

Wealth Added Financial Management Research

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Abstract:

The objective of the current study is to examine in depth the newly developed wealth measurement tools with the main emphasis placed on a value based management and enhancement. The sophisticated wealth measurements techniques emphasize on cash flows, rather than profits, in the estimation of value. They relate the profitability and return achieved by a firm with the cost it has incurred for creating this profit. These methods consist of: a) cash value added, b) market value added, c) economic value added, e) refined economic value added and e) cash flow return on investment

The presentation and analysis of the empirical literature in the area of wealth added financial management revealed that perfect correlation between value measurement and stock prices is impossible because the fundamentals of a company cannot fully explain its market capitalization, since other factor or market anomalies such as speculative activities, market sentiments, macro-economic factors, calendar effects, influence movement in share prices.

Keywords: Wealth Measurement, Cash Value added, Economic Value Added, Market Value Added, Cash Flows, Return on Investment, Market Values, Net Operating Profit.

JEL Classification: G14, G30

Introduction

It is widely accepted in finance theory that the primary objective of management is to maximize the value of the firm. This is achieved by investing in projects that have a return greater than the minimum acceptable hurdle rate (investment decision), choosing a financing scheme that minimizes the hurdle rate and matches the duration of the assets being financed (financing decision), and returning excess cash to stockholders when there are not enough investments that earn the hurdle rate (dividend decision), (Damodaran 2001). Put in another words, in order for a company to create wealth it must earn more than its cost of debt and equity capital (Hamilton, 1777; Marshall, 1890).

In the financial literature internationally, through the years, a number of measures have been developed that are used to calculate the ability of a firm to create value. The selection of a theoretically sound corporate wealth measurement method is very important to the future success of a firm for mainly two reasons. Firstly, potential investors must have a tool in their hands in order to correctly evaluate the financial performance of the firm. Secondly, the management of the firm must be evaluated on the basis of their wealth

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creation ability and not on the basis of a traditional accounting related performance measure. Thus, in recent years, in the financial literature, there has been an observed attempt to develop new financial performance measures (Ittner and Larcker, 1998).

Traditional techniques that try to measure the wealth creation ability of a firm fall into two broad categories. The first group of methods include standard accounting measures such as sales, profit margins, earnings per share, operational cash flows etc. The second group utilizes ratios that look into depth to the profitability (return on total assets, return on equity), efficiency, turnover, liquidity and capital structure of the firm. All interested stakeholders (equity and debt holders, management, suppliers, employees and customers) can use this information in order to evaluate the historical financial performance of the firm and then assess its future prospects. Furthermore, all this publicly available information, for listed firms, must have an impact, depending on the degree of efficiency of the market, in the current price of their share.

The effectiveness of traditional wealth measurement techniques is increasingly being doubted and questioned by academics and practitioners. Johnson et al. (1985) stated that we couldn't base judgments about corporate excellence solely on accounting measures and ratios because they are occasionally misleading and "poor surrogates of economic performance". Rappaport (1986) has explained the shortcomings of accounting measures of wealth and has commented that "Undue focus on reported earnings can lead to [the] acceptance of strategies that reduce value and rejection of strategies that increase value".

Besides the traditional wealth measurements techniques, through the years, a number of more sophisticated models have been developed in the financial literature internationally. All of these measures emphasize on cash flows, rather than profits, in the estimation of value. More specifically, they relate the profitability and return achieved by a firm with the cost it has incurred for creating this profit. A firm is in a position to create value only if it is able to generate returns higher than its cost of capital.

The current study takes a broad stand on wealth management by examining in depth the newly developed measurement tools with the main emphasis placed on value based management and enhancement. The remainder of the paper is organized as follows. Section 2 presents in detail the latest methods that have been developed in the area of corporate wealth measurement. Section 3 presents the most important empirical studies examining the practical issues of the wealth measurement tools. Section 4 concludes the paper and indicates avenues for future research.

Wealth Measurement Methods

Cash Value Added

The Cash Value Added (CVA) model was developed by Ottoson (1996) and calculates the value creation ability of a firm by taking into account only cash items:

$$\text{CVA} = \text{Operating Cash Flow} - \text{Operating Cash Flow Demand} \quad (1)$$

The sum of the Earnings before Depreciation Interest and Tax (EBDIT) adjusted for non-cash charges, the working capital movements and non-strategic investments gives the Operating Cash Flow (OCF). The next step in the model requires the comparison of the operating cash flow with a cash flow requirement, which is named Operating Cash Flow Demand (OCFD). This OCFD represents the cash flow needed to meet the company's financial requirements on its strategic investments, i.e. the cost of capital.

The advantage of the CVA model is that it gives a very good estimate of the cash flow generated above or below the company's requirement for a given period. Furthermore, the analysis can be accomplished at each level of the company. The total CVA for the company is the aggregate CVA of its strategic investments. This methodology is a cash flow measure that can be used for the performance evaluation of the firm over time. Finally, it must be noted that the CVA measure is based on the idea that a business must cover both the operating costs and the capital costs.

