

Economic Value Added (EVA) - Literature Review and Relevant Issues

Dr. Anil K. Sharma

Department of Management Studies, Indian Institute of Technology Roorkee
Roorkee-247667, India

Tel: 91-13-3228-5632 E-mail: anilfdm@iitr.ernet.in

Satish Kumar (Corresponding author)

Department of Management Studies, Indian Institute of Technology Roorkee
Roorkee-247667, India

Tel: 91-92-8664-3008 E-mail: satisddm@iitr.ernet.in

Abstract

This paper aims to present a narrative literature review of 112 papers published on the EVA from 1994 to 2008. It provides a classification scheme, identifies the gaps in existing literature and suggests the direction for future research. Studies are classified and presented on the basis of the time period, issues covered, distribution of literature in various sources, methodology used, country-wise publications and contributions made by the researchers on the concept. The studies conducted in the developed countries have largely been found to be supporting EVA though there are certain studies in these countries too that consider conventional measures as better tools of corporate performance reporting. However, in developing economies less numbers of studies are available supporting the empirical validity of the concept as a corporate performance measurement tool. 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. The paper presents a comprehensive literature review and a critical analysis to move towards the advances in EVA. It may be a very useful source of information to the researchers and managers who wish to understand and implement EVA and carry out further research on the diverse issues of this interesting and value adding performance metric.

Keywords: EVA, Market Value Added, NOPAT, Traditional measures, ROE, SHV

1. Introduction

Maximizing shareholders value has become the new corporate paradigm in recent years. The Corporates, which gave the lowest preference to shareholders curiosity, are now bestowing the utmost preference to it. Shareholder's wealth is measured in terms of returns they receive on their investment. It can either be in forms of dividends or in the form of capital appreciation or both. Capital appreciation depends on the changes in the market value of the stocks. The market value of stocks depends upon number of factors ranging from company specific to market specific. Financial information is used by various stakeholders to assess firm's current performance and to forecast the future as well.

The empirical studies highlight that there is no single accounting measure which explains the variability in the shareholders wealth (Chen and Dodd, 1997; Rogerson, 1997). Any financial measures used in assessing firm's performance must be highly correlated with shareholders wealth and on the other hand should not be subjected to randomness inherent in it. Traditional performance measures such as NOPAT, EPS, ROI, ROE etc. have been criticized due to their inability to incorporate full cost of capital thereby accounting income is not a consistent predictor of firm value and cannot be used for measuring corporate performance. Value based management system has gained popularity in academic literature in last two decades. One such innovation in the field of internal and external performance measurement is EVA. (Note 1)

Pioneered and advocated by US based business consultant Stern Stewart and company argue that EVA can be used instead of earnings or cash from operations as measures of both internal and external performance. "Abandon earnings per share", "Earnings, earnings per share, and earnings growth are misleading measures of corporate performance" and "The best practical periodic performance measure is EVA" (Stewart 1991). Further to support his hypothesis that EVA is a better performance measures than other performance measures Stewart (1994) cites in-house research indicating that "EVA stands well out from the crowd as the single best measures of

value creation on continuous basis". He further remarks that 'EVA is almost 50% better than accounting based measures in explaining changes in the shareholders wealth'. Apart from this popular study, support for EVA has been acknowledged from other sources, Fortune, which regularly publishes EVA performance rating since 1993 has acknowledged EVA under different notations "today's hottest financial idea", "The Real way to creating wealth" and "A new way to find Bargains". Proponents of EVA have made following principles claims about EVA:-

- 1) EVA helps in reducing Agency conflict and improve decision making (Costigan & Lovata, 2002; Biddle et al. 1999)
- 2) EVA is more strongly associated with stock return than other measures. (Maditinos et al., 2006; Lehen and Makhija,1997)
- 3) EVA Improves Stock Performance (Ferguson et al., 2005)
- 4) EVA adds more informational content in explaining stock returns (Erasmus, 2008; Chen and Dodd, 1997; Kim, 2006; Palliam, 2006)
- 5) EVA and Market Value are correlated (Lefkowitz, 1999; O'Byrne, 1996; Uyemura, 1996; Peterson and Peterson, 1996).

Before proceeding further on the concept, let us first understand the concept of EVA.

2. The Concept of EVA

In 1990 a new device was formulated to gauge the profitability of a concern, which is known as 'EVA'. This concept is, as a matter of fact, a reversion to the formulation of Alfred Marshal (1890) which he put forward in early nineteenth century. The EVA of the company is just a measure of the incremental return that the investment earns over the market rate of return. In simple terms, it can be stated that EVA measures the profitability net of cost of capital. As someone has aptly remarked, 'you only get richer if you invest money at a higher return than the cost of money to you'. Everybody knows this but many seem to forget it. Thus, EVA can be taken as the net operating profit minus an appropriate charge for the opportunity cost of all the capital invested in an enterprise. As such, EVA is an estimate of true economic profit or the amount by which earnings exceed or fall short of the required minimum rate of return that shareholder and lenders could get by investing in other securities of comparable risk.

2.1 Calculation of EVA

EVA is the surplus left after making an appropriate charge for the capital employed in the business. It can be calculated in the following way.

$$\text{EVA} = \text{NOPAT} - (\text{TCE} \times \text{WACC}) \dots\dots\dots (1)$$

Where,

NOPAT = Net operating profit after tax

TCE = Total capital employed

WACC= Weighted average cost of capital

While calculation of NOPAT, the non-operating items like dividend/interest on securities invested outside the business, non-operating expenses etc. will not be considered. The total capital employed is the sum of shareholders funds as well as loan funds. But this does not include investments outside the business. In determining the WACC, cost of debt is taken as after tax cost and cost of equity is measured on the basis of capital asset pricing method. Under capital asset pricing model, cost of equity, i. e, K_e is given by the following:

$$K_e = R_f + b_i (R_m - R_f) \dots\dots\dots (2)$$

Where,

R_f = Risk free return

R_m = Expected market rate of return

b_i = Risk coefficient of particular investment

The cost of capital is thus the most important aspect of EVA. Under the traditional methods most companies appear to be profitable whereas in reality, they are not. As Peter Drucker (1995, p.59) has observed, "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... until then it does not create wealth; it destroys it." EVA takes this fact into consideration and states that managers must pay for the capital they are utilizing, just as if it were a wage. From the Table I, it is clear that traditional

measure of corporate performance does not consider cost of capital in calculation of NOPAT whereas EVA includes the same.

