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THE VALUE RELEVANCE OF ECONOMIC VALUE ADDED (EVA): AN APPLICATION AT ISTANBUL STOCK EXCHANGE

Ahmet Şakir TANRIÖVEN

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Yüksek Lisans Tezi olarak sunduğum "**The Value Relevance of Economıc Value Added (Eva): An Applıcatıon at Istanbul Stock Exchange**" adlı çalışmanın, tarafımdan, bilimsel ahlak ve geleneklere aykırı düşecek bir yardıma başvurmaksızın yazıldığını ve yararlandığım eserlerin kaynakçada gösterilenlerden oluştuğunu, bunlara atıf yapılarak yararlanılmış olduğunu belirtir ve bunu onurumla doğrularım.

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Anabilim Dalı	**:** İngilizce İşletme
Programı	**:** İngilizce İşletme Yüksek Lisans (MBA)
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ÖZET

Yüksek Lisans Tezi

Ekonomik Katma Değer: İstanbul Menkul Kıymetler Borsası Uygulaması

Ahmet Şakir TANRIÖVEN

Dokuz Eylül Üniversitesi

Sosyal Bilimler Enstitüsü

İşletme Anabilim Dalı

İngilizce İşletme Yönetimi Yüksek Lisans Programı

Bu araştırmada Ekonomik Katma Değer (EKD) ile hisse senedi fiyatları arasında ilişki ve EKD'nin hisse senedi katılımcıları tarafından yatırım kararlarında kullanılıp kullanılmadığı belirlenmeye ve incelenmeye çalışılmıştır.

Gittikçe artan sayıda şirket tarafından uygulanan göreceli olarak yeni bir kavram olan EKD'nin, hisse başına kazanç (HBK) ve hisse başına defter değeri (HBDD) ile birlikte, hisse senedi fiyatları arasındaki ilişki Istanbul Menkul Kıymetler Borsasında işlem gören şirketler üzerinde araştırılmıştır. Bu nedenle, 2006 ve 2007 yılları için, IMKB 100 endeksinde işlem gören finansal olmayan 69 firma incelenmiş, firmaların EKD'leri hesaplanmış ve hisse senedi fiyatı ile EKD ilişkisi regresyon analizi ile incelenmiştir.

Çalışma dört bölümden oluşmaktadır. İlk bölümde performans konu detaylı olarak incelenmiştir. Performans ölçüm kriter ve sistemleri, geleneksel finansal metodlar ve ekonomik kar kavramları üzerinde durulmuştur. İkinci bölüm EVA teorisini açıklamaktadır. Finansal ve muhasebe hesaplamalarından kaynaklanan sapmaların etkisini ortadan kaldırmak için gerekli olan düzenlemeler bu bölümde açıklanmıştır. Ayrıca, vergi sonrası net operasyonel kar, sermaye ve sermaye maliyeti konuları açıklanmıştır. Üçüncü bölümde, EKD uygulamaları, zayıf yönleri, örnekleri incelenmiş EKD ve diğer finansal

ölçüm araçları ile karşılaştırılmıştır. Dördüncü bölümde regresyon uygulamasına yer verilmiş ve sonuçlarının analizi yapılmıştır. Son olarak, sonuç ve öneriler sunulmuştur.

Anahtar Kelimeler: Performans Ölçümleme, Ekonomik Katma Değer

ABSTRACT

Master Thesis

The Value Relevance of Economic Value Added (EVA):

An Application at Istanbul Stock Exchange

Ahmet Şakir TANRIÖVEN

Dokuz Eylul University

Institute of Social Sciences

Department of Business Administration

MBA Program

The research project identifies whether there is a relationship between Economic Value Added (EVA) and stock prices and whether EVA is used by the stock price market participants in their investment decisions or not, and investigates them.

As a relatively new concept that is being implemented by an increasing number of firms; EVA's relationship with stock prices along with earnings per share (EPS) and book value per share (BVS) is investigated among the companies functioning in Istanbul stock Exchange (ISE). So that, for 2006 and 2007 years, 69 non financial companies in ISE 100 Index are examined, their EVA values are computed and relationship between EVA and stock prices are examined through regression analysis.

The study consists of four parts. In the first part, performance concept is investigated in detail. Performance measurement criteria and systems, traditional financial methods and economic profit concepts are emphasized. The second part displays theoretical framework of EVA. Adjustments required to eliminate accounting and financial distortions are clarified. Moreover, Net Operating Profit after Taxes (NOPAT), capital and cost of capital calculations

are discussed. In the third part, EVA implications, weaknesses, examples and comparison with other financial measures are stated. In the fourth part, the regression model and numeric results are enclosed. Lastly, the results and proposals are presented as a conclusion.

Key Words: Performance Measurement, Economic Value Added

ECONOMIC VALUE ADDED:
AN IMPLICATION IN ISTANBUL STOCK EXCHANGE

PART 3

EVA APPLICATIONS

PART 4

METHODOLOGY

ABBREVIATIONS

BVS	Book Value Per Share
BSC	Balanced Scorecard
CAPM	Capital Asset Pricing Model
EVA	Economic Value Added
EPS	Earnings Per Share
GAAP	Generally Accepted Accounting Principles
ISE	Istanbul Stock Exchange
IRR	Internal Rate of Return
MVA	Market Value Added
NOPAT	Net Operating Profit After Taxes
NPV	Net Present Value
PIs	Performance Indicators
Pp	Page Number
ROA	Return on Assets
ROE	Return on Equity

FIGURE LIST

TABLE LIST

INTRODUCTION

In globalization process, while the world becoming a small village along with the rapid technological improvements, traditional top to down management understanding seems to be changing. Decentralized structure is becoming more favorable. So that, first level and middle managers are being empowered and enabled to involve decision making process in order to behave themselves as not only the agents, rather owners of the firm. As a result, they are expected to accept responsibility for the success or the failure of the enterprise with a sensible risk taking. However, this only occurs only if there is a prospect of a corresponding financial reward. (Stern, Stewart and Chew, 1996)

Also, rather than setting multiple objectives for different departments which may result in conflict among them; setting a simple objective that improve accountability, incentives and financial soundness of the firm is more desirable. Introduced by Stewart, with a sole objective of increasing value added to shareholders' wealth; Economic Value Added (EVA) offers integrated compensation plan and as a performance measurement system combines all long and short term objectives within itself. (Stewart, 1991)

Stewart, as a founder, simply defines EVA as the difference between operating profit after taxes less cost of capital invested. Furthermore, he states EVA depends on the idea in which every project that exceeds their cost of invested capital adds to their shareholder wealth so that should be supported and implemented. On contrary, those that could not exceed cost of capital should be abandoned since it reduces shareholders' value. Moreover, EVA considers not only the interest expense of debt financing, but also the cost of capital invested. Thus, EVA measures corporate performance free from any possible manipulation that would occur through the choice of accounting method. (Stewart, 1991)

Unlike accounting profit, EVA reflects cash basis calculation rather than accrual basis one. For this reason, EVA needs adjustments to eliminate distortions resulting from Generally Accepted Accounting Principles (GAAP). (Peterson and Peterson, 1996) Meanwhile, Stern Stewart argues that although numerous adjustments are counted, five to fifteen adjustments are seen as sufficient for EVA computation. Stern, Stewart and Chew (1996) used thirteen adjustments, Stern (2008) and Kyriazis and Anastassis (2007) display six items, Grant (2007) focuses nine adjustments, Kaur and Narang (2008) computes EVA with five adjustments, Jacque and Valaaer (2001) indicates eight, Goldberg (1999) states required adjustments and Cagle, Smythe and Fulmer (2003) indicate four items. In this study, five adjustments named as net capitalized intangibles, doubtful allowances reserve, inventory obsolescence reserve, goodwill and deferred income taxes are implemented.

Two objectives are considered in that research. First, any relationship between EVA and Stock Price is investigated. Secondly, value relevance of EVA along with Earnings per Share and Book Value per Share is examined. This study involves four parts.

In the first part, performance criteria and systems, traditional accounting methods and economic profit concepts are examined. In the second part, EVA theory is given in accordance with adjustments, capital, NOPAT, and cost of capital calculations. In the third part, EVA related issues such as reward system, short termism and standardized EVA are discussed. Moreover, EVA weaknesses are examined. Furthermore, EVA's comparison with traditional methods and stock price are displayed. Lastly, some EVA examples are given. In the fourth part, model setup is presented. Correlation analysis between EVA and Stock Price are displayed. Also, regression analysis of 69 non financial companies in In Istanbul Stock Exchange in year 2006 and 2007 with respect to EVA, Earnings per share, Book Value per Share and Stock Prices are discussed. Lastly, as a conclusion, results and suggestions are evaluated.

PART 1
PERFORMANCE IN GENERAL

1.1 PERFORMANCE MEASUREMENT CRITERIA

Performance is the process of quantifying action, where measurement is the process of quantification and action leads to performance. Furthermore, effectiveness refers to the extent to which customer requirements are met, while efficiency is a measure of how economically the firm's resources are utilized when providing a given level of customer satisfaction. (Neely at all, 2005)

Neely at all (1997) state that inadequately designed performance measures can result in dysfunctional behavior. Often the method of calculating performance, the formula, encourages individuals to pursue inappropriate courses of action. Designing a performance measure, however, involves much more than simply specifying a robust formula.

In literature, measures of performance are recommended to be simple to understand, be clearly defined, visible to all, transparent, be consistent, be simple and easy to use, have visual impact, focus on improvement, relate to specific goals, have an explicit purpose, provide information, provide timely, accurate and fast feedback (See: Parker, 1999; Globerson, 1985; Fortuin, 1988; Maskell, 1989; Neely et al., 1997) Fortunately, EVA enables all those requirements.

1.2 TRADITIONAL METHODS

Laitinen (1999), examines the financial performance through three factors namely profitability, liquidity, and capital structure. He defines profitability as the ability of the firm's assets to generate profits; liquidity as the ability of a firm to pay its bills when they become due; and the capital structure, as long-term solvency. Profitability can be divided into two relevant dimensions: the profitability of total assets and the profitability of shareholders' assets. The profitability of total assets refers to performance from the perspective of the whole firm. According to him, the

most valid and reliable measure for this dimension will probably be the return-on-investment ratio, even though -like almost all financial ratios- this too is vulnerable to manipulation. This financial measure is usually calculated as the ratio of earnings before interests and taxes (EBIT) to total assets. The profitability of shareholders' assets refers to profitability measured from the point of view of the owners of the firm. This dimension is usually measured by the return-on-shareholders' assets ratio, the ratio of net profit to shareholders' assets.

He argues that liquidity has two dimensions: static liquidity and dynamic liquidity. Static (traditional) liquidity measures the amount of liquid assets relative to the billed amounts that have to be paid in the short term (liquidity reservoir). A good measure for the liquidity concept is the quick ratio, which is defined as financial assets relative to current liabilities. Dynamic liquidity is based on a flow concept and it measures the adequacy of the firm's revenue financing to deal with current expenditure, taxes, and interests. This concept can be measured by the cash-flow-to-sales ratio.

Furthermore, capital structure can also be divided into two relevant dimensions: static long-term solvency and dynamic long term solvency. Static long-term solvency refers to the traditional capital structure, measuring the extent to which shareholders' capital is employed in the balance sheet. This concept can be measured by the shareholders' capital-to-assets ratio. Dynamic long-term solvency is defined as the ability of the firm to manage the obligations (interests and amortizations) stemming from debtors. This ability can be measured by the pay-back period of loans, which is calculated as the ratio of total debt to operating cash flow.

Performance = Profitability x Liquidity x Capital structure

Peterson and Peterson (1996) clearly illustrate the traditional methods through return of investment ratios. First, Basic earning power ratio, which is calculated as dividing earnings before interest and taxes (EBIT) to total assets, helps to evaluate how well the firm uses its assets in its operations. For example, a basic earning

power ratio of 25 percent means that for every dollar invested in assets, the firm generates 25 cents of operating profit. However, this measure deals with earnings from operations, it does not consider how these operations are financed.

Basic Earning Power Ratio = EBIT / Total Assets

Secondly, Return on assets, calculating as dividing net income to total assets, shows the return available to owners from the investment of the capital from both creditors and owners. A return on assets of 20 percent indicates that for every dollar of capital, a profit of 20 cents is generated for the firm's owners.

Return on Assets = Net Income / Total Assets

They record that an investor may not be interested in the return the firm gets from its total investment, but rather, he or she may be interested in the return the firm earns on the equity investment. Return on equity is the ratio of the net income shareholders receive to their equity in the stock. A return of equity of 10 percent displays that for every dollar invested by owners, they earn 10 cents.

Return on Equity = Net Income / Book Value of the Equity

Generally higher return ratios are associated with better performance. Return ratios are typically used in two ways. First, return ratios are often compared over time for a given firm if it is the trend and secondly, return ratios are compared among firms or compared with a benchmark, such as an industry average return or a return for the industry leaders.

1.3 FINANCIAL vs. NON FINANCIAL

Financial measures encourage short-termism, a lack of strategic focus, and local optimization; they also encourage managers to minimize any variance from the standard rather than seeking continual improvement, and they fail to provide information on what customers want and how competitors are performing (Neely, 1999). Maskell (1989) also preferred non financial to financial measures, and observed that non financial measures are clearer and more relevant for manufacturing firms. Bromwich and Bhimani (1994) also claimed the relevance of considering non financial information cannot be overemphasized. Horngren (1995) declared that non financial performance measures will acquire greater prominence in future management accounting practice.

The measurement of a product's profitability is based on the difference between its unit revenue (price) and its unit cost. There is no problem when it comes to allocating revenue as between products. The measurement of unit cost, however, is not always reliable. The homogeneity assumption will be violated if the costs in a cost pool are driven by two or more activities that are not closely correlated, while only one of the activities taken into account is assigning the costs in the cost pool as a whole to products. Product costs are thus arbitrary, which distorts the reliability of the measurement. The proportionality assumption may be violated on several grounds, for instance, proportionality cannot be strictly met if the cost pool includes nonlinear or fixed costs associated with the activity. Laitinen (1999).

Fisher (1992) studied non-financial measures in five high technology manufacturing plants and concluded as follows: ‘While the new measures were considered superior to the old methods of control, the non-financial system was not problem-free. One of the key difficulties of the non-financial system was the inability to dollarize the amount of improvement in the non-financial measurements. The tie between improvements in the non-financial measures and profits was unclear.’ He also pointed out that non-financial measures can conflict in a short-term perspective, which makes it difficult to determine genuine trade-offs between them, while gaming with such measures may also occur. Thus, there seems to be an acute need to improve the decision-usefulness of non financial measures alongside the financial

ones. Satisfactory usefulness can only be achieved by developing systems that take explicit account of the causal relationships between the measures.

1.4 ECONOMIC PROFIT & VALUE ADDED METHODS

A firm's management creates value when it makes decisions that provide benefits exceeding costs. These benefits may be received in the near or distant future, and the costs include the direct cost of the investment and the cost of capital (Peterson and Peterson, 1996). Likely, Stewart (2002) claims that the most egregious error accountants are now making is considering equity capital as a free resource. Although they subtract the interest expense associated with debt financing, they do not place any value on the funds that shareholders have put or left in a business. As a result, companies often report accounting profits when they are in fact destroying shareholder value. He claims that economic profit eliminates this distortion; since economic profit more accurately measures corporate performance by subtracting the cost of all resources used to generate revenues, including the cost of equity capital. He states that unlike interest or wages, the cost of equity is not cash cost. It is an opportunity cost. At its most basic:

Economic Profit = Accounting Profit - The Cost of Equity

Furthermore, he argues that economic profit does not account for a company's value, but for the wealth it has created for its shareholders after the value of their investment has been recovered. It accounts for the difference between a firm's market value and its book value, a spread termed market value added, or MVA.

