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VALUE BASED MANAGEMENT WITH SOME PRACTICAL EXAMPLES IN SLOVENIAN INDUSTRIES

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Abstract

Constantly bigger efficiency in the capital markets requires a more efficient allocation of capital within firms. Therefore a new system of indicators, as for example Value Based Management (VBM) which better reflects opportunities and threats, is urgent and needed. Within the VBM framework the author especially focuses in this paper on the economic value added (EVA) and on the cash value added (CVA). In the theoretical part, besides making a literature review on this topic, and shortly presenting the research methodology basically using Capital Asset Pricing Model, he analyses and estimates advantages and disadvantages of both indicators, at first by comparing them with standardized financial indicators and then by comparing them between each other. In the empirical part, the two indicators are applied on some selected firms from various industries (automotive industry, chemical industry, pharmaceutical industry and mining industry). At the end of this paper, the author emphasizes and advocates the thesis that a simultaneous choice of both indicators, i.e. EVA and CVA, has an important effect on managerial resources, and on the selection of a strategy as well as on the question of how investors (owners) estimate an individual firm as their potential investment.

Key Words

Economic value added; market value added; cash value added; capital-asset-pricing model; coefficient beta; weighted average cost of capital.

INTRODUCTION

Performance meausurement is often discussed but rarely defined. Performance measurement is the process of quantifying action, where measurement is the process of quantification and action leads to performance (Neely, Gregory & Platts, 1995). According to the marketing perspective, organizations achieve their goals, that is they perform, by satisfying their customers with greater efficiency and effectiveness than their competitors (Kotler, 1984). Effectiveness refers to the extent to which customer requirements are met, while efficiency is a measure of how economically the firm's resources are utilized when providing a given level of customer satisfation. How about the satisfaction of the owners? How do effectiveness and efficiency of a firm's performance influence their satisfaction? They want to get either the dividend payouts as much as possible or they want to be rewarded for their capital invested in a firm with higher value of their shares. In this paper we are especially interested in a performance measurement dealing with the owners. In this context a simple question can be posed: what measures are the most appropriate to quantify the value creation?

Shareholder value creation has become the motto of the most blue-chip companies since the late 1990s. The most fundamental objective is to bring an improvement in the value addition to the shareholders investment. In a market-driven economy, there are a number of companies that create wealth whereas others certainly destroy it. As a result, corporate executives may seek to inquire about the fundamental factors that cause the difference between the best and the worst performing companies and ultimately derive the long-term sustainable shareholder value (Narang & Kaur, 2014). These two researchers have carried out an empirical analysis of firm-specific attributes on shareholder value creation of Indian companies. Their study has examined the firm-specific factors, among which the corporate decision makers can navigate their key choices and trade-offs to create shareholder value. The study analyzed that investors tend to reward those companies which have higher profitability, lower market risk, efficient resource management, high leverage, more liquidity, higher marketing expenditures and robust market capitalization. They also suggest that decision makers should strive to push their management teams to think creatively and aggressively about upcoming opportunities leading to the long term shareholder value creation (Narang & Kaur, 2014).

This paper reveals at the very beginning a short literature review on shareholders' value creation presenting some measures which are the most relevant for shareholders' value. Among them the focus is given to economic value added (EVA) and cash value added (CVA). There are more advocates

of these two indicators than opponents and critics, who defend market value added (MVT) as the most appropriate measure for owners' value, and some others, like Tobin's q. Firstly, the advantages of EVA and CVA are presented in comparison with some most commonly used financial ratios, further on we prefer CVA as a more indicative measure and it is also easier and less complicated to comopute than EVA. It simply avoids so many adjustments needed to be made in accounting while computing EVA. It follows profitability and value creation better than EVA. These theses are tested and proven in the empiriral part of this paper. Several companies have been (chosen, each from different industry, for which EVA and CVA have been computed. At the end of the empirical part a short comparitive analysis is made, including conclusive findings. The paper ends up also with some suggestions for further research in this particular field.

LITERATURE REVIEW

After having scrutinized the studies dealing with shareholders' value creation we have found out that most of them have focused on the comparison of traditional performance meausures on one hand, like earnings, cash flow and productivity parameters, net present value, etc., and value-based measures on the other, like EVA, etc. There are quite a few of researchers who have dealt with such a comparison while identifying the most significant performance measure that best explains the shareholder value, like Lehn and Makhija 819969, Biddle et al. (1997), Chen and Dodd (1997), Fernandez (2001), Kramer and Pushner (1997), Malik (2004), Medeiros (2005), Misra and Kanwai (2004), Ramana (2004), Worthington and West (2004), Kyriazis and Anastassis (2007) and others. The existing literature has not yet developed the factors and determinants sufficiently that shall define the shareholder value creation. The value drivers to be identified emphasized associate shareholder value with specific financial or strategic attributes only. Thus, Kakani (2001) studied the relationship between ownership distribution and shareholder value creation in the stock markets. Some others, like Venkkateshwarlu and Kumar (2004) empirically studied the relationship between non-markert value performance indicators and market value. They examined accounting profitability, cash flow and growth, etc. Kaur and Narang (2010) examined the corporate attributes that can be associated with the companies' EVA disclosure choices. Some researchers, like Pandey (2006) empirically explored the significance of profitability and growth as drivers of shareholder value, measured by market-to-book value. Pandey's finding has shown that the economic profitability-growth interaction

variable has a positive coefficient. It indicates that growth associated with economic profitability influences shareholder value positively. Literature review on the subject has revealed the need for a further study to explore how the firm-specific attributes contribute to shareholder value.

According to Stern Stewart & Co's[1] EVA is a measure of economic profit and has the following advantages over traditional performance measures:

- EVA is the measure that correctly takes into account value creation or destruction in a company;
- EVA is a measure of the true financial performance of a company;
- there is evidence that increasing EVA is the key for increasing the company's value creation;
- EVA is the only measure that gives the right answer. All the others, including operating income, earnings growth, ROE and ROA may be erroneous;
- more EVA always is unambiguously better for shareholders;
- managing for higher EVA is, by definition, managing for a higher stock price;
- EVA is the performance measure most directly linked to the creation of shareholder wealth over time (www.eva.com).

Biddle, Bowen and Wallace (1997) conducted a study on some companies that used EVA and CVA as parameters for their executives' renumeration. They compared their progress with another set of companies without using these parameters. Among other things the companies that used EVA and CVA bought 112 % more shares on the market (in order to decrease WACC) than those which did not use these parameters.

Kleiman (1999) compared the performance of some ten companies that opted EVA and CVA with that of its most direct competitors that did not adopt these indicators. Among other things the companies that introduced EVA had on average a hire shareholder return, and sale of assets increases significantly after introduction of the EVA.

On the other hand there are also some critics who do not see any particular value added of these two indicators, especially EVA. Some authors, like Kyriazis and Anastassis (2007) investigated the relative explanatory power of the EVA model with respect to stock returns and firms' market value, compared to established accounting variables. Their tests revealed that net and operating income appear to be more value relevant than EVA. They say that EVA even though useful as a performance evaluation tool, need not necessarily be more correlated with shareholder's value than established accounting variables.

[1] Stern Value Management is a global management consulting firm and the world's leading advisor on value management, value strategy and value creation.

Other researchers, like Fernandez (2001) disagrees that EVA and CVA are really creating value for the shareholders. He argues for thesis, that a firm's value and the increase in the firm's value over a certain period are basically determined by the changes in expectations regarding the growth of the firm's cash flows and also by the changes in the firm's risk, which lead to changes in the discount rate. Further, he says, a company creates value for the shareholders when the shareholder return exceeds the equity's cost or the required return to equity, and vice versa a company destroys value when the opposite occurs. The items of the income statement and balance sheet are historic data. For him it is impossible for accounting-based measures to measure value creation. He advocates the equity market value instead. Therefore, it can come as no surprise that shareholder value creation has very little to do with the EVA, irrespective of whatever adjustments may be made to the accounting data used (Fernandez) (2002). He supports his statement with statistical results obtained through analysis of 582 American companies while having calculated the 10-year correlation between the increase in the MVA each year and each year's EVA and some other indicators. He has also found that the correlation between the shareholder return in 90.s and the increase in the CVA of the world's 100 most profitable companies was low (only 1,7 %).

Fernandez sees usefulness of EVA and CVA as management performance indicators only, for they take into account not only the earnings but also the cost of the resources used to generate those earnings. He is convinced that the problem with these parameters starts when it is wished to give these numbers a meaning they do not have: that of value creation.

METHODOLOGY

This research was based on a standard method, on Capital Asset Pricing Model (CAPM) as a partial statistical model.[2] CAPM is a model that describes the relationship between systematic risk and expected return for assets. CAPM is an important tool used to analyze the relationship between risk and rates of return. Originally CAPM is a static (single-period) model although it is generally treated as if it holds temporally (Merton, 1973). Fama (1970) has provided some justification for this assumption by showing that, if preferences and future investment opportunity sets are not state-dependent, then intertemporal portfolio maximization can be treated as if the investor

[2] One of the more important developments in modern capital market theory is the Sharpe-Lintner-Mossin mean-variance equilibrium model of exchange, commonly called the capital asset pricing model (Sharpe, 1964; Lintner, 1965; Mossin, 1966).

had a single-period utility function. Merton (1973) has shown in a number of examples that portfolio behavior for an intertmeporal maximizer will be significantly different when he faces a changing investment opportunity set instead of a constant one. We can also refer to the definition of Brigham and Houston: »the relevant riskiness of an individual stock is its contribution to the riskinesss of a well-diversified portfolio« (2004, 189).

