

Bachelor Thesis: Economic Value Added and its Effect on Managerial Behaviour

*An Investigation into the Effectiveness of an Economic Value Added
Compensation System*

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Abstract

As the financial statements of companies grow in importance, its users are increasingly demanding more adequate measures of performance and value. After the introduction of the Residual Income measure, Stern Stewart appraised this measure and eventually made further adjustments, giving rise to Economic Value Added (EVA). This measure is claimed to better reflect a company's performance. However, the exact effects of using the EVA measure on a firm's incentive program are still unclear. In this research paper, the goal will be to examine and interpret the effects of using an EVA-based incentive system on managerial behavior and firm profitability.

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Introduction

Traditional measures of accounting profit have attracted criticism in recent years. This has led to improvements and ultimately the development of the concept Economic Value Added (EVA), which is considered a far better measure of a company's performance. The term, a registered trademark of consulting firm Stern Stewart, is calculated as the difference between the Net Operating Profit after Tax and the opportunity cost of invested capital. This opportunity cost is determined by the weighted average cost of capital (WACC) and the amount of capital employed (Stern Stewart and Co., 2012). EVA is an adaptation of the already established Residual Income Measure. The distinction between the two measures lies in the fact that EVA not only accounts for the cost of capital, but also considers several GAAP-adjustments amongst others which will be discussed in the literature review. The formula for EVA is depicted below:

$$EVA = ANOPAT - c^* \times Capital\ Employed$$

Where EVA = Economic Value Added
 ANOPAT = Adjusted Net Operating Profit After Taxes
 c* = Cost of Capital %: weighted average including debt & equity

The main argument of EVA proponents is that the accounting earnings metrics exclude any costs associated with equity. EVA addresses this weakness and includes more complete information about company performance and should therefore be more closely associated with value as interpreted by the market. Furthermore, the EVA metric addresses the flaws in GAAP accounting by introducing a substantial 160 GAAP adjustments. Despite having so many adjustments to choose from, many companies tend to select around twenty of these but in reality only use five or six. What this paper will investigate is the effect of using EVA, as opposed to more traditional accounting measures of profit, as a performance measure for management incentive plans.

A suitable performance measure should evaluate how the actions of upper management affect the firm's value (Sharma, 2010). Irala (2005) concluded in his study that EVA is

considered a better measure of performance than the traditional measures such as Return on Equity (ROE), Earnings per Share (EPS), Return on Investment (ROI), or the profit measures. EVA used as a performance measure stimulates managers to employ a firm's assets more productively and it assists in reducing differences in the interests of the managers and shareholders (Irala, 2005). Further research has concluded that firms that adopt residual income based incentives plans exhibit increases in income (Biddle, Bowen, & Wallace, 1998). This could lead to one concluding that EVA based incentive plans could prove effective in directing and motivating managers for shareholders wealth creation. The fundamental assumption of shareholder value is that a business is worth the net present value of its future cash flows over a defined timeframe, discounted by the cost of capital appropriate for the business (Clarke, 2000). The relationship between EVA and its effect on managerial behavior and firm profitability will be further researched in this paper.

The research will be carried out as follows: In the next section a literature review shall be conducted which will be used to answer two sub-questions in support of the main research question:

Does the use of EVA performance measures direct managerial behavior towards increasing shareholder value?

The two sub-questions which the literature review shall answer are thus:

- 1. What are the more traditional performance measures and how does EVA compare to them?***
- 2. What are the effects of using EVA-based incentives on managerial behavior?***

In the third section the results of the literature review shall be discussed and used to answer the main research question. Finally, the conclusions drawn and the author's interpretation of the findings will be given to close the discussion.

Literature Review

EVA performance measure in contrast to traditional performance measures

Introduction

As outlined by Kenneth A. Merchant and Wim van der Stede, there are roughly four main types of financial performance measures (Merchant & van der Stede, Management Control Systems, 2011). This section will consider each in detail and make a comparison to EVA. The sub-question to be answered is as follows:

Sub-question 1:

What are the more traditional performance measures and how does EVA compare?

Results

As outlined by Kenneth A. Merchant and Wim van der Stede, there are roughly four main types of financial performance measures (Merchant & van der Stede, Management Control Systems, 2011). This section will consider each in detail and make a comparison to EVA.

