

Article

Sustainability Assessment Using Economic Value Added

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Abstract: Sustainability assessments should be based on financial and non-financial indicators. To describe the financial situation of companies and to calculate the actual economic profit of a company, the Economic Value Added methodology appears as a suitable solution. The aim of the paper is to apply the Economic Value Added methodology to real-life corporate data and present the company's value through a case study. This study is based on information that was gathered through an extensive literature review (research publications and research studies (documents) about sustainability, corporate social responsibility, Sustainable Value concept, and Economic Value Added (EVA) methodology; and the company's financial statements with notes of the selected company) using Internet and research databases and the author's own experience. Methods of analysis, comparison, selection, abstraction, induction, deduction, determination, and statistics were used. In addition to the positives, this evaluation method also has negatives, including limitations (problems) in measuring a company's value.

Keywords: sustainability; assessment; Economic Value Added

1. Introduction

The concepts of value and value creation have been discussed extensively in literature on strategic management, organizational, and partnership theory [1]. Contributions in the value field count Bowman and Ambrosini (2000), Makadok (2001), and Makadok and Coff (2002), who discuss value creation as value capture derived from value in use and value in exchange from a classic economic perspective on an organizational level [1]. The value of a company provides a more accurate estimate of takeover cost than market capitalization because it includes a number of other important factors, such as preferred stock, and debt (including bank loans and corporate bonds), and it backs out cash reserves. A company's market capitalization consists only of the number of stock shares it has outstanding multiplied by its current share price [2]. In simple words, the value of a company is a theoretical price at which it can be bought. It is significantly different from market capitalization and considers many other factors to arrive at the correct valuation of the business [3].

1.1. Literature Review

Lepak et al. (2007) extend the concept beyond the classical economic perspective, applying the individual and society level as sources and targets of value creation and value capture in a more holistic perspective, which supports the idea of sustainable value creation [1].

Sustainable value measures corporate sustainable performance in monetary terms. Figge and Hahn published their first Sustainable Value Added (SVA) model based on comparing earned value of a company with a benchmark entity, assuming the same impact of both the company and the benchmark entity on the environment [4]. This approach simplifies the measurements and enables sustainable

performance to be measured in monetary terms depending on data availability on the enterprise level as well as on the benchmark ([5,6]). It shows how much value or damage is created as a result of using economic, environmental, and social resources, compared to a benchmark ([6–9]). According to the method published by Figge and Hahn (2004), the SVA calculation can be expressed as follows [6]: “The gross value added of the company should be calculated (in unit €). After that, the amount of each environment or social resources should be determined (e.g., t, m³, etc.). Then efficiency computed by dividing the gross value added on the amount of resources (unit €/t, €/m³). The same steps should be done for the benchmark. Finally, the last two values are subtracted from each other and the result multiplied by the amount of considered indicator.” The calculation of Sustainable Value Added for a company in two different periods t_1 and t_0 is presented in Equation (1) [6]:

$$SVA = EG - \sum_{i=1}^n EE_{i,b} * (EIA_{i,t1} - EIA_{i,t0}) - \sum_{j=1}^m SE_{j,b} * (SIA_{j,t1} - SIA_{j,t0}) \quad (1)$$

where n and m = the number of relevant environmental and social indicators, respectively; $EIA_{i,t0}$, $EIA_{i,t1}$, $SIA_{j,t0}$, $SIA_{j,t1}$ = the eco-effectiveness for environmental and social impacts in t_0 and t_1 ; $EE_{i,b}$ and $SE_{j,b}$ = the eco- or social efficiency of the benchmark for i environmental and j social resources, respectively. These values are calculated using Equation (2):

$$EE, SE = \frac{VA_b}{EIA_b} \quad (2)$$

where b = benchmark; $EG = (VA_{t1} - VA_{t0})$ = economic growth; VA = the gross value added.

Porter and Kramer [10] came up with a concept of value as something beneficial for both the company and for society. They point out that the internal economic costs approach needs to be extended to include social costs and benefits that contribute to long-term sustainability [4].

Other studies in this area were developed by Kuosmanen, T., Kuosmanen, N. [5]; Kassem, Trenz, Hřbíček and Faldík [6]; Kocmanová, Pavlákova Dočekalová, Škapa, Smolíková [11]; Ang, Van Passel [12]; Kocmanová, Simanavičienė, Pavlákova Dočekalová [13]. They brought a review on the method developed by Figge and Hahn (2004), presented in [5,6,11,12]. T. Kuosmanen and N. Kuosmanen [5] critically examined Figge and Hahn’s estimator for opportunity cost and showed that the proposed estimator rests on a number of strong, unrealistic assumptions. They did not criticize the theoretical concept of Sustainable Value; they appreciated the idea of valuing resources based on their opportunity cost. However, they argued the distinction between the theoretical object of interest (the estimand) and the computational rule (the estimator). The study “Not measuring sustainable value at all: A response to Kuosmanen and Kuosmanen” of Figge and Hahn (2009) [14] undertaken in reaction to the study of T. Kuosmanen and N. Kuosmanen [3] showed that the argument in [5] rests on a fundamental misspecification of the Sustainable Value approach. According to [14], they identified three conceptual misfits in [5]: A mismatch in the perspective of the analysis, a misspecification of opportunity costs and the irrelevance of production functions.

Kassem, Trenz, Hřbíček and Faldík [6] are of opinion that the main calculation remains the same; whereas the improvements of the SVA calculation include several modifications, in order to achieve the following factors [6]:

- Comprehensive sustainability assessment—environmental, social, economic, and corporate governance indicators should be integrated;
- Simplicity and suitability—the assessment should be done for different companies; however, the model cannot be universal, because the indicators should reflect the specifics of the industry in which the company operates;
- Applicability—the modified model should be easy, suitable, and accurate; it reflects not only three dimensions (economic, environment, social), but also the corporate governance pillar is added; the

gross value added is replaced by Economic Value Added (EVA) to describe the financial situation of the companies more efficiently.