In this research the stocks of four companies in four different industries are the subject of consideration. CAPM is used for the pricing of risky stocks, which generate expected returns for assets. These assets (stocks) are submitted to risk, and cost of capital has to be considered as well. The formula for calculating the risk of a stock given its risk is the following:

$$\overline{r_a} = r_f + \beta_a (\overline{r_m} - r_f),$$

where

r_f = risk free rate

β_a = beta of the stock

$\overline{r_m}$ = expected market return

In the context of VBM, CAPM indicates that investors need to be compensated for their input by time value of money and risk. The first one is represented by the risk-free rate, rate in the formula above. It compensates the investors for putting money in any investment over a certain time period. The risk-free rate represents the yield on government bonds. The other half of the formula represents risk and computes the amount of compensation the investors/owners require for taking on additional risk. This is computed by means of beta, β, a risk measure. Thus, in the CAPM formula a coefficient beta is used. The tendency of a stock to move up and down with the market is reflected in its beta coefficient, β. Beta is a key element of the CAPM and compares the returns of the asset to the market in a given period of time, and to the market premium, i.e. for how much the return of the market is bigger than risk-free rate. Beta measures how risky an asset is in comparison to market risk. Beta is a function of the volatility of the asset and the market. It reflects the correlation between the two (Investopedia, 2016).

Beta is the most relevant measure of any stock's risk, for a stock's beta coefficient determines how the stock affects the riskiness of a diversified portfolio, or as Brigham and Houston (2004, 193) say, since a stock's beta measures its contribution to the riskiness of a portfolio, beta is the theoretically correct measure of the the stock's riskiness.3 CAPM model indicates the expected return of an individual stock equals the rate on a risk-free stock increased by a risk premium. If the expected return does not meet

[3] For stocks, the market is usually represented as the S&P 500.

the required return of an investor/owner, the investment should not be undertaken.

The calculations of our both VBM indicators, EVA and CVA, are based on CAPM model.

VALUE BASED MANAGEMENT

Firms perform their activities in a business environment which requires them to implement such a system of indicators that illustrates value and profitability in a better way. Accounting systems, as we have known them so far, are inadequate and do not respond to a growing demand for efficient capital markets and the demand of owners. Constantly increasing efficiency in capital markets requires a more efficient allocation of capital within firms. Therefore, according to Dimc (2005) a new system of indicators, such as Value Based Management (VBM) - management on the basis of value, and management to increase (market) value, which reflects the opportunities and threats much better is urgent and necessary. VBM includes the following indicators: EVA, a term coined by the consultancy firm Stern Stewart, which has done much to develop and promote the concept (Brealey, Myers & Marcus, 2001), CVA, cash flow return on investment (CFROI) and those indicators that are relevant to shareholder value analysis (SVA). Firms may choose one of them to be key in determining their future scorecard.

Indicators currently used by firms to follow their profitability and value creation are not consistent with the mechanism of capital markets and with what market considers being key in determining value. Therefore, we must build on management that is based on value. For internal financial management firms should use VBM instead of an accounting system. Accounting is, of course, required for fiscal reasons and to control business in terms of legislation, but it does not contribute to improving the quality of management structures and all those involved in value creation. For the sake of understanding and managing business operations it is therefore necessary to rely on VBM within firms.

According to Weissenrieder (1998) a firm may be illustrated by two most important areas: the first is directed at the owners (capital market) and the other at the buyers (customers). The latter represents a business reality; these are activities that take place in a real business world. Firms have to manage these activities as effectively as possible to maximize value for shareholders. At the same time firms have to be able to complete these activities in such a way that they satisfy market expectations. This may only be achieved on the part of a firm's management by simulating the reality with

the mechanism of the capital market. By making a financial exemplification of a business reality they acquire the necessary management skills. This gives them a relevant feedback which they need to improve their business activities.

Weissenrieder (1998) says that the boundary between a business reality and the mechanisms of capital markets can be quite rapidly abused, similarly as it can be abused with financial statements. With this every opportunity to prepare for effective corporate management is lost. They become completely misinformed unless they perceive and comprehend a business reality on the basis of VBM. A firm must operate on a strategic feedback loop which means a constant evaluation of strategies in which doing management carry out the evaluation by using information from the strategies in order to make necessary adjustments in their firms later. There are a lot of cases in firms where the scope of a business reality does not work as it should, but there are very rare cases where it functions efficiently. Financial simulation of a business reality, of course, has to take into account a discounted cash flow.

According to Morin and Jarell (2000) value derives from three broad areas of decision-making: strategic, financial and corporate. Strategic determinants include production and marketing strategies and portfolio planning. Financial determinants include the optimization of capital structure and risk management. Corporate determinants include governance, mainly rewarding executive managers and business evaluation.

VBM is a relatively simple framework for setting objectives of those business decisions that add an economic value to a firm in both short and long term. Several approaches to quantifying a corporate value exist and they all have roots in a discounted cash flow model, since this is also the method and manner used by investors and capital markets to actually value their firms and securities. The value of every firm is a function of expected future cash flows correspondingly discounted with relation to risk. This is nothing new, as the discounting method has been used for decades. However, VBM puts this discounting to good use and as an approach extends it to business operations as a whole, thus contributing to strategic decisions about the value and according to Morin and Jarrell (2000) it establishes an increase in these values as a basis for determining a corporate responsibility. According to these authors, the main factors that determine or influence a corporate value are: range and ability of a firm to generate a return that is greater than its cost of capital, growth reflecting both the volume of invested capital and its positive trend of expansion and cost of capital which among other things also reflects a risk of a firm. These factors and their interactions have a tremendous impact on a successful

business strategy, management remuneration and evaluation of business operations. Management is thus helped to detect hidden leadership opportunities for further value creation.

A corporate value which is measured by a free cash flow, discounted at a time and subject to risks, has become popular and widespread as an excellent measure of value creation. Traditional accounting-based criteria such as earnings per share (EPS) and return on equity (ROE) are more focused on past performance than on future cash flows and therefore may not reflect value factors pursued by investors. While these two criteria are in no dependence with the actual value creation, according to Morin and Jarrell (2000) VBM on the other hand provides management with such a link between their actions and strategies that are in the best interest of shareholders.

Economic value added

In order to assess the value addition capabilities of companies Stern Stewart & Company has created two concepts: Economic Value Added (EVA) and Market Value Added (MVA). EVA is a historical figure based on the efficiency with which it used the resources at its disposal in a particular year, its MVA is the market assessment of its ability to create wealth in the future (Stewart, 2000). Quite a few of researchers argued Tobin's Q Ratio to be the most appropriate measure of value creation. The last indicator is calculated as the market value of a firm's assets divided by the replacement value of the firm's assets (Tobin, 1969).

EVA has gained wide acceptance among investors as a measure that links managerial decisions to shareholder value creation (Ramezani et. al, 2002). Stewart (2000) defined EVA to be an estimate of true economic profitability and the performance measure that is most directly linked to the creation of shareholder value over time value creation.

EVA is a model that relies on a firm's accounting. Its mechanism is therefore related to accounting:

Net sales revenue
- Operating Expenses (= costs)
- Taxes

Operating profit
- Financial requirements (= costs of financial resources)

= EVA

The capital base of EVA is formed by a balance sheet:

Balance sheet x WACC = Financial requirements (= costs of financial resources)

"Financial requirements" are calculated as defined assets (adjusted balance sheet), multiplied by the appropriate weighted average cost of capital (WACC).

Although the advantage of the EVA concept as an indicator, which is here following also Bržan case (2008) still asserting itself, lies in its long-term orientation while taking into account the overall capital cost, according to investors, quite some errors appear in accounting what Stewart (1991) points out. They need be corrected in order to simulate cash flow. Disadvantages exist primarily in the valuation of inventories, depreciation, revenue recognition, capitalization and depreciation of R & D activities, marketing, education, restructuring costs, acquisitions premiums, and so forth.

