsequent performance." There are two important points mentioned, one is the financial measure of long-term free cash flow, we come back to that shortly. The second one is value creation which he ties directly to long-term free cash flow. This explains why cash flow is one of the key financial measures and indicators (Dittmar and Mahrt-Smith, 2007). See also Hilbert's calculation of Shareholder Value (Hilbert, n.d.)

Shareholder value (SHV) is the value of a firm which is left at the end of a business cycle, after all debts have been paid. This money, the free cash flow(s) is for the shareholder(s). In financial terms it is the value of a company which is defined as the net present value (NPV) of all future cashflows plus the value of the non-operating assets of the company less the future claims (debts). Where non-operating assets include for example marketable securities like stocks, excess real estate, overfunded pension plans. Future claims are debts include for example short-term and long-term interest bearing debt, capital lease obligations, underfunded pension plans, contingent liabilities.

$$SHV = \text{Corporate Value} - \text{Debts (future claims)} \quad (3)$$

or

$$SHV = (\text{NPV} + \text{value of non-operating assets}) - \text{debts (future claims)} \quad (4)$$

Shareholder value can be calculated using below formula

$$SHV = \sum_{t=1}^n \frac{\pi t}{(1+i)^t} = \frac{(R-C)t}{(1+i)^t} \quad (5)$$

$$SHV = \sum_{t=1}^n \frac{FCF_t}{(1+i)^t} + \frac{TV}{(1+i)^n} - L$$

(6)

in which

$t_1/t_n$  = current and future years

$i$  = interest rate with which future profits / cash flows are discounted

$J = (R-C)t$  = Profit = Revenue - Cost, in a given year

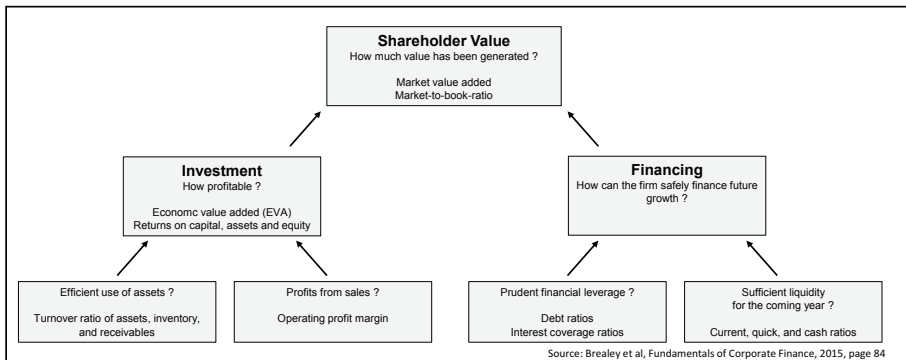
FCF = Future Cash Flow

TV = Terminal Value (firm value at end of period)

L = market value of Liabilities

Brealey et al in their book provide a more practical view on shareholder value and state that “shareholder value depends on good investment decisions” and “... on good financing decisions”. Below figure taken from their book illustrates these two elements along with probing questionings to ask (Brealey et al., 2015).

**Figure 2.:** Common financial ratios and other measures relate to shareholder value



Source: Authors.

Figure 2. shows how common financial ratios and other measures relate to shareholder value. Brealey et al, Fundamentals of Corporate Finance, 2015, page 84

Taking all of this into account it becomes obvious that shareholder value can be an excellent management approach, if its used to its advantage and not as the sole indicator of value add. If not used properly as a management guidance and bonus system for top management it may lead to short term optimization of cash flows to boost shareholder value while harming long term investments (Rieg, 2015). Being a full promoter of the shareholder value approach in his early publications in the 80’s, Rappaport in his 2005 article states “Financial analysts fixate on quarterly earnings at the expense of fundamental research. Corporate executives ... point to the behaviour of the investment community to rationalize their own obsession with earnings. Short-termism is

the disease; earnings and tracking error are the carriers.” (Rappaport, 2005). Also the calculation as such isn’t as straight forward as it looks like in the formula. For instance future risks can and need to be built in by varying the interest factor  $i$ , which also reflects the uncertainty of future interest rates, therefore the factor  $i$  by itself could be the source for significant calculation deviations.

