A REVIEW OF THE ECONOMIC VALUE ADDED LITERATURE AND APPLICATION

Andrija Sabol[1]
Filip Sverer

Abstract

The purpose of the paper is to present a cornucopia of approaches and ways of defining, measuring and using the concept of Economic Value Added (EVA). EVA is a financial performance measure that emphasizes the maximization of shareholder value, as opposed to mere maximization of net profit. The authors familiarize the readers with important ideas and research that have contributed to the development of the concept of EVA. The nature of this paper is exclusive to the review of secondary sources, such as theoretical insights as well as the results of numerous empirical research of EVA. Furthermore, the paper will show various adjustments to financial statements before accounting profits can be used to calculate EVA. The results of the aforementioned research will unequivocally present EVA as one of the most widely used and accepted measures of overall firm performance, gaining more popularity when coupled with the notions of strategic (financial) management. The paper concludes by determining the role and place of the concept of EVA in the process of value and performance management, as well as strategic management.

Keywords: performance measures, strategic management, cost of capital.

INTRODUCTION

Complex, turbulent and uncertain conditions of the internal and external environment of enterprises complicate the process of managing the value of a firm. The management of competitive advantages and firm value as well as their planning requires the selection of appropriate management technology. In an environment filled with strategic fractures it is extremely difficult for value analysts that create, maintain and develop competitive advantages and the value of the firm to rely on the assumption of stable environment of the firm. The development of a suitable management technology is primarily driven by practical needs and the necessity of solving developmental problems of firms. Though the intimate connection between business strategy and the search for (customer) value is

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[1] **Andrija Sabol**, MA, Faculty of Economics and Business Zagreb; **Filip Sverer**, BSc, Zagrebacka banka, Zagreb, Croatia.

well established in the field of strategy, it is somewhat surprising to find only scarce research on how firms create value in contrast to the abundant ideas on value appropriation (Becerra 2009, 91). The changes in management technology are therefore caused by the strong growth in internal and external complexity of the firm, where problems of designing and implementation of business decisions (as well as their control, including ex-post and ex-ante control) are being tackled with an ever increasing set of performance measurement tools and criteria.

Most, if not all value based management performance measures use some form of discounted cash-flow technique to estimate how much a new strategy might affect shareholder value. These financial tools for strategic decision making, including option pricing theory, are widely used by managers, and the most basic of them are usually included in strategic management textbooks. The problem lies in the fact that financial analysis is not really intended to understand where value ultimately comes from. There are important aspects of strategic management that are not facilitated by the use of these techniques, like the analysis of customers, competitors and resources. Basically, how the management of the firm handles these categories will determine financial implications for shareholder value (Becerra 2009, 90).

In order to solve this practical problem, Stern and Stewart developed the Economic Value Added (EVA)[2] performance measure in 1991. It measures the dollar value of the firm's return in excess of its opportunity cost (Bodie, Kane, and Marcus 2014, 644). Indeed, Hall (Hall 2013) lists a number of studies (Stewart, 1991; Stern, 1993; O'Byrne, 1996; Chen and Dodd, 1997; Hall, 1999; Chmelikova, 2008) confirming the superiority of the valuation using economic value added compared to traditional accounting performance indicators. EVA as a measure of company's performance places the emphasis on the creation of value by the management for the owners since it takes into account the cost of capital employed. From the standpoint of an investor, EVA provides a better predictor of market value of a company than other measures of operating performance (O'Byrne 1996). Furthermore, it takes into account the social aspect of an enterprise. As Peter Drucker explained it (Drucker 1995), *"until a business returns a profit that is greater than its cost of capital, it operates at a loss. Never mind that it pays taxes as if it had a genuine profit. The enterprise still returns less to the economy than it devours in resources."*