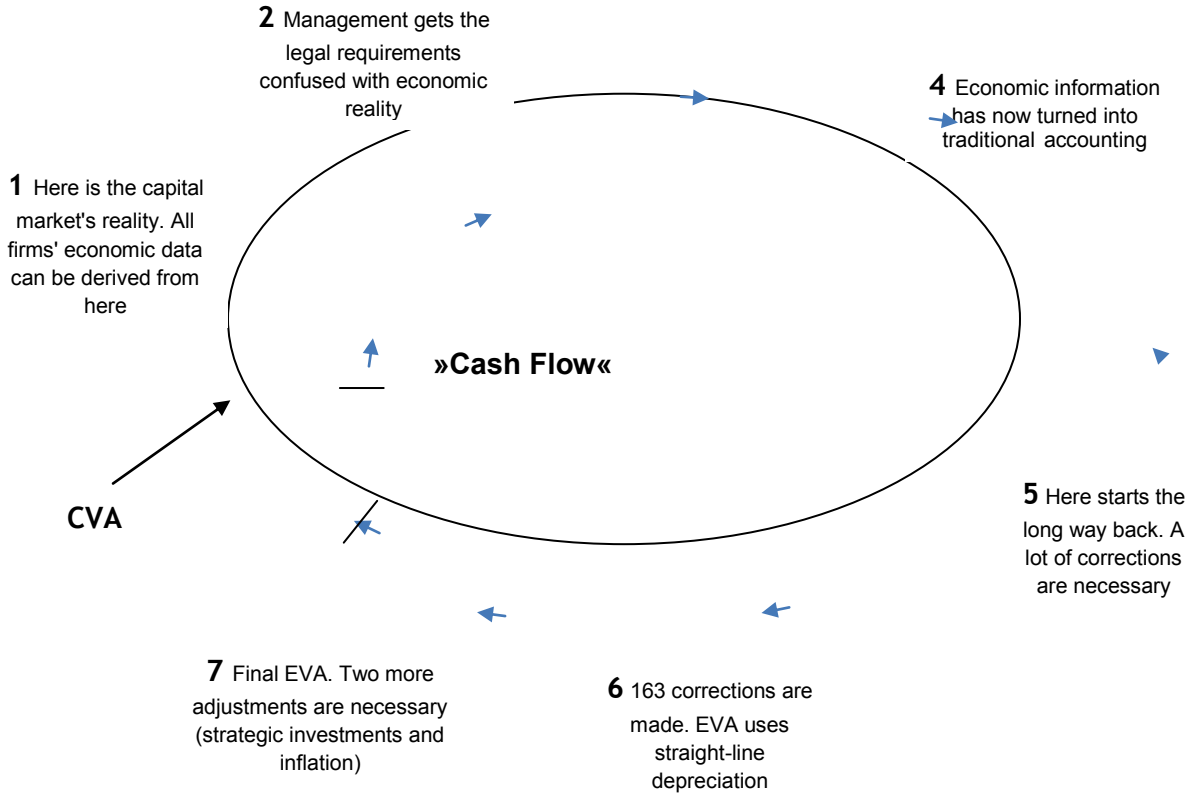
EVA should be a framework for VBM. Is it really? Some of the literature – Pettit (1998), Stern, Stuart and Chew (1995) – argues that EVA increases shareholders' wealth (Kim) (2006). This depends on how well this framework simulates the business reality from the point of view of shareholders, i.e. the reality of financial markets. If it is supposed to be simulated closely, a number of adjustments in accounting are required. And even if we succeed in performing as many adjustments as required by the EVA (original EVA author Bennett Stewart (1991) identified as many as 164 of them) - in practice, of course, this is a bit more difficult - EVA will still not be an ideal indicator. EVA measure is implemented in firms mainly for two reasons:

1. Its objective is to extend a firm's organizational knowledge and the understanding of its process's financial implications, which should improve the decision making process and thereby eventually increase a firm's value.
2. It can be easily understood.

According to Weissenrieder (1998, 8) the idea of EVA can be illustrated by the reference circle shown in Figure 1.

1. Point 1 shows the capital market's reality: investments, cash flow, economic lifetime and cost of capital. In this point, we should measure value and profitability. Here we use the discounted cash flow (DCF). All data about a firm derive from here.
2. In point 2 a firm invests and cash flows are shown on transaction accounts. Managing a firm has legal requirements intertwined with the economic reality.

Figure 1. Reference circle flow flow



Source: Adapted to Fredrik Weissenrieder : Value Based Management: Economic Value Added or Cash Value Added? (1998, 8)

3. In point 3 a firm's bookkeeping is not adjusted for cash flow. Economic information is further burdened with regulatory requirements and recorded in the income statement and balance sheet.
4. In point 4, economic information is converted to traditional accounting information. Managers are no longer in a position to measure profitability or value.
5. In point 5 a long road back begins. At least 164 corrections / adjustments are needed, if cash flow is supposed to be restored on the circle.
6. In point 6, necessary corrections and adjustments are made. In the EVA calculation we use a straight-line depreciation.
7. Point 7 shows EVA and so-called "annuity depreciation". EVA, as we know it today, has remained at 164 corrections and adjustments. But at least two more adjustments are necessary. We will have a look at them later on.

The logic of the above illustration lies in the fact that at the beginning all firms have their operation data shown through the prism of money. These are then placed in a firm's economic framework outlined through an accounting prism. When an accounting process ends, when all past events are properly entered, a firm finds itself on the far right of the upper circle. The mission of the EVA indicator is that it then takes us back to the starting point 1 on the far left upper circle, because only in this point we are in the state according to financial terminology to simulate the business reality of a firm as seen by shareholders.

Cash value added

Weissenrieder (1998) defines CVA as a net present value model which classifies the calculation of net present value at a time and investments into two categories: strategic and non-strategic. Strategic investments are those whose goal is to create new value for shareholders such as firm's growth. Non-strategic investments are those that maintain the value created by strategic ones. A strategic investment, such as, for example, an investment in a new product development or an investment in the acquisition of a new market, is followed by several non-strategic. A strategic investment may be tangible or intangible; traditional view of whether an investment is expenditure or not is here irrelevant. Anyway, all that in a firm counts as cash expense which is associated with creating new values and can be defined as a strategic investment.

Strategic investments form a capital base in the CVA model, because the financial demands of shareholders (i.e. a reward for invested money) should come precisely from the entrepreneurial ventures, from strategic business decisions, but not, for example, from office furniture. This means that all other investments that are intended to preserve the original value of strategic investments have to be considered as "costs" such as, for example, buying new office equipment.

How is thus capital base in the CVA calculated? The operating cash flow demand (OCFD) is calculated for each strategic investment (the first factor out of four, which defines value). The sum of the required operating cash flow of every strategic investment in each business unit is the capital base of this business unit. OCFD is calculated as cash flow (the second factor out of four which defines the value). These are the same amounts in real values of every year. If it is discounted at the appropriate cost of capital (the fourth factor out of four which defines value), we will get net present value equal to zero for a strategic investment during its economic lifetime (the third factor out of four which defines the value). OCFD is a real annuity, adjusted to the

actual annual inflation (not average inflation). If strategic investments are supposed to create value, the operations cash flow (OCF), which is a cash flow before strategic investments, but after non-strategic investments, has to cover OCFD.

OCFD is in no way predictive of what would have to be a future OCF. It is merely a common benchmark for future cash flows. OCFD is "fixed" in current prices during the economic lifetime of an investment, since this is the only way we can illustrate financial logic. Our understanding of how this is related to cash flow of a business unit or an entire firm could be paraphrased by business logic. It is difficult and sometimes even impossible to understand business logic unless we have a constant benchmark at current prices (we will see this later). A strategic investment creates value if at the time period OCF is higher than OCFD which can according to Weissenrieder (1998) be presented as follows:

+ Net sales revenues
- Costs

= Operating profit or loss (excess of income over expenditure)
+ / - Changes in working capital
- non-strategic investments

= Cash flow from operating activities
- Required cash flow from operating activities

= Cash value added

CVA shares common origins with EVA and it represents value creation from the point of view of shareholders. It can be shown for different time periods. Ottosson and Weissenrieder (1996) express it as an index:

Cash flow from operating activities
--- = CVA index
Required cash flow from operating activities

CVA is based solely on cash flow.

Advantages of EVA and CVA over other indicators of profitability

Conceptually, Lehn and Makhija (1996) are convinced that both EVA and CVA as measures (indicators) of value creation are better than accounting

gains, because they take into account the cost of capital and therefore also the risk of company's operations. Brigham and Houston (2004) say that EVA provides a good measure of the extent to which the firm has added to shareholder value. EVA and CVA are constructed in such a way that their maximization can be set as a goal. Traditional measures do not work like that. Therefore, for example, maximizing accounting gain or accounting rate of return does not lead to the desired outcome. Later on we try to briefly highlight the benefits of EVA and CVA as compared to conventional performance criteria (indicators).

Return on equity is a very general and widely used performance indicator. Different firms calculate this indicator using different formulas and also name it differently, for example, return on investment (ROI), return on invested capital (ROIC), return on capital employed (ROCE), return on net assets (RONA), return on assets (ROA), etc. The main disadvantage of all these rates of return lies in the fact that maximizing the rate of return does not mean maximizing return for shareholders.

Firm's operations should not be based on or guided by the objective of maximizing the rate of return. As a relative indicator, which takes no account of risk, ROI cannot guide operations correctly. Consequently, the ROI-based capital can be invested or allocated incorrectly. In particular, ROI neglects (ignores) the exact requirement that the rate of return should be at least as high as the cost of capital. Secondly, the ROI indicator does not admit that shareholders' wealth is not maximized when the rate of return is maximized. Shareholders want the firm to maximize the absolute return over the cost of capital and do not wish it to maximize the percents. Firms should not ignore projects that bring more than is the cost of capital simply because their return may be lower than the current return of a firm. Cost of capital is a much bigger hindrance than the current firm's ROR. Hočevar (2002) sees the advantages of EVA criteria over the ROI indicator also in comparative judgment and planning.

The difference between EVA and ROI is actually the same as the difference between NPV (net present value) and IRR (internal rate of return). IRR represents a good approach to evaluating investment opportunities and investors should always take into account such an opportunity discount factor which conveys best use of resources with the same risk, but as Tajnikar (2001) points out they should not give priority to one investment project over another with regard to IRR.