Market measures are any measures for which the value created can be measured directly for any period as the sum of the dividends paid to shareholders in the measurement period plus or minus the change in the market value of the stock (Merchant & van der Stede, Management Control Systems, 2011). The advantages of this are that they are understandable and also cost-effective as the data is widely available. In a study conducted by Richard Lambert and David Larcker (Lambert & Larcker, 1987) it was found that firms will place more weight on market performance when:

- i) The variance of the accounting measure of performance is high relative to the variance of the market measure of performance
- ii) The firm is experiencing high growth rates in assets and sales
- iii) The value of the manager's personal holdings of his firm's stock is low

However market measures also have their problems. Market valuations might not reflect the company's true intrinsic value because the market does not have access to all the private information available to managers (Merchant & Sandino, 2009). Market measures also have

controllability issues where they experience high volatility over which the managers have little influence. EVA addresses these problems. Not only is it a more controllable measure, both the return on capital and the cost of capital are affected by their decision, but it is also influenced by all decisions (with respect to investments, dividends and financing) managers have to make within a firm.

A second measure of performance is the accounting measures. Accounting measures of performance can be broadly split into two groups; residual measures including net income, operating profit, EBITDA etc. and ratio measures which include ROI, ROE, ROA or risk-adjusted return on capital. The main benefit of using such measures is that they can be measured on a fairly timely and objective basis. Also important to mention is that using these measures keeps management in line with the organizational goal of profit maximization. However, these also have several disadvantages which EVA addresses. Accounting systems are transactions oriented and hence focus on the past, and do not reflect any non-financial transactions that have taken place. The profit accounted for is then highly dependent on the choice of measurement methods, and can thus be slightly subjective. A final problem lies with the investment myopia which results from tying in manager's bonuses with the profits that company makes. This can result in managers discarding potentially positively large NPV projects for fear of the large investment they will have to make which then will affect their bonuses. Using EVA as a performance measure should "mitigate this problem as it involves the capitalization of expenditures managers might try to cut if they were pressured for profits" (Merchant & van der Stede, Management Control Systems, 2011)

Carrying on from accounting measures the focus will now be on one specific ratio measure; Return on Investment. It provides a way of measuring returns in percentage terms which virtually all managers understand (Way, 2012). Unfortunately, this measure is also prone to investment myopia and can create incentives for managers to lease assets as opposed to buying them. Below is the formula for ROI to aide in the explanation:

$$ROI = \frac{\text{Net Operating Income}}{\text{Average Operating Assets}}$$

A new investment could reduce the ROI of the project as the value of the average operating assets increases. A manager who is evaluated based on ROI will reject any project whose rate of return is below the division's current ROI, even if the investment would be a good one for the company as a whole (Friedlb & Plewa, 1996). EVA, as well as Residual Income, would solve this matter as consideration is given to whether or not the net operating income resulting from the project is above the minimum required rate of return. If this is the case then it should increase the residual income of the company overall and should hence be considered a good investment.

The last measure to discuss is the residual income performance measure. In theory, EVA is merely an extension of the residual income performance measure, adapting it to suit the various adjustments companies require to make the income statement reflect the company's position in the best possible way. Residual income is calculated by subtracting from profit a capital charge for the net assets tied up in the investment centre. The capital is charged at a rate equal to the weighted average corporate cost of capital, this gives all investment centre managers an identical incentive to invest. A criticism of residual income is that it, too, can result in myopic behaviour. "There is a danger that the failure of the accounting system to reflect economic reality might cause the business to be run without proper regard to the long-term" (O'Hanlon & Peasnell, 1998). EVA was tailor-made to address this problem, as the capitalization of expenditures should mitigate the myopia issue as it involves the capitalization of expenditures managers might try to cut if they were pressured for profits (Merchant & van der Stede, Management Control Systems, 2011).

Conclusion

This section provided insight in the contrast between EVA and the alternative performance measures. Findings can be summarised as follows: (1) Market measures are understandable and also cost-effective as the data is widely available, however they also suffer from issues in controllability and they might not reflect the company's true intrinsic value. (2) Accounting measures have the benefit that they can be measured on a fairly timely and objective basis. Furthermore, the accounting measures keeps management in line with the organizational goal of profit maximization. However, a major disadvantage is that the systems are

transactions oriented and hence focus on the past, and do not reflect any non-financial transactions that have taken place. Furthermore, the measure is not completely free from subjectivity and there is risk of myopic behaviour. (3) Ratio measures, specifically Return on Investment (ROI), is also prone to investment myopia and can create incentives for managers to lease assets as opposed to buying them. (4) The Residual Income measure is criticised as it too, can produce myopic behaviour. The EVA adjustments were tailor-made to address this issue. The exact details and execution of these adjustments are the focus of the next section.

