

ECONOMIC VALUE – ADDED (EVA): A REVIEW OF THE THEORETICAL AND EMPIRICAL LITERATURE

Panayiotis G. Artikis and Michail G. Alexopoulos***

Abstract: Finance and accounting researchers, analysts and investors have great interest in examining the intrinsic value of a company, the parameters that affect this value and the role of accounting numbers in the valuation process. Intrinsic valuation assumes that a firms' value is a function of its expected future payoffs to common shareholders, based on currently available information, and the risk inherent in these payoffs. A number of models have been developed that try to estimate the fundamental or intrinsic value of firm, providing a link between market values and accounting numbers.

The purpose of the present paper is to review the theoretical underpinnings of EVA (Economic Value Added) which is considered as one of the most controversial Models. The concept of EVA has gained significant attention in the advanced economies, but implementation issues and its validity is under debate all over the world. This paper aims to present a narrative literature review of papers published on the EVA from 1991 to 2014. It is provided a classification scheme, identifying the gaps in existing literature and it is suggested the direction for future research. Literature is divided in four categories: i) Relationship between Economic Value and Stock Returns, ii) EVA – MVA relationship and other Methods, iii) Managerial behavior and performance management, iv) EVA adoption and firm value. Moreover, is presented the contribution to literature, on the issue of EVA, made by researchers. Research conducted in the developed countries have largely been found to be connected with EVA though there are certain studies in these countries too that found conventional measures as better tools of corporate performance reporting. On the other hand, in developing economies less number of studies is supporting the empirical validity of the concept as a corporate performance measurement tool.

Keywords: 1) EVA and stock returns 2) Intrinsic valuation.

1. INTRODUCTION

What do we mean by intrinsic value; In finance literature we come up with many definitions that try to explain intrinsic value or fundamental value, as it is

* Associate Professor, Department of Business Administration, University of Piraeus-Greece
e-mail: partikis@unipi.gr

** Doctoral Student (correspondent author) Department of Business Administration, University of Piraeus-Greece **email:** mixalhsalexopoulos@yahoo.gr

frequently called. Below are presented two definitions with the ambition to give a quick notion of the meaning.

First: Intrinsic Valuation assumes that a firms' value is a function of its expected future payoffs to common shareholders, based on currently available information, and the risk inherent in this payoffs.

Second: The actual value of a company or an asset, based on an underlying perception of its true value including all aspects of the business, in terms of both tangible and intangible factors. This value may or may not be the same as the current market value. Value investors use a variety of analytical techniques in order to estimate the intrinsic value of securities in hopes of finding investments where the true of the investment exceeds its current market value.

Measuring the intrinsic value of a company has mostly two kinds of groups of interest. First, those who constitute the financial market participants, such as the professional and private investment community - stockbrokers, corporate financiers, bankers, venture capitalists and private investors and so on. Moreover, consultants also belong to this group of interest as their work is to give the right guidelines in making or increasing value by advising professional investors and corporations. The other group consists of academic students and empirical theoretical researchers who try through frantic research to identify the determinants of intrinsic valuation models.

This paper analyses the studies concerning Economic Value added-EVA, a tool for creating wealth, which is considered, by many researches, as the leading idea in corporate finance today. Highly regarded companies like Coca-Cola and CSX have seen their market value soar since adopting EVA. The remainder of the paper is organized as follows. The following section gives the rationale and scope of the study. Section III gives the definition of Economic Value Added together with its Theoretical Framework as described in bibliography. Furthermore, the role of accounting adjustments to GAAP analyzed, in order to serve better the EVA calculation. In particular, Stewart (1997) suggests a total number of 164 adjustments but empirical evidence, conducted by Mourtise (1998) and Yong (1997), revealed that actual only 10-15 are needed. In Section IV empirical tests, for the aforesaid method, are presented in an attempt to 'value' the applicability of EVA method. Finally, the last Section gives a summary of the findings that draws some conclusions and points out avenues for future research.