Cash Flow Return on Investment

The Cash Flow Return on Investment (CFROI) was originally developed by Boston Consulting Group and Holt Value Associates which is a subsidiary of Credit Suisse First Boston. It is a wealth creation measure based on cash flows and not accounting profits and is mainly used by portfolio managers and corporations.

The rationale of the index is that the current market price of a firm is associated mainly with the cash flows from its operations and not from its net profits, and is calculated as follows:

$$\text{CFROI} = (\text{Gross Cash Flow} - \text{Economic Depreciation}) / \text{Gross Investment (2)}$$

The gross investment represents the existing assets of a firm and can be calculated by adding to the net assets the accumulated depreciation and by making adjustments for inflation to the book value. The gross cash flow is the sum of the after-tax operating income and the depreciation and amortization. The economic depreciation is the amount that has to be set aside to cover the expected replacement cost of the assets at the end of their economic life.

The cash flow return on investment is in essence the internal rate of return, based on real cash flows and not earnings, which a firm achieves for its existing investments (Damodaran, 2001). It is normally calculated on an annual basis and is compared to an inflation-adjusted cost of capital to determine whether a firm has produced returns greater than its cost of capital.

The advantage of this methodology is that it can be calculated both at a divisional and a firm level and it can be also calculated for private held companies. Furthermore, it adjusts for the distortions arising from inflation and asset lives. On the other hand it must be noted that it is a complex measure to calculate since it is difficult to determine the future cash flows and asset values and managers do not easily understand it.

Economic Value Added

The one measure that has received great attention in the academic financial literature internationally is economic value added (EVA²). The EVA measure was developed by Stern Stewart & Company and is based on the comparison between the profit a firm creates and the capital charge it has incurred for creating this profit. In order for a firm to have positive EVA it must have a positive economic spread, i.e. the difference between the return on capital invested and the weighted average cost of capital.

The profit a firm creates is measured, within the framework of the EVA model, by the net operating profit after tax (NOPAT). Thus, the EVA measure can be calculated as:

$$\text{EVA} = \text{NOPAT} - \text{Capital Charges} \quad (3)$$

The EVA is in essence an estimate of the residual income that a firm creates, since it takes into account not only the NOPAT the firm produces but also the capital charges, it has incurred in order to produce this profit. Since these charges are the product of the invested capital times the weighted average cost of capital (WACC), the EVA can also be defined as (Ehrbar and Stewart 1999):

$$\text{EVA} = \text{NOPAT} - (\text{Invested Capital} \times \text{WACC}) \quad (4)$$

The NOPAT is a function of earnings before interest payments and taxes (EBIT) and the tax rate of the firm, that is (Young and O' Byrne 2000):

$$\text{NOPAT} = \text{EBIT} \times (1 - \text{Tax Rate}) \quad (5)$$

If we define the return on invested capital (ROIC) as the ratio of the NOPAT over the invested capital then the EVA can be redefined as follows:

$$\text{EVA} = \text{Invested Capital} \times (\text{ROIC} - \text{WACC}) \quad (6)$$

The invested capital refers to the sum of the net operating capital and the operating long-term assets. More specifically the invested capital is calculated as follows (Brigham and Ehrhardt 2002, p. 44):

$$\begin{aligned} \text{Invested Capital} &= (\text{Cash} + \text{Accounts Receivable} + \text{Inventories} \\ &+ \\ &\quad + \text{Operating Long Term Assets}) - \\ &\quad - (\text{Accounts Payable} - \text{Accruals}) \end{aligned} \quad (7)$$

The WACC is the average cost of equity and cost of debt of a firm weighted by the proportion of equity and debt in the total capital of the firm. The cost of equity is usually calculated using the Capital Asset Pricing Model.

² EVA is a registered trademark of Stern Stewart & Co

Economic spread is the difference between ROIC and the WACC. This difference, which is the heart of the EVA model, is actually the net return the firm achieves for the capital it uses in its operations. Companies that have a positive economic spread will have positive EVA and thus create wealth, while companies that have a WACC larger than the ROIC (negative economic spread) will eventually destroy wealth.

The advantage of the economic spread as a measure of wealth creation is that it elegantly incorporates balance sheet data into an adjusted income statement metric. Furthermore, economic spread is justified by financial theory and is consistent with valuation measures. Finally, economic spread summarizes in a single statistic the value created above and beyond all financial obligations, since it recognizes that capital is not free through the deduction of the capital charge from the profit a firm creates.

Market Value Added

The Market Value Added (MVA) measure is based on the assumption that the total market value of a firm is the sum of the market value of its equity and the market value of its debt. Stewart (1991) defines Market Value Added as the excess of market value of capital (both debt and equity) over the book value of capital. In another words MVA is the difference between the current market value of a firm (V) and the capital contributed by its investors (K):

$$\text{MVA} = \text{V} - \text{K} \quad (8)$$

If the MVA is positive, the company has created wealth for its shareholders. If it is negative, then the firm has destroyed value. The capital is the amount that is put in the company by the shareholders and in essence is the fixed assets plus the net working capital.