Mäkeläinen (1998) deems it to good to know that in corporate control EVA and CVA (as well as NPV) go hand in hand, just as ROI and IRR. The first three show the effects on shareholders' wealth, while the other two show the rate of return. There is no reason to abandon ROI and IRR. They are in fact

appropriate and illustrative indicators which tell us about rate of return. IRR can always be used in conjunction with NPV in investment calculations while ROI can always be used with EVA and CVA in evaluating business operations. We should not, however, pursue the objective of maximizing IRR and ROI, and base our decisions on these two criteria. IRR and ROI give us additional information, although all decisions could be made without them. Maximizing rate of return (IRR, ROI) is not important if the objective is to maximize returns for shareholders. Mäkeläinen believes (1998) that EVA and CVA (as well as NPV) should play a leading role in corporate control while ROI and IRR are supposed to play the role of giving further details.

In the case of ROE which measures profitability of ordinary equity Tekavčič and Rejc (1999) consider that we come across the same flaws as with ROI. Risk is not included and therefore there is no comparison. ROE also does not tell the owners if a firm creates or diminishes their property's value. With ROE this deficiency is more pronounced than with ROI, because a simple increase in the leverage (debt) can increase ROE. As we know, a deterioration of solvency does not always improve financial position of shareholders due to increased (financial) risk. Just as ROI and IRR the return on equity (ROE) is likewise an informative indicator and should not be used in firms for conducting the operations.

Why CVA follows profitability and value creation better than EVA

Someone might think that EVA and CVA are similar. In theory they are, but not in reality. In theory, they are alike, because CVA is located on the far left of the circle in Figure 1, which is the point on the circle, where EVA would like to bring us. As we know, Ekar (2000) reminds us that in reality only a few corrections and adjustments are carried out, so that we do not travel too long along the circle. According to Weissenrieder (1998) they are therefore not similar in real life.

The first of the two adjustments which are necessary in order to use CVA as a relevant criterion for decision making relates to the so called non-strategic investments. Why should we not, say, office furniture, which is included in the accounting data and financial requirements of EVA include into financial needs of the company? Because owners of firms are not interested in this. But they are very interested in which strategies create value and which do not.

Why should management of a firm be directed by accounting principles rather than business logic in making investments? Some costs associated with development, research, and marketing should be treated and regarded as an investment in firms, and vice versa, certain payments which are today

regarded as capital expenditures should take their place among running costs.

Traditionally, accounting has a fairly sharp view of what is an investment. The confusion in today's business environment, where cash expenditure for a machine is far from achieving success by selling a product or service in the global market, has many faces. All of a sudden, "hidden values" are found within firms and those holding responsibility in firms rush looking for the value of intangible assets (intangible investments) and intellectual capital, rather than triggering a change in the basic economic framework of a firm. Can we really be surprised by the fact that firms often create money out of investments that are not listed in their balance sheets? Hopefully not. The balance sheet is produced by accountants with regard to the relevant legislation and accounting standards, not business reality and business logic. Therefore, discussions regarding the nature of the overall strategic assets of a firm (tangible and intangible) are very important and should according to the previously mentioned author Weissenrieder (1998) be focused on relevant topics.

Value of the firm is created by long-term and short-term strategic assets. The firm’s managers have to understand their mutual relationship well, because only on this basis do the business reality and reality in financial markets join. Relying merely on the financial concept of investments only increases the confusion.

Effective VBM structures strategic assets to intangible and tangible assets and makes no distinction between the two. Thus, capital will have its price or cost and all of a sudden a debate about the value of the capital structure (strategic assets) will become important. When comparing the value of strategic assets with the market value of equity, we must be careful because the latter will not include only the present value of the existing strategic assets, but also the net present value of future strategic investments. Net present value of future strategic investment may be positive or negative.

If we include non-strategic investments in cash flow from operations instead of activating them as investments, financial requirements will be very close to the required cash flow of the CVA indicator. This is followed by another necessary adjustment.

After all this we can ask ourselves a simple question: why travel on a circle in the figure above from the point on the far left to the point at the far right in order to return to the point from where we left off. We were at the beginning and why not stay there? From this point on the circle it is not possible to measure historical performance and value until CVA is developed. Now that we have developed it, firms have strategic and operational tool that focuses solely on strategic investment (tangible and intangible assets), their cash

flow, their economic life and cost of capital. In such firms we can now link their business reality with the reality in financial markets.

Let's go back to the process of VBM. To achieve a successful VBM, we have to improve the three already existing functions. A process is successful if it increases wealth for shareholders (value of shares and dividends).

A firm has a properly oriented concept of VBM if management focus on important issues, if they rely on four factors that determine value: strategic investments (both tangible and intangible assets), their cash flow from operations, their economic lifetime and in their cost of capital. Accounting, unfortunately, does not focus on these four factors. EVA can to some extent help us (it is well designed in theory), but we are still in accounting.

The concept of VBM, which is based on financial theory, gives a firm an opportunity to increase the quality of financial analysis. EVA offers a firm a little better analysis, but is still far from what should in the real world be our ambitions.

The two functions will have an effect on the intrinsic value of a firm, which will in the long term have an impact on market value. If a firm is to equate its intrinsic value to the market value at a time, then the function of investors' (owners') relationships should also rely on value. The following issues become important in a firm: allocation of capital (what are strategic investments for a firm), investment strategies, information about areas of profitable growth, analysis of cash flow from operations, and others. Some analysts will not immediately perceive this information, because they are not yet observing the market mechanism today, i.e. discounted cash flow. The latter will in future become a key factor.

Discounted cash flow should much better fulfill the requirements of the shown process than those concepts which rely on financial statements. Some firms will still choose the criterion measure of EVA instead of CVA because their management have smaller ambitions with the VBM process. If ambition in a firm within the framework of the value of property for shareholders is smaller, then EVA may be a perfectly appropriate criterion. Making up to ten corrections and adjustments in accounting is not such a difficult task. Some proponents of the EVA criteria, like Stewart (2000), suggest that EVA is all we have to know and that it is also simple. It is simple because it draws data from the accounting. Some authors, as for example Korošec (2001) go a step further and suggest that for the assessment of achievements it is advisable to use also other long-term criteria in addition to the EVA amount, as well as non-financial criteria. We also want to somewhat move away from the latter. CVA is also simple if we have any knowledge of corporate finance. CVA focuses on relevant factors, while EVA does not. CVA is more correct. We simply cannot meet our expectations with the

criterion of EVA, when our ambitions for the quality of information from our VBM process are bigger, or if we want to change a firm in the direction of understanding the meaning of "property value for shareholders." In other words, if we want to travel for more than about 10% along the circle in Figure 1, where we have to make a number of accounting adjustments, then we according to Weissenrieder (1998) certainly benefit more if we use a concept that is based on cash flow starting at the point on the left side of the circle. In this case accounting adjustments are no longer needed. We pursue the discounted cash flow, wherever it appears.

EMPIRICAL APPLICATION OF EVA AND CVA

In the empirical part of this paper EVA and CVA performance indicators are applied on some concrete economic entities. Four big Slovenian companies (they wish to remain anonymous) have been chosen, company A is a parts manufacturer for the European automotive industry, company B is a manufacturer of pharmaceutical products, a company C is a producer of chemical products, and company D is a producer of pre-coated silica sand and cores for the foundries.

In the Apendix the entire process of calculating the two indicators, first EVA and then CVA for the period from 2010 to 2014 is given only for the company A, for the other three only the final results are shown. Further within this section the key findings on the basis of the results are summarized.

Conclusive findings for company A (automotive industry)

Let us show both the calculated criteria of business performance, EVA and CVA, for our company A during the past five years in a joint Table 1.

Table 1: A review of EVA and CVA for the company A in the period from year 2010 to year 2014

Year	2010	2011	2012	2013	2014
EVA	6.093	6.560	1.548	5.339	4.935
CVA	8.396	7.136	2.904	5.916	5.115

Source: Table 8 and Table 12 in Appendix

We find that both the criteria for their absolute values differ one from another largely due to consideration of depreciation in the calculation of CVA, but they indicate approximately the same trend in changing business performance of an economic entity. EVA and CVA have throughout the period from year 2010 to year 2014 always been positive. They have both essentially dropped in 2012. In this year sales revenues have dropped for 5 % according to the previous year. This year has owing to exceptionally high growth of business in society seen a great increase in the demand for additional working capital. The company financed it by short-term borrowed resources, which resulted in an increase in the cost of debt capital. The relationship between the equity and total debt of the company also deteriorated, and its financial leverage increased. Depreciation as a result of increased investment in tangible assets (increase in production capacity, while technological upgrading) has also contributed to the increased lower value of the EVA indicator.

The comparison of the two time series shows that the business performance of our commodity producer, the company A, in the automotive industry despite the drop in sales revenues in 2012 has been improving in 2013 and 2014. The company despite almost the same volume of sales of its products in the European automotive market (approximately € 190 million) over the years 2010 and 2014 and even with slightly increased adjusted invested capital in the last two years achieved a relatively better business outcome as measured by the two criteria than the year before (in 2012). Such a change can be attributed to a significant decrease in the prices of raw materials and components with unchanged selling prices of finished goods. These have decreased at the expense of so-called productivity which manufacturers of car parts have to grant to their customers in the amount of up to 5% every year. Exceptionally well performed are the years 2010 and 2011. In 2011 the company increased the sales for 21 %, what influenced the values of EVA and CVA in that year.