After applying all the modifications to Equation (1), the Sustainable Value Added is presented in Equation (3) [6]. The authors supposed that “different indicators don’t effect equally on enterprises score. It means, each indicator should have a different weight on sustainability calculation. This weight differs according to the country, size and sector of the company” (see also [15]).

$$SVA = EVA_c - \sum_{i=1}^n \left(\frac{w_{i,c} * EI_{i,c}}{w_{i,b} * EI_{i,b}} * EVA_b \right) - \sum_{j=1}^m \left(\frac{w_{j,c} * SI_{j,c}}{w_{j,b} * SI_{j,b}} * EVA_b \right) - \sum_{l=1}^k \left(\frac{w_{l,c} * GI_{l,c}}{w_{l,b} * GI_{l,b}} * EVA_b \right) \quad (3)$$

where EI, SI, GI = value of environment, social, and governance indicators, respectively; symbol b = refers to benchmark; symbol c = refers to the studied company; w_{EI} , w_{SI} , w_{GI} = the weight of environment, social, and governance indicators.

This opinion to include the Economic Value Added (EVA) into the model of the Sustainable Environmental, Social and Corporate Governance Value Added (SESG_{VA}) have Kocmanová, Pavláková Dočekalová, Škapa, Smolíková [11]. They found that [11] “The link between the Sustainable Value and EVA provides a huge potential for synergy. In addition to opportunity costs, the Sustainable Value also takes into account the environmental, social, and economic dimensions of corporate sustainability and is a much more comprehensive tool for corporate performance measurement.” The model is based on the strengths of the original SVA developed by Figge and Hahn, but overcomes its weaknesses [11]: “The SESG_{VA} model concept is based on the assumption that not all environmental, social, and corporate governance indicators (ESG indicators) have the same impact on sustainability and this is why weights are allocated to individual indicators. The SESG_{VA} model is intended for owners, investors, and other stakeholders to support their decision-making and sustainability assessment. The inclusion of ESG factors means that strengths and weaknesses of companies can be more readily identified and permits a broader view of the company than the one-dimensional methods based only on their economic performance”.

1.2. Findings

Comparing the results of research (Section 1) and own experiences [16–21] we came to the following findings:

- Findings 1:

In Jankalová, Jankal [16], according to R. B. Pojasek, it is stated that sustainability is only one of several terms now being used to denote the same concept; other terms include corporate social responsibility (CSR), social responsibility, corporate citizenship, corporate responsibility, environmental sustainability, sustainable development, and each of these terms in turn can be defined in scores of different ways. Opinions on the identification of individual items of sustainability are differing due to various views of this issue, which is demonstrated by statements by many authors (see also [22]). Usually, corporate sustainability incorporates the triple bottom line approach (three dimensions like economic, environmental, and social). On the other hand, the research by [6] and [11] also emphasized corporate governance indicators. These approaches calculate a company’s value by using not only financial but also non-financial resources.

Finally, sustainability assessment should be based on financial and non-financial indicators.

- Findings 2:

In Jankalová, Jankal [16], it is stated that although there are various international efforts on sustainability assessment (sustainability indices, sustainable development indicators, Business Excellence models) that can evaluate the sustainable development of companies, only few of them have an integral

approach taking into account environmental, economic, and social aspects. In most cases, the focus is on one of the three aspects, although, it could be argued that they could serve supplementary to each other.

Figge and Hahn [23] are of opinion that companies contribute to sustainability only if the value created exceeds the external damage caused; on the other hand, there are proponents of eco-efficiency. They stipulated that companies should create as much value per environmental impact as possible. However, many of these approaches are either difficult to apply or, if they can be applied, their significance is limited. Therefore, Sustainable Value Added as developed in [23] provides a new approach to measure corporate contributions to sustainability.

As has become clear from the shortcomings discussed above, a sustainable measure must consider the efficiency and the effectiveness of all three dimensions of sustainability simultaneously [23]. However, our paper focuses only on the one dimension of the Sustainable Value Added concept—economic dimension. We assume that the Sustainable Value Added can also be calculated by transforming the economic indicator (economic growth; the gross value) through the Economic Value Added (EVA). The reason? Economic Value Added, as one of the most important and useful financial indicators, is used to determine a company's value. From the perspective of financial management combines all the basic components required to describe the economic situation of the company [6]. EVA is recognized as an important tool of performance measurement and management all over the world, particularly in advanced economies, by adopting it as corporate strategy [24].

Finally, to describe the financial situation of the companies and to calculate the actual economic profit of a company, the Economic Value Added methodology appears as a suitable solution. It measures all of the costs of running a business—operating and financing—which separates EVA from other performance metrics such as EPS, EBITDA, and ROIC [24]. EVA also differs from the other measures, and therefore can be used for past and future [25], Cash Value Added, Cash flow return on investment and Economic Profit because it allows a more detailed and thorough adjustment and conversion from the Accounting data [26].

The aim of the paper is to apply the Economic Value Added methodology to real-life corporate data and present a company's value through a case study. The Economic Value Added methodology for measuring a company's value is based on the assumption that a company's value consists of two basic parts: One is reflecting the amount of capital invested by shareholders and creditors, and one is the present value of future economic value added.

The paper is organized as follows: Section 2 describes the methodology approach; Section 3 presents the concept of the Economic Value Added and explains calculation of the Economic Value Added; Section 4 discusses the link between the results and the company's Sustainable Value; in Section 5 are the main findings and implications summarized.

2. Materials and Methods

The aim of the paper is to apply the Economic Value Added methodology on real-life corporate data and present a company's value, including identification of limitations in measuring a company's value. The choice of the company was random, and these criteria were taken into account in the selection: Size of the company (number of employees); duration of the company (number of years); the markets in which it operates. It is a company that deals with the sale of spare parts for any motor vehicle (NACE Code 45.31.0; Branch Auto spare parts retail and wholesale—Wholesale semi-trailers and accessories). The company has been operating in the Slovak Republic for more than 25 years. It is also part of an international group. The company is the only tool to apply the EVA methodology (focusing on the one dimension of the Sustainable Value Added concept—economic dimension) and discusses the link between the results and the company's Sustainable Value.