According to Stern and Shiely (2001), in order to calculate the market value of a firm, we have to value the equity part at its market price on the date the calculation is made. The total investment in the company since day one is then calculated as the interest-bearing debt and equity, which includes retained earnings. Present market value is then compared with total investment. If the former amount is greater than the latter, the company has created wealth.

Stewart (1991) states that MVA is an cumulative measure of corporate performance and that it represents the stock markets assessments from a particular time onwards of the net present value of all of a company's past and projected capital projects. The disadvantage of the method is that like EVA there can be a number of value based adjustments made in order to arrive at the economic book value and that it is affected by the volatility from the market values, since it tends to move in tandem with the market.

Refined Economic Value Added

The refined economic value added (REVA) is an extension to the EVA methodology, providing an analytical framework for evaluating corporate performance in the context of shareholder value creation (Bacidore et al., 1997). The current methodology uses market values for the firm's assets along with a market-derived cost of capital. The rationale of

the REVA is that since in the calculation of EVA the capital charge for the firm is derived from a market-based weighted average cost of capital then it is not appropriate to use the economic book value of assets.

$$\text{REVA}_t = \text{NOPAT}_t - k_w(\text{MV}_{t-1}) \quad (9)$$

where,

NOPAT_t = Net Operating Profit after tax at the end of period t
 MW_{t-1} = Total market value of the firm's assets at the end of period $t-1$
 k_w = Weighted average cost of capital

The total market value of the firm's assets at the end of period $t-1$ (MW_{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 $t-1$. REVA assesses a capital charge equal to the weighted average cost of capital times the market value of the firm.

The main difference between EVA and REVA stems from the different treatment of the capital of the firm. Specifically, REVA assesses the capital charge for period t on the market value of the firm at the end of period $t-1$ (or the beginning of period t), while EVA uses the economic book value of the assets in place. This characteristic of the REVA methodology permits its computation using either flows to equity or flows to all financing parties, which is not possible with EVA unless market and economic book values happen to be equal by chance.

Bacidore et al. (1997) claims "EVA performs quite well in terms of its correlation with shareholder value creation, but REVA is a theoretically superior measure for assessing whether a firm's operating performance is adequate from the standpoint of compensating the firm's financiers for the risk to their capital".

The main advantage of the REVA is that it is fairly easy to calculate. Furthermore, management can understand that market values are more relevant to calculating economic returns than book values, since we are including in the calculation non-financial factors that are influencing value. The disadvantage of the methodology is affected by the volatility from market values.

Empirical Research

The literature concerning the wealth measurement methods is vast. This topic, as a research issue, has gained momentum mainly after the consulting firm Stern Stewart Ltd. introduced the EVA measure. The related literature can be divided into following categories: **a) Conceptual and Anecdotal:** Stewart (1991), Damodaran (2001), Biddle et. al. (1999), Dodd & Johns (1999), Paulo (2002), Adsera and Vinolas (2003), **b) EVA and Accounting:** Peasnell (1982), Uyumura et. al. (1996), Lehn and Makhija (1997), Chen and Dodd (1997), O' Hanlon & Peasnell (1998), Machuga et. al. (2002), Hatfield (2002), Anderson et. al. (2004), **c) EVA and Managerial Decisions/Compensation:** Tully (1993), Milunovich and Tsuei (1996), Jackson (1996), Zimmerman (1997), and **d) EVA and Market Value>Returns:** Stern et. al. (1995), O'Byrne (1996),

Grant (1996), Dodd and Chen (1996), Lehn and Makhija (1997), Bao and Bao (1998), Kleiman (1999), Farsio et al. (2000), Garvey and Milbourn (2000), Stern and Shiely (2001), Worthington and West (2004), Abate, Grant and Stewart III (2004), Ferguson et al. (2005), Artikis et. al. (2006), Kyriazis and Anastassis (2007), Artikis (2007), Artikis and Sorros (2007), Grant and Trahan (2007).

Since a detailed review of all the literature concerning wealth measurement methods is out of the scope of this paper, the current section will present the most important and recent empirical research studies in the area of wealth added value.

O'Byrne (1996) compared the information content by regressing firm value on EVA and earnings, which are measured by NOPAT. The sample consisted of 6,551 firm-year observations, for the period between 1985 and 1993. The author estimated two regressions where market value divided by capital is the dependent variable. In the first regression the independent variable is EVA standardized by the weighted averaged cost of capital and in the second regression NOPAT. All variables were standardized by capital at the beginning of the period. The author reports an adjusted R^2 of 31% for the EVA regression and 33% for the NOPAT regression. After a series of adjustments to the EVA regression were made, namely the allowance of separate coefficients for positive and negative values of EVA, the consideration of the natural log of capital in an attempt to capture differences in the way the market values firms of different sizes and the inclusion of 57 industry dummy variables in order to capture potential industry effects, the author obtained a larger adjusted R^2 for the enhanced EVA regression (56%), than for NOPAT (33%). The author concluded that EVA outperforms earnings in explaining firm values.