#### 2.4. Cash flow and Free cash flow

“The value of a company depends on how much cash it can generate for investors after it has paid for any new capital investments. This cash is called ... free cash flow.” (Brealey et al., 2015).

It is obvious that cash cash flows are a very important part, if not the most important one in defining and judging value add of a firm. As a matter of fact in a recent talk with a controller of a medium-sized german stock market listed and fast growing company, he said that cash flow is the key financial indicator for him. Below formula shows how cash flow from operations and free cash flow are calculated.

*EBIT – interest expense – taxes*

*= net income + interest + depreciation – additions to net working capital*

*= cash flow from operations – capital expenditures = free cash flow* (7)

The importance of cash is also emphasized by Dittmar, Mahrt-Smith “Answer to question ‘Does it matter if firms hold large cash reserves?’ is yes ...” (Dittmar and Mahrt-Smith, 2007).

There seems to be also the unified agreement that corporate governance doesn’t have much impact on how much cash is generated, that is clearly in the hand of the executives “... governance has a relatively minor impact on how firms accumulate cash, but a significant impact on how firms spend their money.” (Dittmar and Mahrt-Smith, 2007). However, the use of available cash seems to be indeed tight to the level of corporate governance of a firm “... show that governance has a substantial impact on value through its impact on cash ....(Dittmar and Mahrt-Smith, 2007) Furthermore they state that “... \$1.00 of cash in a poorly governed firm is value at only \$ 0.42 to \$ 0.88. Good governance approximately doubles this value.” (Dittmar and Mahrt-Smith, 2007). Also interesting and at the same time not surprising are the findings of Harford “... shows that ... firms with large cash reserves spend more on acquisitions” (Harford, 1999).

## 2.5. ROI/ROE/ROA/RONA/ROCE

EVA measures "how many dollars a business is earning after deducting the cost of capital." which means "the more assets a manager has to work with, the greater the opportunity to generate large EVA" (Brealey et al., 2015). Therefore, additional supporting measures are helpful. The most common ones among those are Return On Capital (ROC) or Return On Capital Employed (ROCE) or Return on Investment (ROI) and Return On Equity (ROE), as well as Return On Assets (ROA) or Return On Net Assets (RONA).

Stiglbauer defines a set of five different financial criteria as endo-gene variables to reflect the correlation between corporate governance and corporate success (Stiglbauer, 2010a). These are Return On Equity (ROE), Return On Investment (ROI) as two balance sheet criteria, and two so-called hybrid criteria Tobin's Q and the market to book value of equity as well as one stock market related criteria which is return on stock.

Mäkeläinen sees these measures critical "All accounting based rate of returns (ROI, RONA, ROCE, ROIC) fail to assess the true or economic return of a firm, because they are based on the historical asset values, which in turn are distorted by inflation and other factors. Stewart defines his rate of return as return on beginning capital and as return after taxes but these adjustments do not affect the problems attached to accounting rate of return. The shortcomings of accounting rate of returns and the current research on the subject are presented in detail in next section. The valuation formula of EVA, however is always equivalent to discounted cash flow and Net present value, if EVA is calculated as Stewart presents." (Mäkeläinen, 1998).

## 2.6. ROC - Return on Capital

ROC is defined as (Brealey et al., 2015) net income plus after-tax interest as a percentage of long-term capital.

It is equal to after-tax operating income divided by total capitalization. Important to know is when calculating ROC a so-called flow measure (income over period of a year) is combined with a snapshot measure (capital at the start of the year). Therefore it may be a more accurate reflection of realities if the average of the total capitalization at the beginning and end of the year is taken.

## 2.7. ROA - Return on Assets

ROA is defined as net income plus after-tax interest as a percentage of total assets.