EVA Adjustments

Introduction

Stern Stewart argues that Generally Accepted Accounting Principles (GAAP) accounting yields an inaccurate depiction of a firm's performance and adjustments to earnings and balance sheet figures (i.e. LIFO reserves, deferred taxes, R&D etc.) must be made in order to discover the firm's true economic performance (Stern Stewart and Co., 2012).

There have been a number of studies investigating the relevance and importance of each of the 160 adjustments suggested by Stern Stewart & Co. This section will explain and elaborate on these adjustments and will also discuss the relative merit of implementing these adjustments in context of an incentive compensation system.

The most common EVA adjustments

In order to better comprehend the reasoning behind the EVA method, it can prove useful to look into its most fundamental proposition; the adjustments to GAAP earnings. What follows is an elaboration on the most important of EVA adjustments.

Efforts Accounting is practiced when only the costs of 'successful efforts' – investments that had a significantly positive return – are capitalized [FOOTNOTE]. Unsuccessful efforts would simply be written off as costs, which mean that these less successful investments would not appear in the accounting figures. Such a system thus considers these investments merely as a cost, whereas EVA would consider both the successful and the unsuccessful as

investments. EVA proponents argue that it does not matter to the shareholder whether or not a dollar invested was successful or not. This adjustment has two important benefits. First the amount of invested capital is maintained in the accounting figures and will in this manner serve as a reminder to management to earn sufficient returns on invested capital to off-set unsuccessful investments. Second, it serves a more important use, which is limiting the opportunity for earnings management and also nullifying the ability of management to time the identification of losses. This will in turn provide a more realistic view of a company's performance, and thereby increase the reliability of the financial figures.

Research and Development is one of the most argued for adjustment in the EVA system. Most firms treat R&D costs as incurred expenses. However, R&D is an investment, and should be treated as such. EVA proponents thus argue for the capitalization of R&D, with corresponding amortization over the expected useful life. This will prove more accurate as well as more beneficial to parties interested in the true value of the firm. Furthermore, when firms do not capitalise their R&D, they risk underinvesting, as the cost of R&D is fully expensed in the current period while potential benefits will only appear in future periods.

Deferred Taxes, which arise from timing differences between the accounting value of assets and liabilities and their value for tax purposes, requires a similar adjustment. The most significant part of the deferred taxes account originates out of depreciation; however any temporary deviation in tax and book value can result in deferred taxes. Then, an adjustment is carried out by adding the change in deferred tax to the NOPAT figure. The adjustment thus effectively removes the influence of GAAP on tax charges, which also further aligns the accounting figures to what the firm actually owes in taxes. The EVA figure is then more contiguous with actual cash flows and is less influenced by the amount in the deferred taxes account.

LIFO Reserves. The LIFO (Last-in, first-out) inventory costing method widely used and has two important benefits. First in times of inflation it can offer significant tax benefits over other costing methods. Second, it also generates more accurate cost figures with respect to replacement costs, which will result in a better matching of revenues and costs. However, firms that make use of the LIFO accounting system will need to adjust their corresponding

NOPAT figure. Firstly, old costs of goods can cause the current inventory to be understated, thereby miscommunicating the real profits. Secondly, whenever inventory levels decrease from year to year, there will be an overestimation of income, as the present revenues are subtracted by old costs of goods. In the financial statements of companies using the LIFO method, there will be a LIFO reserve included, which is constructed by calculating the difference between FIFO and LIFO inventory costing methods. The amount in the LIFO reserve is added to invested capital and the relevant increase (decrease) in the LIFO reserve is added back to (subtracted from) NOPAT (Young, 1999).

Depreciation, where the cost of an investment is allocated to its relevant periods of use, is yet another adjustment. Under the straight-line depreciation method, calculation of performance will show an improvement of the EVA measure, although performance is not genuinely improved. EVA proponents argue thus that this portrays a misleading picture of a firm's performance. They propose a different depreciation method, one where depreciation costs start relatively small and gradually increases. Under this method, a calculation of EVA will be zero for each year. Thus, this method is similar to the banks' amortization of loans.