1. THE ECONOMIC VALUE ADDED CONCEPT

The concept of Economic Value Added is based on the work of professors Franco Modigliani and Merton H. Miller. In 1961 they published the seminal paper *"Dividend Policy, Growth and the Valuation of Shares"* in the Journal of Business. Modigliani and Miller showed that corporate investment decisions – manifested in positive NPV decisions – are the primary driver of a firm's enterprise value and stock price – as opposed to the firm's capital structure mix of debt and equity securities (Grant 2003, 3). These ideas were extended into the concept of EVA by Stewart and Stern of Stern, Stewart & Co at the beginning of the 1990s. It is an estimate of a firm's economic profit – being the value created in excess of the required return of the company's investors (being shareholders and debt holders). It is the performance measure most

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[2]EVA® is a registered trademark of Stern Stewart&Co.

straightforwardly connected to the creation of shareholders wealth over time (Ray 2012). Stern et al (Stern, Shiely, and Ross 2001, 33) suggest that *"when fully implemented"* EVA will be *"the centerpiece of an integrated financial management system that incorporates the full range of corporate financial decision making"*.

EVA has become a widely advocated method of measuring firm performance. The methodology is *"the one measure that properly accounts for all the complex trade-offs involved in creating value"* and therefore*, "the right measure to used for setting goals, evaluating performance, determining bonuses, communicating with investors, and for capital budgeting and valuations of all sorts"* (Stewart 1991, 136). EVA is the spread between the rate of return on capital and the cost of capital, multiplied by the economic book value of the capital employed to produce that rate of return (Barbera and Coyte 1999, 16). However, this methodology presents an upgrade to then already existing measure of residual income, which is defined as operating profit subtracted by capital charge. The roots of the measure go back as far as 1890, when residual income was defined by Alfred Marshall as total net gains less the interest on invested capital at the current rate (Barbera and Coyte 1999, 18). Mathematically EVA gives exactly the same results in valuations as Discounted Cash Flow (DCF) or Net Present Value (NPV), which are long since widely acknowledged as theoretically best analysis tools from the stockholders' perspective (Brealey and Myers 1991, 73–75).

Nonetheless, EVA is different from other traditional performance measuring tools because most measures mostly depend on accounting information. The problem with these kinds of tools is that accounting earnings fail to measure changes in the economic value of the firm, and some of the reasons include (Shil 2009): (1) Alternative accounting methods may be employed: different methods for depreciation, inventory valuation, goodwill amortization, and so on; (2) Both business risk (determined by the nature of the firm's operations), and financial risk (determined by the relative proportions of debt and equity used to finance assets) are excluded; (3) Accrual based accounting numbers differ from cash flows from operations; (4) Dividend policy is not considered; (5) The time value of money is ignored.

2. THE CALCULATION OF ECONOMIC VALUE ADDED

Stewart defines EVA as *"the difference between the profits each unit derives from its operations (NOPAT) and the charge for capital each unit incurs through the use of its credit line"* (Stewart 1991, 224). Furthermore, EVA is defined as net operating profit after taxes and after the cost of capital. Capital includes cash, inventory, and receivables (working capital), plus equipment, computers and real estate. The cost of capital is the rate of return required by the shareholders and lenders to finance the operations of the business. When revenue exceeds the cost of doing business and the cost of capital, the firm creates wealth for the shareholders (Grant 2003, 13).

$$\text{EVA} = \text{Net Operating Profit} - \$ \text{ Cost of Capital} \tag{1}$$

EVA is therefore superior to accounting profit as a measure of value creation because it recognizes the cost of capital and, hence, the riskiness of firm's operations (Lehn and Makhija 1996). The perception of EVA is based on the effective economic principle that

firm's value increases only if it is able to generate surplus over its cost of capital and therefore it is based on well-built theoretical foundation (Ray 2012).