It measures after-tax operating income as a fraction of the firm's total assets. Total assets equal total liabilities plus shareholders equity are greater than total capitalization because total capitalization does not include current liabilities.

## 2.8. ROE - Return on Equity

ROE is defined as income as a percentage of shareholders equity.

It measures the income to shareholders per Dollar they have invested. Again to ensure flow measures are used consistently it should be taken net income divided by average equity.

## 3. THE USE OF FINANCIAL VALUE ADD MEASURES IN PRACTICE - AN EMPIRICAL ANALYSIS OF THE 30 GERMAN DAX LISTED CORPORATIONS

In order to evaluate the use of financial measures in practice as part of this research, an empirical approach has been chosen. Analyzing 2015 annual reports of the 30 German DAX listed companies with the following objectives has been performed.

Objectives have been to:

- (1) identify whether and which financial measures are used beyond the standard financial reporting needs in order to reflect financial return and value creation
- (2) document the values of these measures by firm
- (3) analyze and discuss measures and data

This empirical analysis is to set the basis for further research as part of a dissertation. Below two tables compile and summarize financial measures, first from the theoretical part of the paper and, second from the empirical research done. Table 1 takes financial measures and how these are calculated adding commentary to it on how its calculated or what advantages or limitations it might have. The fourth column then reflects in which 2015 annual report of the German DAX 30 corporations the respective measure is used, while the last column references literature which is used in this paper regarding these financial measures.

### 3.1. Results of empirical approach

The empirical research unveiled that most of the firms using a true value add measure beyond ROCE, ROE or ROA are using EVA or an EVA like calculation which in both cases they define as their own firm specific value add measure. Such examples are Continental Value Creation (CVC), ThyssenKrupp Value Added (tkVA) or Merck Economic Value Added (MEVA) or simply Financial Value Add (Daimler), Value Add(ed) (Bayer, BASF, BMW, EON) or Value Creation (Henkel). Table 2 shows which measure is used by which company, how its calculated and again commentary including whether its just a financial metric or value add is used and implemented as a management approach to compare different business units with each other or to

steer and measure management and teams towards value creation (Henkel, Continental).