2. SCOPE OF THE STUDY

Managers and investors find themselves in an unending search for the best economic framework in order to increase the profitability of their company. Traditional accounting tools seem to be insufficient to deal with the challenges

arising from efficient capital markets. EVA has growing popularity because traditional tools are only capable of explaining a specific market or firm situation. On the contrary, EVA can explain capital market, capital budgeting and net assets at the same time. Due to the popularity and the abilities of EVA a lot of work has been conducted and various studies have been published. This study tries to shed more light by presenting both academic literature which considers EVA as being superior to traditional measures and those studies that reject this hypothesis.

2.1 Methodology used

In this study, effort is made to present the changes on the evolving concept of EVA based upon studies conducted on EVA in various countries and published in various sources. The main scope of this study is to fill the gap in organizing and presenting the publications concerning EVA for the last decade.

Studies are presented on the basis of the time period, issues covered, distribution of literature in various sources and methodology used.

3. ECONOMIC VALUE ADDED – EVA (THEORETICAL FRAMEWORK)

The pendulum swing of investors and corporate decisions makers focus over the past few years has probably not been this extreme for at least a generation. Growth for the sake of growth has been replaced with intense scrutiny of capital usage and payback. Risk has changed from loss of opportunity to loss of capital. Most importantly, valuation and all of its individual components highlighted the need to reconcile what market expectations already reflect at today's stock price in terms of actual company fundamentals and outlook. Fundamental and technical analysis is also another method of measuring performance and predicting future (Layyinaturrobaniyah, Masyita & Sekartadje, 2016).

In this changed environment, the Economic value added (EVA) gives a new-fresh approach comparing with the traditional methods merely based on the simply notions of accounting profits and relevant ratios derived from them. The difference is that traditional performance measurement benchmarks do not consider the cost of invested capital (equity and debt) in order to generate profits made by a company. Internal audit quality is also determinant of performance (Ilias, Razak & Rahman, 2015).

Alfred Marshall (1890) pioneered the notion of economic profit, expressed in terms of real profits besides various operating cost and cost of invested capital. Later in 1991, New York based management consultancy firm Stern Stewart and Co. coined and popularized the concept of EVA.

Fortune has called EVA as “today’s hottest financial idea” and “A New Way to Find Bargains”, moreover it publishes from 1993 the EVA performance rankings. Supporters claim that EVA is not just another performance measure, but can be the main part of an integrated financial management system, leading to decentralized decision making. Examples of EVA users are: Coca Cola, AT&T, Briggs & Stratton, Quaker Oats. On the other hand, several academic empirical studies (e.g. Dodd and Chen, 1996; Biddle, Bowen and Wallace, 1997) have offer contradictory results regarding the superior informational content of EVA.

3.1 Building the model:

$$\begin{aligned} \text{Economic Value Added} &= (\text{Return on capital invested} - \text{Cost of capital}) \\ &\quad \times (\text{Capital invested}) = \text{After-tax operating} \\ &\quad \text{income)} \\ &\quad \frac{(\text{Cost of capital})}{(\text{Capital invested})} \end{aligned}$$

or

$$\text{EVA} = \text{NOPAT} - \text{WACC}_t \times \text{IC}_{t-1}$$

where,

NOPAT = net operating profits after taxes

WACC = weighted average cost of capital

IC = invested capital

3.2 The Role of Accounting Adjustments

EVA valuation model is trademarked by Stern Stewart & Company. Joel Stewart and G. Bennett Stewart state that is the residual income that remains after operating profits cover the cost of capital. In order not to bind EVA with conventional GAAP, Stewart (1994) suggests a number of adjustments. Specifically, Stewart suggests 164 adjustments in order to achieve that EVA is not bound by GAAP. It is found from studies conducted by Mourtise (1998), Stern Stewart (1997) and Yong (1997) that no company is able to apply all the 164 adjustments. As Young (1999) says adjustments are useful when they have the following results:

Produce an EVA figure that is closer to cash flows, and therefore less subject to the distortion of accrual accounting 2) correct biases caused by accounting depreciation 3) bring off-balance sheet debt into the balance sheets 4) remove the arbitrary distinction between investments in tangible assets, which are capitalized, and intangible assets, which tend to written off as incurred 5) prevent the amortization, or write-off, of goodwill.