3. Rationale and Scope of the Study

There has been a growing concern about the performance measures based on traditional accounting information such as Return on Equity (ROE), Earning per Shares (EPS), Net operating profit after taxes (NOPAT) and Return on Investment (ROI) etc. As discussed in the introductory part of this paper, these measures although widely used fails to capture the shareholders value creation/destruction as a result of management actions. The concept of EVA has gained popularity all over the world particularly in USA, UK and European countries as companies are using EVA as an internal as well as external performance measure because it is consistent with the organizational objective of shareholder's value creation. Due to its popularity lot of research work has been conducted in late 1990's covering diverse issues on EVA. Although theoretically the significance of EVA has been proved but there exist gaps between the various studies about the superiority of EVA. In some academic literature EVA has been proved superior to traditional measures and some studies reject this hypothesis partially or fully. In the light of above, present study has been conducted to find out various issues underlying EVA and to present them at a single place. Another rational of this review paper is that empirical studies conducted till date on EVA in different countries have used different methodology and variables to prove their respective hypothesis. This study is a step to bring out those methodologies and variables in order to determine the direction for future research on EVA. The paper covers empirical studies conducted and published on EVA during 1994 to 2008.

3.1 Objectives of the Study

The study has been conducted with the primary objectives like arranging the publications on EVA in an orderly manner so as to enable easy and quick access, classifying literature on EVA and analyzing the outcome of the studies reviewed. Identifying gaps in the existing literature and suggesting the course of future research on EVA are some added objectives of the paper.

3.2 Data and Methodology

The paper is based upon studies conducted on EVA in various countries and published in various sources. A total of 112 papers (from 61 refereed journals and international conferences) have been reviewed. The distribution of articles reviewed from various sources is given in Table II. All these papers are classified on the basis of various approaches & issues covered and presented in Table III. Literature related to EVA addresses issues like EVA and MVA (Note 2) relationship, EVA and stock returns, Value based management, discounting techniques and EVA, EVA concepts, limitations, advantages and implementation, EVA as strategy and literature review (Figure I). All the studies reviewed are also classified on the basis of methodologies used that are given in Table III & Figure 2. The following part covers detailed description on literature on EVA.

4. Literature on EVA

Various articles dealing with the theory and applications of EVA have been published over the last 15 years, but the concept is still under development and debate particularly in developed countries. Worthington and West (2001) reviewed the literature on EVA and provided a synoptic survey of EVA's conceptual underpinnings. They concluded that empirical evidences concerning EVA have been mixed. There is strong need for research over a longer time frame to allow greater empirical certainty on the status of EVA as a corporate performance measure. Pal and Sura (2007) reviewed 25 empirical studies published in various journals related to relationship of EVA and stock returns. They have only reviewed the results of the studies and have not considered other issues prevalent in EVA research such as EVA-MVA relationship, EVA and discounting techniques, other residual income (Note 3) based techniques, EVA implementation and EVA and managerial performance and control. Till date no other study has been conducted to cover the issues involved in research about EVA. In the present paper we have covered various issues on EVA by reviewing 112 studies on the concept. Apart from this, we have also categorized the studies based on methodologies used by various researchers, country and year-wise publication and breakup of literature reviewed on research related to EVA which is presented in Table III. Some important observations based on the classification of the literature on EVA are given in the following part:-

4.1 Breakup of Literature on EVA

Literature on EVA can broadly be classified into seven sub- themes. These are EVA and stock returns, EVA-MVA relationship, managerial behavior and performance management, concept, criticism & implementations issues of EVA, value management & EVA, discounting approaches and their relationship with EVA and review studies on EVA. A brief description of these issues is presented in the following section explaining sub topics covered under each issue.

4.1.1 EVA and stock returns- This is the most widely covered aspect in the number of studies conducted on the concept of EVA. This includes literature on relationship of EVA and firm performance, evidences from stock returns, comparison of EVA with other accounting measures, portfolio selection tool, testing information content of EVA, error-rate, earning forecasts and residual income model etc.

4.1.2 EVA –MVA relationship - This concept includes literature on linkages between EVA and MVA of companies, EVA as proxy for MVA, correlation between EVA & MVA, value drivers, firm performance and MVA, inter-industry analysis and survey, effectiveness of EVA and efficacy score approach etc.

4.1.3 Managerial behavior and performance management- It includes literature on wealth creation, managerial compensation, agency theory & EVA, performance & compensation, performance evaluation profit sharing and gain sharing plans & EVA aspects.

4.1.4 Concept, criticism & implementation- This aspect covers literature on EVA as financial management system, strategy, implementation, limitations, facts & fantasy, misconceptions, EVA - adjustments etc.

4.1.5 Value management- Value based management (VBM), true value, value creation & measurement, investment recovery and value added, cash value added and share holder value creation, shareholder value drivers etc. are some important aspects that have been studied under this category.

4.1.6 Discounting approaches- EVA relationship to NPV, (Note 4) reconciliation of variations of DCF valuation, inflation adjustments, Residual Income & DCF (Note 5) approaches etc. are the issues covered under discounting approaches.

4.1.7 Literature survey- Studies covering comprehensive literature survey are included in this category.

It is thus clear from Table IV and Figure 1 that empirical evidences on EVA and stock returns seem to be the dominant research theme. Majority of researchers have worked on EVA and stock returns, as 58 articles out of 112 are on this aspect. Another popular category of research is EVA and its relationship with Market value added (MVA). Only two articles out of 112 studies reviewed have been found to be created on survey of literature that justifies the need for more such studies on literature survey and other related aspects of EVA.