1.4.1 Economic Profit vs. Accounting Profit

Peterson and Peterson (1996) display major differences between the economic profit and the accounting profit. Firstly, accounting profit is the difference between revenues and costs, based on the representation of these items according to

accounting principles. Economic profit is also the difference between revenues and costs, but unlike in the determination of accounting profit, in economic profit, the cost of capital is included in the costs. Secondly, accounting profits, for the most part, are represented using the accrual method, whereas economic profit reflects cash basis accounting. Thirdly, unlike accounting profit, economic profit cannot be manipulated by management through the choice of accounting methods. Furthermore, they state compensation on economic profit, rather than accounting profit, encourages longer sighted decision making.

Moreover, Ehrbar (1998) claims that the accounting model holds a combination of earnings per share, earnings growth, and return on equity determine expected future profits and, in turn stock prices. He indicates that the main competing explanation of stock valuation is called as the economic model. The economic model holds that investors care about only two things: the cash that a business can be expected to generate over its life and the riskiness of the expected cash receipts. According to him, the economic model does a much better job of explaining movements in stock prices, and that the accounting model is simply wrong. Furthermore, he suggests that the empirical evidence displays EVA, which is derived from the economic model, correlates much more closely with changes in MVA than any other performance measure.

1.4.2 For Single Projects

As single projects Net Present Value and Internal Rate of Return methods may be used. Net Present Value discounts uncertain future cash flows at some rate that reflects the cost of capital used in the investment. This cost of capital reflects the marginal cost of raising additional capital. The cost also reflects the risk inherent in the project; the greater the investment's risk, the greater its cost of capital. The difference between the present value of these uncertain cash flows and the cost of the project is referred as the project's net present value. If the net present value is positive, the investment is expected to add value to the firm; if the net present value

is negative, the investment is expected to reduce the value of the firm. (Peterson and Peterson, 1996)

IRR is simply the discount rate that equates the net present value to zero. Use of the IRR requires first calculating the IRR and then comparing this rate with cost of capital. This cost of capital reflects the costs of the various sources of funds and the uncertainty associated with the investment. If the project's IRR exceeds this cost of capital, the project is value enhancing. If the project's IRR is less than the cost of capital, the project is value reducing. (Peterson and Peterson, 1996)

1.4.3 Market Value Added

Griffith (2006) indicates that Market Value Added (MVA) is the difference between the market value of a company (both equity and debt) and the capital that lenders and shareholders have entrusted to it over the years in the form of loans, retained earnings, and paid in capital. MVA is a measure of the difference between 'cash in' (what investors have contributed) and 'cash out' (what they could get by selling at today's prices). If MVA is positive, it means that the company has increased the value of the capital entrusted to it, and thus created shareholder wealth. If MVA is negative, the company has destroyed wealth. Peterson and Peterson (1996) identify the key elements of the MVA as:

1) Calculation of the market value of capital
2) Calculation of the capital invested; and
3) Comparison of the market value of capital with the capital invested.

Moreover, they formalize MVA as:

MVA = Market value of the firm – Capital.

Similarly Stewart (1991) simply formalizes MVA as:

MVA = market value — capital
MVA = present value of all future EVA

Furthermore, he claims that MVA is the absolute dollar spread between a company's market value and its capital. Unlike a rate of return which reflects the outcome of one period, MVA is a cumulative measure of corporate performance. It represents the stock market's assessment as of a particular time of the net present value of all a company's past and projected capital projects. It reflects how successfully a company has invested capital in the past and how successful it is likely to be at investing new capital in the future.

1.5 MIXED PERFORMANCE METHODS

Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of action. A performance measure can be defined as a metric used to quantify the efficiency and/or effectiveness of an action. A performance measurement system can be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions. (Neely, 1994)

Neely et al. (2005) argue that one of the problems with the performance measurement literature is that it is diverse. This means that individual authors have tended to focus on different aspects, for that reason, they examine a Performance Measurement System with three different levels:
(1) the individual performance measures;
(2) the set of performance measures – the performance measurement system as an entity; and
(3) the relationship between the performance measurement system and the environment within which it operates.

They argue that, at the level of the individual measure, "performance measurement system" can be analyzed by asking questions such as:

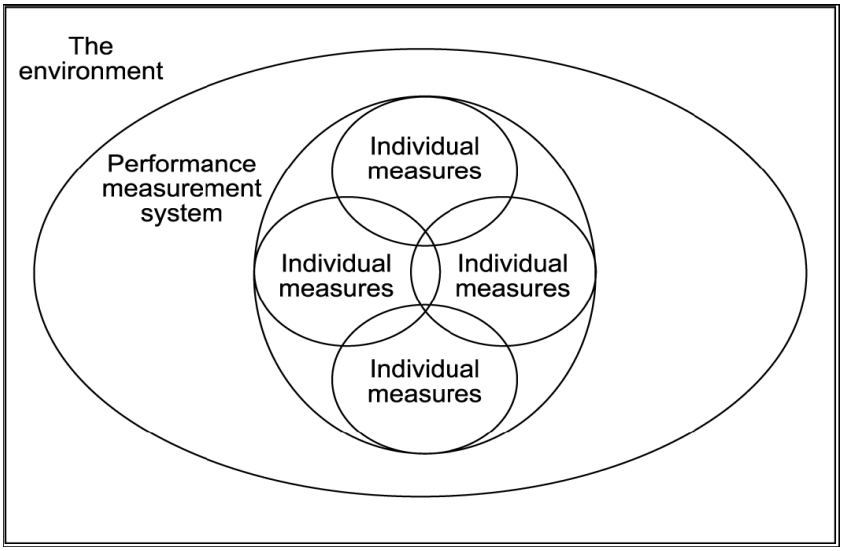
- What performance measures are used?
- What are they used for?
- How much do they cost?
- What benefit do they provide?

At the next higher level, the system can be analyzed by exploring issues such as: Have all the appropriate elements (internal, external, financial, non-financial) been covered; rate of improvement been introduced; both the long- and short-term objectives of the business been introduced; the measures been integrated, both vertically and horizontally and whether any of the measures conflict with one another.

And at the highest level, the system can be analyzed by assessing whether the measures reinforce the firm's strategies; match the organization's culture; be consistent with the existing recognition and reward structure; focus on customer satisfaction; and concentrate on what the competition is doing.

Figure 1:

Performance Measurement System



Source: Adopted from Neely at all, 2005.

Fitzgerald et al. (1991) on the other hand, suggest that there are two basic types of performance measure in any organization – those that relate to results (competitiveness, financial performance), and those that focus on the determinants of the results (quality, flexibility, resource utilization and innovation). This suggests

that it should be possible to build a performance measurement framework around the concepts of results and determinants.

Flapper et al. (1994) classify the performance indicators (PIs) in literature under five subgroups:

- *Financial versus non-financial*

- *Global versus local:* Global PIs are for top management, and local PIs for managers at lower levels.

- *Internal versus external:* Internal PIs are used to monitor the performance of an organization on aspects that are relevant for its internal functioning, whereas external PIs are introduced to evaluate the performance of the organization as experienced by customers or to evaluate the performance of suppliers, where customer and supplier can also refer to different parts of one organization.

- *Organizational hierarchy:* The vertical relations between PIs are often based on the organizational structure of a company. The hierarchy functions in a natural way to aggregate PIs at a certain level into a smaller number of indicators at the next higher level (a bottom-up approach).

- *Area of application:* This classification is department oriented: R&D, operations, sales and marketing. The idea behind this classification is that each department requires its own PIs.

In addition, they represent a new classification of PIs involving three intrinsic dimensions: decision type, aggregation level and measurement unit. With decision type dimension they focus on PIs related to a decision having effect on issues with a time scale. PI whose effect lasts for years called as a strategic PI; for weeks or months as tactical; and for daily activities as operational one. With level of organization they clarify a PI whether it causes a significant good or bad

performance (partial) or as a whole (overall) one. Lastly, they state three types of measurement units: monetary, physical and dimensionless. The indicators that express the performance in terms of monetary units are called as monetary PIs; with physical units such as units/hour, m^3, or kg/m^2 as physical PIs; and more abstract ones that often obtain by calculating a percentage or a ratio are dimensionless PIs.

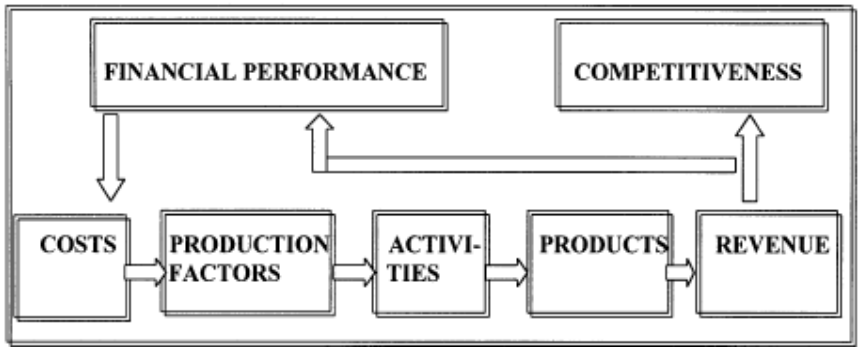
Dixon et al. (1990) present a performance measurement questionnaire (PMQ), which consists of three stages. In the first one, general data on both the company and respondent are collected. In the second, the respondent is asked to identify those areas of improvement that are of long-term importance to the firm and to say whether the current performance measurement system inhibits or supports appropriate activity. In the third, the respondent is asked to compare and contrast what is currently most important for the firm with what the measurement system emphasizes. The data are collected using seven-point Likert scales and then four types of analysis are conducted. The first is alignment analysis in which the extent of match between the firm's strategies, actions and measures is assessed. The second is congruence analysis, which provides more detail on the extent to which the strategies, actions and measures are mutually supportive. The third is consensus analysis, in which the data are analyzed according to management position or function. And the fourth is confusion analysis in which the range of responses, and hence the level of disagreement, is examined.

Also, Laitinen (1999) presents an integrated performance measurement system (IPMS) that consists of seven main factors and the causal chain connecting these factors. The factors are classified as two external factors (financial performance and competitiveness) and five internal factors (costs, production factors, activities, products, and revenues). The main idea of the IPMS is to follow the use (transformation) of resources from the point of the very first (elementary) resource allocation to the point when the results of the allocation are realized as revenues. In the causal chain, the factor at any point along the chain is regarded as a determinant of the factor that succeeds it. Moreover, the next resource allocation decision is

dynamically affected by the results of the former decisions, thus allowing for learning-by-doing.

Figure 2:

Integrated Performance Measurement System



Source: Adopted from Laitinen (1999).

Stern et al., (1996) suggest a financial management system consist of financial policies, procedures, methods and measures that guide a company's operation and strategy. It has to do with how companies address questions as: What are our overall corporate financial goals and how do we communicate them, both within the company and to the investment community? How do we allocate resources –everything from the purchase of an individual piece of equipment, to the acquisition of an entire company, to opportunities for downsizing and restructuring? How do we evaluate ongoing operating performance? Last but not least, how do we pay our people, what is our corporate reward system?

1.5.1 Balanced Scorecard

Kaplan and Norton (1992) argue Balanced Scorecard (BSC) as set of measures which enables managers to address the following questions:

- How do we look to our shareholders (financial perspective)?
- What must we excel at (internal business perspective)?

• How do our customers see us (the customer perspective)?
• How can we continue to improve and create value (innovation and learning perspective)?

The BSC includes financial measures giving the results of actions already taken. However, it complements the financial measures with operational (non-financial) measures regarding customer satisfaction, internal processes, and the innovation and improvement activities of the organization. These measures are the drivers of future financial performance. The authors argue that the complexity of managing an organization today requires that managers be able to view performance in several areas simultaneously.

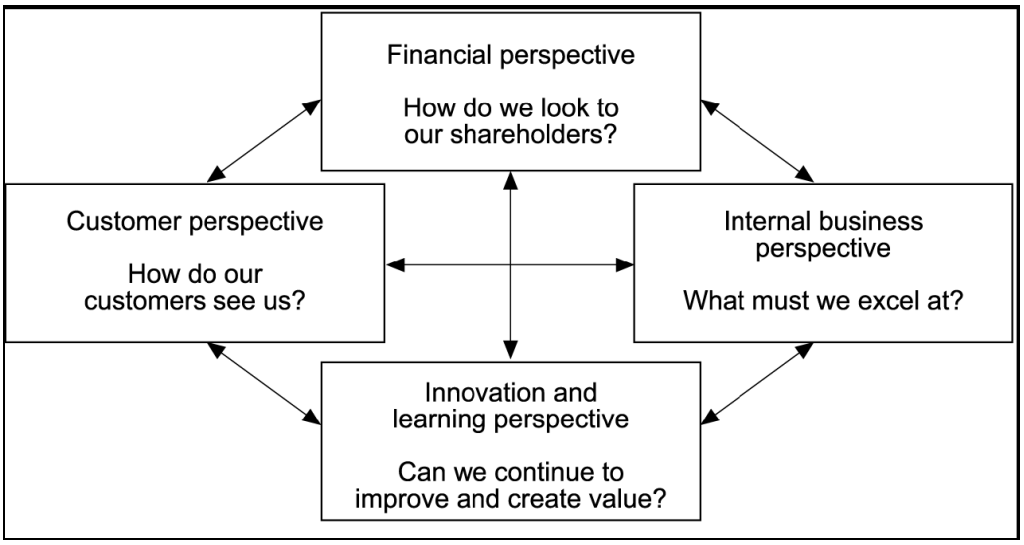
Moreover, they indicate that BSC is composed of four relevant factors (main dimensions). First, the customer perspective translates the general mission statement on customer service into specific measures that reflect what really matters to customers. The measures in this category usually deal with time, quality, performance and service, and cost. Second, the internal perspective deals with the performance measures for the critical internal operations that enable the firm to satisfy its customers' needs. The measures in this category concern such things as cycle time, quality, employee skills, and productivity. Third, the innovation and learning perspective describes a company's ability to innovate, improve, and learn about the customers' needs. The measures here generally concern the ability to launch new products, to create more value for customers, and to make continual improvements in operating efficiency. Fourth, the financial perspective indicates whether the company's strategy, implementation and execution are helping to improve the bottom-line.

However, Neely et al. (2005) criticize the balanced scorecard since it could not answer one of the most fundamental questions of all – what are our competitors doing (the competitor perspective)? On the other hand, Ittner & Larcker (1998), in a survey on the implementation of BSC in 60 firms, find out that most of the respondents (64%) reported that the satisfaction or value achieved from their BSCs

was higher, or even significantly higher, than the satisfaction gained from other performance-measurement systems. However, 37% felt that the employees' understanding of performance measures and goals was greater under the scorecard system than under other systems and 18% thought that it was less. Moreover, Ittner, Larcker, and Meyer (1997) did not find any evidence in retail branch banks that the BSC approach altered the managers' understanding of business goals, their plans for meeting the goals, or the connections between their job and the business objectives.

Figure 3:

Balanced Scorecard



Source: Adopted from Kaplan & Norton (1992)

1.5.2 Performance Pyramid Model

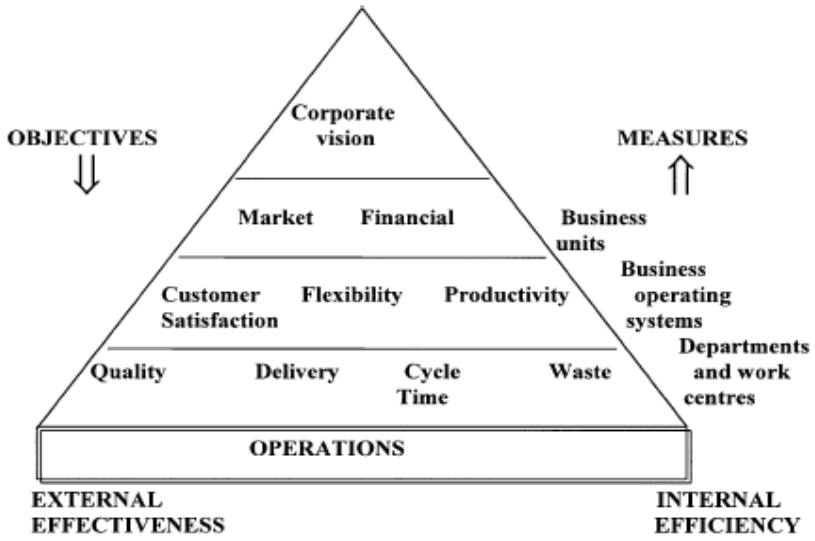
Laitinen (1999), indicates that the purpose of the The Performance Pyramid System (PPS) is to link an organization's strategy with its operations by translating objectives from the top down (based on customer priorities) and measures from the bottom up. Moreover, he indicates that PPS includes four levels of objectives that address the organization's external effectiveness (the left side of the pyramid) and its internal efficiency (the right side). The development of a firm's performance pyramid starts with the definition of an overall corporate vision (the highest or first level of

objectives), which is then translated into individual business unit (SBU) objectives at the second level. At the second level of objectives key market and financial measures are identified as ways of monitoring performance in achieving the vision. In order to attain these market and financial objectives, key measures of customer satisfaction, flexibility and productivity are also derived. These key measures at the third level are further converted into specific operational measures, which form the base of the pyramid. These measures (quality, delivery, cycle time and waste) relate to individual departments or components of the business system within an organization.