The fulfilment of the aim is preceded by:

- Analysis of research studies about the sustainability assessment and the concept of the Sustainable Value (see Section 1),

- Calculation of net operating assets (NOA, see Section 3),
- Calculation of weighted average cost of capital (WACC, see Section 3),
- Calculation of net operating profit after tax (NOPAT, see Section 3),
- Calculation of Economic Value Added (EVA, see Section 3),
- Calculation of the company's value through the Economic Value Added methodology (see Section 3),
- Identification of limitations in measuring the company's value (see Section 4).

2.1. Calculation of Net Operating Assets (NOA)

Net operating assets are those assets of a business directly related to its operations, minus all liabilities directly related to its operations [27]. The basis of NOA calculations are company net assets presented in statements of the financial position for 2015, 2016, and 2017 of the selected company that deals with the sale of spare parts for any motor vehicle (NACE Code 45.31.0; Branch Auto spare parts retail and wholesale—Wholesale semi-trailers and accessories). The assets need to be adjusted by items that relate to financing activities (including activities that are not necessary for its core business purpose). The task is [28]:

- To eliminate non-operating assets from among assets;
- at market valuation, to capitalize assets which are not recognized within assets in the financial statements;
- to decrease assets by non-interest-bearing debt capital.

2.2. Calculation of Weighted Average Cost of Capital (WACC)

The weighted average cost of capital (WACC) is a financial ratio that calculates a company's cost of financing and acquiring assets by comparing the debt and equity structure of the business [29]. The WACC Formula and Calculation (Equation (4)):

$$\text{WACC} = r_d * (1 - t) * \frac{D}{C} + r_e * \frac{E}{C} \quad (4)$$

where r_d = total cost of debt; t = income tax rate; D = value of total debt; r_e = total cost of equity; E = value of total equity; C = total value of the company's combined debt and equity or $D+E$; D/C = percentage of financing that is debt; E/C = percentage of financing that is equity.

The total cost of debt (r_d) is expressed according to Equation (5) [28]:

$$r_d = \text{interest expenses/total debt} \quad (5)$$

The total cost of equity (r_e) is expressed according to Equation (6) [30]:

$$r_e = r_f + \beta * (E(r_m) - r_f) \quad (6)$$

where r_f = risk-free rate of return (the theoretical rate of return of an investment with zero risk); β = beta of the investment (a measure of how much risk the investment will add to a portfolio that looks like the market; if a stock is riskier than the market, it will have a beta greater than one; if a stock has a beta of less than one, the formula assumes it will reduce the risk of a portfolio); $(E(r_m) - r_f)$ = market risk premium.

2.3. Calculation of Net Operating Profit After Tax (NOPAT)

Net operating profit after tax (NOPAT) shows how well a company performed through its core operations, net of taxes [31]. In other words, this is the amount of profits that a company makes from its

operations after taxes without regard to interest payments [32]. The NOPAT Formula and Calculation (Equation (7)):

$$\text{NOPAT} = \text{operating profit} * (1 - t) \quad (7)$$

Operating profit is also referred to as earnings before interest and taxes (EBIT). The EBIT Formula and Calculation (Equation (8)) [33]:

$$\text{EBIT} = \text{net income} + \text{interest expenses} + \text{income tax} \pm \text{non-operating gains/losses} \quad (8)$$

2.4. Calculation of Economic Value Added (EVA)

Economic Value Added (EVA) is an internal management performance measure that compares net operating profit to total cost of capital [34]. Economic value added (EVA) is also referred to as economic profit. The EVA Formula and Calculation (Equation (9)) [35]:

$$\text{EVA} = \text{NOPAT} - (\text{WACC} * \text{capital invested}) \quad (9)$$

where NOPAT = net operating profit after tax; WACC = weighted average cost of capital; capital invested = total capital invested through equity or debt in a given company (the other way of its calculating is to summarize fixed assets and net working capital (current assets—short term liabilities)—both approaches offer the same results [36], NOA are mathematically equivalent to the invested capital).

2.5. Calculation of the Company's Value Through the Economic Value Added Methodology

EVA valuation is the sum of the invested capital and all future EVAs (in present value terms). When the market fairly values a company, it takes into account all future expected annual EVAs and these will equal the Market Value (MVA) [37]. If we implement the above-described entering parameters, the company's value through the Economic Value Added methodology can be calculated as follows [38]:

$$\text{company's value} = \text{NOA}_0 + \sum_{t=1}^T \frac{\text{EVA}_t}{(1 + \text{WACC})^t} + \frac{\text{EVA}_{t+1}}{\text{WACC} * (1 + \text{WACC})^T} - D_0 + A_0 \quad (10)$$

where NOA_0 = net operating assets at the valuation date; EVA = Economic value added in the year "t"; WACC = weighted average cost of capital; D_0 = value of total debt at the valuation date; A_0 = non-operative assets at the valuation date; T = number of years explicitly planned EVA.

The Economic Value Added methodology is applied to real-life corporate data and presented the company's value through a case study. The results of these findings are stated in the following Section 3.

This study is based on information that was gathered through an extensive literature review (research publications and research studies (documents) about sustainability, corporate social responsibility, Sustainable Value concept, EVA methodology; the company's financial statements for 2015, 2016, and 2017 with notes of the selected company) using Internet and research databases (Web of Science, Scopus, EBSCO) and the author's own experience (results from own research projects (project manager M.J.)—VEGA 1/0653/18 Business sustainability as a prerequisite for prosperity; VEGA 1/0916/15 Business Excellence status assessment in relation to the corporate social responsibility concept). Methods of analysis, comparison, selection, abstraction, induction, deduction, determination, and statistics were used.

3. Results

In the previous Section 2, we defined all inputs which would be used for the value calculation of the selected company. We see the research in two directions: On the one hand, the calculation of

Economic Value Added (EVA) according to (9); on the other hand, the calculation of the company's value through the Economic Value Added methodology according to (10).