Grant (1996) studied the relationship between MVA/CAPITAL and EVA/CAPITAL for 983 companies selected from the Stern Stewart Performance 1000 database from 1993 to 1994. The results showed an overall R^2 of 32% for all the companies. For the 50 largest wealth creators the R^2 was 83%. For the 50 largest wealth destroyers the R^2 was only 3%. In another study of Grant (1997) the cross-sectional regression statistics for 1994 reveal that 74% of the movement in the MVA/CAPITAL ratios for top-performing large firms is explained by variations in the EVA/CAPITAL factor. Grant (1996) found that the real corporate profits should be measured relative to the amount of capital needed to generate that level of profitability. Then he used standardized values for EVA and market value instead of absolute values. He concluded that his empirical results indicated that EVA has a significant impact on a company's MVA. The value of a company responds to variations in both the near-term EVA outlook and movements in the long-term growth rate.

Uyemura et al. (1996) used a sample of the 100 largest USA banks for the period between 1986 to 1995 in order to calculate the MVA and to test the correlation with EVA as well as four other accounting measures, namely net income (NI), Earnings per Share (EPS), Return on Equity (ROE), and Return on Assets (ROA). The results of their research indicated that there is a strong relation between EVA and MVA. The correlations between these performance measures and MVA are: EVA 40%, ROA 13%, ROE 10%, NI 8% and EPS 6%.

Dodd and Chen (1996) studied the correlation between stock returns and EVA, Residual Income (RI), ROA, ROE and EPS. The data is from the ten-year period 1983 through 1992, and the sample consists of 566 US companies. In their study ROA explained best with an R^2 of 24.5%. The R^2 for the other performance measures are: EVA 20.2%, RI 19.4% and between 5% to 7% for ROE and EPS. It appears that EVA does not relate well to share returns. The results obtained imply that 80% of changes in share returns could not be accounted for by changes in EVA. Finally, the authors concluded that adjusted EVA offers few advantages over unadjusted EVA or Residual Income (RI).

Milunovich and Tsuei (1996) reviewed the correlation between MVA and several conventional performance measures in the computer industry for the period from 1990 to 1995. They found EVA to correlate somewhat better with MVA than the other measures. They argue that the relatively weak correlation between MVA and free cash flow can be a misleading indicator. They point-out that a fast growing technology startup company with positive EVA investment opportunities and a loss-making company on the verge of bankruptcy can have similar negative cash flows. They concluded that growth in earnings is not enough to create value, unless returns are above the cost of capital. They suggest that EVA works best as a supplement to other measures when one is evaluating shares and that EVA sometimes works when other measures fail.

Biddle, Bowen, and Wallace (1997) test assertions that Economic Value Added (EVA) is more highly associated with stock returns and firm values than accrual earnings, and evaluates which components of EVA, if any, contribute to these associations. Data used in this study were purchased directly from Stern Stewart & Co. These data included up to eleven annual observations for economic value added (EVA), capital, and cost of capital for firms with fiscal years ending June 1983 to May 1994. The resulting sample has 6,174 firm-year observations for 773 firms.

Relative information content tests revealed earnings to be more highly associated with returns and firm values than EVA, residual income, or cash flow from operations. Incremental tests suggested that EVA components add only marginally to information content beyond earnings. Considered together, these results do not support claims that EVA dominates earnings in relative information content, and suggest rather that earnings generally outperforms EVA.

Chen and Dodd (1997) presented findings on the value relevance of Operating Profit (OP), Residual Income (RI) and EVA. Each variable was standardized by the beginning share price. The study was based on 6,683 firm-year observations, for the period from 1983 to 1992. Regarding EVA's incremental information content the authors stated that the inclusion of EVA in the regression model that contains RI and OP increases the explanatory power of stock returns, despite the fact that the increase in R^2 is not statistically significant. There is stronger evidence for the incremental information content of RI beyond the information content of OP. Concerning the relative information content of these metrics, the authors presented findings that OP has higher information content ($R^2 = 6.2\%$) than RI ($R^2 = 5\%$) or EVA ($R^2 = 2.3\%$) in explaining stock returns. The authors concluded that companies are probably better off making no adjustments at all, relying instead on unadjusted RI.

Lehn and Makhija (1997) studied the relation between several performance measures and stock returns. They used data from 452 US companies and the research period spanned from 1985 to 1994. The results of their study suggested that EVA and MVA, like the traditional measures, are effective measures of performance. Moreover, even though not by a large difference, the correlation of EVA with stock returns (0.59) is higher than the correlation of MVA (0.58), ROE (0.46), ROA (0.46) or Return on Sales ROS (0.39).