4.2. Methodologies used in the studies under review

In the process of reviewing literature on EVA we have also classified the studies on the basis of methodologies used. Different methodologies used by the various researchers are divided into four categories which are conceptual, descriptive, empirical and exploratory cross-sectional. Conceptual papers are those covering basic/fundamental concepts in EVA while studies providing explanation or description of EVA content or process and implementation issues are classified as descriptive studies. Empirical studies cover those which have taken data from existing databases, reviews and case studies. Studies in which data collection is done through survey are classified as exploratory cross-sectional. Table III and figure 2 exhibit the description of methodology used by various researchers over a period of time, while Table V enumerates the studies conducted using different methodologies. As evident from the Table V, out of 112 studies reviewed, 80 are based on empirical methodology that constitutes 71 percent of total studies reviewed. Only 4 percent studies have used exploratory cross-sectional methodology which is the least as compared to conceptual (7 percent) and descriptive (18 percent) approaches. Year- wise and country wise publication on EVA is presented in the following part.

4.3. Year -wise and country-wise publication of literature on EVA

The book by Stewart, *The Quest for Value* (1991), introduces EVA and market value added measures and their benefits. Since then, lots of studies have been conducted on various issues related to EVA. Table VI and Figure 3 summarize year wise break up of studies conducted on EVA. One interesting observation that can be had from Table VI that only 24 (21.4 percent) studies have been published in important journals till 1999, and the remaining 88 (78.6 percent) were published during 2000 -2008. Table VII and Figure 4 summarize the country-wise studies on EVA. One interesting observation that can be drawn from figure 4, that 45 percent (51 articles) studies belong to USA, 19 percent (21 articles) pertain to India and 21 percent (23 articles) studies are conducted in countries like Brazil, Russia, Indonesia, New Zealand, Malaysia etc. Since the concept of EVA was originated from US market hence more popular in same country. It seems that China and UK lag behind as far as research on the concept of EVA is concerned. Some empirical evidences on EVA form succeeding part in the paper.

5. Empirical evidences on EVA

There has been a growing debate on what influences share prices of a company. A large number of studies have investigated the relationship between accounting numbers and stock returns. Traditionally, studies have focused

on accounting profits and earnings but now residual income and cash flow have attracted considerable attention of researchers all over the world. In this review paper a large number of empirical studies on EVA have been presented and their results have been analyzed in order to validate the hypothesis associated with EVA. Careful analysis of literature reveals that any source of accounting based information can influence the share prices. The empirical analysis suggests that earnings generally dominate in explaining variability in stock returns. But earnings should not be relied upon because of its inability to incorporate full cost of capital. It is partially because of this limitation and partially because of increased demand by investors and analysts to correctly identify firm value, the need for research in this area has been intensified.

In contrast to earnings, EVA which is the difference between after -tax operating profits and total cost of capital is a true measure of corporate profitability. As value is the main concern for shareholders, advocates of EVA claim that it is only performance measure that link directly to stock's intrinsic value (Stewart 1991). This as well as other important issues have been covered in the studies conducted on EVA as compared to the traditional measures of firm performance. The following section deals with identifying and highlighting important issues that establishes the relationship between EVA and firm performance and other conventional measures of corporate performance reporting.

5.1 Relationship between Economic Value and Stock Returns.

Proponents of EVA claim that EVA is highly correlated with stock returns. EVA derives stock prices (Stewart, 1995; Medeiros, 2005) better than other accounting based performance indicators. Lefkowitz (1999) analyzed the US companies and results of the study supported Stern- Stewart hypothesis, i.e., EVA is better correlated with stock returns as compared to traditional performance measures. They found that EVA is reasonably reliable guide to understand the firm's value. Machuga et al. (2002) in their study highlighted that EVA can be used to enhance future earnings predictions. Lehn & Makhija (1997) investigated the degree of correlation between different performance measures and stock market returns. The results indicate that EVA is the most highly correlated measure with stock returns. Various Studies are also conducted on Incremental information content tests of EVA and provide evidences that it adds significant explanatory power to EPS (Note 6) in explaining stock returns. Bao and Bao (1998) studied the usefulness of EVA and abnormal economic earnings of US firms and results indicate that EVA is a significant factor in market returns and its explanatory power is higher than that of accounting earnings. Chen and Dodd (1997) reported that EVA measure provides relatively more information than the traditional measures of accounting profits. They also found that EVA and RI (Residual Income) variables are highly correlated and identical in terms of association with stock returns. Worthington and West (2004) provided Australian evidences regarding the information content of EVA and concluded that stock returns to be more closely associated with EVA than residual income, earnings and net cash flow.

There are some studies that do not support the claim that EVA provides better stock returns. (Biddle et al., 1997 and 1999) analyzed a sample of firms over the period 1984-93 by comparing the stock market adjusted returns against EVA, Residual Income and Operating Cash Flow. The results do not support that EVA dominates traditional performance measures in its association with the stock market returns. Ismail (2006) conducted a study on EVA and its association with stock returns viz- a- viz accounting earnings and stock returns and found that net operating profit after taxes and net income outperform EVA in explaining stock returns. Further, this study states that accruals and operating cash flows have significant incremental information content than EVA. Peterson and Peterson (1996) analyzed traditional and value-added measures of performance and their relationship with stock returns. Their findings state that traditional measures are not empirically less related to stock returns than return on value added measures. Kyriazis and Anastassis (2007) in their study of Greek firms concluded that relative information content tests reveal that net and operating income appear to be more valuable than EVA. EVA components add only marginal information content as compared to accounting profit.

One interested finding related to literature is that most of researchers have used R^2 and panel data regression model to measure value relevance. Recent evidences suggest that these measures may be affected by presence of scale effects in levels regressions (Das and Lev, 1994). Various reasons are suggested by various researchers (Biddle 1998) why EVA performs relatively poor in comparison with other measures like earnings in explaining the stock returns. The important reasons are estimation errors in calculating capital charge (WACC) and accounting adjustments as compared to what market is using to value firms.