Table 1.: Financial measures, calculations and use in German DAX30 firms

Financial Measures	calculation	comments	in 2015 annual report	Literature
Cash Flow (from Operations)	calculated as net income + interest + depreciation - additions to net working capital + cash flow from operations	The value of a company depends on how much cash it can generate.	Bielefeld AG Annual Report 2015, page 49 also covers Net and Free Cash flows / Lufthansa Annual Report 2015, page 2 / SAP AG Annual Report 2015, page 136 / Bayer AG Annual Report 2015, page 3	compare: Dittmar, Harri-Smith 2005, pages 1 and 4 / Brealey et al, Fundamentals of Corporate Finance, 2015
Free Cash Flow	cash flow from operations - capital expenditures = free cash flow	The value of a company depends on how much cash it can generate for investors after it has paid for any new capital investments. This is called free cash flow.	Continental AG, Annual Report 2015, pages 2/13 / Henkel, AR 2015, page 74 / Software AG, Annual Report 2015, page 3	compare: Dittmar, Mahrt-Smith 2005, pages 1 and 4 / Brealey et al, Fundamentals of Corporate Finance, 2015
Economical Value Add (EVA)	$EVA = NOPAT - WACC \cdot NOA$ $EVA = (ROCE - WACC) \cdot NOA$	EVA has been developed resulting from difficulties of ease of communication of the shareholder value add. EVA champions the idea a business is only profitable when it creates wealth and returns for shareholders, and requires performance above a company's cost of capital. The EVA calculation relies heavily on the amount of invested capital, and is best used for asset-rich companies that are stable or mature. Companies with intangible assets, such as technology businesses, may not be good candidates for an EVA evaluation.	Henkel AG, Annual Report 2015, page 71 / EDN Annual Report 2015, page 50 / Merck Annual report 2015 MEVA page 60 / RWIE Annual report 2015, page 54 / ThyssenKrupp Annual Report 2015, page 4	compare: Hilbert, Wertorientierte Unternehmensführung, pages 13 ff / Brealey et al, Fundamentals of Corporate Finance, 2015
ROA - Return on Assets	$ROA = (\text{Net Income} + \text{after-tax interest}) / \text{total assets}$	ROA is a measure to show how well a company uses the available assets and how much profit it is able to generate using these assets	Freisenius Annual Report 2015, page 3 / Infineon Annual Report 2015, page 4	Compare: Kraft et al, 2013, page 15 and 27 The results show a positive and significant relationship between governance and ROA. Firms with weaker corporate governance are less profitable / Brealey et al, Fundamentals of Corporate Finance, 2015, page 89
RONA - Return on net assets	$RONA = \text{Net Income} / (\text{fixed Assets} + \text{net working capital})$	the higher RONA is the better is the profitability of a company's operations. For longer term considerations one time expenses need to taken out of the equation		Compare: Kraft et al, 2013, page 15 and 27 The results show a positive and significant relationship between governance and ROA. Firms with weaker corporate governance are less profitable.
ROE - Return on equity	$ROE = EBIT / \text{Equity}$	Measure for profitability or return on equity	Adidas AG Annual Report 2015, page 3 - 11, 2% / Bayer Annual Report 2015, page 3 / Deutsche Bank, Annual Report 2015, page 46 ROAE post-tax return on average active equity / Commerzbank Annual Report 2015, page 2 - operating return on equity / Danier Annual Report 2015, page 90 / Deutsche Börse Annual Report 2015, page 54 / Fresenius Annual Report 2015, page 3 / Infineon Annual Report 2015, page 4	Compare: Stiglbauer 2010, page 130 / Brealey et al, Fundamentals of Corporate Finance, 2015, page 90
ROCE - Return on capital employed	$ROCE = EBIT / \text{Capital Employed}$	A higher ROCE indicates more efficient use of total capital. ROCE should be higher than the company's capital cost; otherwise it indicates that the company is not employing its capital effectively and is not generating shareholder value. ROACE is Return on Average Capital Employed.	Linde AG Annual Report 2015, page 3 - ROCE 9.4% / Continental AG page 36 ROCE target of 20%, actual 20.9% / Henkel AG, Annual Report 2015, page 4 / Lufthansa Annual Report 2015, page 2 / EDN AG Annual Report 2015, pages 49-50 / BMW AG page 4 / Siemens Annual Report 2015, page 9 / Deutsche Telekom Annual Report pages 11 and 65 / Fresenius Annual Report 2015, page 3 / Heidelberg-Cement Annual Report 2015, pages 4 and 139 / EDN Annual Report 2015 page 60 / Merck Annual report 2015 page 60 / RWIE Annual report 2015, page 54 / ThyssenKrupp Annual Report 2015, page 4	Compare: Brealey et al, Fundamentals of Corporate Finance, 2015, page 89
ROI - Return on Investment	$ROI = (\text{gain of invest} - \text{cost of invest}) / \text{cost of invest}$	Return of total capital invested allows easy comparisons, however does inherently not take time into account, so may need to be adjusted to same time periods for comparison	Volkswagen AG, Annual Report 2015, page 3	Compare: Stiglbauer 2010, page 131
Shareholder Value (SHV)	$SHV = \text{Company value} / \text{outside capital}$	A company's discounted projection of future cash flows less the projected total value at the end of the period considered. While somewhat complicated to calculate it is a very good management approach if not misused to only boost for short-term effects.		compare: Knaup, 2014, page 22 / Hilbert, Wertorientierte Unternehmensführung, pages 7 ff
Tobin's Q	$Q = (MVE + PS + DEBT) / TA$	Future growth potential as seen by capital market Tobin's Q is defined as the ratio of the firm's market value to the replacement cost of its assets plus the book value of the firm's long term debt, and TA is the book value of the firm's total assets		Compare: Stiglbauer 2010, page 131 / Kraft et al, 2013, pages 15 and 24

Source: Own creation.