The following adjustments were selected as a representative sample in calculating-creating the <<right>> EVA:

- (i) **Research and development (R&D):** Young and O’Byrne (2000, p.212) argue that expenses for R&D are investments. The authors advocate the capitalization of these expenditures. Moreover, the capitalization of Research and Development expenditures are related to the dysfunctional behavior of the managers and directors. Managers are concerned about their evaluation and believe that is a function of short term business results. This behavior by managers has a tendency to influence long term results and investment decisions.
- (ii) **Intangibles-Goodwill:** Goodwill that occurs from corporate acquisitions is concerned as intangible asset that is not automatically written off in an EVA method. The reason is that the write-off of goodwill (whether at acquisition or more gradually through capitalization and amortization) effectively removes at least part of the acquirer’s investment in the target from the balance sheet. According to Young : “...thereby lessening management’s burden to earn a competitive return on that portion of invested capital”. The objective is to reverse amortization that has already been done and put it back to invested capital.

The opposite argument, presented by Young (1999, p.17), is: “present value of charges to the future results from the acquisition of goodwill will be the same”. This argument means there may be no obvious need for this adjustment.

- (iii) **Taxes are only charged to profits as they are paid:** Taxes need to be deducted from profits when actually paid rather than when they arise from timing differences between book income according to GAAP and income for tax purposes.

The most significant source of the latter is the accelerated treatment of depreciation for tax purposes as against book income, with the argument that timing differences will recognize more book income than tax income (a deferred tax liability).

Alternatively, deferred tax assets arise when provisions are made for future costs that serve to reduce current book income. These may include provisions for warranties, restructuring and environmental clean-up. The net change of EVA is to add (or subtract) these changes in deferred tax to more accurately reflect the actual cash flows to tax authorities. In other words, the “deferred tax adjustment brings EVA closer to cash flows, and thus eliminates any influence on profits from one of the most important components of accrual accounting” (Young, 1999, p. 12). Most proponents argue that this focus on cash flows is the most useful component of EVA calculations.

- (iv) **Depreciation:** Rennie, (1997) remarks that: "... the operational value of plant does not fall as quickly as depreciation schedules suggest and management performance should reflect this", so the adjustment made to depreciation is useful. On the other hand, for tax reasons a fast write -down of plant is preferred in order to reduce income.

Another issue that needs to be presented is the depreciation method used and how it reflects firm's performance. A straight-line accounting depreciation means that rates of return tend to be understate the true internal rates of return in the early years and overstate it in later years (Stewart, 1994, p. 80). This makes a faulty impression of improving performance, but what really happens is that the increase of EVA indicator is due to the depreciation method used (Young, 1999, p. 14). Moreover, EVA supporters claim that EVA should be steady over the life of the asset, and should be depreciated in exactly the same way that bank loans are amortised (Young, 1999, p. 14). This important adjustment is usually not consider among analysts and is ignored in corporate enterprise. The main reason for this is that, unless the company is in a high growth phase, depreciation figures under the annuity method are likely to be close to those under the straight-line method (Young, 1999, p. 18).

- (v) '**Successful efforts accounting**': This means that only successful investments with future economic significance are to be capitalized and eventually placed on the balance sheet. On the contrary, those characterized as unsuccessful are conventionally written off. EVA supporters claim that the unsuccessful investments are just as important to shareholders as successful investments. This means that all investments both bad and good are to be included in the balance sheet. As for the losses, they will be recognized gradually in future periods in the form of higher capital charges, and thus lower EVA. Thus the adjustment is to obtain the present value of all additional capital in future periods. This is equal to the amount of the write-off (Stewart, 1994).

Despite the fact that only few adjustments presented, the calculations that Stern Stewart's EVA employ have obvious intuitive appeal. On the contrary, studies do exist and argue that most of the adjustments are difficult to employ, have little importance at the company level, have great cost for firms and also that managers have difficulties in understanding them. For instance, Young (1999) argues that many of these adjustments are of little importance at the company level. Chen and Dodd (1997, p. 331), argue that a company could "...implement performance measures based on [the computationally simpler] residual income which will likely provide them with most of the practical benefits promised by an EVA system'. The main drawback of Economic Value Added concerning the adjustments discussed is that is based on accounting figures and accounting principles.