5.2 EVA adoption and firm value

Firms that adopt EVA appear to have above the average profitability relative to their peers both before and after the adoption of EVA. Further evidences also state that EVA adopters experience increased profitability relative to their peer after adoption of EVA (Ferguson et al.). Further, firms using EVA exhibit a higher percentage of

institutional ownership and a lower percentage of insider ownership than non-adopters (Lovata & Costigan, 2002). Grant (1996) conducted a survey to examine the relationship between EVA and Firm Value. Results suggest that EVA significantly impacts the firm value. EVA, REVA (Note 7) and MVA are better measures of firm value (Anand et al. 1999)

A major study that addresses the changes made by EVA adopters is by Wallace (1997). It examines the resultant performance of firms using EVA and other residual income techniques. He finds that EVA adopters dispose of more assets and fewer new investments. Shareholders get what they pay for; i.e. performance is greater in the areas that are reinforced by the EVA bonus plan. Biddle et al. (1998) concluded that managers respond to EVA incentives but there is no evidence thus far to support claims that EVA is more associated with firm value than net income.

5.3 Relationship between EVA and Market Value Added (MVA)

Stewart (1991) examined the relationship between EVA and MVA of US companies and found a stronger correlation between EVA and MVA. Kramer and Pushner (1997) studied the strength of relationship between EVA and MVA. They found that MVA and NOPAT were positive on average but the average EVA over the period was negative. EVA unlike other earnings measures is systematically linked to the market value and it is powerful tool for understanding the investor expectations (O' Byrne, 1996; Finegan, 1991). Ghanbari and More (2007) analyzed the relationship between EVA and MVA of automobile industry in India and results indicate that there are strong evidences to support Stern- Stewart's claim.

There are some studies which claim that traditional measures have better correlation with MVA. Fernandez (2001) examined the correlation between EVA and MVA of 582 American companies for the period 1983-97. It was shown that for 296 firms in the sample the changes in the NOPAT had higher correlation with changes in MVA than the EVA, while for 210 sample firms the correlation between EVA and MVA was negative. Wet (2005) conducted a study on EVA-MVA relationship of 89 Industrial firms of South Africa and found that EVA did not show the strongest correlation with MVA.

5.4 EVA and Managerial Performance

An appropriate performance measure should assess how managerial actions affect the firm value. In this regard EVA is considered as better alternative to the traditional performance measures such as Profits, EPS, and ROE etc. EVA based performance drive managers to employ firm's assets more productively and it helps in reduction of differences in the interests of the managers and shareholders (Irala, 2005). Biddle et al. (1998) concluded in their study that firms that adopt residual income based incentives plans exhibit increased income. This study supports that managers do respond to residual income based plans. Therefore, EVA and residual income could prove effective in motivating managers for shareholder wealth creation but whether implementation of EVA and residual income based incentives have been truly effective remain an open question for future research. "You lose about 50% of the power of EVA if the incentive plan is not truly driven by it" (Stewart 1995). An effective EVA compensation system requires a substantial commutation effort and extensive training for both managers and their subordinates (Ferguson and Leistikow, 1998). Desai and Ferri (2006) in a case study discussed the concept of EVA and its practical applications as a management control system for performance measurement. From the analysis of literature reviewed, it appears that there is no reported study on EVA and managerial performance particularly in developing countries. Therefore, research is needed to understand the basic issues involved in such countries and their comparison of EVA with other developed economies.

6. Future Directions and Areas of research

As evident from the literature, EVA has been the topic of interest for researchers particularly in USA and few other countries since 1994. Majority of the studies relate to EVA & stock returns and its comparison with traditional measure of corporate performance. But there are many other important areas which need the attention of research as presented in the following section.

6.1 Accounting Adjustments and EVA

GAAP related adjustments comprise the most unique and debatable aspect of EVA. Although, these adjustments are argued to produce earnings figures that are closer to cash flows, they are often criticized for having little importance and difficult to understand. Stern- Stewart has suggested 164 possible adjustments to arrive at adjusted net operating profit after taxes for the calculation of EVA. There are still controversies among academicians regarding GAAP related adjustments in EVA calculation. Removal of some accruals through these adjustments is argued to reduce, rather than increase, the information content of EVA. There is a need to harmonize some adjustments that are required to be incorporated in calculation of NOPAT. Another issue of

research in EVA adjustments is to examine more closely which components of EVA and earnings contribute to, or subtract from information content (Worthington & West, 2001).

6.2 Empirical evidences about developing countries

Empirical evidences available on EVA till date and as evident from Table VI & Figure 3 show that EVA related information are readily available and promoted in the advanced economies like USA, Australia, Brazil, South Africa that facilitate research on the concept contrary to the situation in emerging economies where no good number of studies are published on EVA. This may be another area for future research that provides evidences about the superiority of EVA in other countries particularly the developing ones.

6.3 Sector Specific studies

Studies conducted on EVA viz- a -viz traditional measures of corporate performance till date relate to different sectors. These studies fail to provide clear evidences about which metric is more useful in explaining stock returns and can be used as performance measure. Companies selected in these studies relate to various industries. Analyzing sector specific companies by using EVA viz- a -viz traditional measures and comparing results can be another area of research in order to provide sector specific evidences about the concept of EVA.

6.4 EVA Applications in other Industries

Most of the studies in EVA pertain to the manufacturing sector across the world. As value added is widely recognized parameter of corporate success, it can be applied in various other areas like education, hospital and tourism etc. Kim (2006) conducted a study and tested the hypothesis on hospitality sectors firms and compared EVA with traditional measures where he found high association of returns of hospitality industry firms that to with EVA. Geysler & Liebenberg (2003) examine introducing EVA as a performance measure for agribusinesses and co-ops in South Africa. In future, researchers could explore how EVA be applied to other industries and comparison of results made to validate the applicability of the concept.