3.1. Calculation of Economic Value Added (EVA)

EVA is the difference between the net operating profit after tax of the business organization and the cost of the opportunity capital invested in the business organization [24]. The sequence of steps in the calculation of Economic Value Added (EVA) is shown in the Figure 1.

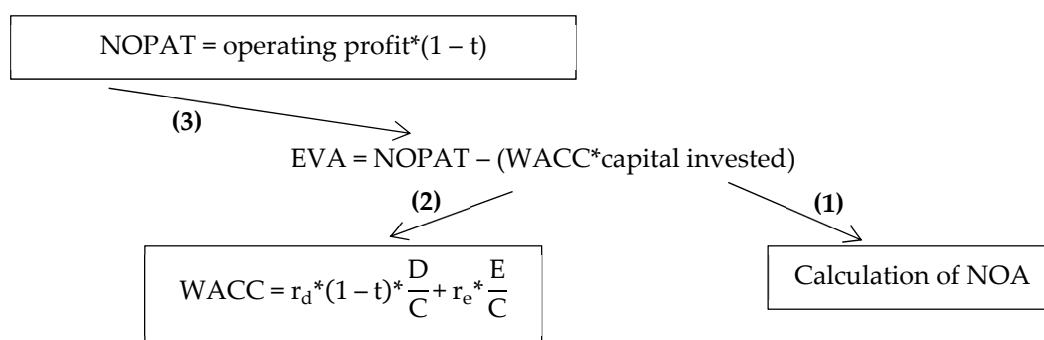


Figure 1. The sequence of steps in the calculation of Economic Value Added (EVA).

3.1.1. Calculation of Net Operating Assets (NOA)

NOA is calculated by adjusting the statement of financial position (balance sheet) for 2015, 2016, and 2017 of the selected company so that operating activities are separated from financing activities. Management is usually not responsible for creating value through financing activities (excluding the companies in the finance industry). Therefore, adjusting the statement of financial position allows investors to value just the operating activities and get a more accurate measurement of the company's value.

For the calculation of net operating assets (NOA) the assets need to be adjusted by items:

- Inventories—this means inventories which the company considers not to be sold; from the perspective of the company, the inventories that are older motor vehicle parts and customers are not interested because they do not own such types of motor vehicles,
- Receivables—this means a bad debt as an account receivable that has been clearly identified as not being collectible,
- Provisions—this means strategic provisions which the company creates for the purpose of financial compensation regarding claims and returned goods.

In Table 1 are input data for calculation of net operating assets (NOA).

Table 1. Input data for calculation of net operating assets (NOA).

Items	2015	2016	2017
total assets	20,745,546 €	23,668,162 €	27,017,302 €
inventories	12,186 €	14,394 €	58,339 €
receivables	44,180 €	120,708 €	94,622 €
claim provisions	0 €	73,423 €	92,153 €
provisions for returned goods	0 €	15,013 €	17,882 €

Source: Authors.

Calculation of net operating assets (NOA) 2015:

$$\begin{aligned}
 \text{NOA}_{2015} &= 20,745,546 - 12,186 - 44,180 \\
 \text{NOA}_{2015} &= 20,689,180 \text{ €}
 \end{aligned}
 \tag{11}$$

Calculation of net operating assets (NOA) 2016:

$$\begin{aligned} \text{NOA}_{2016} &= 23,668,162 - 14,394 - 120,708 - 73,423 - 15,013 \\ \text{NOA}_{2016} &= 23,444,624 \text{ €} \end{aligned} \quad (12)$$

Calculation of net operating assets (NOA) 2017:

$$\begin{aligned} \text{NOA}_{2017} &= 27,017,302 - 58,339 - 94,622 - 92,153 - 17,882 \\ \text{NOA}_{2017} &= 26,754,306 \text{ €} \end{aligned} \quad (13)$$

3.1.2. Calculation of Weighted Average Cost of Capital (WACC)

The weighted average cost of capital (WACC) is the discount rate, or time value of money, used to convert expected future free cash flow into present value for all investors ([26,39]). It consists of two important parts: To calculate the total cost of debt (r_d) according to Equation (5) and the total cost of equity (r_e) according to Equation (6).

In Table 2 are input data for calculation of total cost of debt (r_d).

Table 2. Input data for calculation of total cost of debt (r_d).

Items (Interest Expenses)	2015	2016	2017
lease	524,622 €	593,198 €	614,611 €
loans	117,817 €	116,058 €	110,429 €

Source: Authors.

Calculation of total cost of debt (r_d) 2015:

$$r_d(2015) = \frac{524,622}{117,817} = 4.45\% \quad (14)$$

Calculation of total cost of debt (r_d) 2016:

$$r_d(2016) = \frac{593,198}{116,058} = 5.11\% \quad (15)$$

Calculation of total cost of debt (r_d) 2017:

$$r_d(2017) = \frac{614,611}{110,429} = 5.57\% \quad (16)$$

The cost of equity capital (r_e) is expressed by means of the Capital Assets Pricing Model (CAPM) according to Equation (6). The task is to calculate:

- Risk-free rate of return (r_f),
- beta of the investment (β),
- market risk premium ($E(r_m) - r_f$)—the difference between the expected return on a market portfolio ($E(r_m)$) and the risk-free rate (r_f).

The risk-free rate of return (r_f) was obtained from the government bond lists of exchange rates, which shows the development of yield curves in Slovakia [40]. In determining the indicator, we used the information that was available on the last day of the year, for which we calculated the cost of equity. In 2015, the risk-free rate of return was 3.51%, in 2016 risk-free rate of return was 3.43% and in 2017 risk-free rate of return was 3.32%.

The expected return on a market portfolio ($E(r_m)$) was obtained from calculations by the respected professor Damodaran from USA, who calculates each year the individual risk premiums for each country in the world [41]. His calculations are used by the expert organizations that specify value

of the company. Individual returns on a market are largely influenced by Moody's rating, which determines a country's ability to pay its debts. In 2015, the return on a market was 7.09%, in 2016 its value fell by 0.43% and stood at 6.06%. In 2017, the value of the return on a market was 6.06%.