Lynch and Cross (1991) claim that the pyramid model is useful for describing how objectives are communicated down to the troops and how measures can be rolled up at various levels in the organization. They also identify the use of the PPS in a feedback context, whereby it is used explicitly to monitor organizational performance. They argue that this model is equally useful for monitoring performance at the corporate, the SBU, the Business Operating Systems (BOS), and the departmental and work-centre levels of the organization.

Figure 4:

The Performance Pyramid



Source: Adopted from Lynch & Cross, (1991)

Laitinen (1999), criticize the PPS model since the relationships between the factors at the same levels are not described in detail.

PART 2
EVA THEORY

2.1 THE THEORY OF EVA

EVA, founded by Stewart in 1991 with his famous novel named as 'The Quest for Value', the difference between operating profit after taxes less a charge for capital calculated by capital and its cost (Ferguson, Rentzler and Yu, 2005). Fairfield (1994) claims theoretical justification for the usefulness of EVA is derived from traditional present value of dividend model. Moreover, he states that this model is written as the present value of future dividends. However, it is easily transformed into the sum of the current value of a firm's assets, less the current value of its liabilities, plus the present value of future abnormal earnings.

Weaver (2001) explains EVA in a simple way; "to increase shareholder value a firm must make more from the capital it employs than the true cost of that capital to the firm". EVA is formulated as:

EVA = NOPAT - Cost of invested capital

where NOPAT is the Net Operating Profit After Tax, Cost of invested capital is the Cost of Capital multiplied by Invested Capital. The Cost of Capital is generally the weighted average cost of capital using the risk adjusted return from equity as calculated by the Capital Asset Pricing Model (CAPM). Furthermore, Peterson and Peterson (1996) suggest that Economic Value Added is another name for the firm's economic profit; and to estimate economic profit, the following key elements are necessary:

1) Calculation of the firm's operating profit from financial statement data, making adjustments to accounting profit to reflect a firm's results for a certain period;
2) Calculation of the cost of capital.
3) Comparison of operating profit with the cost of capital.

In theory, firms that take on projects that exceed their cost of invested capital will be adding to their shareholder value; those taking on projects with negative (positive) EVA will be reducing (increasing) their shareholder wealth (Turvey and Starling, 2003). Also, Ehrbar (1998) suggests that EVA methodology explicitly addresses business and financial risk and allows the investor to gauge the magnitude and sustainability of returns.

According to Stern and Schönburg (1999) the reasons behind the success of EVA are the internal corporate governance (managers and employees work together and trust each other's motives) and external credibility (investors know that managers and employees are working in shareholder's interests).

Lastly, Stewart (1991), argues that EVA is the one measure that properly accounts for all the complex trade-offs involved in creating value. Moreover, it is computed by taking the spread between the rate of return on capital r and the cost of capital c^* and then multiplying by the economic book value of the capital committed to the business:

$$EVA = (r - c^*) \times \text{capital}$$

$$EVA = (\text{rate of return} - \text{cost of capital}) \times \text{capital}$$

When both r and c^* are multiplied with capital:

$$EVA = r \times \text{capital} - c^* \times \text{capital}$$

$$EVA = NOPAT - c^* \times \text{capital}$$

$$EVA = \text{operating profits} - \text{a capital charge}$$

Furthermore, he argues that although in any given business there are countless individual things that people can do to create value, eventually they all must fall into one of the three categories measured by an increase in EVA. EVA increases when:

i) The rate of return earned on the existing base of capital improves; that is, more operating profits are generated without tying up any more funds in the business

ii) Additional capital is invested in projects that return more than the cost of obtaining the new capital.

iii) Capital is liquidated from, or further investment is curtailed in substandard operations where inadequate returns are being earned.

In other words, he states three EVA strategies as:

1) To improve operating profits without tying up any more capital

2) To draw down more capital line of credit so long as the additional profits management earns by investing the funds in its business more than covers the charge for the additional capital.

3) To free up the capital and pay down the line of credit so long as any earnings lost is more than ofset by a saving on the capital charge.

2.2 ADJUSTMENTS

The accounting model relies on two distinct financial statements; an income statement and balance sheet, whereas the economic model uses only one: sources and uses of cash. Because earnings are emphasized in the accounting model, whether a cash outlay is expensed on the income statement or is capitalized on the balance sheet makes a great deal of difference. In the economic model, where cash outlays are recorded makes no difference at all, unless it affects taxes (Stewart, 1991). Likely, Turvey and Starling (2003) indicates that in order to assess economic profit, it is necessary to accurately measure actual cash flows and returns, without the distortions caused by Generally Accepted Accounting Principles (GAAP). Thus, the implementation of EVA requires managers to make adjustments to reported accounting measures. It is the process of making adjustments to GAAP statements that challenges managers and investors trying to compare and value investment decisions. The adjustments are not simple and, for Stem Stewart customers, they are not made public.

From this viewpoint, the accounting distortions can be halted through some adjustments on accounting data. Even though Stern Stewart claim those adjustments more than 120 adjustments, they also inform mostly 15 to 25 of them are sufficient to calculate EVA (Stern, Stewart and Chew, 1996). Unfortunately, in most part of the EVA literature, those adjustments are neither clarified as what they are, nor identified how they are explicated from the financial tables and footnotes. On the other hand, the common view on determining adjustments indicates four tests:

It is likely to have a material impact on EVA?

Can the managers influence the outcome?

Can the operating people readily grasp it?

Is the required information relatively easy to track or derive?

According to Young (1999) those adjustments aim to 1) produce an EVA figure that is closer to cash flows, and therefore less subject to the distortions of the accrual accounting; 2) remove the arbitrary distinctions between investment in tangible assets, which are capitalized, and intangible assets, which tend to be written off as incurred; 3) prevent the amortization, or write off, of goodwill; eliminate the use of successful effort accounting; 5) bring off balance sheet debt into the balance sheet; and 6) correct biases caused by accounting depreciation. Moreover, Young names eight common adjustments that are most widely used that are; non recurring gain and losses, research development, deferred taxes, provisions for warranties and debts, LIFO reserves, goodwill, depreciation and operating leases. Stern, Stewart and Chew (1996), named thirteen of them as; inventory costing and valuation; depreciation; revenue recognition; the writing-off bad debts; mandated investments in safety and environmental compliance; pension and post-retirement medical expense; valuation of contingent liabilities and hedges; transfer pricing and overhead allocations; captive finance and insurance companies; joint ventures and start ups; and special issues of taxation, inflation and currency translation. Similarly, Stern (2008) displays amortization of goodwill, capitalizing of brand advertising, LIFO reserve, the allowance for bad debts, operating leases, and deferred tax liability. Furthermore, Kyriazis and Anastassis (2007) in their study focusing on the

information content of EVA with 121 non financial firms functioning in Greek Stock Market data from 1996 to 2003; applied six EVA adjustments proposed by Stern Stewart. First capitalization of R&D expenses, secondly capitalization of provisions, thirdly subtraction of the interest tax shield from the operating profits, fourthly, subtraction of the taxes from non operating profits; fifthly, subtraction from the total invested capital of fixed assets under construction, and lastly adding accumulated depreciation of goodwill. In a similar way, Grant (2007) in his study regarding health care providers in the US, calculates EVA through adjusting LIFO reserve, goodwill amortization, capitalized R&D, cumulative write offs and special items, bad debt reserve, capitalized net charity care, capitalized medical training programs, and capitalized community wellness programs with an inspiration of Stewart's model. Moreover, Jacque and Valaaer (2001) in their study focusing on shareholder value creating of multinational companies; indicate marketing and R&D cost, deferred taxes, purchased goodwill, operating leases, bad debt and warranty costs, LIFO inventory costing, and discontinued operations as necessary adjustments. Likely, Goldberg (1999) in his atricle comparing EVA with earnings and return on equity; chooses goodwill amortization, deferred taxes, LIFO inventory accounting, subscription revenues, advanced billings, R&D expenditures, and operating leases for NOPAT calculation; and, reserves for deferred income taxes, LIFO inventory valuation, cumulative amortization of goodwill, capitalization of R&D, other market-building outlays, cumulative unusual write-offs (less gains) after taxes, and allowances for warranties and doubtful accounts adjustments for capital calculations.

Kaur and Narang (2008) in their research based on a single company data of 1997–98 and 2005–06; computes EVA with five adjustments named as nonrecurring income and expenditures, R&D expenditure, goodwill, investments in marketable securities, and revaluation reserve. They start with excluding nonrecurring items from NOPAT. In more detail, nonrecurring losses or expenditure are taken as additions to capital while non recurring incomes or gains are deemed to be reductions to it. Secondly, R&D expenditure is included in the capital and added back to NOPAT in which the amount included in the capital is amortized over five years. Thirdly, goodwill amortization is excluded from the calculation of NOPAT and gross

goodwill is included in capital. Fourthly, investments in marketable securities are included in capital. Lastly, revaluation reserve is excluded from capital.

Cagle, Smythe and Fulmer (2003) display capital calculation by adding allowance for bad debts, capitalization of advertising expenditures, capitalization of R&D expenditures, present value of operating leases items; but, subtracting excess cash & short term investments and non operating assets from capital. Furthermore, NOPAT is measured by adding interest expense including interest on operating leases, current year advertising expenses, current year R&D expenditures, increase in bad debt reserve, charitable contributions, and income tax expense to NOPAT. However, interest income, cash operating taxes, amortization of advertising expenditures, and amortization of R&D expenditure are deducted from NOPAT through calculation.

Lastly, Weaver (2001) in his study regarding inconsistencies in the measuremnt of EVA and its main components, examines 29 EVA adopted companies and their EVA components for calculation. He states 14 items in NOPAT; and 22 items in capital calculation. Then, he displays the number of companies that issued those adjustments. Interestingly, used adjustments hugely vary among 29 companies. Weaver's (2001) NOPAT and Capital Adjustments Tables, given in Table 1 and Table 2, prove that there is not a single constant way of measuring EVA. In practice, companies prefer to use different number of items as necessary adjustments. From this viewpoint, numerous EVA calculations may exist for a single company. For that reason, in the next section some common adjustments are defined and Stewart's (1991) Wall Mart case, that is frequently cited in literature, of NOPAT and Capital calculations are examined in detail.

Table 1:

Weaver's NOPAT Adjustments Table with number of companies used relevant items

	Respondents that Make Adjustment		
	Number	%	Significance 5-Point Scale
A. *US GAAP Adjustments – NOPAT Excludes:*			
1. Discontinued Operations	19	67.9	2.63
2. Extraordinary Items	24	85.7	2.71
3. Changes in Accounting	20	71.4	2.45
4. Restructuring Charges	19	67.9	3.63
5. Other One-Time Charges	19	67.9	2.94
6. Interest Expense	26	92.9	3.96
7. Interest Income	20	71.4	3.00
B. *Non-US GAAP Adjustments – NOPAT Adjustments*			
Alignment with Cash Flow:			
8. Expense Cash Taxes Only	13	46.4	3.54
9. Eliminate Amortization of Goodwill	20	71.4	3.80
10. Eliminate Amortization of Intangibles	15	53.6	3.13
11. Change COGS to FIFO Basis	8	28.6	3.25
Non-Alignment with Cash Flow – Capitalization of:			
12. Research and Development "Investment"	11	39.3	2.73
13. Advertising "Investment"	6	21.4	1.50
14. Operating Leases	10	35.7	4.10

Source: (Adopted from Weaver, 2001)

Table 2:

Weaver's Capital Adjustments Table with number of companies used relevant items

	Respondents that Make Adjustment		
	Number	%	Significance 5-Point Scale
A. *US GAAP Adjustments – Invested Capital Excludes:*			
1. Accounts Payable	14	51.9	3.15
2. Accrued Liabilities	16	59.3	3.00
3. Other Payables	15	55.6	2.93
4. Other Non-Debt Current Liabilities	14	51.9	2.92
5. Notes Payable*	13	48.1	2.75
6. Short-Term Debt*	11	42.3	3.45
7. Long-Term Debt*	12	44.4	4.33
8. Deferred Taxes*	10	37.0	3.20
9. Pension Liabilities (or Assets)*	6	22.2	3.50
10. Other Long-Term Liabilities*	9	33.3	2.67
B. *Non-US GAAP Adjustments*			
Coordination with US GAAP NOPAT Adjustments:			
11. Discontinued Operations	16	61.5	1.75
12. Extraordinary Items	19	70.4	2.61
13. Changes in Accounting	12	46.2	1.09
14. Restructuring Charges	19	73.1	2.94
15. Other One-Time Charges	18	69.2	2.47
Permanent Capitalization of:			
16. Goodwill	18	69.2	2.65
17. Intangibles	15	55.6	2.00
18. Goodwill of Divested Businesses	11	42.3	2.30
19. Inclusion of FIFO Based Inventory	10	37.0	2.30
Capitalization and Subsequent Amortization:			
20. Research and Development Investment	14	53.8	2.23
21. Advertising Investment	7	26.9	1.86
22. Operating Leases	15	55.6	3.57

Source: (Adopted from Weaver, 2001)

2.2.1 Non Recurring Gains and Losses

Young (1999) explains this adjustment through oil well example. He stresses that most accountants supports balance sheet should report only those assets with future service potential. If an oil well is a dry hole and no future cash flow is possible from it, we should not call it an asset. However, he indicates that nobody knows whether the well has economic quantities of oil before digging it. For instance, if five well were dig and only one of them became successful. At that point rather than the whole cost of the five wells; only the corresponding part of the one well's cost should be capitalized.

2.2.2 Provisions for Warranties and Guarantees

Young (1999) indicates that the accrual method of accounting requires companies to make provisions for costs that are expected in the future as a result of events, circumstances, or decisions that have already occurred. Bad debts, restructuring, and warranties are among the most common provisions. From the viewpoint of EVA proponent, the recognition of provisions takes accounting profits farther from cash flow and provisions are popular vehicles for manipulating financial reports. For this reason, increases in provisions are added back to NOPAT, net of tax, while decreases are subtracting. Increase in denote charges to earnings in excess of cash expenses, while decreases denote cash expenses greate than charges to earnings. Balance in provisions accounts, including the allowance for doubtful accounts (bad debts) are added to invested capital.

2.2.3 Deferred Income Tax Reserve

Deferred income tax reserve stores the cumulative difference between the accounting provision for taxes and the taxes actually paid. So long as the company replenishes the assets that give rise to the deferral of taxes; an assumption investors take for granted in the valuation of going-concern businesses, the deferred tax reserve will never be repaid but instead constitutes the equivalent of permanent

equity. Moreover, by adding back the increase in the deferred tax reserve to earnings, NOPAT is charged only with the taxes that actually are paid instead of the accounting tax provision. (Stewart, 1991)

Stewart (1991) suggests adding deferred tax reserve to Capital, and the increase in the deferred tax reserve to earnings. Peterson and Peterson (1996) calculate the decrease/increase in deferred taxes as the difference between deferred taxes on balance sheets for the following years. Similarly, in this study, increase in deferred taxes is computed according to Footnote 14 of financial tables (Deferred Tax assets and Liabilities).