Goodwill, arising during an acquisition, is the surplus value of an entity over and above the value of its assets. Different countries account for goodwill in different ways. For example, certain countries capitalise and amortize their goodwill, whereas other countries immediately write off their goodwill to the reserves account. However, EVA proponents argue that both of these commonly used approaches are objectionable. The act of writing off goodwill partially eliminates the committed investment during acquisition. Similarly to successful efforts accounting, this results in a part of the investment not being included in the balance sheet, which in turn eases the pressure on management to earn sufficient returns on invested capital. In EVA, goodwill is neither written-off nor amortized, but rather added to invested capital.

Operating Leases, which are contracts that allow for the use of an asset without transferring ownership, also require an adjustment according to EVA. In an operating lease, merely the right of use is transferred and at the end of the leasing period, the asset is returned to the owner. As there is no transfer of ownership, the cost of the operating lease is accounted for

as an operating expense and will not appear in the balance sheet. EVA calls for an adjustment whereby the present value of all forthcoming lease costs are added to invested capital. This will ensure an accurate depiction of a firm's invested capital and financial strength.

Importance of adjustments

Even though all accounting-based measures, such as operating profit or ROI, are used for the purpose of creating shareholder value, many of these measures share a low correlation with share prices. This could mean that these accounting measures may not be ideal for creating value and that managers who are compensated based on these measures may engage in earnings management or act myopically (i.e. overemphasizing short-term gains at the cost of long-term success).

Taking into consideration the limitations to the traditional accounting performance measures, EVA proponents advocate adjusting the GAAP-based figures. According to Stern Stewart & Co, adjusting these accounting numbers will increase the correlation with share prices and consequentially link the compensation and evaluation of managers more accurately to shareholder value creation. Furthermore, these adjustments decrease the impact of uncontrollable factors, which arguably makes for a more fair and just compensation system.

The aims of these adjustments are, according to Young (1999), as follows;

- (1) calculate a performance figure more analogously linked to cash flows, which will significantly reduce errors of accrual accounting;
- (2) resolve the difference in capitalizing tangible assets and writing off intangible assets;
- (3) prevent the amortization of goodwill;
- (4) exclude the use of successful efforts accounting;
- (5) introduce off-balance sheet debt back into the balance sheet; and
- (6) correct biases caused by accounting depreciation.

Before moving on to discussing the execution of these adjustments and the effect they have on the GAAP figures, it is important point out that there are certain risks and costs involved in applying EVA adjustments.

First, the risk of litigation will be increased, as the external readers of financial statements could evaluate the official accounting reports as inaccurate or inadequate. Second, as EVA is a further refinement of the regular accounting numbers, it is more costly to implement and the degree of complexity is further raised, both for accountants in charge of producing the accounting numbers as well as for the external readers of financial statements. Lastly, as knowledge of EVA and its interpretation is not guaranteed among a company's operating managers, there might be costs in educating them to the desired level of understanding. Furthermore, there is also the risk of friction and operating manager's reluctance to adapt to a new and perhaps more difficult system. As a result of the aforementioned costs and risks of applying EVA adjustments, many firms are reluctant to adopt to an EVA system (Young, 1999).

Conclusion

This section investigated the EVA adjustments and their relative merit to implement in an incentive compensation system. The results imply that adjusting the GAAP figures will increase the correlation with share prices and consequentially link the compensation and evaluation of managers more accurately to shareholder value creation. However, although EVA adjustments provide significant benefits to a compensation system, it is not without costs. First, there is additional risk of litigation as the external readers of financial statements could evaluate the official accounting reports as inaccurate or inadequate. Second, as EVA is a further refinement of the regular accounting numbers, it is more costly to implement and the degree of complexity is further raised. Third, there might be costs to educate and explain the workings of EVA to relevant parties. Fourth, there is also the risk of friction and operating manager's reluctance to adapt to a new and perhaps more difficult system. Lastly, note the inherent subjectivity in the EVA adjustments, as two accountants can reach different EVA figures with the same accounting data.