4. LITERATURE ON EVA

4.1 Empirical Evidence

Specifying a rational performance measure for firms has turned out as a crucial issue for researchers. In time, the gradual growth of this incentive was accompanied by the emergence of new measures of firm and management evaluation. In different decades, researches centered around different measures and in 1990s they were mostly centered on EVA as one the most recent measures. After Stewart (1991) claimed; EVA is the best performance measure, many researches have been done to verify its accuracy. In this section a thorough presentation from empirical tests concerning the literature of EVA is given in an attempt to ‘value’ the applicability of this method. In this study literature is divided in four categories: i) Relationship between Economic Value and Stock Returns, ii) EVA – MVA relationship and other Methods, iii) Managerial behavior and performance management and iv) EVA adoption and firm value.

4.2 Relationship between Economic Value and Stock Returns:

This is the most interesting and popular covered aspect among the studies conducted on the issue of EVA. It includes analyzing the literature concerning the relationship of EVA and firm performance. Many academic researchers try to find how EVA and evidences from stock returns are related. Some important academic studies, based on the above issue, are given in the following part:

No	Researchers	Year	Scope, Methodology	Findings
1	Stewart	1995	Empirical.	EVA has significant explanatory power over stock returns.
2	Lehn & Makhija	1997	It is analyzed the correlation among various performance measures and stock market returns.	EVA has significant explanatory power over stock returns.
3	Peterson, P. P. & Peterson, D.R.	1996	Traditional and value-added measures of performance and their relationship with stock returns are explored.	Traditional measures are not empirically less related to stock returns when comparing to return on value added measures.
4	Chen and Dodd	1997	Empirical.	-Eva and Residual Income are highly correlated and identical in terms of association with stock returns. -EVA measure produces relatively more information than the traditional measures of accounting profits.

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| 5 | Biddle et al., | 1997, 1999 | Makes a comparison of stock market adjusted returns against EVA, Residual Income and Operating Cash Flow. It is used a sample of firms for a period of 1984-93. | Concluded that EVA does not give better results than traditional performance methods in its association with the stock market returns. |
| 6 | Bao and Bao | 1998 | US firms examined to the issue of usefulness of EVA measure and abnormal economic earnings. | - EVA found to have higher explanatory power over accounting earnings and a valuable factor for market returns. |
| 7 | Lefkowitz | 1999 | Examine the correlation of EVA and stock returns to a sample of US companies. | The results are supporting to Stern-Stewart hypothesis. |
| 8 | Machuga et al. | 2002 | Research to date on the relative effectiveness of Economic Value Added (EVA) and earnings per share (EPS) as measures of firm performance for stock valuation. | EVA is a reliable measure for future earnings. |
| 9 | Worthington and West | 2004 | Research made in Australia for evidences regarding the information content of EVA. | EVA is more correlated to stock returns than residual income, earnings and net cash flow. |
| 10 | Ismail | 2006 | Examine how EVA is associated with stock returns viz- a- viz accounting earnings and stock returns. | EVA is not better in explaining stock returns than net operating profit after taxes and net income. Also accruals and operating cash flows have significant incremental information content than EVA. |
| 11 | Kyriazis and Anastassis | 2007 | Investigated the information content of EVA and unadjusted residual income, in comparison with two established accounting measures of performance, namely the net income and the operating income.(Sample of Greek firms) | - Relative information content tests reveal that net and operating income proved to be more valuable than EVA.
- EVA components add less to marginal information content as compared to accounting profit. |
| 12 | Taufik, Isnurhadi, Widiyanti | 2008 | Investigate if an accounting (ROE and ROA) or (EVA) approach has superior effect on the stock return of banks listed in Jakarta Stock Exchange (JSX) for a period of 2002 – 2005. | The statistical result reveals that EVA approach is superior to accounting (ROE and ROA) in influencing the listed banks stock return for the year 2002 – 2005. |

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13	C Lin, Z QIAO	2010	Empirically examined what would influence EVA companies listed in China's securities market. The methods of Factor analysis and multivariable linear regression model were used.	-concluded that the company's capital structure, profit ability, size, growth ability, management ability, and industry's return on equity had positive influence on EVA, -The intangible asset had poor negative relationship with EVA. -inventory management ability had no influence on EVA.
14	I Ismail	2011	Can positive EVA outperform negative EVA in predicting company performance and either the period of study may play a role in explaining the variation of the stock return.	Found that neither value creator nor value destroyer had a relationship with stock return, as both models prove to be statistically insignificant.