7. Conclusion

EVA is now recognized as an important tool of performance measurement and management all over the world, particularly in advance economies by adopting it as corporate strategy. Still there are mixed evidences about the superiority of EVA over traditional performance measurement tools. Country specific evidences are also not clear when compared with other residual income metrics. In this review paper, an attempt has been made to review the literature on EVA. We have presented the literature classification scheme by categorizing the articles in seven sub-streams of EVA, viz., EVA –MVA relationship (content^a), EVA and stock returns (content^b), managerial behavior and performance management (content^c), concept, criticism, application and strategy (content^d), value management (content^e), discounting approaches (content^f) and literature survey (content^g); whereas earlier researchers (Worthington & West,2001 and Pal & Sura,2007) had not categorized the literature on these bases. It is encouraging to note that last 10 years, in particular 2000 to 2008, have seen a remarkable increase in research on EVA. Empirical research methodology alone accounted for 71 percent among all four methodologies (empirical, conceptual, descriptive and exploratory cross-sectional) From the analysis of studies, it is felt that further research is needed on implementation issues, role of accounting adjustments, empirical evidences in developed economies, EVA as a strategy, EVA and discounting techniques like NPV, IRR and managerial performance measurement aspects of EVA. Empirical studies conducted till date on EVA had used data for smaller period whereas there is scope for future research on the concept by considering the data pertaining to longer durations in order to test the validity of the concept. Therefore efforts should be made in this direction to further broaden the horizon of applicability of this useful concept.

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Notes

Note 1. EVA is registered trademark of Stern Stewart & Company.

Note 2. MVA is acronym of Market Value Added, another popular measures used to analyse the firm performance. Market Value Added (MVA) is the difference between the current market value of a firm and the capital contributed by investors. If MVA is positive, the firm has added value. If it is negative, the firm has destroyed value.

Note 3. The Residual Income (RI) based concept has been recognized by economists since the 18th century. RI is calculated as follow: $RI_t = NOPAT_t - K_t \times \text{capital}_{t-1}$, where NOPAT is net operating profit after tax, K_t is the company's cost of capital, and capital_{t-1} is the invested capital at the beginning of the year. DCF is a valuation method used to estimate the attractiveness of an investment opportunity.

Note 4. NPV, Net Present Value is valuation method widely used in evaluating capital budgeting proposals. It is the difference between the present value (PV) of the future cash flows from an investment and the amount of investment. Present value of the expected cash flows is computed by discounting them at the required rate of return (also called minimum rate of return)

Note 5. Discounted cash flow (DCF) analysis uses future free cash flow projections and discounts them (most often using the weighted average cost of capital) to arrive at a present value, which is used to evaluate the potential for investment. If the value arrived at through DCF analysis is higher than the current cost of the investment, the opportunity may be a good one.

Note 6. The term earnings per share (EPS) represents the portion of a company's earnings, net of taxes and preferred stock dividends, that is allocated to each share of common stock. The figure can be calculated simply by dividing net income earned in a given reporting period (usually quarterly or annually) by the total number of shares outstanding during the same term.

Note 7. Refined economic value added (REVA) provides an analytical framework for evaluating operating performance measures in the context of shareholder value creation. REVA for a given period t is defined as $REVA = NOPAT_t - K_w(MV_{t-1})$, where NOPAT is the firm's NOPAT at the end of period t and MV_{t-1} is the total market value of the firm's assets at the end of period t-1 (beginning of period t). MV_{t-1} is given by the market value of the firm's equity plus the book value of the firm's total debt less non-interest-bearing current liabilities, all at the end of period t-1.

Table I. Comparison of different Traditional Performance Measures

Performance Measure	Computation includes		
	Returns	Capital employed(CE)	Cost of CE
NOPAT	YES	NO	NO
EPS	YES	YES	NO
ROCE	YES	YES	NO
ROE	YES	YES	NO

(Source: Irala, L. R. (2005).

Table II. Distribution of reviewed articles from various sources

Particulars	Number of Papers
(A) Journal	
Social Sciences Research Network (SSRN)	24
Management Dynamics(MD)	01
Harvard Business Review(HBR)	01
International Journal of Managerial Finance	01
American Business Review (ABR)	01
Journal of International Business & Economics	01
Review of Quantitative Finance and Accounting	02
Journal of Managerial Issues(JMI)	02
Advances in Accounting	01
The Journal of Investing	02
Asian Review of Accounting(ARA)	01
Journal of Accounting and Economics	02
Journal of Applied Corporate Finance(JOACF)	03
Business and Economic Review(ER)	01
Management Accounting Research(MAR)	02
Financial Practice And Education	02
European Management Journal (EMJ)	01
Australian Journal of Management(AJM)	01
The Journal of Corporate Accounting & Finance	02
Review of Economic Sciences(RES)	01
Journal of Applied Finance	04
Journal of Accounting Research	01
Journal of Economics & Business	01
Strategy & Leadership	02
Quarterly Journal of Finance and Accounting	01
European Financial Management	01
Management Decision	01
Managerial Finance	01
Russian And East European Finance & Trade	01
South African Journal of Economic And Management Sciences	01
The Engineering Economist	01
The Financier	01
The Icfai Journal of Accounting Research	02
The Icfai Journal of Applied Finance	01
The Management Accountant	01
Vidyasagar University Journal of Commerce	01
Vikalpa- Journal of Decision Makers	01
PES Business Review	01
Meditari Accountancy Research	01
Journal of the Academy of Business and Economics	01
Journal of Hospitality & Tourism Research	01
Journal of Financial and Strategic Decisions	01
Journal of Global Economy	01
Indian Journal of Accounting & Finance	01
Icfai University Journal of Industrial Economics	01
Global Journal of Flexible Systems Management	01
Global Finance Journal	01
Financial Analysts Journal	01
Agribusiness	02
Agrekon	01

Decision	01
Amity Journal of Business Strategy	01
China-USA Business Review	01
SAM Advance Management Journal	01
South Africa Journal of Business Management	01
Benchmarking	01
Canadian Social Science	01
Accountancy Ireland	01
Journal of Accounting	01
Total	87
(B) International Conference Papers	09
(C) Working Papers & Others*	06
Grand Total	112

*Others Includes Unpublished Thesis and Survey on EVA accessed from Internet.