Furthermore, the company in the year 2014 immediately embarked on cost reduction (cost cutting) based on the rationalization of its business (at the increased level of sales, the material costs remained practically the same). It also reduced the stocks (for one tenth), took certain measures in collecting receivables (although most of its customers are fairly reliable payers), reduced short-term payables and made all its hired labor redundant, etc. Through this short analysis we can confirm the company A has been successfully able to create value for its shareholders. On comparing industry-wise composite frequencies for EVA for all years, it was found that there has been a significant increasing trend in EVA of the automobile

industry firms which means that companies have a positive trend to improve their firm values (Selvi & Vijayakumar, 2007, 459-460).

Comparative analysis of EVAs and CVAs for all selected industries

After having calculated EVAs and CVAs for all four companies, based on data from their income statements, balance sheets and other internal data of the four companies (see the calculations in Appendix), the final statements can be rounded up as it follows:

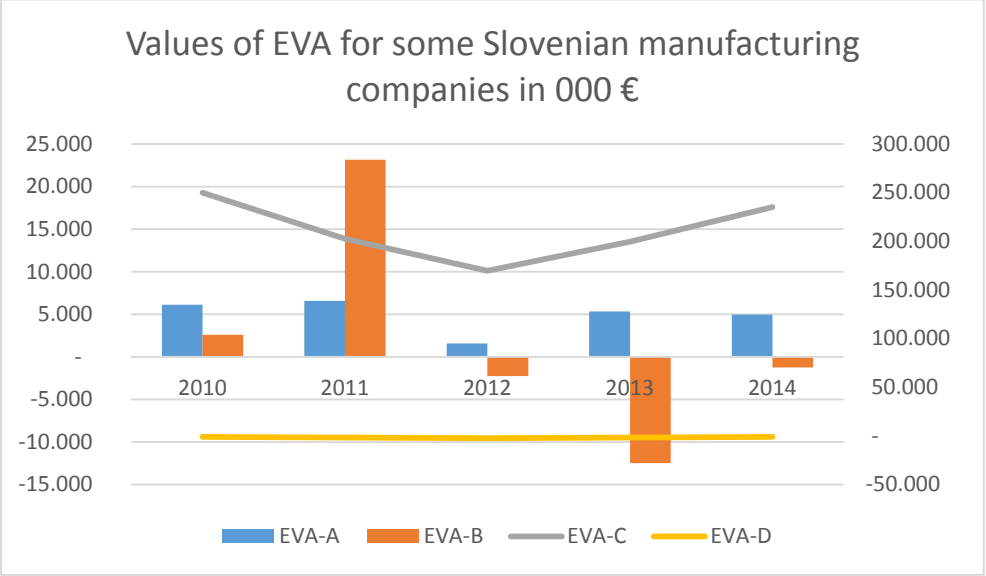
- The trend of course for EVAs are equal to the trend of course for CVAs for all the companies; it means if EVA increases in an individual year CVA increases as well, and if EVA drops in an individual year, similarly CVA diminishes, too regardless if the values for these two indicators are positive or negative. Direction of tendency is with both indicators the same. This tendency can be seen in the figures 2 and 3 below and for each company in the appendix.
- If the absolute value of these two indicators are taken into consideration, in our case we find out that for two companies (company A and company B) EVAs have bigger values than CVAs.
- On average the company D has the highest WACC; it is a cost of capital and directly influences CVAs. This is also a reason why this company has negative CVA during the whole 5-year period.
- The company B had extremely high NOPATs in 2011 and 2012; relatively good performance in those two years can be explained by the record-breaking sales revenues, also by the improved productivity. Although WACC increased in 2012 almost to 14 %, this influenced significantly the values of CVAs in those two years. Similarly EVA is extremely high in 2011. The main reason can be ascribed to the high value of the changes in long-term provisions that company had made in that year.
- Owing to exceptionally high growth of business in 2011 the company B had to increase its net working capital. In that year accounts payable as a short-term funds increased significantly, for 20 % in comparison to year before. The need for additional working capital was also in 2012.
- What was also specific for the company B - this is not the case with the other three though – is its deleveraging. The company was relatively high indebted in 2010. Already in 2011 short-term financial debt was cut in two, and the company succeeded to reduce its long-term credits down to almost one third.
- The company D among the four companies selected in this sample is the only one having negative values of EVAs and CVAs in the whole 5-year period. This particular company is an excellent example showing us that the ratios like NOPAT, ROIC, etc. are not sufficient for measuring company performance, its efficiency. On the contrary,

EVA and CVA show that the shareholders are not recompensed for what they had invested into the company. These two indicators are much better though, more indicative, and real measures of shareholders' value.

- It is obvious that pharmaceutical industry is the most prospective industry. The figures of company C in Table 15 above confirm this statement. The company is a worldwide independent producer of drugs (mainly generic). It is r&d intensive – it invests approximately from 9 to 10 % of its annual sales revenues into research and development of new products. If we add investments into marketing research this percentage becomes significantly higher (around 12 %). It's average annual growth rate of sales is about 5 %. The company has constantly increased its adjusted operating invested capital, between 5 and 7 % a year. However this is not the case for the other three companies. For company B the adjusted operating invested capital has been shrinking in the last two years. For the companies A and D it stayed practically at the same level in all five years or for the last two years respectively.
- Coefficients Beta have the highest values for the company D (always above 1), and for the company A (above 1 in the last three years). The coefficient Beta is the lowest for the company C, what could have been expected while having in consideration the basic characteristics of the pharmaceutical industry. For the company A, automotive industry, Beta coefficient has been constantly increasing since 2011. The automotive industry was in big recession till the second half of 2010 when it has started to recover from a significant sales drop in 2008 and from then on.
- Although the company D, mining industry, was not leveraged excessively, for the Slovenian economy far below the average, this means on the other hand the cost of own funds are the most expensive, the required rate of return on invested capital (equity) is the highest among the four companies in our sample. This implies high cost of capital and makes the values of EVA and CVA negative. On top of that, ROIC for this company is also relatively low, only around 1,2% on average.

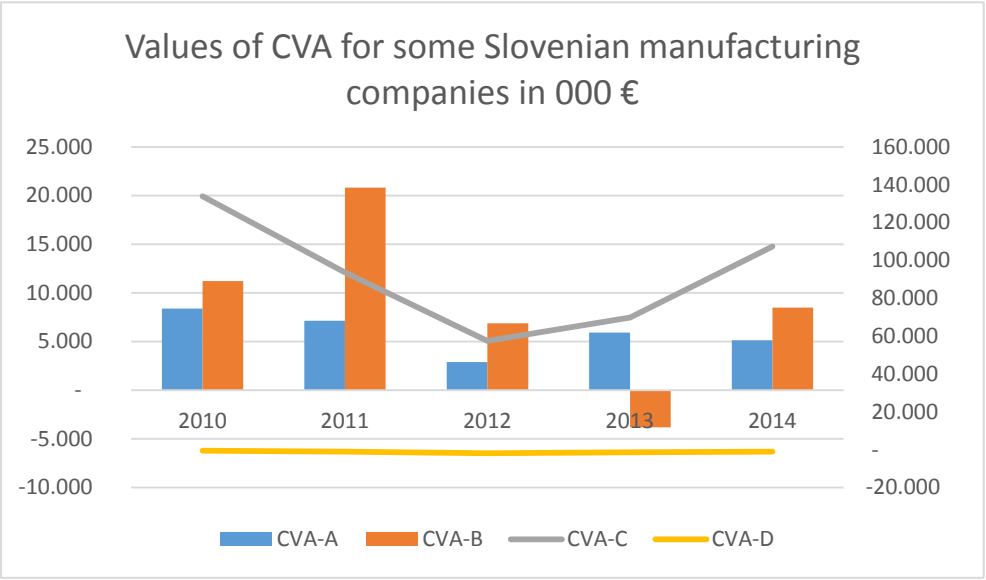
We have used some concrete examples to show that EVA and CVA are relatively good alternative criteria of so called residual income statement of a company. CVA is designed in such a way that it tries to bring a company's profit and cash flow together while still maintaining the advantage that EVA has over standard indicators of performance when considering the cost of capital. The main shortcoming of the CVA indicator lies in the fact that it can get us into a dangerous illusion, believing that cash flow is the only thing that matters in capital market, so we have to devise a measure right on it. Such thinking may be wrong, or as Young & O'Byrne (2000) put it "money may be the king, but only in the form of the expected free cash flow".

Figure 2. The tendency trends of EVA for the selected manufacturing companies



Source: Calculations in Appendix

Figure 3. The tendency trends of CVA for the selected manufacturing companies.



Source: Calculations in Appendix

6. CONCLUSION

For an ongoing strategic development of every economic entity measuring business performance is extremely important. As Turk says (2002), shortcomings of traditional, standard indicators of business performance, while looking at business performance and a relationship between the attainment of the aims expressed by outputs from operations and set goals expressed by outputs from operations, have long been subject of many discussions of economists, especially because traditional indicators attempt to measure only past business performance. Any criterion of a firm's profitability, which does not take into account the total cost of capital and which does not incorporate all the relevant information for strategic decision making, may be misleading. With the classic indicators of business performance short-term aspect is highlighted, which may, for example, quickly lead an economic entity to irrationally reduce investments in research and development. Thus the short-term business performance increases, but in the long run such economic entities run into difficulties and may fall out of the market.