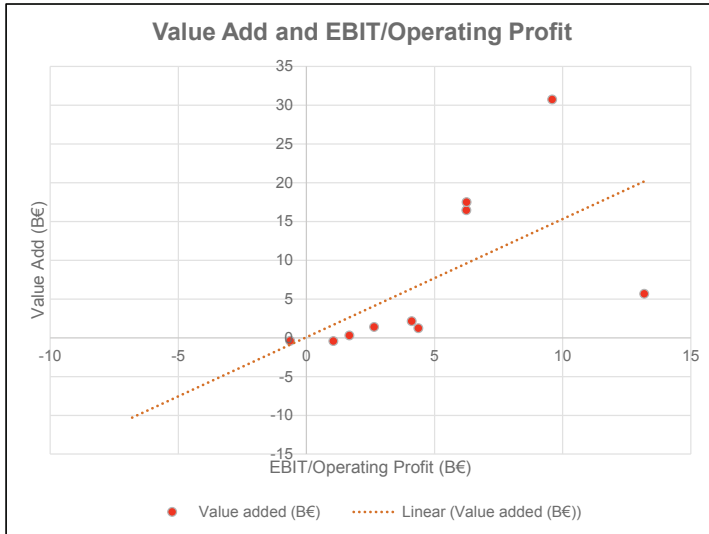
**Table 2.:** Value add measurements as defined and used by German DAX30 firms

DAX 30 Firms Value Add Measures	calculation	comments	in 2015 annual report
<b>Continental AG Value Contribution (CVC)</b>	$CVC = (ROCE - WACC) \times \text{average operating assets}$	CVC - Continental Value Contribution based on ROCE, EBIT, WACC - part of value driver system, to also compare business units	Continental AG, Annual Report 2015, page 50
<b>EACC (Lufthansa AG)</b>	$EACC = (\text{Adjusted EBIT} + \text{Interest} - \text{Tax} - WACC)$	Earnings after Cost of Capital EACC as well as ROCE replacing CVA (Cash Value Added = Actual Cash Flow - Minimal needed Cash Flow)	Lufthansa Annual Report 2015, page 13
<b>Financial Value Add (Daimler AG)</b>	$FVA = \text{NOPAT} - (\text{NOA} \times \text{CC}\%)$ $FVA = (\text{ROS} \times \text{NAP} - \text{CC}\%) \times \text{NOA}$	value added is calculated taking cost of capital as the result of net assets and cost of capital expressed as a percentage, which is subtracted from earnings	Daimler AG Annual Report 2015, page 77
<b>MEVA (Merck AG)</b>	$MEVA = \text{ROCE} - WACC$	Merck: ROCE/MEVA as KPIs but no data	Merck Annual Report 2015 MEVA page 60
<b>NAV Net Assets Value (Vonovia AG)</b>	$NAV = \text{Equity attributable to Vonovia's shareholders} + \text{Deferred taxes on investment properties and assetsheld for sale} +/- \text{Fair value of derivative financial instruments} +/- \text{Deferred taxes on derivative financial instruments}$	Growth from operating activities and the value of our property assets are two factors that are decisive for the further development of our company and that are reflected in the net asset value (NAV) – a standard parameter in our sector	Vonovia Annual Report 2015 page 105
<b>Thyssenkrupp Value Added (tkVA)</b>	$kVA = \text{EBIT} - WACC \times \text{CE}$	kVA is the value created and permits comparison of the financial performance of businesses with different capital intensity. kVA is calculated as EBIT minus or plus the cost of capital employed in the business. To obtain the cost of capital, capital employed (CE) is multiplied by the weighted average cost of capital (WACC), which includes equity, debt and the interest rate for pension	Thyssenkrupp Annual Report 2015 page 40
<b>Value Creation (Henkel AG)</b>	EVA	Value creation as corporate approach - Goal of 3x value / footprint by 2030 / taking into account EBIT, ROCE, WACC by BU / EVA as measure	Henkel Annual Report 2015, page 71
<b>Value add (BASF AG)</b>	Value added = Financial Performance - (depreciation & amortization) - (services purchased & energy costs & other expenses) - (cost of raw materials and merchandize)	Financial performance minus goods and services purchased, depreciation and amortization. Business performance includes sales revenues, other operating income and interest income, as well as income from shareholdings. Value add as company strategy reflected in individual employee's goals	BASF Group Annual Report 2015, page 3 / page 31: Value Added = EBIT - WACC, value add as company strategy reflected in individual employee's goals
<b>Value add (Bayer AG)</b>	Value Add = total operating performance - costs of procured goods and services - depreciation and amortization	Bayer: value added is defined as the company's total operating performance in the previous fiscal year less the costs of procured and consumed goods and services, depreciation and amortization. 2015 AR, page 67	Bayer AG 2015 Annual Report, page 67
<b>Value Added (BMW AG)</b>	$VA = \text{earnings} - (\text{cost of capital rate} \times \text{capital employed})$	the contribution made to business value growth during the financial year is measured in terms of "value added"	BMW AG Annual Report 2015, pages 20-21 and 57
<b>Value Added (EON AG)</b>	Value added = (ROACE - cost of capital) x average capital employed	Value added measures the return that exceeds the cost of capital employed	EON AG Annual Report 2015, pages 2 and 47
<b>Value based management SAP AG</b>		SAP - approach of value-based management as stated on page 63, to target best areas for sustained investments. No specific financial measure mentioned in this section.	SAP AG Annual Report 2015, page 63