2.2.4 The LIFO Reserve

Stewart (1991) explains that in the economic model, income and capital are measured as if the company's inventories were sold for their end-of-period prices and immediately repurchased, with any gain booked into periodic profits and the cumulative gain appearing as a revaluation reserve on the balance sheet. This gain belongs in profits because the rate of return is to be compared with a cost of capital that includes a premium for inflation. This is still cash accounting, but cash accounting assuming a simultaneous sale and purchase of inventories, an approach identical with that taken by investors who consider unrealized capital gains as part of their total return. LIFO accumulates costs from many prior periods in inventory. Inventory and equity are outdated and understated. Thus, there is a need to mark the LIFO inventories to current value. FIFO, by contrast, expenses first in, first out, leaving inventories on the balance sheet valued at the most recent prices. There is no need to adjust the FIFO value of inventories, since it is a good approximation of current replacement cost. The LIFO reserve is the difference between the LIFO and FIFO value of the inventory. It is a measure of the extent to which the LIFO inventories are understated in value.

Stewart (1991) measures the LIFO reserve as the difference between the FIFO and LIFO value of the inventories and informs that mostly it was declared in footnotes of the LIFO valuated companies. Moreover, he suggests that the periodic change in the LIFO reserve may be seen as the difference between LIFO and FIFO cost of goods sold. Adding such a change to reported profits converts from the cost of goods sold expense of LIFO to FIFO, but while retaining LIFO's tax benefit. In addition, Peterson and Peterson (1996) make LIFO reserve calculation through IFRS' Footnote 14.

2.2.5 Goodwill

When the purchase method is used to account for an acquisition, any premium paid over the estimated fair value of the seller's assets is assigned to goodwill and amortized against earnings over a period not to exceed 40 years. Because it is non cash, non tax deductible expense, the amortization of goodwill is of no consequence in the economic model of valuation. In the accounting framework, by contrast, it matters because it reduces reported earnings. To make the noncash, non-tax-deductible amortization of goodwill the nonissue it really is, it should be added back to reported earnings. And, to be consistent, the cumulative goodwill amortization must be added back to equity capital and to goodwill remaining on the books. (Stewart, 1991)

Also, Peterson and Peterson (1996) refer to the IFRS' Footnote 1 for calculation Goodwill Amortization and Accumulated Goodwill Amortization. Similarly, in this study, the goodwill amortization is measured by subtracting the beginning year and end year goodwill values in Footnote 17 of SPK. Moreover, the end year accumulated goodwill amortization is taken from Footnote 17, too. Stewart (1991) implicitly measures goodwill amortization through subtracting the goodwill values of the following years and add goodwill amortization to NOPAT.

2.2.6 Unrecorded Goodwill

Stewart states that if the acquisitions are accounted for by using the pooling of interest technique, then unrecorded goodwill emerges. From the standpoint of the buying company's shareholders, the true cost of an acquisition is the market value of the securities offered to consummate the deal as of the transaction date. The acquirer could have issued an identical package of securities for cash and then used to cash as the medium of exchange. The difference between the book value acquired and often much higher market value of securities offered is unrecorded goodwill. To record the true cost of a pooling of interest acquisition, and thereby more accurately measure the rate of return the acquirer is earning, unrecorded goodwill is added both to goodwill and to equity capital as an equity equivalent that does not amortize, thus making the treatment of purchase and pooling acquisitions entirely equivalent.

2.2.7 Intangibles

R&D outlays should be capitalized onto the balance sheet as an equity equivalent and then amortized into earnings over the anticipated payoff period for the successful projects. The result of capitalizing and amortizing R&D is a (net) capitalized R&D intangible that counts as an equity equivalent reserve. By adding the change in the (net) capitalized R&D intangible to NOPAT, the R&D expense of the period is replaced with the amortization of the capitalized R&D. (Stewart, 1991).

2.2.8 Depreciation

Depreciation is a measure of how much of an asset is used up in the period, which indicates how much must be expended to maintain operations at the existing level. (Peterson and Peterson, 1996) In addition, Stewart (1991) indicates that since there is no real cash flow transaction in depreciation amortization, depreciation is assumed to be added to NOPAT.

Peterson and Peterson (1996) calculate depreciation as depreciation and amortization from income statement less goodwill amortization from IFRS' footnote 1.

2.2.9 Implied Interest Expense on Operating Leases

Implied interest expense on operating leases is calculated using footnote information. The interest expense is estimated as the interest cost on the change in the average value of leases during the year, which requires estimating the present value of leases at the beginning and end of the year (Peterson and Peterson, 1996). They calculate the present value of operating leases by discounting minimum rental commitments on operating leases for the next five years. Likely, Harper illustrates five year expanding bond obligation as an operating leases. Similar to Peterson and Peterson, Harper takes five years cash flow of the obligation and discounts them to find their present value. For the next years, he discounts under one item as 'thereafter'.

2.3 NOPAT & CAPITAL CALCULATIONS

2.3.1 NOPAT

Stewart (1991) defines NOPAT as the profits derived from the company's operations after taxes but before financing cost and non cash bookkeeping entries. According to Peterson and Peterson (1996) there are two important elements in calculation NOPAT named as operating profit after depreciation and cash operating taxes. Cash operating taxes are estimated by starting income tax expense and adjusting this expense for

(1) changes in deferred taxes,

(2) the tax benefit from the interest deduction (for explicit and implicit interest) to remove the tax effect of financing with debt, and

(3) taxes from other non operating income or expenses and special items.

The change in deferred taxes is removed from the income tax expense for the following reasons:

- An increase in deferred taxes means that a portion of the income tax expense that is deferred is not a cash outlay for the period.
- A decrease in deferred taxes means that the income tax expense understates the true cash expense.

The tax benefit from interest is added back to taxes so that the cash taxes reflect the taxes from operations. This tax benefit is the reduction of taxes from the deductibility of interest expense.

Tax benefit from interest = Interest Expense x Marginal tax rate

2.3.2 Capital

Peterson and Peterson (1996) define the capital as the sum of net working capital, net property and equipment, goodwill and other assets. They offer two approaches for estimating the adjusted capital named as asset approach and source of financing approach. The asset approach begins with net operating assets and then makes adjustments to reflect total invested capital. For example, the goodwill generated from paying more for acquiring a company than the book value of its assets can be considered to be an investment; therefore, both goodwill and prior period's amortization of goodwill are added to reflect the firm's asset investment. Another approach, the source of financing approach, begins with the book value of common equity and adds debt, equity equivalent, and debt equivalents.

Similarly, Stewart (1991) defines the capital as a measure of all the cash that has been deposited into a company over its life without regard to the financing source, accounting name, or business purpose. He claims that capital employed can be estimated by taking the standard accounting book value for a company's net assets and then grossing it up three ways:

- To convert from accrual to cash accounting; by adding accounting reserves that are formed by recurring, non cash bookkeeping provisions such as deferred tax reserve.
- To convert from the liquidating perspective of lenders to the going concern perspective of shareholders; by capitalizing R&D outlays and market building expenditures.
- To convert from successful efforts to full cost accounting; by adding back cumulative unusual losses, less gains after taxes.

Stewart (1991) explains NOPAT and capital calculations in two dimensions: depending on how well the company was operated and how well it was financed.

2.3.4 NOPAT & Capital Calculations From Financing Approach

Stewart (1991) indicates that NOPAT is completely unaffected by a change in the mix of debt and equity a company chooses to employ. What matters is simply the productivity of capital employed in the capital has been obtained. Because, in calculation, all debt is added to capital and related interest expense is added to NOPAT.

NOPAT	Capital
= Income available to common	= Common equity
+ Interest expense after taxes	+ Debt

Moreover, to eliminate other financing distortions equity provided by preferred stockholders and minority investors are added to capital and income diverted to these equity sources added back to sources. It can be seen that for every component of capital, there is a corresponding entry in the calculation of NOPAT. NOPAT is the sum of the returns attributable to all the providers of funds to the company. In this way the NOPAT return is completely unaffected by the financial composition of capital.

NOPAT	Capital
= Income available to common	= Common equity
+ Preferred dividend	+Preferred stock
+ Minority interest provisions	+ Minority interest
+ Interest expense after taxes	+ All debt

Furthermore, to eliminate accounting distortions, equity equivalent (EEs) reserves are added to capital and the periodic change in such reserves added to NOPAT.

NOPAT	Capital
= Income available to common	= Common equity
+ Increase in equity equivalents	+ Equity equivalents
Adjusted net income	Adjusted common equity
+ Preferred dividend	+Preferred stock
+ Minority interest provisions	+ Minority interest
+ Interest expense after taxes	+ All debt

Stewart (1991) states that EEs items such as the deferred income tax reserve, the LIFO inventory valuation reserve, the cumulative amortization of goodwill, a capitalization of R&D and other market building outlays, cumulative unusual write offs (less gains) after taxes should be added to capital. In addition to correcting the balance sheet, EEs serve to eliminate the ways in which accountants distort the measurement of a firm's true economic profits. With the add backs, NOPAT records the actual timing of cash receipts and disbursements, includes economic holding gains and losses, building outlays as R&D and up front market development expenditures.

Table 3 indicates common EEs recommended by Stewart in NOPAT and Capital calculations.

Table 3:

Stewart's Common Equity Equivalents in Capital and NOPAT Calculation

Add to Capital:	**Add to NOPAT**
Equity Equivalents	**Inrease in Equity Equivalents**
Deferred Tax Reserve	Increase in Deferred Tax Reserve
LIFO Reserve	Increase in LIFO Reserve
Cumulative Goodwill Amortization	Goodwill Amortization
Unrecorded Goodwill	
Net Capitalized Intangibles	Increase in Net Capitalized Intangibles
Full Cost Reserve	Increase in Full Cost Reserve
Cumulative Unusual Loss (Gain) AT	Unusual Loss (Gain) AT
Other reserves, such as:	Increase in other reserves
Bad Debt Reserve	
Inventory Obsolescence Reserve	
Warranty Reserve	
Deferred Income Reserve	

Source: Adopted from Stewart (1991)

Lastly, Stewart's frequently cited NOPAT and capital calculations through financing approach of Wall Mart case and sources of the items used in the calculations, which is also benchmarked in this study, is submitted as:

2.3.3.1 Stewart's NOPAT Formula through Financing Approach

(a) Income Available to Common	Income Statement
(b) Increse in deferred Taxes	Footnote 41, the difference between the following years' deferred taxes
(c) Increase in LIFO Reserves	

(d) Goodwill Amortization	Footnote 17, the difference between the end year and beginning year balance of goodwill
(e) Increase in Equity Equivalents	= (b) + (c) + (d)
(f) Adj. Income Availanble to Common	= (a) + (e)
(g) Interest Expense	(Footnote 39)
(h) Interest Exp. Non-Cap Leases	
(i) Adj. Intereset Expense	= (g) + (h)
(j) Tax Benefit of Interest Exp.	= (i) * Tax Rate
(k) Interest Expense After Taxes	= (i) – (j)
NOPAT	= (k) + (f)

2.3.3.2 Stewart's Capital Formula through Financing Approach

(a) Short Term Debt	Balance Sheet Current Liabilities
(b) Current Portion of LTD	Balance Sheet Current Liabilities
(c) Senior Long Term Debt	Balance SheetNoncurrent Liabilities
(d) Capitalized Lease Obligations	Footnote 8 _ Lease Receivables and Payables (as adding long and short term financial leases.)
(e) PV of Non Cap Leases	
(f) Total Debt and Leases	= (a) + (b) + (c) + (d) + (e)
(g) Common Equity	Balance Sheet
(h) Deferred Income Taxes	Footnote 14 _ the deferred tax assets and liabilities net value
(i) LIFO Reserve	
(j) Accumulated Goodwill Amort.	Footnote 17 end year accumulated amortization
(k) Equity Equivalents	= (h) + (i) + (j)
(l) Adjusted Common Equity	= (g) + (k)
Capital	= (f) + (l)

2.3.4 NOPAT & Capital Calculations From Operating Approach

From an operating perspective, capital can be defined as net working capital (NWC) plus net fixed assets (NFA). Net working capital, in turn, is current assets net of non interest bearing current liabilities (NIBCLS), which are accounts such as accounts payable and accrued expenses. Net fixed assets consist of net property, plant and equipment, goodwill, and other long term capital necessary to run the business. Moreover, to obtain the same measure of capital as the financing approach procedures, adjustments must be made to assets for certain equity equivalent reserves such as adding the LIFO reserve to inventories, the bad debt reserve to receivables, the cumulative amortization of capitalized intangibles to net fixed assets and so on. Furthermore, if the present value of non capitalized leases treated as a debt equivalent, it must also be considered the equivalent of a net fixed asset.

From an operating perspective, NOPAT is defined as net operating profits after taxes. Calculation starts with sales as a proxy for operating cash receipts and then subtracts recurring cash economic operating expenses, including depreciation. There remain net operating profits. Next, cash operating taxes is approximated by taking the accounting provisions for taxes, then deferred taxes that were not paid, are subtracted.

NOPAT	Capital
= Sales	= Net working capital
- Operating expenses	+ Net fixed assets
- Taxes	

In the next section, NOPAT and Capital calculations through operating approach of Stewart's Wall Mart case is presented in detail.

2.3.4.1 Stewart's NOPAT Formula through Operating Approach

In his Wall Mart case, Stewart (1991) starts NOPAT calculation from Net Sales and subtracts operating expenses and taxes to reach NOPAT value. His formula is presented as:

(a) Net Sales	
(b) Cost of Goods Sold	
(c) Depreciation	
(d) Selling General and Depreciation	
(e) Interest Expense of Non Capitalized Leases	
(f) Increase in LIFO Reserve	
(g) Operating Expenses	= (b) + (c) + (d) – (e) – (f)
(h) Adj. Net Operating Expenses	= (a) – (g)
(i) Other Income	
(j) Net Operating Profits Before Taxes	= (h) + (i)
(k) Cash Operating Taxes	
NOPAT	= (j) – (k)

He clarifies cash operating taxes as subtracting 'Increase in Deferred Taxes' from and adding 'Tax Savings from Interest Expense' to 'Income Tax Provision'.

2.3.4.2 Stewart's Capital Formula through Operating Approach

Capital is calculated as the sum of the Net Working Capital, Adjusted Property Plant and Equipments, Gross Goodwill and other asset items. During the calculation, LIFO Reserve adjustment added to current assets, Present Value of Non Capitalized Leases is added to Property Plant and equipment item, and lastly

Accumulated Goodwill Amortization adjustment is added to goodwill in order to clarify gross goodwill.