These and similar shortcomings should be resolved by EVA and CVA measures. Their advantage lies in their long-term orientation and in their consideration of the total cost of capital. Managers who make investment decisions focused also on the opportunity cost of their own resources create a basis for increasing the value of owners' property. Both criteria, EVA and CVA, reflect business performance in the temporal scope. They are indicators which represent a criterion for decision making, where emphasis lies on the added value on the invested resources of the owners.

The last decade and a half has seen academic discussions revolving around a single concept on which useful value of EVA indicator is designed. Questions are raised whether EVA is suitable enough as a benchmark, albeit at an indicative value it exceeds the standard indicators and is at the same time a simple and easily understood indicator. Let us only recall the problem of its adjustments, which must be implemented urgently if the indicator should have an indicative value. Odar (2001) here warns us that users of accounting information that represent a record of past events and owners for decision-making need also more recent and other information, as they are usually focused on the future.

For this reason and also because of criticism directed at the accounting concept of EVA, where no notice is taken of future operations, the idea of CVA came into existence. All the louder are also the advocates of the so-called market value added (MVA). The aim of the value-based management (VBM) is to increase the value of an owner's property as much as possible.

But how can we measure this? Authorities with strong expertise in the field of VBM, such as, for example, Stewart (2000), thus introduced a MVA measure. They argue that owners' property only maximizes by maximizing the difference between the total value of a firm and the total capital invested by owners - investors. This difference is named MVA. Grant and Abate (2001) in this respect even equate it with the present value of the future EVA. However, one of the major disadvantages of this criterion once again lies in complete adjustment of the balance sheet, when defining the capital in the calculation of MVA.

In conclusion of this paper it can be emphasized that, despite numerous attempts in academic circles to find on the one hand, a comprehensive, integrated, all inclusive and on the other hand simple and easy to evaluate measure of business performance, no measure of a firm's performance is ideal, or such that we could with it, expressed in absolute values or in relative numbers, unambiguously and subject to many factors, stakeholders, mainly shareholders and aspects, including the time dimension, measure business performance of a firm. EVA and CVA definitely represent a step further away from traditional or standard performance indicators. It is opportune to calculate both criteria simultaneously. If the former focuses more on past performance the latter strongly focuses on future, because the CVA concept is built on strategic investments. Although the criteria are based on two different concepts, EVA on accounting and CVA on finance, there is a strong correlation between the two. In the time series they both indicate the same trend in changing business performance. We have also seen this in our cases. Their combined use may be quite a fortunate combination or such a system of indicators devised on the value-based management, which on the one hand expresses value and profitability, and on the other it reflects the opportunities and points out the dangers. The owners/ investors can with this strongly bind the management of the firm to striving to increase the value of their property.

A thesis can also be advocated that a simultaneous selection of the two indicators has a significant impact both on management resources and strategy selection, as well as on the question of how investors/owners evaluate a certain firm as their potential investment.

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APPENDIX

Let us calculate EVA and CVA for the company A. In 2014 Company A had 1 528 employees and annual net sales of approximately € 193 million. The company has recorded a relatively high and dynamic growth in 2011. After drop in 2012 the sales revenues have started to grow again but at the moderate rate of 2 and 3 % respectively.

1. EVA calculation for company A (automotive industry)

EVA = NOPAT - (WACC * Adjusted Invested Capital)

1.1. NOPAT

Net Operating Profit After Taxes (NOPAT)) or operating profit after taxes is a profit adjusted by accounting gained from operating activities after adjusted taxes – VAT is deducted from the operating profit as if a basis for it was an operating profit. Net operating profit after taxes but before financing costs (Net Operating Profit Less Adjusted Tax) can be calculated as follows:

NOPAT = EBIT x (1 - tax rate), or EBIT - tax on EBIT.

This is a basic principle of calculating unadjusted NOPAT. In calculating EVA, we adjusted NOPAT in the way shown in Table 2.

In calculating EVA, we included "ADJUSTED NOPAT (III)." This was obtained by adding interest income to EBIT and deducting the paid income taxes and tax shield on interest expense. In this way we got "ADJUSTED NOPAT (I)." Some adjustments were added to account for changes in provisions in long term deferred revenue for capitalized research and development expense and capitalized marketing expense. The sum was named "ADJUSTED NOPAT (II). This was then deducted by income taxes paid and we got "ADJUSTED NOPAT (III)", which is also used in the calculation of EVA.

Table 2: Adjustments in the income statement (NOPAT adjustments)

	ADJUSTMENTS IN INCOME STATEMENT	2010	2011	2012	2013	2014
PN (I) = A+B+C+D	ADJUSTED NOPAT (I) (NOPAT CVA)	7502	7.486	6.205	11.559	9.909
A	Operating income e (EBIT)	5.905	6.322	4.596	10.039	8.353
B	+ interest income	3.177	2.897	2.438	2.222	1.970

C	-Income taxes	292	547	-50	-1	-102
D = i * e	-(tax shield on interes expense)	1.288	1.186	879	703	516
i	Interest expense	6.442	5.929	4.881	4.133	3.035
e	Effectove tax rate	0,20	0,20	0,18	0,17	0,17
P = dr+rr+ti	ADJUSTMENTS EVA	4.017	5.419	4.282	5.035	5.999
dr	Changes in provisions in long term deferred revenues		559	-336	328	1168
rr	Capitalized r&d expenses	4.017	4.860	4.618	4.707	4.831
ti	Capitalized marketing expense					
PN (II) = PN (I) + P	ADJUSTED NOPAT (II)	11.519	12.905	10.488	16.595	15.908
t	Income taxes paid					
PNE (III) = N + P - t	ADJUSTED NOPAT EVA (III)	11.518	12.905	10.488	16.595	15.908

Source: Income statement and balance sheet of the A company for the period from year 2010 to year 2014

Adjustments for research and development expense (capitalized research and development expense) were taken into account in the amount of 1.5% of the value of net sales each year. Even though the company allots up to approximately 3% of the value of its net sales to research and development, according to IAS 38 (International Financial Reporting Standards (2008) out of these we could only rightly capitalize i.e. recognize as deferred development costs and intangible assets arising from development, or developmental stages of an internal project, in the exact indicated height.

1.2. WACC

Weighted Average Cost of Capital is the price of the invested capital, which is calculated as a weighted average cost of debt and equity capital. The basic purpose of WACC is to identify the opportunity costs of capital that are important for investment decisions. Cost of capital represents the rate of return that owners and investors can expect if they invest their capital elsewhere, in projects or firms with comparable risk.

CALCULATION : WACC = (D/IC) x Rd x (1-T) + (E/IC) x Re,

where:

D = debt T = tax rate

IC = invested capital E = equity

Rd = cost of debt Re = cost of equity

IC (Invested Capital) is the volume of both debt and equity capital invested.

Table 3. Total capital invested as the sum of equity and debt capital

		2010	2011	2012	2013	2014
K=L+J	Total cap. inv. (long-term fin. resources)	87.548	92.977	89.089	93.457	92.607
L	Equity capital	33.723	35.668	37.527	44.362	50.814
J = k + m	Debt cap. (short term and long term debt)	53.825	57.309	51.562	49.095	41.793

Source: Balance sheet of the A company for the period from year 2010 to year 2014

In calculating the cost of debt capital we also have to take into account the statutory tax rate in Slovenia, which was in that period 22%.

The cost of debt is represented by the average interest rate of commercial banks for long-term and short-term loans granted to the company A in the past period, the cost of debt securities as for example ordinary corporate bonds is determined on the stock exchange. The calculation of the final cost of debt capital, adjusted for tax, which is part of WACC is as follows:

Costs of debt capital in WACC:
*(*LTD = long-term debt, STD = short-term debt)*

= (share of LTD in the whole invested capital) x (cost of LTD) (share of STD in the whole invested capital) x (cost of STD)

The cost of LTD = the share of LTD in the entire debt capital x weighted average interest rate for LTD)
The cost of STD = the share of STD in the entire debt capital x weighted average interest rate for STD)

Table 4: Calculation of the cost of debt as part of WACC

		2010	2011	2012	2013	2014
2 = I + II	WACC (linked to the cost of debt)	2,29%	1,67%	2,15%	1,85%	0,93%
I = C x D	Costs of long - term debts financing in total WACC	2,24%	1,39%	2,10%	1,78%	0.07%
II = E x F	Costs of short - term debts financing in total WACC	0,05%	0,28%	0,05%	0,07%	0,86%

Source: The A company's internal data for the period from year 2010 to year 2014; the website of the Bank of Slovenia (2008)

The cost of equity:

Determining economic profit takes into account that equity sources of financing also have their price. According to Bergant (1998) an economic gain of a certain period is a current value of equity. In calculating the cost of equity we need to establish the value of equity (item "Equity" in the balance sheet). Then we calculate its cost with the help of the Capital Asset Pricing Model (CAPM):

Required capital rate of return = risk-free rate + Beta * Market risk premium rate + Risk premium

Data for beta are shown in the Table 5 below.