Table III. Classification of Literature on EVA

S.no	Researchers	Year	Content	Methodology	Contribution to Research
1	Keef & Roush	2003	Content ^a	Descriptive	Theoretical relation between the series of abnormal returns and series of economic profit is idiosyncratic to the choice of adjustments.
2	Lehn & Makhija	1996	Content ^a	Empirical	EVA and MVA serve as signals for strategic change.
3	O'Byrne	1996	Content ^a	Empirical	Focus on Link between theory and practice on EVA
4	Kramer & Pushner	1997	Content ^a	Empirical	Empirically tests the relationship between EVA and market value added
5	Hall & Brummer	1999	Content ^a	Empirical	Comparison of various performance measures with MVA
6	Banerjee	2000	Content ^a	Empirical	Find the relevance of Stewart's claim
7	Kramer & Pushner	2001	Content ^a	Empirical	The marginal cost of using EVA as a proxy for MVA are not justified by any marginal benefits
8	Velez-Pareja	2001	Content ^a	Empirical	Different approaches to calculate EVA and MVA are compared with NPV results.
9	Peixoto	2002	Content ^a	Empirical	EVA does not have more information content than traditional performance measures in explaining equity market value
1	Sparling & Turvey	2003	Content ^a	Empirical	EVA as a tool for valuing investments.
1	Griffith	2004	Content ^a	Empirical	EVA adopters outperform their peers and EVA is useful for forecasting
1	Lin & Zhilin	2004	Content ^a	Empirical	Presented the integrated EVA performance measurement (IEPM) model
1	Ramana	2005	Content ^a	Empirical	Evidences about EVA- MVA relationship of Indian companies
1	Wet De	2005	Content ^a	Empirical	Stronger relationship between MVA and cash flow from operations
1	Zaima et al.	2005	Content ^a	Empirical	Provides implications for corporate executives utilizing EVA to evaluate performance linked to MVA
1	Kim	2006	Content ^a	Empirical	Empirical analysis of EVA and MVA relationship in Hospitality Industry
1	Ghanbari & More	2007	Content ^a	Empirical	Empirical evidences on Indian Automobile Industry
1	Irala	2007	Content ^a	Empirical	Examines whether EVA has got a better predictive power relative to the traditional accounting measures
1	Nagar	2007	Content ^a	Empirical	EVA values do have an impact on MVA of the companies
2	Wet & Toit	2007	Content ^a	Empirical	Impact of popular financial performance measures on shareholders' wealth.
2	Forker & Powell	2008	Content ^a	Empirical	Predictability and variability measures to investigate empirically the relative quality of Stern Stewart's measure of economic value added (EVA) compared to other measures
2	Fontaine et al.	2008	Content ^a	Empirical	EVA does provide economically useful information that can be used to forecast portfolio separation
2	Gandhi & Rajib	2008	Content ^a	Empirical	EVA can be used as strategy to achieve organizational objectives
2	Ismail	2008	Content ^a	Empirical	Value creators have better earnings multiplier than value destroyers
2	Lefkowitz	1999	Content ^a	Exploratory	Empirical analysis of firms and industry related to EVA

S.no	Researchers	Year	Content	Methodology	Contribution to Research
				cross-sectional	
2	Martin et al.	2003	Content ^b	Conceptual	Theoretical foundations of residual income as a tool for evaluating firm performance
2	Dodd & Chen	1996	Content ^b	Descriptive	Management and stock holder interests would be aligned by adopting EVA
2	Paulo	2002	Content ^b	Descriptive	Relevance of EVA and Accounting Information
2	Bacidore et al.	1997	Content ^b	Empirical	EVA performs quite well in terms of its correlation with shareholders value creation, but REVA is theoretically superior
3	Biddle et al.	1997	Content ^b	Empirical	Earnings outperform EVA in explaining stock returns.
3	Chen & Dodd	1997	Content ^b	Empirical	Operating Income regressions show higher regressions than Residual Income & EVA regressions
3	Chen & Dodd	1997	Content ^b	Empirical	Empirical evidences regarding superiority of EVA are provided
3	Biddle et al.	1998	Content ^b	Empirical	Managers do respond to EVA incentives
3	Brown & Pierce	2000	Content ^b	Empirical	UK dataset exhibits similar characteristics to empirical evidence in the US
3	Erdogan et al.	2000	Content ^b	Empirical	Economic profit model and comparison with EVA
3	Farsio et al.	2000	Content ^b	Empirical	EVA is not a good indicator of stock performance. It explains only a fraction of the variability in stock returns fluctuations
3	Garvey & Milbourn	2000	Content ^b	Empirical	Empirically estimate the value-added" of EVA by firm and industry
3	Ho et al.	2000	Content ^b	Empirical	Internet companies and superiority of EVA
3	Cordeiro & Kent	2001	Content ^b	Empirical	No significant relationship between EVA adoption and stock market performance
4	Jambulingam	2002	Content ^b	Empirical	Relative performance of Pharmaceutical companies from various countries analyzed using EVA
4	Lovata & Costigan	2002	Content ^b	Empirical	Provide evidence as to the systematic differences between firms using EVA and not using EVA
4	Machuga et al.	2002	Content ^b	Empirical	New approach to evaluating the relative performance of earnings and EVA as measures of firm performance
4	Verma	2002	Content ^b	Empirical	Banks must always strive to maximize shareholders value without which their stocks can never be fancied by the market
4	Biddle et al.	2003	Content ^b	Empirical	Independent evidences regarding EVA's alleged advantages
4	Tian et al.	2003	Content ^b	Empirical	Negative EVA and the negative estimated EVA coefficient in Hong Kong listed companies
4	Tortella & Brusco	2003	Content ^b	Empirical	Adoption of Economic Value Added (EVA®) management technique has positive effects on various variables
4	Hall & Geysler	2004	Content ^b	Empirical	Explore that EVA provides additional information about wealth creation and profitability than do the other ratios.
4	Worthington & West	2004	Content ^b	Empirical	Australian evidences suggests that EVA is significant in explaining stock returns
4	Ferguson et al.	2005	Content ^b	Empirical	Event study methodology to empirically investigate EVA adopting and non- adopting companies
5	Medeiros	2005	Content ^b	Empirical	The hypothesis that EVA affects stock returns is tested through linear regression, using alternative models in Brazilian stock exchange
5	Misra & Kanwal	2005	Content ^b	Empirical	Empirical analysis of EVA and Stock returns in Indian Companies
5	Pandey	2005	Content ^b	Empirical	Empirically explores profitability and growth as drivers of shareholder value
5	Dimitrios et al.	2006	Content ^b	Empirical	Stock returns are more closely associated with earnings per share than with EVA
5	Ferguson	2006	Content ^b	Empirical	Event study on MVA – EVA relationship
5	Griffith	2006	Content ^b	Empirical	Investment decision and value based measurement
5	Ismail	2006	Content ^b	Empirical	UK empirical evidences regarding association of stock return between