The steps in Economic Value Added computation are as follows: (1) Collect financial statements; (2) Make adjustments to categories in financial statements; (3) Identify the firm's capital structure (capital + interest bearing debt); (4) Calculate the Weighted Average Cost of Capital (WACC); (5) Calculate Net Operating Profit after Tax (NOPAT), where some needed adjustments are:

Operating profit after depreciation and amortization
+ Implied interest expense on operating leases
        Increase in LIFO reserve
        Increase in accumulated goodwill amortization
        Increase in bad-debt reserve
        Increase in capitalized research and development
        Increase in cumulative write-offs of special items
= Adjusted operating profit before taxes
– Cash operating taxes
= Net operating profit after taxes (NOPAT)

The accounting adjustments are needed in order to nullify distortions that may affect residual income. Stern Stewart identified more than160 possible accounting adjustments (to GAAP) (Dodd and Chen 1997).

$$EVA = NOPAT - Capital\ Employed * WACC \tag{2}$$

$$EVA = (Return\ on\ Capital - Cost\ of\ Capital) * Capital\ Employed \tag{3}$$

Capital Employed = total equity + interest bearing debt
Cost of capital = WACC

If EVA is positive than the company has created value for its owner, and if it is negative then the owner's wealth is reduced. For listed companies and their investors it is important to know whether a company creates or destroys value. According to the calculation reasoning, Stewart (Stewart 1991, 138) says that three strategies will increase EVA: (1) Improve operating profits without tying up any more capital; (2) Draw down more capital on the line of credit so long as the additional profits management earns by investing the funds in its business more than covers the cost of the additional capital; (3) Free up capital and pay down the line of credit so long as any earnings lost are more than offset by a savings on the capital change.

The cost of capital depends on many factors out of which many are difficult to determine in value. It depends on the availability of sources capital, the availability and price of funds on the financial markets, the development of securities markets, business risks, investors' expectations and their required rate of return, market risks, macroeconomic variables and other variables. Cost of capital is usually determined as the weighted average cost of capital (WACC) that takes into account the structure of capital and its costs.

$$WACC = (C_e * W_e) + (C_d * W_d)\ (1 - T_c) + (C_x * W_x) \tag{4}$$

C_e Cost of equity
W_e Total equity
C_d Cost of debt
W_d Interest bearing debt

T_c	Profit tax rate
C_x	Cost other capital sources
W_x	Other capital sources

Cost of capital is often calculated using the CAPM – Capital Asset Pricing Model:

$$CAPM = R_f + \beta (R_m - R_f) \tag{5}$$

R_f	Return on risk free security (risk free rate)
β	Company's systematic risk (beta of the security)
R_d	Expected market return
$(R_m - R_f)$	Market risk premium

Market risk premium is quite difficult to estimate in a volatile or illiquid market. Some other approaches to the calculation of the cost of capital include the dividend price approach and the earnings per share approach, although both of these are criticized because they do not take into account the appreciation in the value of capital and the impact of retained earnings (dividend price approach), nor the fact that the earnings per share and market price will not be constant (earnings per share approach). Cost of interest bearing debt is usually easy to calculate because of the availability of public data.

Of course, one must be aware that it is impossible to use one EVA formula for all markets, industries or companies. The concept of *"True EVA"* presumes the accurate EVA after making all relevant adjustments to accounting data. Since this is both practically and theoretically impossible, especially due to various accounting rules and methods in use, every analyst or manager should focus on creating his *"Tailored EVA"*. As Shil (Shil 2009) states, *"each and every company must develop their tailored EVA definition, peculiar to its organizational structure, business mix, strategy and accounting policies – one that optimally balances the trade-off between the simplicity and precision."*. Shil also claims that once the formula is set, it should be immutable in order to provide a sort of constitutional definition of performance.

Having that in mind, we shall focus on Croatian economy and the specificities of the conditions to which Croatian firms are exposed. We will not focus on accounting principles since they are affected by each firm's accounting policies (within the HSFI – Croatian standards of financial reporting) and since NOPAT can be adjusted accordingly. A more difficult challenge is to implement EVA considering the problems with defining the cost of capital, especially because the Croatian securities market is not liquid and cannot be used as a benchmark for calculating any form of market risk, let alone systematic risk. Croatian stock market is rather volatile and does not represent the real value of securities, meaning that the appropriate premium demanded by the investors cannot be accurately estimated even for big publicly owned companies. Furthermore, shares of only a small fraction of companies are listed on the stock market, with even less of them having issued corporate bonds. All of them constitute around 1% of the total number of firms, with a mere fraction of them in free float. Determining the cost of capital by using methods such as earnings per share calculation or Capital Asset Pricing model (CAPM) is thus rather difficult.