(a) Operating Cash	
(b) Net Accts Receivable	
(c) Net Inventory	
(d) LIFO Reserve	
(e) Other Current Assets	
(f) Adjusted Current Assets	= (a) + (b) + (c) + (d) + (e)
(g) Accounts Payable	
(h) Accrued Expenses	
(i) Income Taxes Payable	
(j) NIBCLs	= (g) + (h) + (i)
(k) Net Working Capital	= (f) – (j)
(l) Net Property Plant & Equipment	
(m) PV of Non Cap Leases	
(n) Adj. Property Plant and Equipment	= (l) + (m)
(o) Goodwill	
(p) Accum. Goodwill Amortization	
(q) Gross Goodwill	= (o) + (q)
(r) Other Assets	
Capital	= (k) + (n) + (q) + (r)

2.4 COST OF CAPITAL

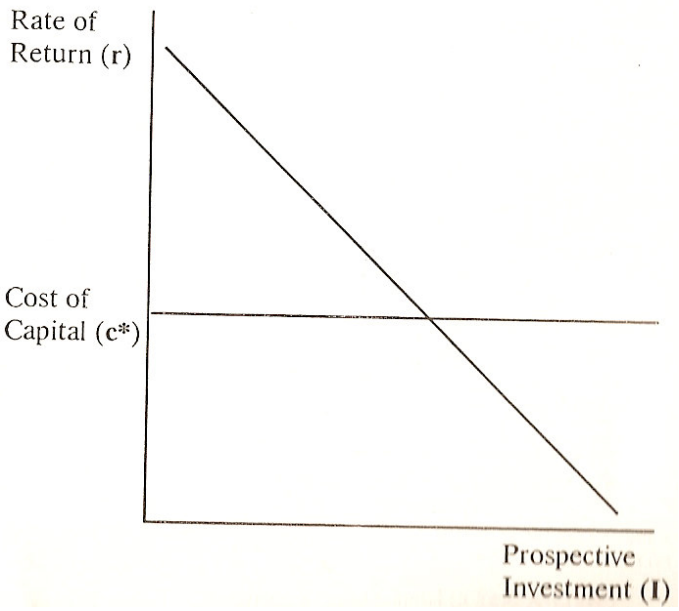
Stewart (1991) indicates that cost of capital is the minimum rate of return that must be earned in order to add value to capital. It is not a cash cost, though. Rather, it is an opportunity cost equal to the total rate of return that a company's investors could expect to earn by investing in the stocks and bonds of other companies of comparable riskiness. From the perspective of a company's investors, who can invest

in anything ranging from essentially default-free government bonds to corporate bonds, high-yield bonds, common stocks, venture capital funds, and, ultimately, options, the cost of capital is driven by the proven trade-off between risk and expected reward. Moreover, he states that for corporate managers the cost of capital can be defined perhaps more meaningfully as the rate of return that some alternative, or marginal, project also up for consideration promises to earn. To be acceptable, any one project must beat the return offered by that hypothetical alternative in order for the world at large to be better off.

2.4.2 Rate Of Return

Figure 5:

The Investment Opportunity Schedule



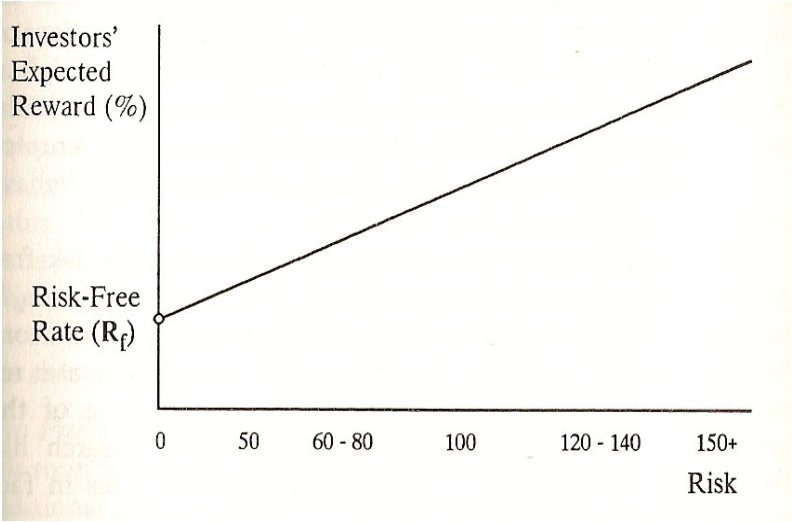
Source: (Adopted from Stewart, 1991)

Stewart (1991) states that potential new capital investment projects may be ranked according to their prospective rates of return. As given in Figure 5, investment (I) compromises the additional funds that might be committed to build up working capital and acquire new long term assets organized into projects. Moreover, downward sloping schedule indicates that the most attractive investment

opportunities are taken first and the least attractive ones last. Assuming that all projects entail roughly the same risk, there is a single rate c* beneath which new projects should not be accepted. As a cutoff rate or cost of capital, c*, is not a cash cost. Rather, it is an opportunity cost that is equal to the rate of return investors could expect to earn by investing in stocks and bonds of other companies of comparable risk. Management should reject projects providing a return less than c* because the company's investors could do better elsewhere.

Figure 6:

Risk Reward Trade Off



Source: Adopted from Stewart (1991)

The reward for investing is the total rate of return obtained through a combination of cash yield and cash equivalent price appreciation. Risk is the variability or uncertainty in the prospective return. As seen at Figure 6, even when the investors take no risk, they can still expect too earn some return just because there is a time value to money. A risk free rate of return, r_f, is indicated by the government bonds. Moreover, the upward slop of the line stretching beyond the risk free yield examines that, because the investors bear no risk, investors ought to earn a greater return. (Stewart, 1991)

2.4.2 Cost of Capital Calculation

The cost of capital is the cost of raising additional funds from debt and equity sources. A cost is associated with each source. Once the cost of each source is determined, the cost of capital for the firm is calculated as a weighted average of each cost, where the weight represents the proportionate use of each source. Hence, cost of capital is also referred to as the weighted average cost of capital (WACC). w_d, w_p and w_e represents the proportions of debt, preferred stock, and common stock in the capital structure; and, r^*_d, r_p, and r_e equal the after tax cost of debt, the cost of preferred stock, and the cost of common stock, respectively. The WACC then is:

$$WACC = w_d r^*_d + w_p r_p + w_e r_e$$ (Peterson and Peterson, 1996)

2.4.2.1 The Cost of Debt

The cost of debt is the after tax cost of raising additional debt. At that point, r_d represents the cost of debt per year before considering the tax deductibility of interest, r_d* represents the cost of debt after considering the tax deductibility of interest, and t is the marginal tax rate. The effective cost of debt formula is presented as:

$$r_d^* = r_d \times (1 - \text{Marginal corporate tax rate})$$

The before tax cost of debt is estimated as the current yield on debt with similar credit risk. However, Peterson and Peterson also warn that there exist a number of complications in estimating current cost of debt. These complications are displayed as:

- the yield in convertible debt
- debt with variable interest rates that contain rate caps and floors
- the yield on debt denominated in a foreign currency
- leases for which no current yield is defined; and
- debt that is not rated.

2.4.2.2 Cost of Preferred Stock

The cost of preferred stock is based on the valuation of perpetuity. P_p indicates the present value of the preferred stock, D_p indicates the perpetual dividend per share per period, and r_p indicate the discount rate. Then Pp may be formulated as:

$$P_p = D_p / r_p$$

That equation can be turned around to solve for r_p, the cost of preferred stock.

$$r_p = D_p / P_p$$ (Peterson and Peterson, 1996)

2.4.2.3 The Cost of Common Equity

Peterson and Peterson (1996), define the cost of common stock as the cost of raising one more dollar of common equity capital, either internally from earnings retained in the firm or externally by issuing new shares of common stock. Costs are associated with both internally and externally generated capital. The cost of internal equity funds is the opportunity cost of funds of the firm's shareholders. This opportunity cost is what shareholders could earn these funds fort he same level of risk. Moreover, the cost of externally generated funds; funds from selling new shares of stock; includes the sum of the opportunity cost and the cost of issuing the new stock, floatation cost. However, they advice to ignore the floatation cost since it is highly difficult to estimate the floatation cost.

Peterson and Peterson (1996) suggest two methods to estimate the cost of common stock that are dividend valuation model (DVM) and the capital asset pricing model (CAPM).

2.4.2.3.1 Dividend Valuation Model (DVM)

The DVM states that the price of a share stock, P, is the present value of all its future cash dividends, where the future dividends are discounted at the required rate of return on equity, r_e:

$$P = (\text{Dividends in } 1^{st} \text{ period}) / (1+r_e)^1 + (\text{Dividends in } 2^{nd} \text{ period}) / (1+r_e)^2 \ldots$$

If these dividends are constant forever, the cost of common stock (the required return on equity, r_e) is derived from value of perpetuity:

$$P = D_0 (1 + g) / (r_e - g)$$
$$P = D_1 / (r_e - g)$$

Rearranging this equation to solve the r_e produces:

$$r_e = (D_1 / P) + g$$

shows that the cost of common stock is the sum of the next period's dividend yield, D_1/P, plus the growth rate of dividends.

2.4.2.3.2 Capital Asset Pricing Model (CAPM)

Alternatively, capital asset pricing model (CAPM) gives a compensation for both the time value of money and for risk. In the CAPM, the cost of common stock is the sum of the investor's compensation for the time value of money and the investor's compensation for the market risk of the stock:

Cost of common stock = Compensation for time value of Money
+ Compensation for the market risk.

Also, the CAPM assumes an investor holds a diversified portfolio. Furthermore, the only risk left in the portfolio as a whole is the risk related to movements in the market as a whole, market risk Since the investors bear only market risk, they need only be compensated for market risk. As a result, greater the market risk, greater the compensation. Moreover, the compensation for the time value of money is represented as the expected risk free rate of interest, r_f. If a particular common stock's market risk is the same as the risk of the market as a whole, then the compensation for that stock's market is the market risk premium.

Risk Premium is the difference between the expected return on the market, r_m and the expected risk free rate:

$$\text{Market risk premium} = r_m - r_f$$

On the other hand, if a particular common stock has market risk that is different from risk of the market as a whole, then that stock's market risk premium has to be adjusted to reflect this difference. This adjustment fine tunes the compensation investors will need to accept for that stock's market risk. The fine tuning starts with the benchmark for the risk of the market as a whole and adjusts that risk to reflect the market's premium for the stock's relative risk to come up with the stock's premium. That is, with beta coefficient (β) representing the adjustment factor:

$$\text{Compensation for market risk} = \beta(r_m - r_f)$$

By knowing the compensation for the time value of money and the compensation for market risk, the cost of common stock, r_e, becomes:

$$r_e = r_f + \beta(r_m - r_f)$$

The term $(r_m - r_f)$ represents the risk Premium required by investors for bearing the risk of owning the market portfolio. The β multiplier fine tunes this market risk Premium to compensate for the market portfolio associated with the individual firm; β is a measure of the sensitivity of the returns on a particular security to changes in returns on the market. (Peterson and Peterson, 1996)

Stewart (1991) indicates that cost of capital can be used to divide projects and companies into three categories: Group 1 projects return more than the cost of capital. Because management can earn a greater return by investing capital inside the company than investors could by investing in the market, thus value is created. Group 2 projects break even the economic terms. The return earned just covers the cost of capital, so that no value is created over and above the capital invested. Group 3 projects, mature companies with cash the burn; return less than their cost of capital.

Since the return earned on the capital invested within the company is less than investors could earn elsewhere, an economic or opportunity loss is suffered and value is destroyed. He suggests a biological analogy in which group 1 project add muscle, a company grows in size and strength; group 2 projects add fat, a company gets bigger but not better; and group 3 projects are timorous, they sap the strength of the corporate body.

PART 3
EVA APPLICATIONS

3.1 EVA AS MEASURE OF PERFORMANCE

Stern, Stewart and Chew (1996) suggest that the natural inclination of operating managers in large public companies is to get their hands on more capital in order to spend and grow the empire. This tendency in turn leads to an overtly political internal competition for capital –one in which different performance measures are used to gain approval for pet projects. Because of this tendency toward empire building, top management typically feels compelled to intervene excessively –not in day to day decision making, but in capital spending decisions; since they do not trust the financial management system to guide their operating managers to make the right decisions. They state that there is no real accountability built into the system and no real incentive for operating heads to choose only those investments projects that will increase value. On the other hand, with EVA model, the internal measure management can decentralize throughout the company. Furthermore, EVA allows all key management decisions to be clearly modeled, monitored, communicated, and rewarded according to how much value they add to shareholders' investment. Whether reviewing a capital budgeting project, valuing an acquisition, considering strategic plan alternatives, assessing performance, or determining bonuses, the goal of increasing EVA over time offers a clear financial mission for management and a means of improving accountability and incentives. In this sense, it offers a new model of internal corporate governance. (Stern, Stewart and Chew, 1996) Similarly, Ehrbar (1998) indicates to provide everyone in an organization with the same clear objective: to increase EVA as much as possible. When EVA becomes the singular focus for all decisions, it establishes clear and accountable links between strategic thinking, capital investments, daily operating decisions, and shareholder value. In addition, EVA can foster an uncommon sense of partnership and cooperation among corporate functions and operating divisions.

3.2 SHORT TERMISM

Shapiro (1977) claims conflict between marketing and manufacturing results from evaluation and reward systems used in the firms. According to his view, one prime reason for the marketing/manufacturing conflict is that the two functions are evaluated on the basis of different criteria and receive rewards for different activities. On the one hand, the marketing people are judged on the basis of profitable growth of the company in terms of sales, market share, and new markets entered, so that marketers are sometimes more sales-oriented than profit-oriented. On the other hand, the manufacturing people are often evaluated on running a smooth operation at minimum cost which makes them more cost-oriented than profit-oriented. The system of evaluation and reward means that the marketers are encouraged to generate change, which is one hallmark of the competitive marketplace. To be rewarded, they must generate new products, enter new markets, and develop new projects. However, the manufacturing people are clearly rewarded for accepting change only when it significantly lowers their costs. Because the marketers and manufacturers both want to be evaluated positively and rewarded well, each function responds as the system asks it to in order to protect its self-interest

Hayes and Abernathy (1980) focus on a different dimension of performance measurement – namely the fact that many traditional measures of financial performance encourage managers to adopt a short-term perspective. Banks and Wheelwright (1979) conducted a series of in-depth interviews with managers and planners in six major US firms and found that short-termism encouraged managers to delay capital outlays; postpone operating expenses; reduce operating expenses; and make other operating changes such as varying the product mix, the delivery schedules, or the pricing strategy. Furthermore, they suggest that one of the ways in which short termism can be minimized is by establishing performance measures, which reflect both the short and long term. Moreover, Ehrbar (1998) indicates that institutional investors, who win or lose business on the basis of their performance, are said to be especially hungry for quarterly earnings gains. The attendant pressure from the stock market forces corporate managers to sacrifice long term

improvements for short term profit gains, focuses on financial engineering and deal making instead of investing in research and development projects, employee training, and other initiatives with distant payoffs. However, EVA discourages managers from making investments that return less than cost of capital. According to Stewart (1991) rather than a short or long term planning, only one measure is needed: EVA that combines both short and long term objectives within itself.

3.3 REWARD SYSTEM

3.3.1 Making Managers Into Owners

Stern et al. (1996) indicates that the information revolution and the rise of global economy lead to major changes in the structure and internal control systems of large organizations. The spread of powerful computer and telecommunications network is contributing to a worldwide move toward decentralization or, empowerment. Within EVA operating managers use their expanded decision making powers in ways that increase value of the firm. In this sense, decentralization, performance measurement, and compensation policy constitute a three-legged stoll of effective corporate control. Moreover, Stewart (1991) indicates that making managers into owners is a proven and potent way to create value. Sensible risk taking and accepting responsibility for the success or failures of the enterprise are among the attitudes that separate owners from mere hired hands. According to Stewart, that will occur if only there is a prospect of a corresponding financial reward.

Stern (2006) examines the process beginning by selecting a proportion of fixed and variable compensation. Fixed consists of wages and pension, which typically don't change much over a business cycle. Variable is pay-for-performance and has historically included profit-sharing, shares and share option grants. He explains through extreme cases: if the compensation consists of 100% fixed and no variable measure, there will be three bad outcomes. First, because salaries depend on responsibilities, which, in turn, are measured by size – turnover generated, assets managed or the number of subordinates – 100 to 0 motivates management to focus

on size, to build market share but growth for its own sake, no matter the price paid to achieve that. Return on capital becomes unimportant. Bigger is simply better – no exceptions. Second, management will minimize personal risk-taking. That's evident in perverse ways. For example, managers will make decisions in committees, not as individuals, thus avoiding accountability. Third, to minimize operating risk, management will encourage investors to diversify the company. On other extreme case, 0 to 100: no fixed remuneration but 100% variable, he warns shareholders, as it encourages managers to take a "bet the farm" attitude on all decisions – and the riskier, the better. He concludes that the board needs to approve the appropriate proportions.