Bao and Bao (1998) investigated the usefulness of two alternative measures of performance: value added and abnormal economic earnings of 166 US firms. Using earnings as the benchmark, firm value analysis, levels analysis, and changes analysis were performed to evaluate their explanatory power. Results show that value added is a statistically significant variable; its explanatory power is higher than that of earnings. Abnormal economic earnings, however, are not a significant variable.

Farsio et al. (2000), studied the relationship between EVA and stock returns. The main objective of their study was to verify if a correlation existed between EVA and stocks returns. Their sample consisted of companies that are found in well known stock indices such as Standard & Poor's 500 (S&P 500) and the Dow Jones Industrial Average (DJIA). The S&P 500 Index was chosen because the constituent companies represent a large, diversified sample of companies for which EVA is available. The time period spanned from 1994 to 1998 and 367 companies from the S&P 500 and 30 from the DJIA were chosen.

Regression analysis was employed for testing the relationships between the variables. Total return was designated as the dependent variable in all tests. Numerous regression tests were conducted including multiple and simple regression. They found that the relationship between EVA and total return to be weaker for new economy companies than for old economy companies. Furthermore, they showed that EVA is not a good indicator of stock performance and represents just one of many available measures. In fact, it may be one of the poorest measures available, explaining only a fraction of the variability in stock return fluctuation.

The study of Kleiman (1999) set out to determine whether companies that adopt EVA as a performance measure add more value for their shareholders than their industry competitors do. His sample consisted of 71 companies that had adopted EVA during the period from 1987 to 1996. The results of the study showed that EVA companies earned an extra total return of 28.8% over four years versus the median industry competitor. Companies that had adopted EVA showed greater improvement in operating profit margins. These improvements were attributable more to a decrease in assets rather than extensive cost cutting.

Garvey and Milbourn (2000) examined whether the new wealth performance measures have a higher correlation with stock values and their returns than do traditional accounting earnings. In doing so, they used a relatively standard principal agent model in which contracts can be based in any two accounting based performance measures plus the stock price. They focused on the problem that while the variability of each measure is observable, its exact information content is not. The model

that they developed provides a formal method for researchers to ascertain the relative value of alternative accounting based measures based on two distinct uses of the stock price. Their sample size was just under 6,800 observations, which represented the universe of firms which appeared in the Stern Stewart Performance 1000 list, and the research period spanned from 1986 to 1997.

The results of the research showed that the simple correlation between EVA or earnings and stock returns is a reasonable reliable guide to its value as an incentive contracting tool. Thus, a firm could reasonably gauge the merits of adding a measure like EVA by examining its correlation with the firms' stock price.

Machuga et al. (2002) adopted a new approach in evaluating the relative performance of earnings and EVA as measures of firm performance. In doing so, they examined the relationship between EVA accounting adjustments and future EPS changes. Furthermore, they examined if this incremental predictive content is reflected in analysts' forecasts of earnings. The rationale for this is that if analysts' do not fully incorporate the information in prior-year EVA changes or levels, then their forecast errors will be correlated with these EVA variables. The sample was drawn from the commercial database of Stern Stewart and consisted of 4,382 firms from 1981 to 1996, ranging from 232 to 362 firms per year.

The results showed that analysts' forecasts appear not to fully reflect information in reported EVA for firms with prior-year earnings increases. This could be due to the fact that EVA was a new measure for the time of the study and analysts, especially in the earlier years, may not have been fully familiar with it. Furthermore, the results showed that EVA contains information that is incremental to EPS in predicting future earnings. In addition, they found that despite this potential for EVA to add incremental value to analysts' forecasts of future earnings, analysts do not use the information in reported EVA appropriately, but appear rather to overweigh it.

Hatfield (2002), argues that EVA changes the accounting landscape fundamentally by treating R&D as a strategic capital cost rather than as an expense. He states that the real value of EVA to R&D lies in the fact that one system can be utilized to manage a diverse set of issues confronting technology management, from financial metrics to portfolio decisions and people issues.

Paulo (2002) argues that EVA is based on the capital asset pricing model, which relies on the efficient market hypothesis. In an efficient market the real return equals the internal rate of return resulting in a zero EVA. He states that arbitrage and competitive forces ensure that abnormal returns cannot occur consistently. On average, a negative EVA offsets a positive EVA and the occurrence of EVA would be random and statistically non-significant. Thus, EVA is regarded as a fiction. He concludes that the validity of EVA should be questionable because it relies on an inappropriate input, namely the weighted average cost of capital.

Adsera and Vinolas (2003) emphasized the principal of one value and suggested that the financial and economic value added (FEVA) approach, which integrates the EVA, discounted cash flow, and Modigliani and

Miller models, is preferable to EVA alone. They argue that traditional valuation methods (economic value added, discounted cash flow, and Modigliani and Miller models) are mathematically equivalent and thus should provide the same result when the same inputs are used. However they do not, because these methods focus on different value drivers. They suggest an alternative valuation method that provides the adjustment necessary to produce consistent results.