EVA is a capital allocation tool both inside a company and also within a broader perspective inside the whole economy. EVA should set a minimal acceptable performance rate based on the average return of the respective market or industry. If this average return rate cannot be reached then the owners would be better off if they allocated their capital to another company or to another industry. The question is then

how to measure the average rate of return on capital in the respective industry or cluster and how to measure the average cost of interest bearing debt? The proposition is to use publicly available financial statements from Croatian companies and publicly available data on average interest rates on banking loans.

3. APPLICATION OF THE ECONOMIC VALUE ADDED CONCEPT

Unlike many countries around the world, comprehensive yearly financial statements from Croatian profit tax payers companies are publicly available in accordance with the Accounting Act of Croatia. They cover approximately 100.000 companies that constitute more than 90% of the total revenues and assets of Croatian business entities. The data also covers information on the companies' business activities, locality and other statutory data. A company manager or analyst may use this data to calculate the weighted average return on equity (C_e) of his respective industry for a period of, for example, 3 years and use that value as the minimal return rate on equity for his company (i.e. cost of equity). The data he needs are balance sheets, income statements and information on the company's registered business activities, since he will simple calculate:

$$\text{Firm } C_e = \text{NOPAT} / \text{owner's capital} \tag{6}$$

$$\text{Weighted industry } C_e = (\text{revenues} / \text{industry rev sum}) \text{ firm } C_e \tag{7}$$

On the other hand, the cost of debt (C_d) can be estimated using publicly available data on credit institutions weighted average credit rates (such as statistical data from the Croatian National Bank). Interest rates on a specific loan can vary (in accordance with its duration, purpose and currency), but this is a good enough estimate for the expected cost of debt.

Let us presume that a Croatian firm operates under the following assumptions: (1) A ratio of equity/interest baring debt of 60/40; (2) Weighted average return on equity in the respective industry equals 10%; (3) The financial debt structure is in kuna and roughly equates 70/30 in favor of the short term debt; (4) Furthermore, let's say that the average interest rates on short term kuna loans are 5% and average interest rate on long term kuna loans are 6%; (5) Tax rate is 20%.

$$WACC = C_e * W_e + (C_d * W_d)(1-T_c) + C_x * W_x \tag{8}$$
$$WACC = 0,10 * 0,6 + [(0,05 * 0,4 * 0,7) + (0,06 * 0,4 * 0,3)] (1-0,2) + 0$$
$$WACC = 7,70\%$$

Under given conditions, the minimal return rate on firm's capital must be 7,70%. This is the absolute lowest return on capital that the company must achieve and it also provides an excellent border-line value that must not be crossed. It is reasonable to expect that the owners will set an expected premium on this value. Taking that into account, firm's break-even EVA is calculated as follows:

$$EVA = \text{NOPAT} - (\text{capital employed} * 7,70\%) \tag{9}$$

The idea and concept of EVA is more useful for Croatian companies than they might initially realize. Croatian business entities are in a dire situation when it comes to payments. Unfortunately, a prolonged recession combined with economic, legal and

cultural factors lead to the widespread illiquidity and it is not rare to meet a company whose buyers have 90, 120 days or longer payment periods, despite the fact that the legal boundary is set at 60 days. Furthermore, companies should keep a record of all of the customers who did not pay on time or who defaulted. Take an example of a large distributor who sells to hundreds of customers. A small portion of them are bound to default and the company has to take that into account when planning future sales realizations. Another useful proposition for Croatian companies, especially for those firms whose significant portion of assets is tied in trade receivables, is to adjust the NOPAT in the EVA calculation by the percentage value of their sales that has not been collected and that are expected to be written off. In turn, one should calculate the net profit lost from each uncollected receivable.