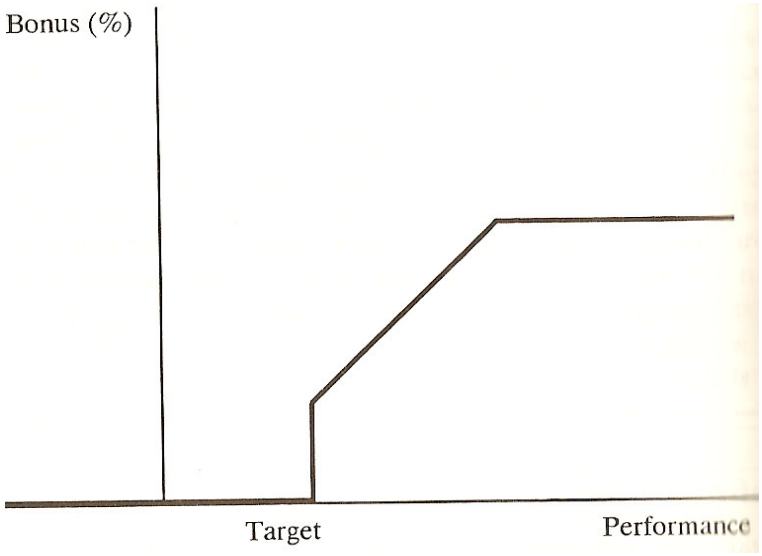
3.3.2 A Typical Plan vs. EVA Compensation

Stewart (1991) argues that the potential bonus for improving EVA should not be capped because, far from being an expense, such bonuses simply provide management with a share of the discretionary value they create for the investors. But to be fair, and to provide an incentive of another sort, management should be penalized if they fail to deliver satisfactory levels of EVA. On the other hand, he claims that other incentive compensation plans fall well short of this ideal. According to him, as stated in Figure 7, a typical plan provides no bonus until some minimum target level of performance is achieved; then there is a bonus that increases with the performance until a cap is reached.

Stewart warns that once the typical plan becomes obvious that performance over a whole year will short of the target, agents may deliberately fall it. With no downsize penalty, there may be a temptation to concentrate losses on a single year, to clear the decks to set the stage for better bonuses in the following years. On the other extreme case, if things going very well, then once the bonus reach the cap, deferring profits will probably become more important priorities for managers than a drive for even more value.

Figure 7:

Typical Compensation Plan



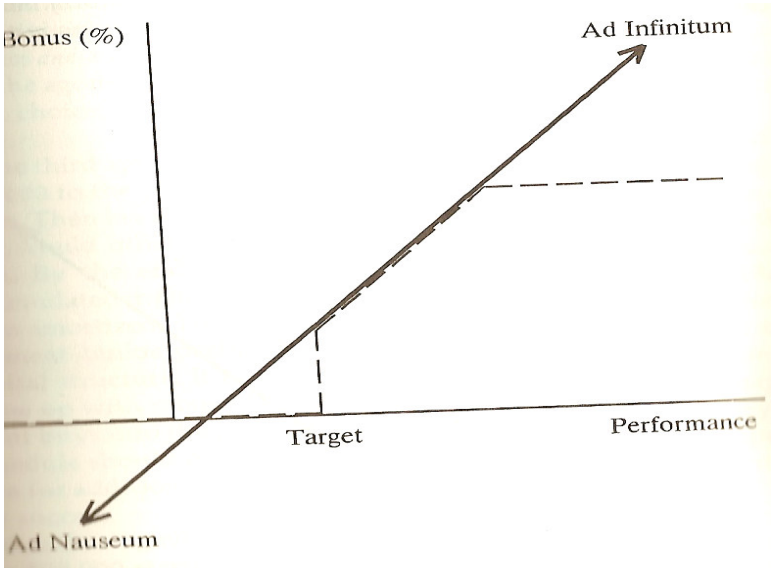
Source: (Adopted from Stewart, 1991)

In Figure 8, Stewart (1991) offers a potential bonus award that is extending upward ad infinitum and downward ad nauseam. In detail, he recommends not to pay annual bonus awards fully; but, to bank forward in order to encourage continued successful performance by enabling to suffer a negative bonus possibility.

Rather than the traditional short term bonus linked to budget and ordinary stock option grants, the EVA ownership plan employs two simple, distinct elements: a cash bonus plan that stimulates ownership; and a leveraged stock option (LSO) plan that makes the ownership real. (Stern et al., 1996)

Figure 8:

EVA: Infinity Goes Both Directions



Source: (Adopted from Stewart, 1991)

3.3.3 Bonus Bank

Bonus Bank concept is proposed by Stewart in 1991 within his novel named as The Quest for Value, as an alternative to typical compensation plans. He suggests that by saving some part of agent's bonus, like a bank, a motive of continues performance for the managers is achieved.

The EVA target could be positive or negative depending upon the outlook for the business when the plan is first instituted. Making EVA less negative is as valid a way to create value as is making it more positive (Stewart 1991). When the target is defined, a bank account that starts with an opening balance is opened. The opening balance can arise in three ways: first, opening balance can come from nowhere at all. It may be just a part of the Formula that determines the bonus but is unfunded in any real way. Second, it may be contributed by the plan participants themselves and put at risk, subject to forfeiture. Thirdly and most popularly, the company loans to the participant's bank account and amortizes it over five years. Then each of the first five

years of the plan, one fifth of bonus that would otherwise be paid is instead retained to pay off the loan. By the end of the five years, whole bonus of equity will have accumulated in the account to replace the debt that has been amortized. It is only fair to compensate for additional risk while providing an even greater incentive for success. As an example, assume that the manager's salary is 100 TL and target bonus is 25 % percent of his salary, that is 25 TL, and lastly the starting balance is 50 TL. With 25 TL from earned bonus and 50 TL starting balance, in total 75 TL is available for payout. One third of the payout is paid to the manager and two thirds is banked forward.

Salary	100 TL
Bonus earned (%)	25 %
Bonus earned (TL)	25 TL
Beginning Bank	50 TL
Available for payout	75 TL
Payout ratio	1/3
Bonus Paid	25 TL
Banked Forward	50 TL

Adopted from Stewart (1991)

Suppose the following year manager highly exceeds the EVA target, there exist two possibilities: Firstly, the manager may produce an increase of EVA that is harbinger of a sustainable gain in the value of the business; and secondly, it arises from good fortune, a cyclical peak, or even a shortsighted business decision. Suppose the exceptional performance equates to a bonus that is 100 % of salary. Then with 100 TL bonus and 50 TL opening balance, the manager will have 150TL of pool. One third of the payout is paid, and two thirds is remained in the bank:

	Target Year (1^{st} Year)	Good Year (2^{nd} Year)
Salary	100 TL	100 TL
Bonus earned (%)	25 %	100 %

Bonus earned (TL)	25 TL	100 TL
Beginning Bank	50 TL	**50** TL
Available for payout	75 TL	150 TL
Payout ratio	1/3	1/3
Bonus Paid	25 TL	50 TL
Banked Forward	**50** TL	100 TL

Assume the third year's EVA falls well short of target, as a negative 50 % of salary. Since the bonus earned will be equal to negative 50 TL, with the 100 TL beginning price, the payout amount will decrease to 50 TL. Similarly, one third part of the payout will be given to the manager, and two thirds of it will remain at the bank account:

	Target Year (1^{st} Year)	Good Year (2^{nd} Year)	Bad Year (3rd Year)
Salary	100 TL	100 TL	100 TL
Bonus earned (%)	25 %	100 %	- 50 %
Bonus earned (TL)	25 TL	100 TL	- 50 TL
Beginning Bank	50 TL	**50** TL	**100** TL
Available for payout	75 TL	150 TL	50 TL
Payout ratio	1/3	1/3	1/3
Bonus Paid	25 TL	50 TL	16,6 TL
Banked Forward	**50** TL	**100** TL	33,3 TL

The banking system smooth out the ups and downs of the business cycle and extend forward managers' time horizon for decision making. Furthermore, Stewart (1991) declares that rather than a short or long term planning, EVA enables to combine both long term and short term targets since all of the potential payoffs can be added together and concentrated in one plan.

3.3.3.1 Target for EVA

Stewart (1991) strictly disagrees with using the budget as a bonus benchmark in compensation. He gives Russian Quota example: he explains that, when a new plant comes on stream, it is difficult to know what is true productive capacity is. During an initial shakeout period, a Soviet plant manager has an incentive to suppress the mill's output so that an easy to reach quotas for mill production. So he suggests instead of having budgets drive bonuses, the bonus system ought to drive the budgets. According to him, bonuses should be determined by comparing performance versus some absolute benchmark that is not budget but which is linked to value and to investor expectations and is revised in a predictable way. Then managers will have the incentive to devise and prosecute aggressive plans without the fear that those plans will be used to second guess or even to punish their exceptional efforts. As a result, he offers EVA as a measure of performance since EVA provides all of the right incentives at the margin and ties directly to creating value. And instead negotiating an EVA target, the target for EVA should be set and revised from year to year according to predetermined formula:

$$\text{Target } (t + 1) = \text{target } (t) + ß\ \% \ [\ \text{actual } (t) - \text{target } (t)\ ]$$

EVA target for the next year is equal to the EVA target for the prior year, year t, plus some percent (ß) of the difference between the prior year's actual performance and the target for that year. For instance, suppose that the target EVA for the first year is 10 TL, and 12 TL is achieved from the actual EVA. Then the formula becomes:

$$\text{Target } (t + 1) = \text{target } (t) + ß\ \% \ [\ \text{actual } (t) - \text{target } (t)\ ]$$

$$\text{Target } (2^{nd} \text{ year}) = \text{target } (1\text{st Year}) + ß\ \% \ [\text{actual } (1^{st} \text{ year}) - \text{target } (1^{st} \text{ year})$$

$$\text{Target } (2^{nd}) = 10 + ß\ (12 - 10)$$

At that point, ß, or beta, ranges from 0 % to 100 % and is the pace at which the target is revised in light of actual prior performance. In detail, if ß is equal to 0 then the target for EVA never changes:

Target (t + 1) = target (t) + 0 % [actual (t) – target (t)]

Target (t +1) = target (t)

At the opposite side, if ß is equal to 100 %, then the target for EVA will always be equal to the previous year's actual ß:

Target (t + 1) = target (t) + 100 % [actual (t) – target (t)]

Target (t +1) = actual (t)

Lastly, Stewart (1991) gives six advices in using EVA as a compensation plan: First, there should be only one cash bonus plan, and not a short- and a long-term plan. Secondly, long-range goals, resource allocation decision, and operating performance should all be evaluated in terms of EVA. Thirdly, EVA targets should be decoupled from the budgetary and strategic planning processes and should be revised according to some predetermined formula. Fourthly, potential bonus should be unlimited in both directions. Also, exceptional bonuses should be banked forward with their full payout contingent upon continued successful performance. Sixth, managers should be encouraged to buy company stocks with respect their reward for success.

3.3.4 Leveraged Stock Option

Stern, Stewart and Chen (1996) offer a bonus plan that reward managers with stock ownership. First, they indicate how to make managers, with their limited financial resources, into significant owners without unfairly diluting the current shareholders. Showering them with stock options or restricted stock is apt to be quite expensive for the shareholders, notwithstanding the incentive for the managers. And asking managers to buy lots of stock is apt to be excessively risky for them. They advice the managers to purchase common stocks in the form of special leveraged stock options (LSOs). Managers purchase the LSOs as a one time investment funded by them, and they are allowed to buy the additional LSOs only with a portion of their EVA bonuses. So that managers gains twice if they create for value, since they can buy more stocks and the prices of the stocks increase gradually.

Also, they display three characteristics of the incentive contracts named as; simplicity, significance and objectivity. Simplicity means the number of factors considered in assessing performance should be very small, so that employees can better focus on accomplishing critical tasks. In this framework the principle objective is measuring improvement in EVA and awarding a percentage of the improvement, supplemented by a few personal performance objectives and key performance indicators. Secondly, Potential payouts need to be significant enough to motivate desired change. That means boards shouldn't see EVA bonuses as an expense, but a participation in outcomes that otherwise would likely not occur. Thirdly, Objectivity means that negotiations in setting targets or a budget are substituted by a project that motivates improvement, with no limits to achievement.

3.4 STANDARDIZED EVA

Stewart (1991) notices a weakness related to use of EVA. According to him, unlike growth rates or rates of return, it is more difficult to compare among companies and business units of different sizes. He claims to solve this problem by standardizing EVA through the level of capital employed. Standardized EVA is computed by taking the spread between that year's rate of return and cost of capital and multiplying by the standardized capital outstanding at the beginning of the year. For the first year standardized capital is assumed to be equal to 100:

Standardized first year EVA = First year's $(r - c^*)$ X 100

Standardized n^{th}, year EVA = n^{th} year's $(r - c)$ X n^{th} year standardized capital

For the following years, standardized capital is calculated as dividing the current year's capital to based year capital and then multiplying it with 100. Lastly, related year's standardized capital is multiplied with the difference between related year's rate of return and cost of capital.

Within years, standardized EVA will increase if there is an improvement in the rate of return on capital versus the cost of capital, if new capital is invested productively, or if capital is withdrawn from uneconomic activities.

3.5 EVA: WEAKNESSES

Turvey and Starling (2003) state that management researchers have been questioning whether EVA does, in fact, provide advantages over more traditional and accessible accounting based measures of performance.

According to Keefe and Roush (2002), the present value of EVA, or economic profits, is equal to the present value of cash flows from operations. As the future unfolds with certainty, it is the present value of the EVA's over time that reflects shareholder value not the EVA itself. Two important corollaries are defined in that study. Firstly, year over year changes in the present value of EVA equals the year over year changes in the present value of cash flows. It is precisely these year over year changes that provide a return (or loss) to shareholders. The second corollary is that year over year changes in EVA should correlate with changes in shareholder value.

Stern Stewart recommends making adjustments to GAAP accounting results whenever the item considered for adjustment makes a significant difference to EVA. According to Stewart, firms typically make 15-25 adjustments to their accounting results. Selecting which adjustments to use is a corporate decision. However, the process of making adjustments presents several dilemmas for investors. With 164 possible adjustments to income, different firms employing different adjustments, comparison of two firms is questionable (Turvey and Starling, 2003). Similarly, Weaver's study (1991) of 29 Stern-Stewart customers found that no two used the same adjustments to calculate their EVA. Even firms in the same sector used significantly different adjustments

Also, Peterson and Peterson (1996) criticize EVA model in two ways. Firstly, it uses the accounting data to determine economic profit, and secondly, for the estimation process of the cost of capital. In detail, Peterson and Peterson (1996) display three major problems in cost of capital calculation. Firstly, forecasting future cost of issuing debt and preferred stock is at least not simple. Recent offerings may help to gauge what the cost will be in the near future, but not in the distant future. Secondly, the DVM requires future period's dividends. Although the model can be adjusted for to allow for non constant dividends, this adjustment produces very rough estimates for the future. In the case of CAPM, the estimation of the risk free rate, expected return on the market, and expected sensitivity of a particular asset's return compared with that of the market's return are questionable since all those estimations are derived by looking at historical data. Thirdly, complications arise with the calculation of the market value of debt for which there are variable interest rates with caps and floors and for swaps, foreign currency denominated debt, leases, equity linked debt and callable debt.

Also, Stewart (1991) accepts that within EVA, it is difficult to compare among companies or business units of different sizes. This size problem however may be solved through using standardized EVA calculation.

3.6 EVA & OTHERS

(Balicore et al. 1997; Biddle, Bowen, and Wallace, 1997; Chen& Dodd, 1997; Clinton & 1998) found that EVA offered no advantage over accounting based measures. The relationship between shareholder returns and EVA was generally no better, and frequently worse, than the relationship between shareholder returns and other accounting based measures. Biddle, Bowen and Wallace (1997) used a sample from a data set purchased from Stem Stewart and find that the relationship between earnings per share (EPS) and 12 month compounded annual return was stronger than between EVA and return. deVilliers and Auret (1997) state that EPS has more explanatory power than EVA in explaining share prices for a number of South African firms. They conclude that there is no evidence of any benefit using EVA

instead of EPS in share price analysis. Kramer and Peters (2001) run a number of tests using cross-sectional-time series data from the Stern Stewart data base to investigate the relationship between MVA, EVA, and shareholder value. Their key finding was that there was virtually no benefit to using EVA rather than NOPAT to explain MVA. With respect to changes in MVA to changes in EVA and NOPAT, only 22 of 53 industry groups indicated a positive and significant (5% level) relationship for the former and only 26 of 53 for the latter.