Table 5. Calculating Beta coefficient

		2010	2011	2012	2013	2014
e	Risk free rate (rate of return on the risk free assets)	4,04%	5,24%	6,07%	6,00%	3,28%
f = g x h	Risk premium (o) = e*f	5,17%	6,83%	11,23%	13,85%	15,07%
g	BETA coefficient for industry (e)	0,90	0,94	1,33	1,58	1,59
h	Market risk premium rate (f)	5,75%	7,28%	8,43%	8,75%	9,50%

Source:Betas; Damodaran Online: Home Page for Aswath Damodaran (2012)

What follows is the calculation of the cost of equity.

Table 6. Calculation of the cost of equity as part of WACC and the required capital rate of return

Year		2010	2011	2012	2013	2014
2 = III	WACC (linked to the cost of equity financing)	3,55%	4,63%	7,29%	9,42%	10,07%
III = G x H	Cost of equity financing in total WACC	3,55%	4,63%	7,29%	9,42%	10,07%
G	Equity capital portion in total capital invested	38,52%	38,36%	42,12%	47,47%	54,87%
H = e + f	Required capital rate of return (cost of equity)	9,21%	12,07%	17,30%	19,85%	18,35%

Source: Internal data of the company A for the period from 2010 to 2014 and the Damodaran On-line website for information about the required capital rate of return.
(Data on market risk premium rate by country and data on the BETA coefficient by country; see the source above).
Data on the yield of government securities, the Bank of Slovenia (2008).

After we calculate the cost of debt and equity capital, we sum them up and get the WACC as the total cost of using both types of capital.

Table 7. Calculation of WACC (the sum of the cost of debt and cost of equity)

Year		2010	2011	2012	2013	2014
2 = I + II + III	WACC	5,83%	6,31%	9,44%	11,28%	11,00%

Source: Private data of the company A for the period from year 2010 to 2014and Damodaran web site (see Table 4 and Table 6)

1.3. Adjusted Invested Capital

Invested capital is an important item in the calculation of EVA, but it also requires some adjustments. It is calculated as follows.

Table 8: Calculation of adjusted invested capital for the calculation of EVA

v 000 €

Year		2010	2011	2012	2013	2014
T + I +	ADJUSTED OPERATING	93.019	100.589	94.699	99.769	99.749

N + A	INVESTED CAPITAL					
	Inventories	25.608	31.775	25.710	27.760	25.340
	Short-term financial investments	42.940	50.441	40.878	46.715	43.880
	Deferred costs and accrued revenue	48	172	366	589	540
N	Current operating assets	68.596	82.388	66.954	75.073	69.760
	Short-term operating liabilities	34.825	38.594	31.430	34.832	30.910
	Short-term accrued costs and deferred revenue	2.401	1.674	1.315	1.152	1.846
O	Non-Interest bearing current liabilities (Operating current liabilities)	37.226	40.268	32.745	35.984	32.756
T = N - O	OPERATING NET WORKING CAPITAL	31.370	42.120	34.209	39.089	37.004
	Intangible assets and long-term deferred costs and acurated revenue	904	651	539	710	737
	Long-term operating financial investments	14.913	16.994	16.312	15.648	15.655
	Property, plant and equipment	35.587	35.265	37.083	38.391	37.660
	Long-term operating receivables	0	0	225	45	0
I	LONG TERM OPERATING	51.404	52.910	54.159	54.794	54.052

	INVESTMENTS					
N	CASH AND CASH EQUIVALENTS	6.228	140	2.049	851	2.694
A	ADJUSTMENTS	4.017	5.419	4.282	5.036	5.999

Source: Balance sheet of the company A for the period from year 2010 to year 2014

Adjusted invested capital are current assets financed by long-term sources, long-term investments, cash, and certain adjustments.
We can now calculate the final value of EVA = Adjusted NOPAT (III) - (WACC * Adjusted Invested Capital).

Table 9. The final calculation of EVA

		2010	2011	2012	2013	2014
a	ADJUSTED NOPAT EVA	11.518	12.905	10.488	16.595	15.908
b	ADJUSTED OPERAT. INVESTED CAPITAL	93.018	100.589	94.699	99.769	99.749
c (a/b)	ROIC	12,38%	12,83%	11,07%	16,63%	15,95%
d	WACC	5,83%	6,31%	9,44%	11,28%	11,00%
e (c–d)*b	**EVA**	**6.093**	**6.560**	**1.548**	**5.339**	**4.935**

Source: The income statement, balance sheet and A company's internal data for the period from year 2010 to year 2014

2. CVA calculation for company A (automotive industry)

CVA = NOPAT (on cash basis) - Cost of Capital

2.1. NOPAT on cash basis

According to Young & O'Byrne (2001, p. 438) it is as follows:
Cash-based NOPAT = NOPAT (Table 1) + Depreciation (as a write-down of assets in the Income statement) + Changes in other long-term liabilities

Table 10: Calculation of NOPAT

		2010	2011	2012	2013	2014
A	NOPAT	7.502	7.486	6.205	11.559	9.909
B	Depreciation	6.462	6.034	5.780	5.686	6.201
C	Changes in other long-term liabilities					
A+B+C	Cash-based NOPAT	13.964	13.520	11.985	17.245	16.110

Source: The income statement and balance sheet of the company A for the period from year 2010 to year 2014

2.2. Cost of capital

Cost of capital = WACC (see calculation of EVA) x cash-based invested capital

Cash-based invested capital = Unadjusted Invested Capital + accumulated assets depreciation (the sum of value adjustments)

Unadjusted invested capital is in its basis capital employed without any adjustments. Such was used in the calculation of EVA.

Table 11: Cash-based invested capital

		2010	2011	2012	2013	2014
a	Unadjusted invested capital	89.002	95.170	90.417	94.734	93.750
b	Accum. assets depreciation (sum of value adjustments: NW-SW)	6.462	6.034	5.780	5.686	6.201
a + b	Cash-based invested capital	95.464	101.204	96.197	100.420	99.951

Source: Internal data of the company A for the period from year 2010 to year 2014

The table below shows the calculation of the cost of capital.

Table 12. Cost of capital for the calculation of CVA

		2010	2011	2012	2013	2014

a	Cash-based invested capital	95.464	101.204	96.197	100.420	99.951
b	WACC	5,83%	6,31%	9,44%	11,28%	11,00%
a*b	Cost of capital	5.568	6.384	9.081	11.329	10.995

Source: Internal data of the company A for the period from year 2010 to year 2014

Thus we can now calculate the final value for CVA which is the difference between cash-based NOPAT and cost of capital.

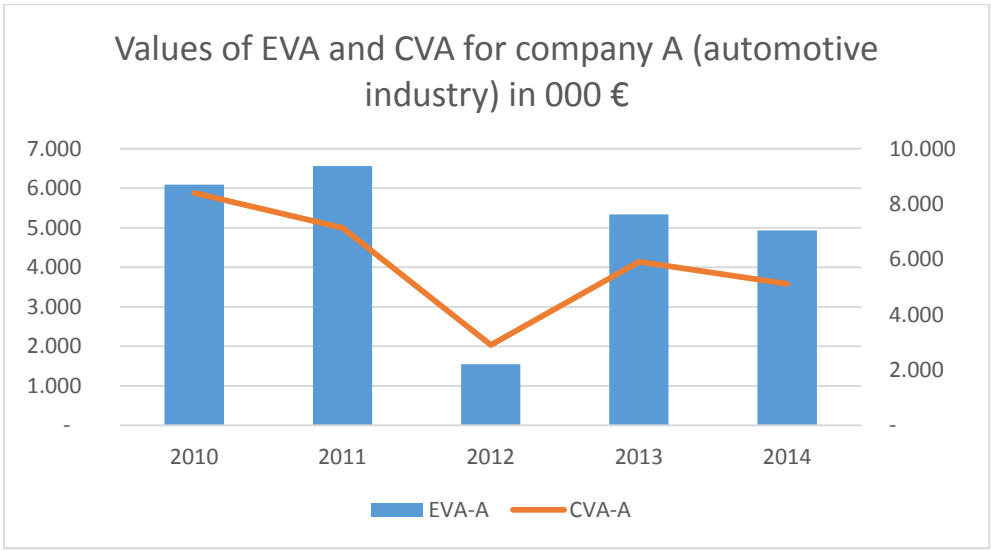
Table 13: The CVA calculation

		2010	2011	2012	2013	2014
A	Cash-based NOPAT	13.964	13.520	11.985	17.245	16.110
B	Cost of capital	5.568	6.348	9.081	11.329	10.995
A - B	CVA	8.396	7.136	2.905	5.916	5.115

Source: The income statement and balance sheet of the A company for the period from year 2010 to year 2014

In the Figure 4 the same tendency trends of EVA and CVA for the company A (automotive industry) are presented.

Figure 4. The same tendency trends of EVA and CVA for the company A



Source: Table 9 and Table 13

3. EVA and CVA calculation for other industries

Within the empirical part included into this Apendix EVA and CVA have been calculated for the other three companies, company B in chemical industry, company C in pharmaceutical industry and company D in mining industry. As already said, for each of them only the main results are given in the tables below.

Let us calculate EVA and CVA for the company B (chemical industry). In 2014 Company B had 989 employees and annual net sales of approximately € 161 million. The company has recorded a relatively high and dynamic growth in 2011. Since then the sales revenues have been decreasing at the annual rate of 6, 4 and 3 % respectively.