Worthington and West (2004) used pooled time-series and cross-sectional data on 110 Australian companies over the period 1992-1998 in order to examine whether the trademarked variant of residual income known as economic value-added is more highly associated with stock returns than other commonly-used accounting-based measures. These other measures of internal and external performance include earnings, net cash flow and residual income. Three alternative formulations for pooling data are also employed in the analysis, namely, the common effects, fixed effects and random effects models, with the fixed effects approach found to be the most empirically appropriate. Relative information content tests reveal returns to be more closely associated with EVA than residual income, earnings and net cash flow, respectively. An analysis of the components of EVA confirms that the GAAP-related adjustments most closely associated with EVA are significant at the margin in explaining stock returns.

Abate, Grant and Stewart III (2004) showed that EVA can be a valuable investing tool to identify good companies with good stocks. Furthermore, they argued that a shift in equity management would define the style of a company in terms of its fundamental ability to create wealth. From an economic value added perspective, a growth company invests for rapid economic profit change, while a value company looks to create wealth through downsizing or restructuring a low-to-negative economic profit spread business. In either case, EVA growth or value, these company types represent good stocks when actual expectations of economic profit growth exceed expectations already imbedded in share price. This economic profit style of investing emphasizes the fundamentals of wealth creation and reconciliation of share price with the level realistically achievable.

Ferguson et al. (2005) in their work used event study methodology to investigate whether firms adopt EVA due to poor stock performance and whether adopting EVA leads to better stock performance. The sample of the study consisted of 65 firms between July 1983 and March 1998, which had become a client of Stern Stewart and applied the EVA methodology. The date when a firm becomes a client of Stern Stewart was used as the event day in the study. Each firm's annual operating performance was evaluated by their operating profit after depreciation and tax divided by assets, i.e. the return on assets and the net profit divided by equity, i.e. the return on equity. The stock performance of each sample firm was measured by monthly total returns for the 121 months surrounding the event date.

The results of the study showed that firms do not adopt EVA due to poor stock performance or that any particular stock performance pattern leads to EVA adoption. Furthermore, firms that adopt EVA appear to have above average profitability relative to their peers both before and after the adoption of EVA and there is some evidence that EVA adopters

experience increase profitability relative to their peers following adoption.

Artikis et. al. (2006) in their work evaluated the value creation capacity of the firms, listed in the Athens Stock Exchange over the period 2000 - 2004, using the Economic Value Added Model developed by Stern Stewart & Co. The picture in the area of value creation for the sample firms was not encouraging; the majority of the firms in four out of five years had a negative Economic Value Added. Despite the fact that the majority of the firms experienced positive return on the capital invested, they were unable to cover their weighted average cost of capital. Nine industries out of ten had positive average Economic Value Added in 2000 and 2001, six in 2002 and 2003, and only five in 2004. With the exception of the technology industry in 2004, the remaining industries in all five years have positive but declining average return on invested capital, and proportionately high weighted average cost of capital.

Kyriazis and Anastassis (2007), investigated the relative explanatory power of the Economic Value Added (EVA) model with respect to stock returns and firms' market value, compared to established accounting variables (e.g. net income, operating income), in the context of a small European developing market, namely the Athens Stock Exchange. Relative information content tests revealed that net and operating income appear to be more value relevant than EVA. Additionally, incremental information tests suggest that EVA unique components add only marginally to the information content of accounting profit. Moreover, EVA does not appear to have a stronger correlation with firms' Market Value Added than the other variables, suggesting that EVA, even though useful as a performance evaluation tool, need not necessarily be more correlated with shareholder's value than established accounting variables.

Artikis (2007), evaluated the relationship between economic spread and market value for all firms, except financials, listed in the Athens Stock Exchange over the period 2000-2004. Specifically, this relationship was examined both on a whole market and on an industry basis. The sample firms were classified into six industries, namely consumer cyclical, basic materials, consumer non-cyclical, industrial, technology, and communications. In doing so a regression analysis was performed having economic spread as the independent variable and the ratio of market value over the invested capital as the dependent variable. Economic spread is defined as the difference between the return on invested capital and the weighted average cost of capital and indicates the net return a firm achieves for the capital it uses in its operations. Market value of a firm is defined as the sum of the market value of equity plus the market value of debt. The results for the whole market showed that there is a statistically significant positive relationship between economic spread and market value in 66.67% of the cases. On the industry basis the results showed a positive relationship between the two variables in all sectors except the technology one.

Artikis and Sorros (2007), in their research paper compared the secondary and service sector firms, except financials, listed in the Athens Stock Exchange on the basis of the effect that Economic Value Added (EVA) had on their market values. Specifically, the relationship between economic spread and market value is examined, for all sample

firms over the period 2000-2005, both on a sector and on an industry basis. The sample firms were classified into six industries, namely consumer cyclical, consumer non-cyclical, technology, communication, basic materials and industrial. A single index regression analysis model was employed having economic spread as the independent variable and the ratio of market value over the invested capital as the dependent variable. The results unveiled a statistical significant positive relationship between the ratio of value over invested capital and economic spread for both the service and secondary sector. On an industry basis the statistical significant positive relationship between the variables of the regression model exists only in the consumer cyclical, consumer non-cyclical and the basic materials industry.