Effects of EVA-compensation systems on managerial behaviour

Having considered the alternatives to EVA, the next section addresses what the effects of using EVA-based incentives on managerial behaviour could be. This is done from studying theory and reviewing empirical studies. The next sub-question to be answered is as follows:

Sub-question 2:

What are the effects of using EVA-based-incentives on managerial behavior?

$$EVA = ANOPAT - c^* \times Capital\ Employed$$

Where	EVA	= Economic Value Added
	ANOPAT	= Adjusted Net Operating Profit After Taxes
	c*	= Cost of Capital %: weighted average including debt & equity

Introduction

From the EVA formula shown earlier, one can already make theoretical deductions on the effects of managerial behavior, when linking EVA to incentive programs (Irala, 2005). First, managers can try to improve returns with the existing capital, which would cause the EVA to improve as managers would earn higher returns without increasing the capital and its cost. Second, managers can employ existing capital more productively. This can be accomplished by employing less capital to earn the given returns, and will compel managers to utilize the capital more productively. Last, when a committed level of capital produces a given level of profit, the EVA can be improved by reducing the cost of capital.

Managers are able to influence this cost of capital by showing caution when making investments. Assuming that the incentive program is adequately linked to a company's EVA, it will be likely that managers will engage in any one of the three aforementioned scenarios, which in turn would cause the value of a company to increase.

Furthermore, EVA can help managers in evaluating and choosing investments that will generate the most value to the firm (Bhalla, 2004). Furthering this theoretical line of thought, if a company links EVA to its incentive programs, managers will be motivated to increase the EVA of a company, which in turn will improve the value of a firm and thus make the EVA-incentive program very effective in directing managerial behavior towards generating more value.

Empirical studies

The theoretical background of EVA would lead us to assume that EVA-based incentives would cause managers to alter their behavior in a way that is beneficial to the company. However, such a claim will not hold much power without empirical backing. Wallace (1997) examined the effect that RI-based incentive plants, including EVA, has on managerial decisions.

Evidence on EVA and management decisions

Specifically he investigates the effects of RI-based incentives on three types of management decisions: investing decisions, financing decisions and operating decisions. For this study, the author studied the managerial behavior for a sample of forty firms that have adopted EVA-like compensation plans then compared the behavior to a matched-pair control sample where compensations plans are still based on traditional accounting earnings. However, the results should be analyzed with care as 1) the RI-based firms that were studied might be subject to other changes unrelated to the incentive system, which would have some responsibility in the observed results and 2) the sample is not a random sample since the firms that were examined chose to implement the new measures voluntarily. The results of the firms that adopted EVA-based incentive plans are summarized below:

(1) They decreased their new investments and increased their disposition of assets. Because the RI based models provide a charge on all capital, both debt and equity, the managers are more selective in their holding of existing projects and in their choice of new

projects (Biddle, Bowen, & Wallace, 1998). This resulted in a significant change in their investing behavior.

(2) They increased their payouts to shareholders through share repurchases. In the EVA model, managers are punished if they accumulate capital that is not able to earn at least the firm's opportunity cost of capital. In this way, they are encouraged to distribute underperforming capital to the shareholders. Two ways in which managers could accomplish this is through share repurchases and/or dividend payouts.

(3) More intense utility of their assets was obtained. Since EVA is increased by using existing assets more intensively, asset turnover increased. This leads to the conclusion that EVA based models can direct the operating decisions of managers towards increasing firm value.

(4) Significant increases in residual income for the firms who adopted the RI-based incentive system. Since residual income measures are the new performance measures for the treatment firms, residual income (EVA) should be the measure that managers attempt to improve. This is consistent with the reasoning behind incentive systems of 'what you measure and reward is what you get' (Wallace, 1997). Wallace's research therefore did indeed produce positive evidence for the use of EVA as a compensation system, as the EVA systems significantly affected manager behavior into improving firm profitability and valuation. Next, the research of Kleiman (1999) will be discussed.

Evidence on EVA post-implementation

Kleiman's study is similar to the one conducted by Wallace, but differs in two respects; first Kleiman limits his data sample to firms that have employed EVA, whereas Wallace used firms that implemented RI. Second, Kleiman's study is more conclusive with regards to EVA's effect on increasing shareholder value. The study used a sample of 71 firms adopting EVA during the period 1987-1996 and statistically analyzed the data in contrast to closest-matched peer firms (i.e. firms that produced similar sales figures). The findings are as follows:

(1) Unlike Wallace's results, Kleiman's study did not discover a decline in capital expenditures; instead he found that EVA firms sold more assets (i.e. property, plant and equipment). This was most likely due to the change in the valuing off investments and assets. EVA reasoning states that if a particular plant is not generating a sufficiently high return to offset the cost of capital, it should be sold off. The results therefore imply that the EVA firms, prior to implementation, had investments that were unable to produce a return greater than the cost of capital. EVA therefore promotes asset disposition in such cases.