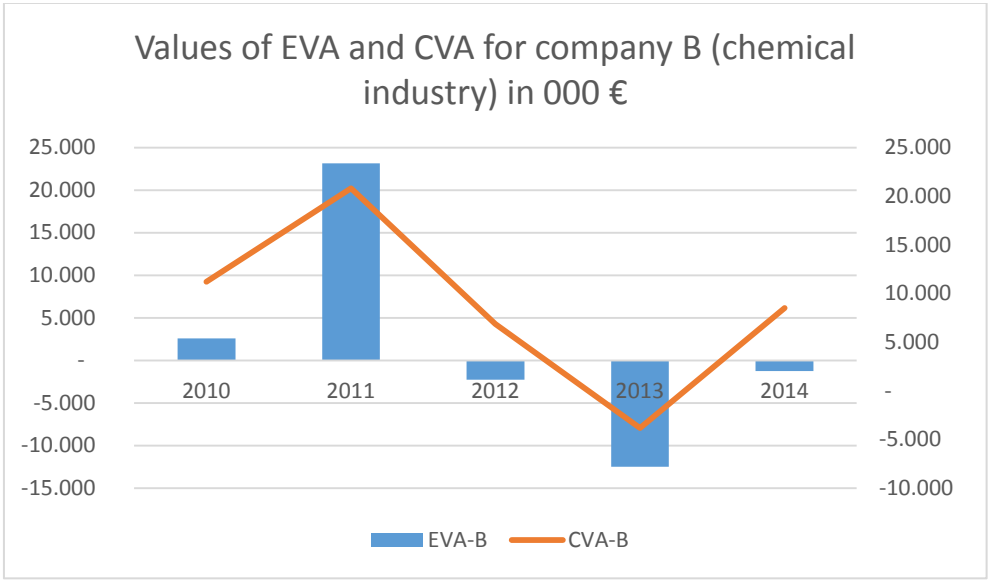
Table 14: The final calculation of EVA and CVA for company B (chemical industry)

		2010	2011	2012	2013	2014
a	ADJUSTED NOPAT EVA	14.508	42.458	23.070	11.625	16.073
b	ADJUST. OPERAT. INV. CAPITAL	172.885	190.662	182.030	167.960	166.071
c (a/b)	ROIC	8,39%	22,27%	12,67%	6,92%	9,68%
	BETA coefficient	0,79	0,83	1,12	1,00	0,75
d	WACC	6,90%	10,14%	13,93%	14,37%	10,43%
e (c– d)*b	EVA	2.587	23.131	-2.281	-12.507	-1.244
	NOPAT	11.441	26.667	20.246	8.891	14.229
	Depreciation	12.311	13.195	13.443	12.865	12.712
	Cash-based invested capital	182.128	188.066	192.649	178.091	176.939
	CVA	11.192	20.798	6.859	-3.831	8.491

Source: The income statement, balance sheet and B company's internal data for the period from year 2010 to year 2014

In the Figure 5 the same tendency trends of EVA and CVA for the company B (chemical industry) are presented.

Figure 5. The same tendency trends of EVA and CVA for the company B



Source: Table 14

Let us calculate EVA and CVA for the company C (pharmaceutical industry). In 2014 Company C had 4 680 employees and annual net sales of approximately € 1.134 million. The company has recorded a relatively high and dynamic growth in 2012 and 2013 (8 % per year). Since then the sales revenues have been still growing but at a moderate rate (only 2 % in 2014).

Table 15: The final calculation of EVA and CVA for company C (pharmaceutical industry)

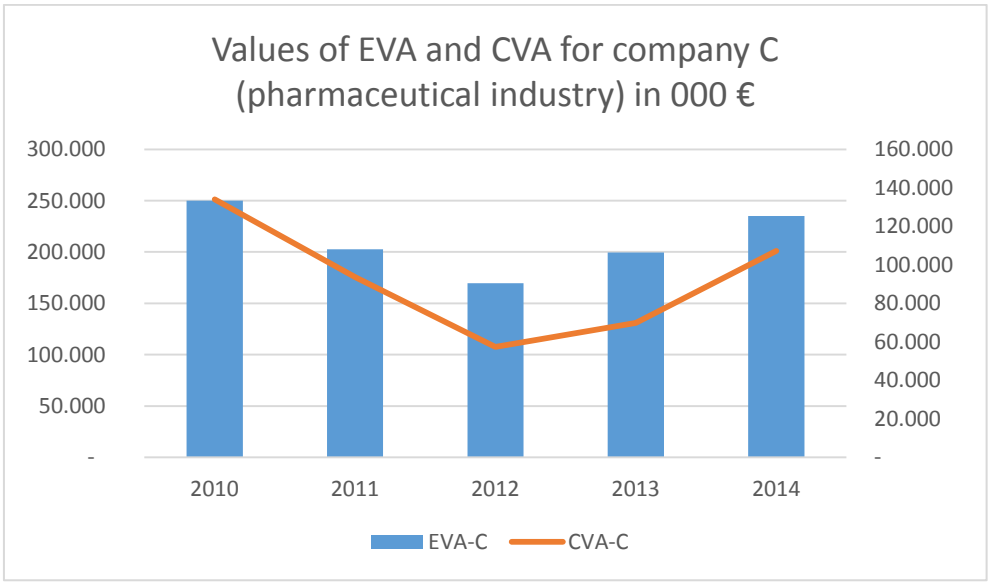
		2010	2011	2012	2013	2014
a	ADJUSTED NOPAT EVA	359.375	354.495	367.660	414.443	477.216
b	ADJUST. OP. INV. CAPITAL	1.403.857	1.450.657	1.526.826	1.633.566	1.737.112
c (a/b)	ROIC	25,60%	24,44%	24,08%	25,37%	27,47%
	BETA	0,77	0,81	0,89	0,89	1,16

	coefficient					
d	WACC	7,80%	10,47%	12,97%	13,16%	13,94%
e (c–d)*b	EVA	249.862	202.585	169.671	199.503	235.054
	NOPAT	172.902	166.320	162.305	193.640	256.698
	Depreciation	60.375	66.414	76.316	71.466	72.050
	Cash-based invested capital	1.278.119	1.328.897	1.397.787	1.484.229	1.588.644
	CVA	133.932	93.575	57.365	69.815	107.283

Source: The income statement, balance sheet and C company's internal data for the period from year 2010 to year 2014

In the Figure 6 the same tendency trends of EVA and CVA for the company C (pharmaceutical industry) are presented.

Figure 6. The same tendency trends of EVA and CVA for the company C



Source: Table 15

Let us calculate EVA and CVA for the company D (mining industry). In 2014 Company D had 130 employees and annual net sales of approximately

€ 16,3 million. It is a medium size company. The company has recorded a relatively high and dynamic growth in 2013 and 2014. In that period the sales revenues have grown at 13 and 24 % annual rate respectively.

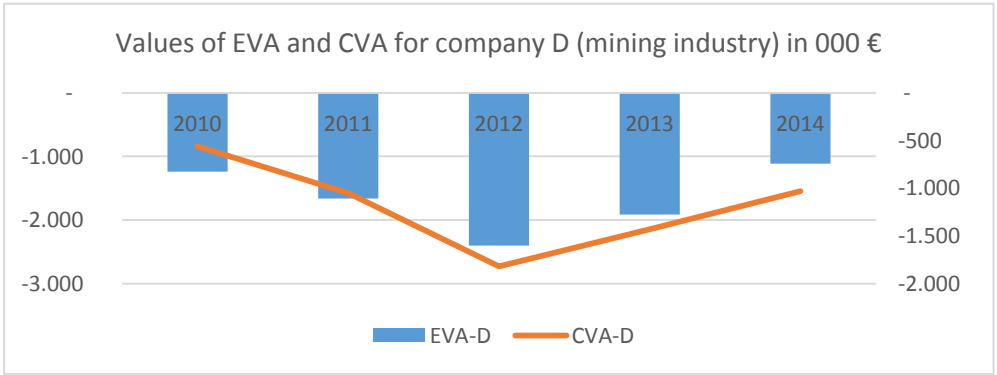
Table 16: The final calculation of EVA and CVA for company D (mining industry)

		2010	2011	2012	2013	2014
a	ADJUSTED NOPAT EVA	239	311	25	414	831
b	ADJUST. OPERAT. INV. CAPITAL	13.781	14.745	14.845	14.798	14.590
c (a/b)	ROIC	1,74%	2,11%	0,17%	2,80%	5,69%
	BETA coefficient	1,33	1,39	1,48	1,30	1,09
d	WACC	10,47	13,40	16,36	15,74	13,34
e (c – d)*b	EVA	-1.241	-1.665	-2.403	-1.914	-1.116
	NOPAT	168	200	-78	214	263
	Depreciation	830	815	830	773	761
	Cash-based invested capital	14.512	15.412	15.732	15.359	15.401
	CVA	-560	-1.051	-1.821	-1.430	-1.032

Source: The income statement, balance sheet and D company's internal data for the period from year 2010 to year 2014

In the Figure 7 the same tendency trends of EVA and CVA for the company D (minining industry) are presented.

Figure 7. The same tendency trends of EVA and CVA for the company C



Source: Table 16