Garvey and Milbourn (2000) find a simple correlation between EVA or earnings and stock returns. They suggest that EVA is a reasonably reliable guide to the firm value. Similarly, Machuga, Pfeiffer, and Venna (2002) explore the relationship between EVA and EPS directly. They examined the association between EVA and future earnings and how analysts incorporate EVA into their forecasts of earnings. Their premise was that if EVA is a predictor of future EPS, then the absence of EVA could explain part of the analysts forecast error. In general, they found that information about EVA does add incremental value to a prediction model of EPS, thus can explain analyst's forecast errors. But the authors also note that the relationship is reversed when the previous year's earnings was not positive. In other words, EVA can be useful for predicting EPS in profitable firms, but the nature of the relationship is less precise and must be reversed for predicting EPS for firms losing money the previous year.

Keefe and Roush (2002) display that EVA is not better than EPS should not come as a surprise. They argue that EVA is still a valuable management tool for the collateral benefits resulting from the attempts to increase reported EVA. The three ways to increase EVA are (i) increase productivity; (ii) investing new capital in wealth generating projects, and (iii) liquidate underperforming assets. They further hypothesize that by undertaking these activities to increase EVA; managers will achieve results which will increase shareholder returns albeit in a sporadic and random manner.

Stern, Stewart and Chew (1996) highly criticize EPS since it based on top to down control system. They emphasize that EVA offers an ownership understanding; but EPS fails. According to them, in the EPS system, the primary incentive of the operating managers was to achieve moderate growth in profits, which could be accomplished in two ways: by improving the efficiency of existing operations or winning more capital appropriations from headquarters. The corporate measurement systems did not take managers long to recognize that it was easier to 'buy' additional operating profits with capital expenditures -even if the investment did not promise anything like an acceptable rate of return. Furthermore, Stewart (1991) advices to abandon EPS model. According to him, with the EPS model, expenses that should be deducted to save taxes are deferred; valuable acquisitions are avoided if a large amount of goodwill must be amortized; R&D and market building outlays get short shrift; the execution of dying businesses is postponed; and lusty earnings growth is sustained by overinvesting in mature businesses. In addition, the accounting model assumes that P/E multiples never change. However P/E multiples change all the time; in the wake of acquisitions and divestitures, changes in financial structure and accounting policies, and new investment opportunities. P/E multiples adjust to changes in the quality of a company's earnings. And that makes EPS a very unreliable measure of value.

Stewart (1991) claims that earnings growth also is a misleading indicator of performance. Although it is true that companies that sell for the highest stock price multiples are rapidly growing, rapid growth is no guarantee of a high multiple. Furthermore, growth can be generated simply by pouring capital into a business. Earning an acceptable rate of return is essential to creating value. Growth adds to value only when it is accompanied by an adequate rate of return. If returns are low, growth actually reduces value. Moreover, Stewart argues that not only do earning and earnings growth not matter: Dividends do not matter either. According to him, in the economic model, paying dividends is an admission of failure to find enough attractive investment opportunities to use all available cash. He states companies are valued for what they do, not for what they do not do. By paying dividends, management has less money available to fund growth. The value of profitable

investment opportunities forgone is subtracted from share price. If management chooses to raise debt or equity to replace the dividend, than current shareholder' interests are diluted by introducing new claims on future cash flow. Such a policy makes a company incur transactions costs for unnecessary financing and forces investors to pay taxes on dividends that might otherwise be deferred as capital gains.

MVA is the difference between the market value of equity and the book value of equity, representing real and anticipated capital gains over the book value; the present value of cash flows is equal to the present value of economic profits, which in turn, equals the present value of EVA over the life of a project. In other words, MVA is simply the present value of residual income or EVA (Yook and McCabe, 2001). MVA is measured relative to observed market values and EVA is measured relative to book value, even in a world of certainty there should be some discrepancy between MVA and EVA because the former is the discounted value of the latter. Although EVA is a deterministic accounting measure, MVA in actuality will differ in terms of expectation and time value. Simply put, if MVA = EVA/r, then dMVA = *dEVA/r*. It follows that the relationship between the change in shareholder value d_S to changes in MVA and EVA can be written as $d_S/d_{MVA} = r\ d_S/d_{EVA}$. In other words, although the absolute values of d_{MVA} and d_{EVA} may differ, there should still be a positive relationship between these changes and shareholder value. Indeed, in the context of the perpetuity $d_{MVA}/d_{EVA} = 1/r > 0$. (Turvey and Starling, 2003). Similarly, Peterson and Peterson (1996) claim that MVA should be equal to the present value of future periods' economic profit discounted at the cost of capital:

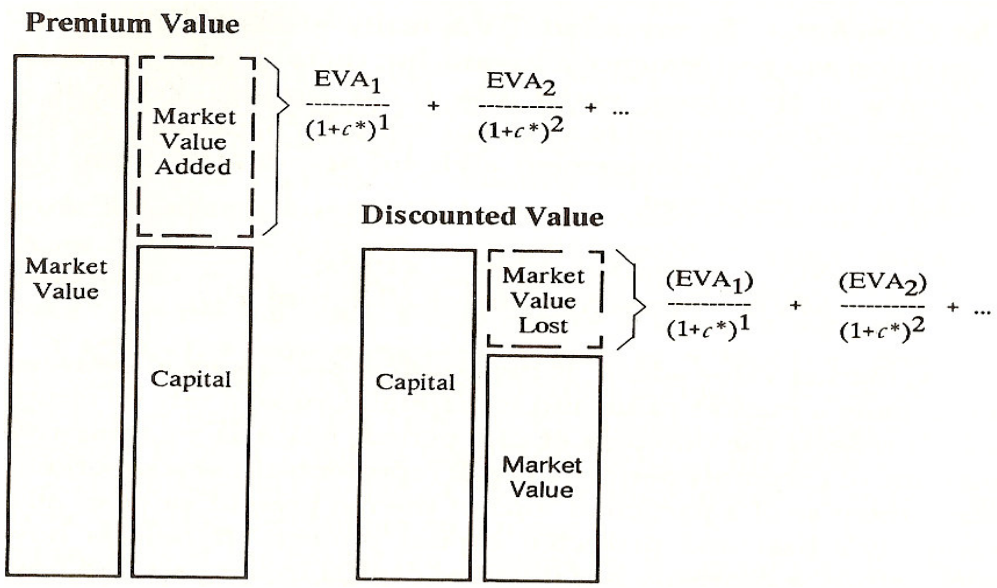
MVA ≈ Economic Profit / Cost of Capital.

They also display the difference between EVA and MVA. They argue that EVA is a single period measure that is estimated using accounting data and an estimated cost of capital. On the other hand, MVA uses market values, which is more forward looking estimates of performance than economic profit. Furthermore, they indicate that in some cases MVA and EVA may result in conflicting evaluations of

performance. They indicate the contradiction with the fact that MVA is based on forward looking stock prices; but, EVA is based on a single period accounting data.

Figure 9:

Stewart's Valuation Framework



Source: (Adopted from Stewart, 1991)

Morover, Stewart (1991) displays a formal valuation framework, as follows. Start with:

MVA = market value — capital

MVA = present value of all future EVA

Therefore:

Market value = capital + present value of all future EVA

He states that the stock market valuation of a company is equal to the capital the company currently has invested plus a premium, possibly less a discount, for its EVA projected and discounted to a present value. Businesses capable of earning more than their cost of capital produce positive EVA and build premiums into their market values. Conversely, businesses whose returns fall short of the cost of capital generate negative EVA and thus discount the value of the capital they employ. He

concludes that maximizing the present value of EVA is exactly the same thing of maximizing intrinsic market value.

According to Stern and Schönburg (1999) corporate finance theory defines the value of a firm as the NPV of its present and future free cash flow (FCF). The present value of current and future EVA provides the same answer; yet, discounting EVA rather than FCF gives an annual assessment of total operating performance. The investment is not subtracted in year 0 but is amortized over its expected life. Thus, EVA is useful at the time of a decision and as a measure afterward. On the other hand, FCF is useless as a period-on-period performance measure. Similarly, Stewart (1991) claims that cash flow may be an important measure of value; but, not a measure of performance. He indicates that within the cash flow model, management invests in rewarding projects; the more investment that is made and therefore the more negative the immediate net cash flow from operations, the more valuable the company will be. However, it only occurs when cash flow is considered over the life of the business, and not in any given year, that cash flow becomes significant. EVA, on the other hand, is a both a measure of value and a measure of performance. EVA clearly link forward looking valuation and capital budgeting procedures with the manner in which performance subsequently can be evaluated. He advocates that although the valuations are same in discounting EVA and cash flow, EVA is dramatically strengthened in comprehension and communication

Madden (1999) suggests a real internal rate of return (IRR) on gross investment may more accurately reflect a firm's economic performance than EVA, which is based on accounting returns on depreciated historical assets. Furthermore, he believes that Stern Stewart's invented MVA and EVA can be used, not as a predictor of performance, but in a compensation system that would lead employees, from top to bottom, to maximize shareholders' wealth.

Ferguson, Rentzler, and Yu (2005) state that EVA firms have positive ROAs prior to and after adopting EVA. Furthermore, EVA firms have positive ROEs after adopting EVA and there is some evidence that they also have positive ROEs before

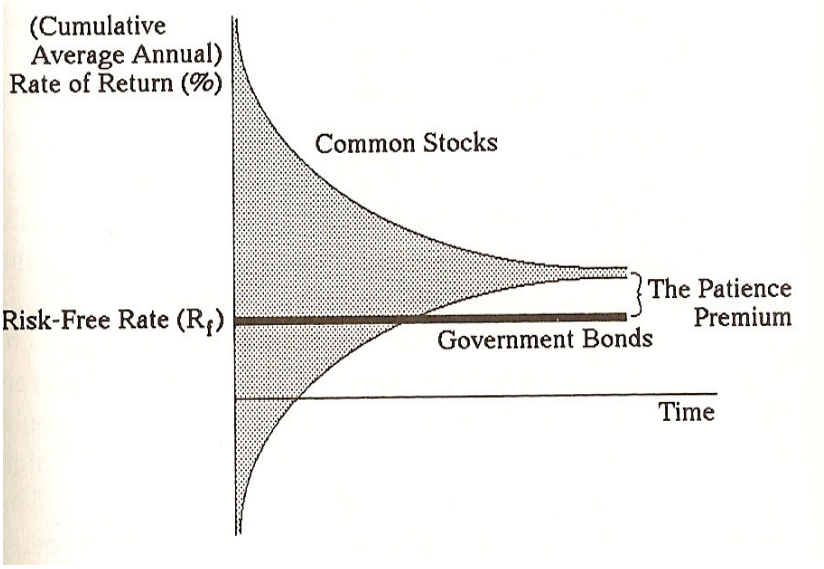
adopting EVA. On the other hand, Stewart (1991) strongly recommends not using ROE due to accounting and financing distortions. In detail, reported accounting earnings are distorted by; the choice of LIFO and FIFO for inventory costing, and purchase or pooling for acquisitions; the expensing of R&D, and accrual bookkeeping entries. Furthermore, ROE reacts to changes in the mix of debt and equity that a company employs and in the rate of interest it pays on its debts. That makes it difficult to tell whether ROE rises or falls for operating and financial reasons. With ROE as its goal, management may be tempted to accept truly substandard projects that happen to be finance with debt and pass by very good ones if they must be financed with equity. Similarly, Peterson and Peterson (1996) criticize the return on investment ratios as a whole since the return on investment ratios are formed using financial statement data in the numerator and/or the denominator; therefore these ratios are sensitive to the choice of accounting methods. Secondly, return on investment ratios use financial data that are an accumulation of monetary values of different time periods. Thus, especially in high inflation periods, an 'apples and oranges' problem may occur. Thirdly, return on investment ratios fail to consider risk. And, finally, the returns on investment ratios do not adjust for controllable versus non controllable factors.

3.7 SHARE PRICE & VALUE RELEVANCE OF EVA

Stewart (1991) notices about the common stock that, as displayed in Figure 10, in the short term, there will be great uncertainty over the potential return; but, over the long run the return will narrow to the reward that investors expect in order to compensate them for risk. The difference between the risk free rate and the risky return over the long run, the reward of the investors, is called as the patience premium.

Figure 10:

Risk Premium



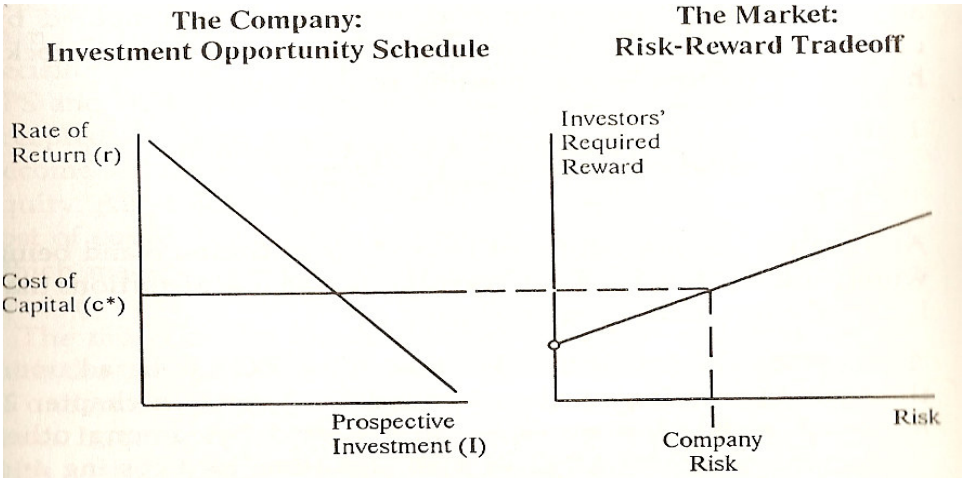
Source: (Adopted from Stewart, 1991)

Also, Stewart, in Figure 11, combines company's investment opportunity schedule and the investor's risk reward tradeoff to estimate required return for creating value. He begins with measuring where a company plots along the risk map then draws a line northward and westward along the risk reward trade off and gets an intersection that displays the cost of capital, c*. This point is equal to the return in which investors could expect to earn by buying a portfolio of companies of similar risk.

According to Stewart (1991), an interaction between two simple diagrams; one portrays the menu of investment opportunities available within a single company and the other showing the returns available to investors in the capital market relative to risk, is what truly drives stock prices.

Figure 11:

Interaction of Investment Opportunity Schedule and Risk Reward Tradeoff



Source: (Adopted From Stewart, 1991)

According to Stern (2007), the share price depends on the net asset value and future EVA. Fundamentally, this means the share price is determined by six distinct factors:

(1) the base level of trading profits today;

(2) the required rate of return for risk;

(3) the amount of new investment;

(4) the expected rate of return on new investment;

(5) the time in years in which the market believes the firm will earn more than is required; and,

(6) the tax shield for debt financing because interest expense is tax deductible. Numbers 2 and 5, at least in the short term, are largely beyond the influence of management. The required return is based on the market's assessment of the firm's business risk and is also related to the level of interest rates. The length of time for which management could earn returns above what is required depends on changes in technology, Government's monetary and fiscal policy and regulations. The remaining four factors – trading profits, tax benefits from debt, new investments and the expected rate of return of new investments – can be communicated by the CEO or chairman to the market.

Value relevance research focuses on variables that asses the valuation characteristics of particular accounting amount; that is, how well accounting numbers reflect information used by investors in valuing firms' equity. (Barth et al., 2001) Kyriazis and Anastassis (2007) claim that EVA unique components, capital charge and Stern Stewart adjustments, do not appear to have significant incremental information content, and thus they do not add greater value relevance to the EVA measure.