Source: Own creation.

The research shows that while 12 out of the 30 corporations claim value add measures or in use only 10 actually do show data. Below graph 1 shows how the absolute value add data from these 10 companies trace over the reported EBIT/Operating Profit number. While there is a huge spread between value add results in average every 10M€ additional EBIT result in 15M€ value add. While this on the first glance may seem as a contradiction in terms, it becomes clearer by looking at the EVA calculation formula with WACC and assets being important factors of the equation.

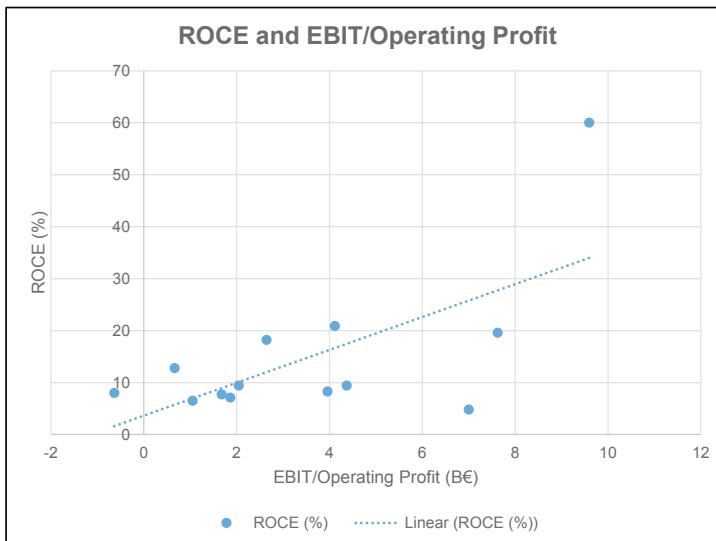
Figure 3.: Value add data tracing over EBIT/Operating profit)



Source: Own creation.

With 43% or 13 out of 30 firms the most used metric is ROCE. Tracing ROCE over EBIT/Operating Profit as shown in below Figure 4., it shows that the spread is way less compared to value add. In average a 1 M€ higher EBIT results in a 3,3% higher ROCE.