Grant and Trahan (2007), employed an EVA style classification, in order to examine whether active investors (such as hedge funds and other long-short investors) can develop an alpha-generating strategy by classifying acquisitions based on the pre-acquisition EVA style quadrant of the acquirers. They obtained data from the 2001 *Stern Stewart Performance 1000* ranking of the 1,000 largest U.S. industrial firms by market value added (MVA) for the year ended 2000. The final sample consisted of 484 U.S. industrial firms that acquired other firms over the period 1990-1999. Over a recent ten-year period, the announcement evidence suggests that acquisitions across all style quadrants generate negative risk-adjusted returns: wherein the magnitude of economic gains from shorting acquirers is determined by EVA style characteristics; namely wealth creators or wealth destroyers. Moreover, they found that the potential for longing gains on targets of acquiring firms is also captured by EVA style.

Conclusions

The primary objective of management is to maximize the value of the firm. In the financial literature internationally, through the years, a number of measures have been developed that are used to calculate the ability of a firm to create value. The objective of the current study was to examine in depth the newly developed wealth measurement tools with the main emphasis placed on a value based management and enhancement.

The sophisticated wealth measurements techniques emphasize on cash flows, rather than profits, in the estimation of value. More specifically, they relate the profitability and return achieved by a firm with the cost it has incurred for creating this profit. A firm is a position to create value only if it is able to generate returns higher than its cost of capital. Generally speaking these models measure the returns generated by the firm in a particular year and compare them with returns generated by assets with similar risk profile. Similarly return on investment for the current period is compared with returns generated in past. The rationale of these techniques is that for a firm to create value it must be able to generate returns higher than its cost of capital.

The performance of a firm gets reflected on its valuation by the capital market, depending always on the efficiency of the market. Market valuation reflects investor's perception about the current

performance of the firm and also their expectation on its future performance. The estimated growth rate of the firm is the factor that determines their expectations in terms of return on capital invested. Even if the current performance is better in relative terms, poor growth prospects adversely affects the value of the firm. Therefore any metric of wealth performance, in order to be effective and efficient, should be able to not only capture the current performance but also should be able to incorporate the direction and magnitude of future growth. Thus, the robustness of a measure is borne out by the degree of correlation the particular metric has with respect to the market valuation.

The presentation and analysis of the empirical literature in the area of wealth added financial management revealed that perfect correlation between value measurement and stock prices is impossible because the fundamentals of a company cannot fully explain its market capitalization, since other factor or market anomalies such as speculative activities, market sentiments, macro-economic factors, calendar effects, influence movement in share prices. Thus, it is suggested that further research should be focused towards the relationship between wealth financial management measurement methods and stock prices.

References

- Abate, J.A., Grant, J.L. & Stewart III, B.G., 2004, The EVA Style of Investing, *The Journal of Portfolio Management*, 30,4:61-73.
- Adsera, X. & Vinolas, P., 2003, "FEVA: A Financial and Economic Approach to Valuation, *Financial Analysts Journal*, 59,2:80-88.
- Anderson, M.A., Bey, R.P., Weaver, S.C., 2004, Economic Value Added Adjustments: Much to Do About Nothing?, A Paper presented at the Midwest Finance Association Meetings.
- Artikis, P.G., Artikis, G.P., Kelepouris, E., 2006, Economic Value Added. The Case of Greek Listed Firms, 5th Annual Conference of the Hellenic Finance and Accounting Association, University of Macedonia
- Artikis, P.G., 2007, Economic Spread and Market Value. The Case of Listed Companies in Greece, *Journal of International Business and Economy*, 8,1:43-58.
- Artikis, P.G., & Sorros, J., 2007, Decomposing Economic Value Added, International Conference on Applied Business and Economics, University of Piraeus.
- Bacidore, J.M., Boquist, J.A., Milbourn, T.T., & Thakor, A.V., 2007, The Search for the Best Financial Performance Measure, *Financial Analysts Journal*, May/June:11-20.
- Bao, B. & Bao, D. 1998, Usefulness of Value Added and Abnormal Economic Earnings: An Empirical Examination, *Journal of Business Finance & Accounting*, 25, 1/2:251-264.
- Biddle, G.C., Bowen, R., & Wallace, J.S., 1999, Evidence on EVA, *Journal of Applied Corporate Finance*, 12,2:69-79.
- Biddle, G.C., Bowen, R.M., & Wallace, J.S., 1997, Does EVA Beat Earnings? Evidence on Associations with Stock Returns and Firm Values, *Journal of Accounting and Economics*, 24,3:301-337.
- Brigham, F.E. & Ehrhardt, C.M., 2002, *Financial Management: Theory and Practice* 10th Edition, New York, South-Western Thomson Learning.
- Chen S. & Dodd, J.L., 1997, Economic Value Added (EVA): An Empirical Examination of a New Corporate Performance Measure, *Journal of Managerial Issues*, 9, 3: 318-333.