4.3 EVA – MVA relationship and Other Performance Measures:

Market Value Added (MVA) is a useful method of measuring firm performance. It is calculated as the sum of all capital claims held against the company plus the market value of debt and equity. Academic studies conducted on these issues mostly examine the connection between EVA & MVA and possible correlation of the two.

Some important academic studies based on the focused literature on EVA are given in the following part:

No	Researchers	Year	Scope, Methodology	Findings
1	Stewart	1991	Analyze the linkage between EVA and MVA for US companies.	According to the research correlation between EVA and MVA appear to be strong.
2	Kramer and Pushner	1997	Examine the relationship between EVA and MVA.	MVA and NOPAT were positive on average but the average EVA over the period was negative.
3	O' Byrne	1996	Empirical.	EVA is systematically linked to the market value and it is a powerful tool for understanding the investor expectations.
4	Finegan	1991	Empirical.	EVA is systematically linked to the market value and it is powerful tool for understanding investor's expectations.

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5	Timo Salmi - Ilkka Virtanen	2001	How EVA behaves under different, financial conditions compared to the behavior of traditional indicators such as ROI, ROE and IRR.	<ul style="list-style-type: none"> - is observed that EVA is very sensitive to its cost of equity - EVA is observed to be much more unstable than the traditional return on investment and directly related to the return on equity measure.
6	Fernandez	2001	Examine the correlation between EVA and MVA (sample of 582 US companies for the period 1983-97).	<ul style="list-style-type: none"> - 296 firms in the sample showed that changes in the NOPAT had higher correlation with changes in MVA than EVA, - while for 210 sample firms the correlation between EVA and MVA was negative.
7	Ghanbari and More	2007	The relationship between EVA and MVA in India for automobile firms.	The study showed no strong evidences to support Stern- Stewart's claim.
8	PP Wibowo, RG Berasategui	2008	<ul style="list-style-type: none"> - Sample of 40 Indonesian listed companies from year 2004 to 2007, - the scope is to find relationship among variables. 	This study found evidence in the relationships between EVA and MVA with reported earnings.
9	Leong et al.	2009	Examine whether portfolios created by utilizing the EVAM ratio will generate higher returns than portfolios formed with (EP) and (BM).	Fail to find any statistical difference among them.
10	Nuttawat Visaltanachoti1, Robin Luo and Yi Yi	2008	Compare EVA information content in explaining 90 sector returns with the information content of three traditional accounting-based performance measures: CFO), earnings (EBIT), and (RI).	Association between traditional accounting performance measures and sector returns is higher than that with EVA.
11	Akbar Parvaei1 & Soran Farhadil	2013	<ul style="list-style-type: none"> - Research examines the main performance measures (Net income (NI), residual income (RI), economic value added (EVA) & free cash flow (FCF) of firm - predictability of Economic Value Added for future performance. 	<ul style="list-style-type: none"> - EVA is the best measure for evaluating the performance of firm and management among other measures, - EVA has low predictability for performance and FCF has slightly superior predictability compared to other measures.

4.4 Managerial behavior and performance management

Performance management (PM) includes activities which ensure that goals are consistently being met in an effective and efficient manner. Studies and literature on this aspect aim at finding how managerial actions affect the firm value. Moreover, is examined whether EVA is an appropriate performance measure and also if it is an effective tool in motivating managers.

Khiari Zahia and Djaouahdou Reda(2012) in their work presented latest theories of the EVA bonus plans. In particular, EVA bonus plan is calculated as follows:

“the bonus earned by a manager is equal to the sum of a target bonus plus a fixed share of excess EVA improvement, that is, the difference between the actual change in EVA (Δ EVA) and an expected improvement in EVA (EI)”

$$\text{Bonus} = \text{Target bonus} + y \% (\Delta \text{EVA} - \text{EI})$$

where:

The **Target Bonus** is the bonus earned by a manager for delivering the EVA improvement that is expected by investors (to be determined by the compensation committee prior to the performance period). This expected EVA improvement should be equivalent to the EVA that will provide shareholders with a cost-of – capital return on the market value of their investment in the business. This target bonus should be larger than conventional target bonuses for two reasons. First, a larger bonus is required to provide more leverage and second, the potential for negative bonuses makes EVA plans riskier.