In calculating the beta of the investment, we used the calculations of the American professor Damodaran, who for a period of five years set a beta of the investment for the selected types of industries in which individual companies operate [42]. For a company with the sale of spare parts for any motor vehicle, the beta of the investment was 1.58.

In the Table 3 are input data for calculation of the cost of equity capital (r_e).

Table 3. Input data for calculation of total cost of the cost of equity capital (r_e).

Item	2015	2016	2017
risk-free rate of return (r_f)	3.51%	3.43%	3.32%
beta of the investment (β)	1.58	1.58	1.58
expected return on a market portfolio ($E(r_m)$)	7.09%	6.66%	6.06%

Source: Authors.

Calculation of total cost of the cost of equity capital (r_e) 2015:

$$\begin{aligned} r_{e2015} &= 3.51 + 1.58 \times (7.09 - 3.51) \\ r_{e2015} &= 9.17\% \end{aligned} \quad (17)$$

Calculation of total cost of the cost of equity capital (r_e) 2016:

$$\begin{aligned} r_{e2016} &= 3.43 + 1.58 \times (6.66 - 3.43) \\ r_{e2016} &= 8.53\% \end{aligned} \quad (18)$$

Calculation of total cost of the cost of equity capital (r_e) 2017:

$$\begin{aligned} r_{e2017} &= 3.32 + 1.58 \times (6.06 - 3.32) \\ r_{e2017} &= 7.65\% \end{aligned} \quad (19)$$

For the years 2015 and 2016, the income tax rate (t) was 22%. For the year 2017, there was a decrease in the rate to 21%, as from 2016. For WACC calculation purposes:

- $(1 - t)$ for years 2015 and 2016 = 0.78,
- $(1 - t)$ for year 2017 = 0.79.

The value of total debt (D), the value of total equity (E), and the total value of the company's combined debt and equity or $E + D$ (C) are identified from the statement of the financial position (balance sheet) for 2015, 2016, 2017 of the selected company in the equity and liabilities section.

- 2015
 - $D = 15,049,579 \text{ €}$,
 - $E = 5,695,967 \text{ €}$,
 - $C = 20,745,546 \text{ €}$,
- 2016
 - $D = 16,655,603 \text{ €}$,
 - $E = 7,012,559 \text{ €}$,
 - $C = 23,668,162 \text{ €}$,
- 2017

- D = 17,882,214 €,
- E = 9,135,088 €,
- C = 27,017,302 €.

In Table 4 are input data for the calculation of weighted average cost of capital (WACC).

Table 4. Input data for calculation of weighted average cost of capital (WACC).

Item	2015	2016	2017
total cost of debt (r_d)	4.45%	5.11%	5.57%
income tax rate (t)	0.78	0.78	0.79
value of total debt (D)	15,049,579 €	16,655,603 €	17,882,214 €
value of total equity (E)	5,695,967 €	7,012,559 €	9,135,088 €
total value of the company's combined debt and equity or D+E (C)	20,745,546 €	23,668,162 €	27,017,302 €
total cost of equity (r_e)	9.17%	8.53%	7.65%

Source: Authors.

Calculation of weighted average cost of capital (WACC) 2015:

$$\begin{aligned} \text{WACC}_{2015} &= 4.45 \times 0.78 \times \frac{15,049,579}{20,745,546} + 9.17 \times \frac{5,695,967}{20,745,546} \\ \text{WACC}_{2015} &= 5.04\% \end{aligned} \quad (20)$$

Calculation of weighted average cost of capital (WACC) 2016:

$$\begin{aligned} \text{WACC}_{2016} &= 5.11 \times 0.78 \times \frac{16,655,603}{23,668,162} + 8.53 \times \frac{7,012,559}{23,668,162} \\ \text{WACC}_{2016} &= 5.33\% \end{aligned} \quad (21)$$

Calculation of weighted average cost of capital (WACC) 2017:

$$\begin{aligned} \text{WACC}_{2017} &= 5.57 \times 0.79 \times \frac{17,882,214}{27,017,302} + 7.65 \times \frac{9,135,088}{27,017,302} \\ \text{WACC}_{2017} &= 5.50\% \end{aligned} \quad (22)$$

The weighted average cost of capital (WACC) for 2015 is 5.04%, for 2016 it is 5.33%, and for 2017 it is 5.50%, which is price a company must pay for using resources. These results are inputs for calculation of Economic Value Added (EVA) according to Equation (9).

3.1.3. Calculation of Net Operating Profit After Tax (NOPAT)

NOPAT is the after-tax profit a company would have if it had no debt and no investments in non-operating assets [26]. Because it excludes the effects of financial decisions, it is a better measure of operating performance than net income ([26,43]).

The task is to calculate the net operating profit after tax (NOPAT) according to Equation (7). Operating profit is referred to as earnings before interest and taxes (EBIT). For the calculation of earnings before interest and taxes (EBIT) the profit needs to be adjusted and calculated according to Equation (8). The adjustment used for the EBIT calculation includes non-deductible and deductible items (Table 5).

For the years 2015 and 2016, the income tax rate was 22%. For the year 2017, there was a decrease in the rate to 21%, as from 2016. For NOPAT calculation purposes according to Equation (7):

- (1-t) for years 2015 and 2016 = 0.78,
- (1-t) for year 2017 = 0.79.

Calculation of net operating profit after tax (NOPAT) 2015:

$$\begin{aligned} \text{NOPAT}_{2015} &= 1,112,338 \times 0.78 \\ \text{EBIT}_{2015} &= 867,623.64 \text{ €} \end{aligned} \quad (23)$$

Calculation of net operating profit after tax (NOPAT) 2016:

$$\begin{aligned} \text{NOPAT}_{2016} &= 1,874,809 \times 0.78 \\ \text{EBIT}_{2016} &= 1,462,351.02 \text{ €} \end{aligned} \quad (24)$$

Calculation of net operating profit after tax (NOPAT) 2017:

$$\begin{aligned} \text{NOPAT}_{2017} &= 2,883,102 \times 0.79 \\ \text{EBIT}_{2017} &= 2,277,650.58 \text{ €} \end{aligned} \quad (25)$$

NOPAT derived this way includes both the effect reached by using assets of a company (its technical-production base for owners) and interest paid to creditors [36].