S.no	Researchers	Year	Content	Methodology	Contribution to Research
					EVA and other accounting measures
5	Issham et al.	2006	Content ^b	Empirical	Negative relationship between the size of the companies and the EVA
5	Maditinos et al.	2006	Content ^b	Empirical	Relative information content tests revealed that stock returns are more closely associated with EPS than EVA
5	Palliam	2006	Content ^b	Empirical	EVA as a tool for valuing investments.
6	Wet & Hall	2006	Content ^b	Empirical	Highlights the importance of economic profits (EVA) and their long term effects on MVA
6	Athanassakos	2007	Content ^b	Empirical	Companies with better stock market performance exhibited higher likelihood of using EVA.
6	Nappi-Choulet et al.	2007	Content ^b	Empirical	Sales of real estate assets can be driven by value maximizing behavior
6	Kyriazis & Anastassis	2007	Content ^b	Empirical	Net Income and Net Operating Income appear to be more value relevant than EVA.
6	Misra & Kanwal	2007	Content ^b	Empirical	EVA is the single most significant explanatory variable in explaining the variation in the Market Value Added
6	Ramana	2007	Content ^b	Empirical	No strong evidences to support Stern Stewart's claim in Indian companies
6	Erasmus	2008	Content ^b	Empirical	Earnings have the strongest relationship with share returns
6	Taufik et al.	2008	Content ^b	Empirical	EVA is superior to ROE & ROA in Banks Stock Returns
6	Wong	1999	Content ^b	Exploratory cross-sectional	Majority of the companies do not achieve the objective of creating shareholder value
6	Goldberg	1999	Content ^c	Conceptual	Benefits and questions of using EVA in performance measurement
7	Irala	2005	Content ^c	Conceptual	EVA helps in reduction of Agency Conflict
7	Anand et al.	1999	Content ^c	Descriptive	EVA as better tool for corporate performance measurement
7	Girotra & Yadav	2001	Content ^c	Descriptive	EVA encourages managers to think like owners and impel them to strive for better performance
7	Irala & Reddy	2006	Content ^c	Descriptive	Corporate India is slowly catching up with few early adopters
7	Young	1997	Content ^c	Empirical	EVA implementation issues are discussed
7	Fogelberg & Griffith	2000	Content ^c	Empirical	Relation between ownership and performance of commercial banks is not monotonic, but is significantly curvilinear
7	Evans & Evans	2002	Content ^c	Empirical	Cash based remuneration, was found to be unrelated to EVA performance.
7	Fatemi et al.	2003	Content ^c	Empirical	Top managers in domestic- and globally focused firms are not only incented to increase EVA, but also rewarded for past additions to MVA
7	Krauter et al.	2004	Content ^c	Empirical	Influence of profit-sharing /gain -sharing plans on the performance of value Drivers
7	Austin	2005	Content ^c	Empirical	Analyze the adoption of economic value added (EVA) income as a benchmark for setting pricing
8	Desai & Ferri	2006	Content ^c	Empirical	EVA and its practical applications as management control and performance management tool.
8	Kumar & Pal	2008	Content ^c	Exploratory cross-sectional	Managers do not apply EVA for decision making
8	Mohanty	2006	Content ^d	Conceptual	EVA is actually the excess free cash flow the company generates to meet the expectations of the investors
8	Brewer et al.	1999	Content ^d	Conceptual	Explain uses and limitations of EVA for managers
8	Tham	2001	Content ^d	Conceptual	Major flaws about EVA
8	Anderson et al.	2005	Content ^d	Conceptual	EVA and role of adjustments
8	Phillips	2007	Content ^d	Conceptual	EVA sets high standards for measuring performance
8	Brabazon & Sweeney	1998	Content ^d	Descriptive	Explain the difference between EVA and Residual Income using a worked example.

S.no	Researchers	Year	Content	Methodology	Contribution to Research
8	Stewart	1994	Content ^d	Descriptive	An attempt to correct some of the practical and theoretical misconceptions surrounding EVA.
8	Villiers	1997	Content ^d	Descriptive	EVA cannot be used under inflation to estimate actual profitability
9	Weissenrieder	1997	Content ^d	Descriptive	Similarities and differences of the EVA and CVA
9	Ehrabar	1999	Content ^d	Descriptive	Company generates benefits implementing EVA if company makes it as centerpiece of its financial management system.
9	Phani & Bhattacharya	2000	Content ^d	Descriptive	Different value added metrics are analyzed
9	Keys et al.	2001	Content ^d	Descriptive	EVA is identical to residual income
9	Velez-Pareja	2001	Content ^d	Descriptive	Conceptual framework about EVA and NPV
9	Bhattacharya & Phani	2004	Content ^d	Descriptive	EVA can be used for corporate reporting and internal governance
9	Ray & Choudhuri	2005	Content ^d	Descriptive	EVA alone can offer an organization a sustainable source of competitive advantage is an overstatement
9	Cheremushkin	2008	Content ^d	Descriptive	Use accounting WACC embracing relevant adjustments made to the Invested Capital charge calculating EVA
9	Stern et al.	1995	Content ^d	Empirical	A practical, and highly flexible, refinement of economists' concept of "residual income"
9	Dechow et al.	1999	Content ^d	Empirical	Assessment of various RI valuation models
1	Acheampong & Wetzstein	2001	Content ^d	Empirical	Value-added measures are not significantly different from traditional measures of performance
1	Fernandez	2002	Content ^d	Empirical	Analyze the relationship between shareholders value creation and other parameters
1	Liao and Feng	2005	Content ^d	Empirical	Analyses the advantages and disadvantages of EVA as evaluating indicator
1	Rakshit	2006	Content ^d	Empirical	Analyze financial performance of Dabur India Ltd. using EVA
1	Weaver	2001	Content ^d	Exploratory cross-sectional	Identifies significant inconsistencies in the measurement of EVA and its major components
1	Malmi & Ikaheimo	2003	Content ^e	Descriptive	Application of VBM in organizations
1	Hall	2002	Content ^e	Empirical	Address issues of shareholder value creation
1	Geyser & Liebenberg	2003	Content ^e	Empirical	Value created by financial engineers is smaller and less significant than the value created by good strategic marketing, production and personnel decisions
1	Shrieves & Wachowicz	2001	Content ^f	Descriptive	Evaluation of various DCF approaches of corporate valuation
1	Velez-Pareja and Tham	2003	Content ^f	Descriptive	Consistency between DCF, RIM and EVA
1	Dillon & Owers	1997	Content ^f	Empirical	Analytical investigation of the relationship between EVA and NPV
1	Worthington & West	2001	Content ^g	Empirical	Review of Economic Value Added studies & direction for future research
1	Pal & Sura	2007	Content ^g	Empirical	Review of empirical literature on EVA and traditional performance measures