The change in EVA less Expected EVA improvement is meant to capture the incremental EVA that a manager has delivered above and beyond the EVA growth that investors expect and have already paid for. The percentage of the incremental performance (y%) that is returned to management is also established by the compensation committee. This plan states that managers should receive a target bonus for “normal” performance (when actual changes in EVA are equal to the expected improvement, i.e., Δ EVA –EI =0), while they should get rewarded (penalized) for superior (inferior) performance, with no limits on the upside or downside.

Some important academic studies based on the focused literature on EVA are given in the following part:

No	Researchers	Year	Scope Methodology	Findings
1	Biddle et al	1998	Examine EVA and managers decisions.	-EVA motivates managers to create wealth for investors, -Managers apply decisions that increase income.
2	Ferguson and Leistikow	1998	How managers use EVA.	Both managers and subordinates need training so as to effectively use EVA compensation system.
3	Irala	2005	How EVA as performance method affects managers in their decisions.	-drives managers to employ firm's assets more productively and -it helps in reduction of differences in the interests of managers and shareholders.
4	Desai and Ferri	2006	Case study about the effectiveness of EVA.	Examine the concept of EVA and its practical applications as a management control system for performance measurement.
5	N R V Ramana Reddy, M. Rajesh,	2011	Comparison of EVA with other measures.	It was found that EVA is the best appropriate measure for measuring the value of shareholders.

4.5 EVA adoption and firm value:

This aspect covers literature on EVA as financial management system, strategy, implementation, limitations, facts & fantasy, misconceptions etc. It has been observed that those firms that adopted Economic Value Added method increased their profitability (Ferguson et al, 2005). C Huang, MC Wang (2008), showed that firm's value is mainly determined by book value, EVA and intellectual capital. Moreover, their results showed that the explanatory capacity for firm market values of residual income based on EVA is not greater than that of residual income based on GAAP and that intellectual capital does provide incremental information for the evaluation of firms. Grant (1996) in his research focused on the relationship between EVA and firm Value and found that EVA significantly impacts the firm value. (Lovata & Costigan, 2002) examined the impact of firm ownership in adopting EVA. Biddle et al. (1998) state that managers are affected in their decisions by EVA but there are no justifications of affecting firm value more than other measures. Wallace (1997) searched the connection between performance and EVA adoption by firms. He found correlation among manager decision and use of EVA. (Anand et al. 1999) found that EVA, REVA and MVA are reliable measures of firm value.

5. OVERVIEW AND CONCLUSION

This paper has sought to derive a critical literature survey on current and previous research on the Economic Value Added. Various theoretical valuation models and frameworks were discussed and analyzed though the presentation of literature in order to be compared with EVA. The implications of the predictability for future stock returns of EVA valuation model were presented and motivating insights were

emphasized. Research showed that this model has advantages and disadvantages coming mostly from: a) the assumptions made and b) the information need to build the model. Thus, we shed more light to the academic literature so far in order to help and provide the reader with a helpful guide about Economic Value Added method. With implementation it is important to understand the EVA-concept thoroughly and tailor the concept to the unique situation of each company or business unit. EVA is at its best as an overall measure and organizational approach with strong link to payroll of managers and other employees. That kind utilization can not succeed without deep understanding and commitment achieved with proper training.

Substantial shareholder value increases and true success stories arise always from outstanding strategy, quick response, great ideas and good predicting of future. EVA helps in quantitative assessing of different strategies but that is all. Wealth does not arise from EVA alone. EVA only measures changes of wealth. It is also as short-term as all other periodic performance measures. Therefore all companies should rely also on other performance measures. Especially important this is e.g. for new growth phase companies. However we have to bear in mind that the success or failure of any given company is measured ultimately as created shareholder value. Therefore EVA is important measure also for those companies that use primarily other tools in assessing the achievement of their strategic goals.

5.1 Future Directions and Areas of research

As a final point, the adequacy of the theory underlying the empirical work should be further explored and empirically established. This need is nowadays more crucial as economic environments changes fast and the size of changes and the effects are unpredicted.

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