Table 5. Input data for calculation of weighted average cost of capital (WACC).

Item	2015	2016	2017
profit before tax	1,086,678 €	1,833,256 €	2,824,220 €
non-deductible items:			
+ interest expenses related to affiliated accounting entities	82,138 €	66,975 €	63,573 €
+ other interest expenses	35,679 €	49,083 €	46,856 €
+ exchange rate losses	3308 €	3671 €	5390 €
+ other expenses related to financial activities	43,576 €	40,777 €	57,174 €
deductible items:			
– interest income from affiliated accounting entities	136,449 €	118,092 €	112,087 €
– other interest income	2551 €	533 €	917 €
– exchange rate gains	0 €	328 €	1041 €
– other income from financial activities	41 €	0 €	66 €
EBIT	1,112,338 €	1,874,809 €	2,883,102 €

Source: Authors.

3.1.4. Calculation of Economic Value Added (EVA)

The task is to calculate the Economic Value Added (EVA) according to Equation (9). In the previous Section 3.1, we calculated all inputs which would be used for the EVA calculation of the selected company. In Tables 6 and 7 are the summary of input data for EVA calculation.

Table 6. Input data for calculation of Economic Value Added (EVA)—years 2015 and 2016.

Item	2015	2016
	EVA _t	EVA _{t+1}
NOPAT	867,623.64 €	1,462,351.02 €
WACC	5.04%	5.33%
NOA	20,689,180 €	23,444,624 €

Source: Authors.

Table 7. Input data for calculation of Economic Value Added (EVA)—years 2016 and 2017.

Item	2016	2017
	EVA _t	EVA _{t+1}
NOPAT	1,462,351.02 €	2,277,650.58 €
WACC	5.33%	5.50%
NOA	23,444,624 €	26,754,306 €

Source: Authors.

Calculation of Economic Value Added (EVA) 2015:

$$\begin{aligned} \text{EVA}_t &= 867,623.64 - (5.04 \times 20,689,180) \\ \text{EVA}_t &= -103,330,609.47 \text{ €} \end{aligned} \quad (26)$$

Calculation of Economic Value Added (EVA) 2016:

$$\begin{aligned} \text{EVA}_{t+1} &= 1,462,351.02 - (5.33 \times 23,444,624) \\ \text{EVA}_{t+1} &= -123,588,054.14 \text{ €} \end{aligned} \quad (27)$$

Calculation of Economic Value Added (EVA) 2017:

$$\begin{aligned} \text{EVA}_{t+1} &= 2,277,650.58 - (5.50 \times 26,754,306.00) \\ \text{EVA}_{t+1} &= -144,778,782,30 \text{ €} \end{aligned} \quad (28)$$

The basic idea of EVA is that economical profit appears when its amount is higher than “normal” profit derived from average cost of capital invested both by creditors (interests expenses) and owners—shareholders (opportunity costs). If $\text{EVA} > 0$, then we can say a company is successful. This is the only case wealth of shareholders increases because they gain more than what their original investment was. The service to creditors is included there, too. In the case that $\text{EVA} = 0$, a company produced just as much as it invested, and $\text{EVA} < 0$ leads to destroying of wealth of shareholders [36].

3.2. Calculation of the Company’s Value Through the Economic Value Added Methodology

EVA valuation is the sum of the invested capital and all future EVAs (in present value terms). We implement the above-calculated entering parameters, with which the company’s value through the Economic Value Added methodology can be calculated according to Equation (10). It consists of three important parts:

- To calculate the 2-year average of WACC (for years 2015 and 2016, and for years 2016 and 2017),
- to calculate total debt at the valuation date (D_0),
- to calculate non-operative assets at the valuation date (A_0).

3.2.1. Calculation of 2-Year Average of WACC

In the previous Section 3.1.2, we calculated all inputs which would be used for the calculation of 2-year average of WACC (see Equations (20)–(22)).

Calculation of 2-year average of WACC (years 2015 and 2016):

$$\begin{aligned} \text{2 year average of WACC} &= \frac{5.04 + 5.33}{2} \\ \text{2 year average of WACC} &= 5.19\% \end{aligned} \quad (29)$$

Calculation of 2-year average of WACC (years 2016 and 2017):

$$\begin{aligned} \text{2 year average of WACC} &= \frac{5.33 + 5.50}{2} \\ \text{2 year average of WACC} &= 5.42\% \end{aligned} \quad (30)$$

3.2.2. Calculation of Total Debt at the Valuation Date (D_0)

The value of total debt at the valuation date (D_0) is identified from the statement of financial position (balance sheet) for 2016 and 2017 of the selected company:

- 2016
 - $D_0 = 593,198 \text{ €}$,
- 2017
 - $D_0 = 614,611 \text{ €}$.

3.2.3. Calculation of Non-Operative Assets at the Valuation Date (A_0)

The value of non-operative assets at the valuation date (A_0) is identified from the statement of financial position (balance sheet) for 2016 and 2017 of the selected company in the asset section. In the Table 8 are input data for calculation of non-operative assets at the valuation date (A_0).

Table 8. Input data for calculation of non-operative assets at the valuation date (A_0).

Item	2016	2017
inventories	14,394 €	58,339 €
receivables	120,708 €	94,622 €
claim provisions	73,423 €	92,153 €
provisions for returned goods	15,013 €	17,882 €

Source: Authors.

Calculation of non-operative assets at the valuation date (A_0) 2016

$$A_0 = 14,394 + 120,708 + 73,423 + 15,013$$

$$A_0 = 223,538 \text{ €} \quad (31)$$

Calculation of non-operative assets at the valuation date (A_0) 2017

$$A_0 = 58,339 + 94,622 + 92,153 + 17,882$$

$$A_0 = 262,996 \text{ €} \quad (32)$$

3.2.4. Calculation of the Company's Value Through the Economic Value Added Methodology

In Tables 9 and 10 are input data for the calculation of the company's value through the Economic Value Added methodology.