Figure 4.: ROCE data tracing over EBIT/Operating profit

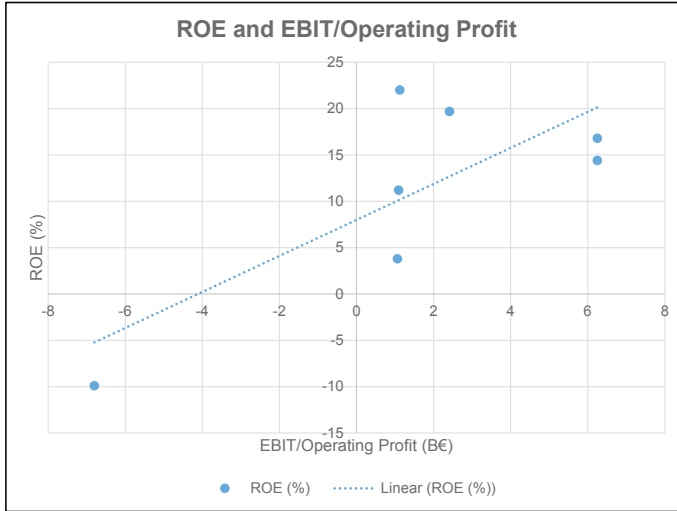


Source: Own creation.



Furthermore 7 out of the 30 firms use ROE as metric. Figure 5. shows also that the highest ROE has been achieved with one of the lowest EBIT values. Obviously this is due to the underlying equity values of the different firms and with a low absolute equity high ROE values are possible as the Figure shows.

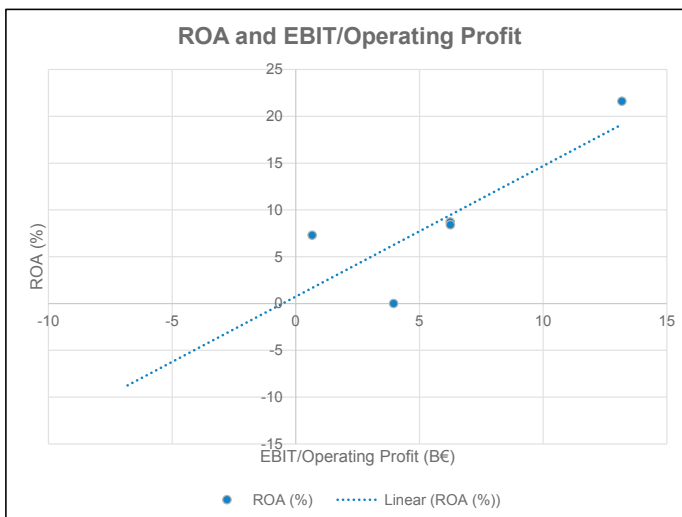
**Figure 5.:** ROE data tracing over EBIT/Operating profit



Source: Own creation.

To complete the Figure 6. companies are using ROA as value measure. Again plotting ROA over EBIT/Operating Profit in Figure 6. it shows an average increase of 1,5% in ROA for every 1B€ added in EBIT.

**Figure 6.:** ROA data tracing over EBIT/Operating profit

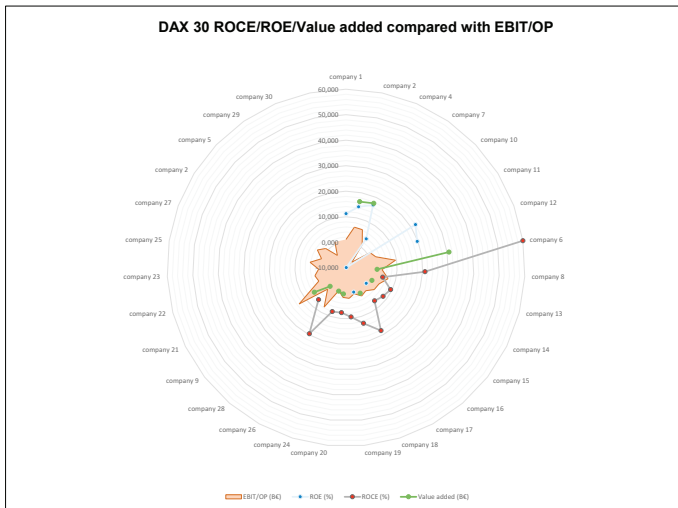


Source: Own creation.