(2) The firms that implemented an EVA system increased their financial leverage, as measured by long term debt to total capital. Similar to Wallace's findings, the EVA firms increased their payouts to shareholders through share repurchases, which reduce the firm's equity capital base.

(3) Lastly, the findings show significant increases in both operating margin before depreciation and operating income before depreciation *per employee*. Surprisingly, this increase in operating income before depreciating per employee does not seem to be a result of reductions in employees, as the level of employment increased, but in fact to sustained improvements in operating performance.

Furthermore, in Kleiman's data sample, the EVA firms created a total of \$124 billion more in stock market value than their closest-matched peers. Moreover, Kleiman noted this superior performance was not clustered in a few high-performing firms, but in fact across the entire data sample. To conclude, the findings of Kleiman's analysis of changes in operating and financial ratios are corresponding to behavior aimed at increasing EVA. This behavior will in turn result in reported increased in the relative stock market performance of EVA firms.

Evidence on EVA and CEO turnover

Lehn & Makhija (1997) conducted a research study investigating the relationship between performance measures, particularly EVA, and CEO turnover. For this specific study, they examined 452 large U.S. companies in the period of 1985-1994. Furthermore, Lehn &

Makhija looked at a number of performance measures, among them were accounting performance measures (ROA, ROE and ROS), stock performance measures (RET) and the Stern Stewart performance measures (EVA and MVA).

The research by Lehn & Makhija approaches the debate from a different angle. They investigate which performance measure is most capable of predicting CEO-turnover. A fundamental benefit of this approach is that it can be observed in practice. Research can be done to discover what conditions will lead to a dismissal of a CEO or in retaining one, taking special notice of the output of the different performance measures. The authors found a significant inverse relationship between stock returns and the probability of CEO turnover, that is, the higher the stock returns, the lower the likelihood of CEO dismissal. Moreover, the researchers also found a negative relationship between EVA returns and CEO turnover, which predicts that when EVA returns are decreasing, CEO turnover will most likely increase. The findings on the other performance measures are as follows: return on assets (ROA) and return on equity (ROE) only show a significant relationship with CEO turnover under certain conditions, which leads one to conclude that manager evaluation hinges more on EVA than on the conventional accounting measures.

To conclude, Lehn & Makhija (1997) studied a sample of 452 firms and found that EVA shows strong positive correlation with stock market performance and a negative correlation with CEO turnover. Meaning, the more unsatisfactory a firm's performance in EVA terms, the higher the chance of CEO turnover.

Evidence on EVA and innovation, quality, customer satisfaction and joint-coordination

Glassman (1997) investigated the impact EVA has on a company's achievement of innovation, quality and customer satisfaction that make the company successful. Specifically, the study investigated the implementation and application of a successful EVA incentive system. The study found that since the 1990s there has been a shift in priority and focus on increasing shareholder value. Glassman further construes that one way to achieve a growth in shareholder value is through the implementation of EVA, which can be embraced as a holistic performance measure driving management decisions, measures, communications,

and incentives (Glassman, 1997). Furthermore, EVA contracting offers the possibility of stimulating innovation, higher cost-efficiency and sharing of benefits. Moreover, as EVA includes the cost of capital in its calculations, there is an added benefit of coordinating managers to define costs more clearly.

To conclude with the findings of Glassman (1997), the use of EVA incentive systems stimulates joint coordinated of the agents in order to reduce costs while accomplishing higher innovation, quality and customer satisfaction.