Notes: - Content^a = EVA-MVA relationship; Content^b = EVA and stock returns; Content^c = Managerial behavior & performance management; Content^d = EVA concept, criticism, applications and strategy; Content^e = Value management; Content^f = Discounting approaches; Content^g = Literature survey

Table-IV. Break -up of the literature on EVA

Focus on	Number of papers
Empirical evidences on EVA, Stock Return & firm performance	58
EVA and market value added (MVA) Relationship	25
Value based management	4
EVA concept, limitations	12
EVA and discounting techniques	3
EVA and managerial performance	8
Literature survey	2
Total	112

Source: Table III

Table-V. Distribution of various methodologies used in studies under review

Methodology	Number of papers	Percentage
Empirical	80	71
Descriptive	20	18
Conceptual	8	7
Exploratory cross -sectional	4	4
Total	112	100

Source: Table III

Table-VI. Year -wise break up of studies on EVA

S.no	Year	No of studies
1.	1994	1
2.	1995	1
3.	1996	3
4.	1997	9
5.	1998	2
6.	1999	8
7.	2000	8
8.	2001	11
9.	2002	9
10.	2003	10
11.	2004	6
12.	2005	12
13.	2006	13
14.	2007	11
15.	2008	8
Total		112

(Source- Authors' calculations based on studies given in Table III)

Table –VII. Country-wise publication of studies on EVA

S.no	Country	No of Studies Conducted
1	USA	51
2	India	21
3	South Africa	08
4	Australia	05
5	UK	02
	China	02
6	Others*	23

*Other includes Malaysia, Canada, Brazil, Greece, Russia, New Zealand, Kuwait, Turkey and Indonesia etc.

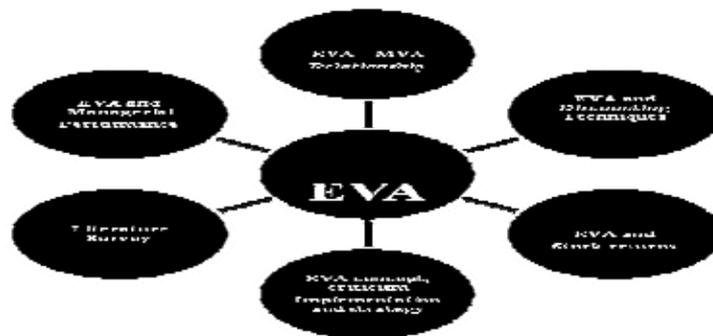


Figure 1. Classification of EVA Literature

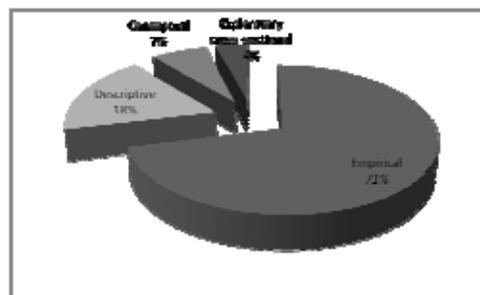


Figure 2. Methodologies used in the studies under review

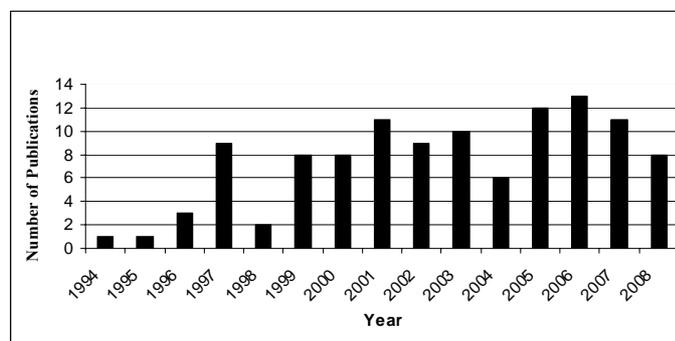


Figure 3. Year- wise publication of studies on EVA

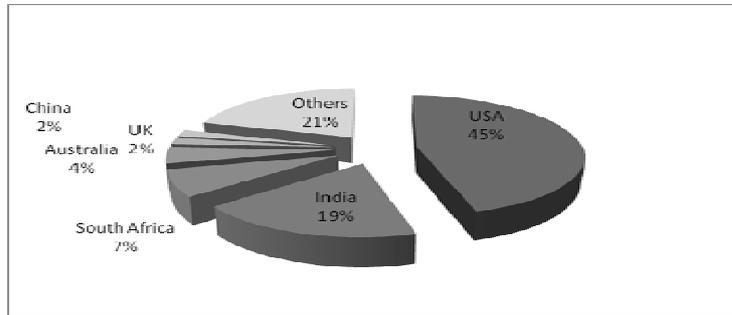


Figure 4. Country- wise publication of studies on EVA