Table 9. Input data for calculation of the company's value through the EVA methodology (2016).

Item	Result
2-year average of WACC (year 2015 and year 2016)	5.19%
net operating assets at the valuation date (NOA_0)	23,444,624.00 €
Economic Value Added in the year 2015 (EVA_t)	-103,330,609.47 €
Economic Value Added in the year 2016 (EVA_{t+1})	-123,588,054.14 €
total debt at the valuation date (D_0)	593,198.00 €
non-operative assets at the valuation date (A_0)	223,538.00 €

Source: Authors.

Table 10. Input data for calculation of the company's value through the EVA methodology (2017).

Item	Result
2-year average of WACC (year 2015 and year 2016)	5.42%
net operating assets at the valuation date (NOA ₀)	26,754,306.00 €
Economic Value Added in the year 2016 (EVA _t)	−123,588,054.14 €
Economic Value Added in the year 2017 (EVA _{t+1})	−144,778,782.30 €
total debt at the valuation date (D ₀)	614,611.00 €
non-operative assets at the valuation date (A ₀)	262,996.00 €

Source: Authors.

In previous paragraph, we defined and calculated all input data which would be used for calculation of the company's value (V) through the EVA methodology. Then, we implement the above-described entering parameters, and the value of the selected company that deals with the sale of spare parts for any motor vehicle (NACE Code 45.31.0; Branch Auto spare parts retail and wholesale—Wholesale semi-trailers and accessories) is calculated as follows Equations (33) and (34).

Calculation of the company's value (V) through the EVA methodology 2016 according to Equation (10):

$$\begin{aligned}
 V &= 23,444,624 + \frac{-103,330,609.47}{(1+5.19)^1} + \frac{-123,588,054.14}{5.19 \times (1+5.19)^2} - 593,198 + 223,538 \\
 V &= 23,444,624 + \frac{-103,330,609.47}{6.19} + \frac{-123,588,054.14}{198.86} - 593,198 + 223,538 \\
 V &= 23,444,624 - 16,693,151.77 - 621,482.72 - 593,198 + 223,538 \\
 V &= 5,760,329.51 \text{ €}
 \end{aligned} \tag{33}$$

Calculation of the company's value through (V) the EVA methodology 2017 according to Equation (10):

$$\begin{aligned}
 V &= 26,754,306 + \frac{-123,588,054.14}{(1+5.42)^1} + \frac{-144,778,782.30}{5.42 \times (1+5.42)^2} - 614,611 + 262,996 \\
 V &= 26,754,306 + \frac{-123,588,054.14}{6.42} + \frac{-144,778,782.30}{223.39} - 614,611 + 262,996 \\
 V &= 26,754,306 - 19,250,475.72 - 648,098.76 - 614,611 + 262,996 \\
 V &= 6,504,116.52 \text{ €}
 \end{aligned} \tag{34}$$

From abovementioned relationships it is clear that total value of the selected company consists of book value of invested capital and present value of future EVA. As a result, we calculated the value of the selected company as a whole.

4. Discussion

The basic idea underlying shareholder value approaches is as simple as it is convincing: Value to the shareholders is achieved only when the residual measure of (adjusted) profit minus the cost of capital is positive—that is, when “profit” exceeds the cost of capital. Madden (2007) argues that maximizing long-term value provides a criterion for management decision-making that leads to the most efficient use of society's resources and recommends that corporate boards undertake a dialogue with management about the content of a periodic Shareholder Value Review [26].

EVA helps the management and also other employees to understand the cost of equity capital [44]. S. O'Byrne found [45] that “EVA, unlike NOPAT or other earnings measures like net income or earnings per share, is systematically linked to market value. It should provide a better predictor of market value than other measures of operating performance. And, it does provide a better predictor once we understand and adjust for two critical relationships between EVA and market value.

- First, investors capitalize positive EVA at much higher multiples than negative EVA. Positive EVA is a sign of future EVA improvement because a growing company can create EVA improvement

simply by maintaining its current rate of return. Negative EVA reduces market value, but by significantly less than if such substandard performance were expected to continue forever.

- Second, capital multiples decline with size. The implicit message from the market here is that size eventually brings with it diseconomies of scale. Big companies that don't generate positive EVA now are less and less likely (as they get bigger) to generate any EVA improvement in the future."

However, it is difficult to use EVA where operating profits are cyclical or suffer from dislocations or appear to grow at a high rate for a long period. These factors affect the reliability of forecasts or of the cost of capital calculations. Moreover, the approach may give misleading results where capital expenditure is changing rapidly from historical levels, where price inflation is high or where several different currencies influence the company. These factors influence the value of invested capital in relation to the profits and lead to changes in rates of return. Finally, the results of an EVA analysis for companies that do not have large asset values (service companies) or have significant intangible assets (branded goods companies or highly acquisitive companies) should be treated with extreme caution [37].

The main problems with EVA in measuring operating performance were identified by Esa Mäkeläinen [44]. He is of opinion that there are countless individual operational things that create shareholder value and increase EVA. Increasing EVA falls always into one of the following three categories [44]:

- (1) Rate of return increases with the existing capital base. This means that more operating profits are generated without tying any more capital in the business.
- (2) Additional capital is invested in business earning more than the cost of capital. (Making Net present value positive investments.)
- (3) Capital is withdrawn or liquidated from businesses that fail to earn return greater than the cost of capital.

EVA (Economic Value Added) is an indicator for measuring performance based on real economic profits of the company product, which allows measurement of its success or failure over a period of time and is useful to investors who wish to determine how well the product has value to them and can be used for comparative analysis with rapid industrial similar ([4,5]). In addition to the positives, this evaluation method also has negatives (see studies ([44–46])). Our main conclusions from the identification of limitations (problems) in measuring the value of the selected company that deals with the sale of spare parts for any motor vehicle (NACE Code 45.31.0; Branch Auto spare parts retail and wholesale—Wholesale semi-trailers and accessories) are:

- The first limitation is the calculation of net operating assets (NOA).