- Damodaran, A. 2001, *Corporate Finance: Theory and Practice*, John Wiley & Sons, Inc.
- Dodd, J., & Chen, S., 1996, EVA: A New Panacea?, *Business and Economic Review*, 42,4,:26-28.
- Dodd, J.L & Johns, J., 1999, EVA Revisited, *Business and Economic Review*, April-June.
- Ehrbar, A. & Stewart III, G.B., 1999, The EVA Revolution, *Journal of Applied Corporate Finance*, 12,2:148-165.
- Farsio, F., Degel, J & Degner, J, 2000, Economic value added and stock returns, *The Financier*, 7,1-4:115-118.
- Ferguson R., Rentzler, J., & Yu, S., 2005, Does Economic Value Added (EVA) Improve Stock Performance Profitability?, *Journal of Applied Finance*, Fall-Winter:101-113.
- Grant, J.L., 1996, Foundations of EVA for Investment Managers, *The Journal of Portfolio Management*, 23,Fall:41-45.
- Grant, J.L., 1997, Foundations of EVA, *New Hope: Frank & Fobozzi*.
- Grant, J.L., & Trahan, E.A, 2007, Active Investing in Strategic Acquirers Using an EVA Style Analysis, Working paper 1033, College of Management, University of Massachusetts Boston.
- Hamilton, R., 1777, *An Introduction to Merchandize*. Edinburgh.
- Hatfield, G.R., 2002, R&D in an EVA World, *Research Technology Management*, 45,1:41-47.
- Ittner, C.D. & Larcker, D.F., 1998, Innovations in Performance Measurement: Trends and Research Implications, *Journal of Managerial Accounting Research* 10:205-238.
- Jackson, A. 1996, The How and Why of EVA at CS First Boston, *Journal of Applied Corporate Finance*, 9,1
- Kleinman, R.T., 1999, Some new evidence on EVA companies, *Journal of Applied Finance*, 12,2:80-91.
- Kyriazis, D., & Anastassis, C., 2007, The Validity of the Economic Value Added Approach: An Empirical Application, *European Financial Management*, 13, 1:71-100.
- Lehn, K., & Makhija, A.K., 1997, EVA, Accounting Profits, and CEO Turnover: An Empirical Examination 1985-1994, *Journal of Applied Corporate Finance*, 10, 2: 90-97.
- Marshall, A., 1890, *Principles of Economics*. The Macmillan Press Ltd, London, New York.
- Milunovich, S. & Tsuei, A., 1996, EVA in the Computer Industry, *Journal of Applied Corporate Finance*, 9,1:104-115.
- O'Byrne, S.F., 1996, EVA and Market Value", *Journal of Applied Corporate Finance*, 9,1:116-125.
- O'Hanlon, J., & Peasnell, K., 1998, Wall Street's Contribution to Management Accounting: The Stern Stewart EVA Financial Management System, *Management Accounting Research*, 9,4.
- Ottoson, E., 1996, Cash value added - a new method for measuring financial performance, Goteborg: Svenska Cellulosa Aktiebolaget SCA.
- Paulo, S, 2002, Operating Income, Residual Income and EVA: Which Metric Is More Value Relevant - A Comment, *Journal of Managerial Issues*, 14,4:500-506.
- Peasnell, K.V., 1982, Some Formal Connections between Economic Values and yields and Accounting Numbers, *Journal of Business Finance and Accounting*, 9, 1.
- Rappaport, A., 1986, *Creating Shareholder Value*, New York, The Free Press.
- Stern, J.M. & Shiely, J.S., 2001, *The EVA Challenge: Implementing Value-Added Change in Organisation*, John Wiley & Sons Inc.

- Stern, J.M., Stewart III. G.B., Chew, D.H., 1995, The EVA Financial System, *Journal of Applied Corporate Finance*, 3,2:38-55.
- Stewart III, G.B., 1991, *The Quest for Value: A Guide for Senior Managers*, New York, NY, Harper Business.
- Tully, S. 1993), The Real Key to Creating Wealth, *Fortune*, 128,6.
- Uyemura, D.G., Kantor, C.C., and Petit, J.M. (1996), EVA for Banks: Value Creation, Risk Management, and Profitability Measurement, *Journal of Applied Corporate Finance*, 9,2:94-109.
- Worthington, A. & West, T., 2004, Australian Evidence Concerning the Information Content of Economic Value-Added, *Australian Journal of Management* 29,2:201-224.
- Young, S.D. & O' Byrne, F.S., 2000, *EVA and Value Based Management*, McGraw Hill Education.
- Zimmerman, J. 1997, EVA and Divisional Performance Measurement: Capturing Synergies and other Issues, *Journal of Applied Corporate Finance*, 10,2.