Conclusion

The empirical evidence on EVA and incentive compensation systems can be summarized as follows: (1) Wallace's (1997) research produced positive evidence for the use of EVA as a compensation system, as the EVA systems significantly affected manager behaviour into improving firm profitability and valuation. (2) Kleiman's (1999) analysis of changes in operating and financial ratios corresponds to behaviour aimed at increasing EVA. This behaviour will in turn result in reported increased in the relative stock market performance of EVA firms (Kleiman, 1999). (3) Lehn & Makhija (1997) studied a sample of 452 firms and found that EVA shows strong positive correlation with stock market performance and a negative correlation with CEO turnover. Meaning, the more unsatisfactory a firm's performance in EVA terms, the higher the chance of CEO turnover. (4) Glassman (1997) concluded that the use of EVA incentive systems stimulates joint coordinated of the agents in order to reduce costs while accomplishing higher innovation, quality and customer satisfaction.

To conclude, the empirical evidence strongly points towards EVA as an effective compensation system to improve firm profitability, stock market performance and joint coordination. Although there are benefits abound, the matter of adopting an EVA compensation system will require careful analysis for each independent firm as there are costs and risks that are not insignificant.

Results

The results of this research paper can be stated by answering the research question: “Does the use of EVA performance measures direct manager behavior towards increasing shareholder value?”

In the first part of this study, there was an in-depth explanation of the workings of EVA and how this measure compares with the other financial performance measures. The conclusion was that the EVA measure is more capable of assessing the true value of a firm, and also solves a great deal of issues inherent within the accounting measures, i.e. controllability issues, subjectivity problems and issues with a myopic view. Furthermore it is another improvement upon the residual-income measure by allowing for GAAP adjustments, setting non-zero benchmarks where appropriate and introducing ‘Bonus banks’ which separate the award and payment of bonuses. With these further adjustments to the residual income measure, EVA is meant to provide a more adequate reflection of the underlying economic events associated with a firm. EVA proponents argue that the other financial performance measures are distorted and must be altered to obtain accurate financial statements. However, it is important to note that the use of EVA is associated with certain costs and risks. First, there is additional risk of litigation as the external readers of financial statements could evaluate the official accounting reports as inaccurate or inadequate. Second, as EVA is a further refinement of the regular accounting numbers, it is more costly to implement and the degree of complexity is further raised. Third, there might be costs to educate and explain the workings of EVA to relevant parties. Fourth, there is also the risk of friction and operating manager’s reluctance to adapt to a new and perhaps more difficult system. Lastly, note the inherent subjectivity in the EVA adjustments, as two accountants can reach different EVA figures with the same accounting data.

In the second part of this study, there was a detailed explanation on the effects of employing EVA based incentives in a firm. In this explanation the study of Wallace (1997) was used to gauge the effect of RI-based incentives on managerial behavior by looking at a matched pair sample. Its conclusion was that the implementation had resulted in significant changes to the behavior of managers with respect to investing decisions, financing decisions and operating decisions. The evidence of this study suggests that the managers are indeed

responsive when changing to an EVA based compensation system. This conclusion is further confirmed by the findings of Kleiman (1999), who noted that changes in operating and financial ratios corresponded to behaviour aimed at increasing EVA, whereby this behaviour will in turn result in reported increased in the relative stock market performance of EVA firms. Furthermore, Lehn & Makhija (1997) found a strong positive correlation between EVA and stock market performance and a negative correlation between EVA and CEO turnover, which can be interpreted as follows; the more unsatisfactory a firm's performance in EVA terms, the higher the chance of CEO turnover. Lastly, the study of Glassman (1997) concluded that the use of EVA incentive systems stimulates joint coordinated of the agents in order to reduce costs while accomplishing higher innovation, quality and customer satisfaction.

Conclusion

As illustrated in the previous sections, EVA is a practical tool which induces the firm to use its capital as efficiently as possible, enhancing the value of the firm. Management incentives which are based upon EVA will only increase as the value of the firm increases. However, take note of the inherent subjectivity in the EVA adjustments. With more than 150 possible adjustments to choose from at the management's discretion, the inherent nature of the EVA means that it is a highly subjective measure to apply, and hence comparability of firm performance is made all the more difficult.

The empirical evidence strongly points towards EVA as an effective compensation system to improve firm profitability, stock market performance and joint coordination. Although there are benefits abound, the matter of adopting an EVA compensation system will require careful analysis for each independent firm as there are costs and risks that are not insignificant. To conclude, it seems that EVA has great potential to add value as a performance measure, but seems plagued by certain obstructions, such as the many adjustments that provide room for subjectivity. If EVA could be simplified and made more standard to reduce the inherent subjectivity in the GAAP adjustments, it could prove to be the most reliable and accurate performance measurement system in use.

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