The assets need to be adjusted by items that relate to financing activities (including activities that are not necessary for its core business purpose). From the theoretical point of view, it is very difficult to define specific items, which are intended to adjust the total assets. The most widely used items are non-current assets and capitalized items which are not part of assets of company and non-interest-bearing foreign capital.

Another limitation, which we encountered, is in the process of determining what belongs to the non-current assets. Based on the recommendation of the company, we included into non-current assets inventory items, which consist of non-resale spare parts, account receivables which the company has difficulty obtaining from company partners and provisions, which the company committed for the needs of its customers. In general, these items can be described as non-current assets that the company does not need solely to continue its business.

- The second limitation is the calculation of weighted average cost of capital (WACC).

In order to achieve the result of weighted cost of capital, it was necessary for us to adjust the given economic result by the so-called creditable and deductible individual items. From a theoretical point of view, it is difficult to define which items are intended to adjust the profit or loss. Defining the individual items is a responsibility of the person (team) which is responsible for determining the value of the company. We adjusted the economic result for interest and income, exchange rate gains and losses and expenses and income, which the company had from its financial activities for the years 2015, 2016, and 2017.

The first variable, which we calculated, was the cost of capital, which company has from other companies (banks, investors, etc.). We had to select numerical values for this calculation from the financial statement of the selected company in order to calculate the percentage of these costs. The company did not record any loans that were granted to it. Therefore, it was necessary to calculate the cost percentage from the leasing, which the company incurred, based on the acquisition of the motor vehicles and the costs incurred by the company for the given lease. There are many methods for calculating the cost of equity. We chose the CAPM model. The calculation of the cost of equity was based on the determining the values of the indicators: Risk-free rate of return, beta of the investment, and expected return on a market portfolio. The risk-free rate of return was obtained after examining the exchange rate lists of government bonds in Slovakia. We were interested in the value of the bonds as of the last day in the years 2015, 2016, and 2017. We obtained the beta of the investment and expected return on a market portfolio from the table calculations of the American professor Damodaran. From these table calculations, the professional experts get the information needed to calculate the value of the company. The remaining values of the indicators, which are part of the formula of average weighted cost of capital, were obtained from the company's financial statement.

According to [26], "we can never be sure just how accurate our estimated cost of capital is". The reason is in a number of difficult issues of the cost of capital are related with estimate [26]:

(1) Privately owned firms.

There is a serious question about how one should measure the cost of equity for a firm of which the stock is not traded. Tax issues are also particularly important in these cases. As a general rule, the same principles of the cost of capital estimation apply to both privately held and publicly owned firms. However, the problems of obtaining input data are somewhat different for each.

(2) Small businesses.

It is generally privately-owned companies for which it is difficult to estimate their cost of equity.

(3) Measurement problems.

One cannot overstate the practical difficulties encountered when estimating the cost of equity. It is very difficult to obtain good input data for the CAPM, for the risk premium in the bond yield and risk premium method.

EVA and EVA valuation is applicable to any company. It is considered as a backbone of a company's performance monitoring and sustainability tools. However, our paper focuses only on the one dimension of the Sustainable Value Added concept—economic dimension. We assume that the Sustainable Value Added can also be calculated by transforming the economic indicator (economic growth; the gross value) through the Economic Value Added (EVA).

5. Conclusions

Sustainable Value is a valuation tool that assesses the sustainability performance of companies using opportunity cost thinking. To calculate the Sustainable Value of a company (or other organizational entities), it must be determined where the financial, environmental, and social resources of the company create more return: Within the company or in the benchmark. As a result, Sustainable Value shows how much more, or how much less return a company created with its set of economic, environmental, and social resources compared to a benchmark [47].

The main advantage of using modern indicators for measuring the financial performance of a company is that these indicators take into account the time value of money and calculate with risk. They also point to the need of including not only the cost of foreign capital, but also the cost of equity. Therefore, it is necessary for the company to achieve not only positive values of traditional indicators, but also positive values of modern indicators, which also include economic added value [48].

The result of determining the value of a company brings important management information for the company as to how the company is reflected on the basis of individual values. The achieved positives represent a company which has perspective and is value-creating. In the case of negative results, it is recommended that the business gradually reduce or eliminate individual items that create a negative value for it. If this process fails, it is recommended to sell this kind of company. At the same time, the company can imagine by the means of acquired value how much an investor would be willing to invest in it if the company were for sale (the business owner would change, or the companies would be merged). Determining the value of a company also brings the knowledge of how the company is doing in terms of market competition and position. With the method of Economic Value Added, the company could also quantify individual indicators of net operating assets or the cost of equity.

The idea behind EVA is that businesses are only truly profitable when they create wealth for their shareholders, and the measure of this goes beyond calculating net income. Economic Value Added asserts that businesses should create returns at a rate above their cost of capital [34]. It designs compensation purposes, for interconnecting the strategic and the operations management of companies. EVA indicators, from the perspective of financial management, combine all the basic components required to describe the economic situation of the company [6]. EVA is a tool for measuring the economic sustainability of a company. And what is important, the companies can see this as one form of innovation [49].

Therefore, we see need for further research in two directions:

- On the one hand, to identify the most important factors that have the same impact on sustainability and the Sustainable Value Added creation regardless of a company's size; branch in which deal,
- on the other hand, to calculate the Sustainable Value Added as a whole by implementing the weights of factors that have the impact on sustainability and benchmark values for specified branches.

In addition, according to [23], Sustainable Value Added is limited to the effect that it does not indicate if a company is sustainable. It shows, however, how much a company has contributed to more sustainability. This contribution can be expressed in either economic, environmental, or social terms. When expressed in economic terms, Sustainable Value Added expresses in absolute monetary terms the sustainable performance of the company relative to a benchmark. By establishing such a micro–macro link, it expresses by how much a company contributes to more sustainability on the benchmark level.

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