Out of the 30 DAX listed firms 9 are not providing any of the mentioned value add data. That is with 30% an unexpected high share.

This diverged approach to value add measurement is shown in below Figure 7. While EBIT/Operating Profit naturally shows data points for every firm, the other measures don't. Therefore, in below paragraph a correlation analysis is done with the intention to identify those measures best suited for value add representation in absence of a true value add measure.

**Figure 7.:** Spidergraph showing EBIT/ROCE/ROE/ROA and Value add



Source: Own creation.

### 3.2. Correlation analyses

In order to identify those measures best suited to represent value add the following correlation analyses were done.

**Table 3.:** Correlation analyses

Value Add / EBIT correlation		
	Column 1	Column 2
Column 1	1	
Column 2	0.6007916	1
Value Add / ROCE correlation		
	Column 1	Column 2
Column 1	1	
Column 2	0.9737878	1
Value Add/ ROA correlation		
	Column 1	Column 2
Column 1	1	
Column 2	-0.998272	1

Source: Own creation.

A Value Add / ROE correlation has not been performed as there are only two datapoints.

The correlation analysis shows that ROCE obviously correlates best with the Value Add measure and therefore, in case there is no value add data point available ROCE is a very good replacement indicator. No surprise that 13 out of the 30 DAX firms are using and stating ROCE data in their reports.

#### 4. SUMMARY

3 key learnings:

- no consistent approach in terms of using the same metric(s) across 30 DAX corporations with 30% using value add, 43% ROCE, 23% ROE, 13% ROA and 30% none of these.
- ROCE correlates best with the EVA value add measure and is best suited to indicate value add in the absence of an EVA measure.
- Shareholder value is not used.

They increasingly take value add as an managerial approach as part of their aim to professionalize corporate governance.

Value add 33% , ROCE 43% , ROE 23% , ROA 13% , None 30% adding up to more than 100% indicates that several firms report multiple metrics while still a high share of 30% are not reporting any value add metric at all. Two of those are at least referring to a value add approach in their firms yet not providing any data.

Also, very interesting is that Shareholder Value as value metric is not being used any more. Supposedly that is due to the negative touch in the broader population shareholder value still has. However, looking at how its calculated and measured along with including mid-term aspects it really provides a very meaningful set of data if not the most meaningful. (Mauboussin, 2011)

It also became clear that one measure by itself is not a proper judgement. In other words, besides value add, additional metrics must be considered in order to be able to truly judge and rate a firms position. Most of the mentioned measures are periodic measures and can be optimized within the given time period on the expense of longer aspects. Therefore, its strongly recommended even when looking for value creation judgements, besides EVA, ROCE, ROE and ROA to take also in consideration the trends of those over several years and minimally include cash flow, cash position and equity ratio as well as total assets as factors.

#### 5. FUTURE OUTLOOK

The empirical part of this research paper focuses on DAX 30 value add measures in 2015 annual reports. It will be interesting to see how it evolves during 2016 and 2017 which then allows also to see the most actual trends. The future hypothesis is

that we won't see major shifts in the 2016 and 2017 annual reports, however it is expected that value add becomes more and more important beyond the sheer financial measures and metrics. Therefore, value based management approaches, reflected in management guidance, business unit measurements, employee objectives and executive's compensation is what the author believes we will see more going into the next years. This research paper provides the basis for the foreseen future comparisons and trend analyses.

With more data from coming year's reports and from potentially expanding research towards other stock market listed firms the database becomes more significant such that a predictive analytics model can be developed allowing to define best-in-class status.

## 6. ACKNOWLEDGMENTS

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