Based on the company's internal data let us presume that the portion of net profit lost due to collection risk is 5%. We may call it the "Collection risk index" or CRI. In that case, EVA should be reduced by the amount of the expected net profit lost due to receivable collection problems:

$$EVA = NOPAT * (1 - CRI) - capital\ employed * WACC \qquad (10)$$

Basically, EVA can be adjusted for any form of risk that can be effectively measured. Banks extensively use this principle correcting net profit with expected loss (EL), cost of capital and taxes, thus calculating EVA (as proposed by the Basel III guidelines).

CONCLUSION: THE PROS AND CONS OF ECONOMIC VALUE ADDED

Unlike accounting profit, the link between economic profit and shareholder value is transparent. With time value of money taken into account, the net present value of the firm is equal to the discounted stream of expected economic value added generated by its current and future assets (Grant 2003, 19), and another way is to consider rents from unique factors of the firm (Montgomery and Wernerfelt 1988). The notion directly bridges a gap between finance and strategy. The importance of this is clear both for the positioning school and the learning school of strategic thought. Porter suggests that a series of interconnected activities creates value for both the firm and its customers (Porter 1980) in the established value chain model of the firm. The learning school, on the other hand, regards current and future assets as resources and/or competencies. In order for the firm to create value, these resources need to be valuable, rare, non-imitable and firm-specific (Barney 1991) (in what is known as the VRIO and VRIN model) –strategically relevant resources which are developed internally through processes of learning and knowledge integration (Teece, Pisano, and Shuen 1998). The heterogeneity of these resources presents the source of competitive advantage (Peteraf 1993) as well as the value of the firm in the sense of creating future cash flow (Barney 1991). Nowadays the resource based view of the firm is one of the most accepted strategy design approaches (Newbert 1998), and it directly corresponds to the logic behind the Economic Value Added performance measure. Furthermore, Stewart discusses four areas of EVA application (the *"four Ms of EVA"*) (Stewart 1991, 189): (1) Management (planning and budgeting): The EVA should be used for the conception of strategies and as an evaluation and measurement tool used as a basis for decisions on the objective of value orientation

when committing resources; (2) Measurement (reporting): The EVA should be the object of both internal and external reporting, since it shows all three of the basic options for increasing the business value; (3) Motivation (compensation for managers): Managers should conduct themselves as entrepreneurs and base their decisions on the same criteria that investors would make use of; (4) Mindset (cultural change): The anchoring of the EVA as a management variable should effect a change in the business culture toward more entrepreneurial behavior and value orientation and also support decentralized decision-making processes.

EVA basically forces managers to recognize that when they employ capital, they have to pay for it as if it were a wage (Shil 2009). It changes their viewpoint as they themselves become entrepreneurs. This in effect makes them behave more responsibly towards assets at hand. Advocates of EVA claim that its use provides a superior measure of year-to-year value that the firm creates. Also, since EVA measures performance in terms of 'value', it should be the basis of any and every financial management system used to design and setcorporate and business strategy, or to evaluate potential capital in<vestment decisions, corporate acquisitions, or performance (Ray 2012).

With its advantages, the concept of Economic Value Added does have some inherent inconsistencies that are limiting the use of the method. Some of the limitations include (Grant 2003, 19): (1) EVA is criticized to be a short-term performance measure. Some companies have concluded that EVA does not suit them because of their focus on long-term investments; (2) The true return or true EVA of long-term investments cannot be measured objectively because future returns cannot be measured, they can only be subjectively estimated; (3) EVA is probably not a suitable primary performance measure for companies that have invested heavily today and expect positive cash flow only in a distant future; (4) Traditional financial ratios are commonly used for distress prediction. It was observed that EVA does not have incremental value in predicting.

Some critics of EVA claim that it should not completely replace accounting earnings as a performance measure. For example, Dodd and Chen (Dodd and Chen 1997) found that accounting profit measures are still of significant information value even if EVA is already in use. Their study shows that along with EVA, companies should continue monitoring the traditional measures of accounting profit such as earnings per share, return of assets and return on equity.

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