Brief and Zarowin (1999) compare the value relevance of book value and dividends versus book value and reported earnings based on cross-sectional regressions of share price on the value measures. They state that book value is the most value relevant variable, having the highest R^2 and incremental R^2 of the three variables, book value, reported earnings and dividends. However, the combination of book value and dividends has virtually identical explanatory power as book value and earnings. Moreover, they indicate that earnings and dividends alone have about the same individual and incremental (given book value) explanatory power.

Finger (1994) examines the value relevance of earnings as measured by their ability to predict both earnings and cash flow. Although earnings are found to be a significant predictor, cash flow is a better short-term predictor of cash flow than are earnings. The evidence indicates that earnings help predict earnings and cash flow but does not support the FASB statement that earnings are a better predictor of cash flow than is cash flow.

Pfeiffer et al. (2001) in their study evaluating the relation among security returns and fund based on earnings components argue that cash flows have incremental information content and that market expectations impound the measured correlation among historical earnings components. Ehrbar (1998) states that economic model does a much better job of explaining movements in stock prices. Moreover, he suggests that EVA methodology explicitly addresses business and financial risk and allows the investor to gauge the magnitude and sustainability of

returns. DeVilliers and Auret (1997) state that EPS has more explanatory power than EVA in explaining share prices for a number of South African firms. They conclude that there is no evidence of any benefit using EVA instead of EPS in share price analysis. Garvey and Milbourn (2000) find a simple correlation between EVA or earnings and stock returns.

3.8 SOME EVA APLLICATIONS

Turvey and Starling (2003) examine two potential relationships for 33 food companies. The first is between the absolute level of EVA in 2000 and 3, 5, and lO year shareholder returns. The second is between 3, 5, and 10 year mean percentage changes EVA and 3, 5, and 10 year shareholder returns. The correlations found were extremely weak in all instances tested.

Turvey et al. (2000) examined the relationship between EVA and the stock market performance of 17 publicly traded Canadian food processing firms. The key finding was that no relationship could be found between the two.

Moreover Griffits' study (2006) in which cumulative, average abnormal returns are used to measure performance on "2004 US 1000 EVA/MVA Annual Ranking Database" finds that all EVA and MVA are poor indicators of performance.

Ferguson, Rentzler and Yu (2005) in their article, investigating whether adopting EVA leads to better stock performance, find out that firms that adopt EVA appear to have above average profitability relative to their peers both before and after the adoption of EVA. Moreover, there is some evidence that EVA adopters experience increased profitability relative to their peers following adoption.

Garvey and Milbourn's (2000) empirical tests begin by computing the value-added to a firm that adds EVA to its existing compensation plan written only on earnings and the stock price. According to the model, the most useful measure of EVA value-added is the percentage reduction in compensation variance when EVA

is added to the wage contract. They estimate this reduction for over 500 U.S. firms between 1986-97, and they extend the sample to 1978-97 for various robustness checks. At the end, they found that, for a large number of firms, EVA adds little or no value. However, they also indicate that there are significant differences across firms and industries.

Kyriazis and Anastassis (2007) in their study with regard to Greek Stock Market data including the financial statements and adjusted stock prices for 121 non-financial publicly traded Greek firms covering a period of eight years, from 1996 to 2003; concludes that according to their Cox test results EVA does not have greater information content than residual income, net income and operating income. Furthermore, for the elements unique to EVA, both the capital charge and the Stern Stewart adjustments do not have any value relevant information additional to that which is already incorporated in the traditional accounting variables. Indeed, they suggest that even when the raw stock returns are the dependent variable, they cannot argue that the capital charge and the Stern Stewart adjustments add significantly to the information content of EVA. At the end, they display that their findings do not support Stern Stewart's claims that EVA is more correlated with stock market returns. In fact, net income and operating income appear to have the greatest relative information content with respect to both abnormal and raw stock returns.

Abdeen and Haight (1999) with their study evaluating EVA users and non users' performance within Fortune 500 companies, found out that companies using EVA are better than the performance of non EVA users for the categories of profits as percentage of revenues, assets, and stockholder's equity; but, worse for the EPS and Total Return to investors.

Worthington and West's (2004) study that examining 110 Australian companies over the period 1992–1998 whether economic value-added is more highly associated with stock returns than other commonly used accounting based measures found out that EVA is significant at the margin in explaining variation in stock returns. In detail, the capital charge and after-tax interest payments were found to be

the most significant components explaining EVA differences, and, accordingly, the level of stock returns. However, the accounting adjustments entailed in EVA calculations were found to be more significant in explaining changes in EVA and hence stock returns.

Biddle, Bowen, and Wallace (1997) with eleven annual observations to EVA starting from 1983 to 1994 of 773 firms, suggest that there is little evidence to support the Stern Stewart claim that EVA is superior to earnings in its association with stock returns or firm values. Moreover, in no case does EVA significantly outperform EBEI in tests of relative information content. On the contrary, in most cases the evidence suggests that earnings outperform EVA. Further, while the charge for capital and Stern Stewart's adjustments for accounting distortions show some marginal evidence of being incrementally important, this difference does not appear to be economically significant.

Tsuji (2006) examined 561 Tokyo Stock Exchange listed firms for 21 years from 1982 through to 2002. He founds that related to the level of corporate values, which create (destroy) shareholders' values, are indeed associated with higher (lower) levels of EVA. However, he also claims cash flow shows the strongest linkage with the levels of corporate market values, and when compared, EVA has a weaker relationship with corporate values than general accounting measures such as operating income and profit after tax.

Machuga, Preiffer, and Verma (2002) show that EVA can be used to enhance future earnings predictions. Chen and Todd (2001) examine the extent to which EVA information can explain the variation in stocks returns and conclude that the variation appears to be attributable to earnings based information. Paulo (2002) further argues that EVA is just another piece of accounting information; like other accounting information, it has become less relevant to stock returns and stock price changes.

Although Stewart (1991) claims that EVA is superier than EPS, cash flow, dividends, ROE and ROA; Turvey and starling (2003), Turvey et al. (2000), Kyriazis

and Anastassis (2007), and Biddle, Bowen and Wallace(1997) findings do not support Stern Stewart's claims that EVA is more correlated with stock returns. Moreover, Griffith (2006) finds EVA as a poor indicator of performance. Similarly, Garvey and Milbourn (2000) state EVA adds little or no value to the firms. Furthermore, Biddle Bowen and Wallace (1997) founds earnings and Tsuji (2006) founds cash flow as better performance metrics than EVA. On the other hand, Abdeen and Haight (1999) display that companies using EVA are better tahn the non users.

PART 4
METHODOLOGY

First objective of this study is to identify whether there exist a relationship between the EVA values of the 69 non financial companies of Istanbul Stock Exchange (ISE) 100 and their stock prices for years 2006 and 2007 or not. Secondly, value relevance of EVA along with Earnings per share and Book Value per Share is questioned. To begin with, this study can be divided into two major parts. In the first part, EVA calculations of the 69 non financial companies of ISE 100 are implemented. Secondly, EVA foundlings are evaluated with the companies' stock prices on the date of their financial tables' declaration through correlation and regression analysis.

4.1 PROBLEM DEFINITION AND HYPOTHESIS TESTING

4.1.1 Relationship between EVA and Stock Prices

In EVA understanding, the sole aim of a company is said to be increasing shareholder value. So that a firm must make more from the capital it employs than the true cost of that capital to the firm. From this viewpoint, EVA can be seen as a strong financial performance measurement system. Also, stock prices are expected to be influenced from the financial performance of the company. At this point, a positive relationship between the stock prices and EVA values of the companies are expected. For that reason, this study investigates whether there really is a relationship between the EVA and stock prices of companies in ISE 100 non financial companies.

First question of this research is:

'Is there any relationship between EVA and Stock Prices along with Earnings per Share and Book Value per Share?'

Moreover, the first hypothesis of the study can be identified as;

H_0 : There is no relationship between EVA and Stock Prices.

H_1 : There is a relationship between EVA and Stock Prices.

First hypothesis will be evaluated with correlation analysis.

4.1.3 Value Relevance of EVA

The second hypothesis we tested refers to the incremental information content of EVA. A test of incremental information content between accounting variables gives an answer to the question whether the disclosure of supplementary accounting and financial measures of profitability, provides more information, relevant to firm value and stock returns, than that which is already included in traditional accounting variables. In particular, we tested whether EVA has any incremental information content over book value per share and earnings per share.

Second question of this research is:

Does EVA have a value relevance of Stock Price along with Earnings per Share and Book Value per Share?

Second hypothesis of the research can be defined as;

H_0 : EVA does not have a value relevance of Stock Price.

H_1 : EVA has a value relevance of Stock Price.

Second hypothesis will be evaluated with regression 0, 05 significance level of the regression model.

4.2 SAMPLE SIZE

Companies in this study are chosen from ISE 100 index of year 2007. In this process, each quarter of ISE 100 index in 2007 are examined. Any company that involves in ISE 100 index at least one quarter in 2007 are counted. After subtracting the financial companies, there remain 71 non financial companies for the discussion. However, two of them, 'Fenerbahçe Sportif' and 'TAV Havalimanları' are excluded because of unavailability and inaccuracy of required data. In detail, Fenerbahçe Sportif (FS) uses different periods for their financial tables. FS, starts its fiscal year from May and finishes at April in 2006 and 2007 unlike other 70 non financial companies that define their period from January to December. Secondly, the declaration date of 2007 financial tables of FS, which is going to be used in Beta calculation, is not available neither in company's nor ISE's web pages. Also, TAV Havalimanları's stock starts functioning in ISE on 26th February 2007 and their financial table declaration date in 2007 is on 27th April. Unfortunately, 44 daily stock closing price data can be seen as doubtful for company's Beta calculation in 2007. For those reasons, 69 non financial ISE 100 companies' data in 2006 and 2007 are collected and implemented. Table 1 displays those 69 companies, their financial tables declaration date and their stock prices on that date for years 2006 and 2007.

4.3 EVA COMPONENTS

EVA components are divided into three parts. In the first part NOPAT calculation and the necessary adjustments, secondly Capital calculation and adjustments, and lastly Cost of Capital calculation is implemented. Before all, it is necessary to acknowledge about Equity Equivalents that are used as adjustments in NOPAT and Capital calculation.

$$EVA = NOPAT - Capital \times Cost\ of\ capital$$

4.3.1 Equity Equivalents

According to EVA understanding, because of the financial and accounting distortions both NOPAT and Capital are required to be recalculated. To this end, in literature, up to 160 adjustments are advised to be implemented. Interestingly, in literature, only three or four changing adjustments are used in EVA studies. Even Stewart's himself displays only four adjustments for NOPAT and four for Capital in his Wall Mart example. Stewart (1991) enlights this inaccuracy by saying although up to 160 adjustments are recommended, five to fifteen adjustments that are material and available were sufficient. Furthermore, the most common adjustments in literature are seen as deferred tax reserve, LIFO reserve, goodwill amortization, net capitalized intangibles, capitalized R&D expense, present value of non capitalized leases, bad debt reserve, inventory obsolescence reserve, and warranty reserve. Stewart in his EVA bible, The Quest for Value, advices to add those Equity Equivalents to Capital and to add increases at those Equity Equivalents to NOPAT.

In this study, five adjustments named as net capitalized intangibles, bad debt reserve, inventory obsolescence reserve, deferred income taxes, and accumulated goodwill amortization for Capital are implemented. Similarly, increase in net capitalized intangibles, bad debt reserve, inventory obsolescence reserve, deferred income taxes and goodwill amortization is added to NOPAT.

At that point more detailed explanation about sources of those Equity Equivalents are required. First, Increase in Net Capitalized Intangibles can be taken from either Balance Sheet or from footnote 20 of financial tables. The remarking point is that, the value of the net capitalized intangibles of the relevant year is added to Capital and the difference between the relevant year and the previous year's values are added to NOPAT. For instance, while preparing Company A's Capital and NOPAT for 2006, Capitalized Intangibles value of 2006 is directly added to Capital and increase in Capitalized Intangibles is calculated by subtracting 2006 value from 2005 one.

Secondly, Doubtful Allowances Reserve is derived from footnote 7. Similar to Net Capitalized Intangibles, Doubtful Allowances Reserve for the relevant year is added to capital and the difference between the relevant year and the previous year gives the increase in Doubtful Allowances Reserve which is added to NOPAT. In detail, for 2006 NOPAT, 2005 Doubtful Allowance Reserve is subtracted from 2006 value. Likely, for 2007 NOPAT 2006 value is subtracted from 2007 one.

Thirdly, Inventory Obsolescence Reserve can be founded in footnote 12. Again, the relevant year's value is added to Capital and increase in Inventory Obsolescence Reserve, which is the difference between the relevant year's and previous year's value, is added to NOPAT.

Fourthly, Accumulated Goodwill and Goodwill Amortization are derived from footnote 17. Goodwill Amortization is measured as the difference between following years' goodwill value and added to NOPAT. In a similar way, Accumulated goodwill amortization is derived from footnote 17 and added to Capital.

Lastly, Deferred Income Taxes are taken from Footnote 41, Taxes. The difference between the current year and previous year is added to NOPAT as Increase in Deferred Income Taxes and relevant year's value is added to Capital.

It should be also mentioned that some companies do not declare their Goodwill, Doubtful Allowances Reserve, and Inventory Obsolescence Reserve at their financial tables and footnotes. At those cases, their values for those three Equity Equivalents are assumed to be 0. Furthermore, there also rarely exists inaccuracy in footnote ranking. In few companies, footnote 41, taxes, is declared under footnote 39 and footnote 38.

Also, some other Equity Equivalents could not be used as adjustment in this study, because of unavailability of the required data. For instance warranty reserve is founded only in Arçelik's footnote among approximately 30 companies pool.

Similarly, only 36 of 69 companies declare their R&D expenses. Moreover, only 16 companies declare their rent expense which is seen as the indicator of Present Value of Non Capitalized Leases. Also, since 2005 LIFO measurement is abandoned, so that there is no disclosure as LIFO Reserve for 2006 and 2007 year's tables and footnotes. At the end of the day, only five adjustments could be gathered from financial tables and footnotes.

4.3.2 NOPAT Calculation

NOPAT calculation starts with deriving 'Income Available to Common' from income statement. By adding 'Increase in Equity Equivalents'; 'Adjusted Income Available to Common' is founded. Lastly, 'Interest Expense after Taxes' is added so that NOPAT value is acquired.

NOPAT = Income Available to Common + Increase in Equity Equivalents + Interest
Expense After taxes

'Interest Expense after Taxes' is founded by subtracting tax benefit from interest expense.

Interest expense can be taken from footnote 39, financial expenses. Since the tax rate is determined as 20% since the beginning of 2006. Interest Expense after taxes may be calculated as:

Interest Expense After taxes = Interest Expense X (1 – 20%)

4.3.3 Capital Calculation

Capital calculation starts with 'Short Term Debt', then 'Current Portion of Long Term Debt', 'Senior Long Term Debt', and 'Capitalized Lease Obligations' items are added. So that Total Debt and Leases are founded. Neatly, 'Common Equity' from balance sheet and five Equity Equivalents are added so that Capital value is acquired.

Capital = ST Debt + Current Portion of LTD + Senior LT Debt + Cap. Lease Obligations + Common Equity + Equity Equivalents.

'Short Term Debt', 'Current Portion of Long Term Debt', 'Senior Long Term Debt' items can be directly taken from the balance sheet and 'Capitalized Lease Obligations' item can be founded in Footnote 8, Financial Leases. Table 2 and Table 3 display NOPAT and Capital Calculations.

4.3.4 Cost of Capital Calculation

In literature, cost of capital calculation is divided into three parts. The first one displays cost of preferred stock, the second indicates cost of debt and the last one implies the cost of equity. Then the cost of capital, or in other words, weighted average cost of capital formula becomes:

$$WACC = w_d \, X \, r^*_d + w_p \, X \, r_p + w_e \, X \, r_e$$

In which w_d, w_p, and w_e represent proportions of debt, preferred stock, and common stock in the capital structure; and similarly, r^*_d, r_p, and r_e explicit the after cost of debt, the cost of preferred stock and the cost of common stock.

Since there is no preferred stock example in Turkey, the first part is omitted. Unfortunately, cost of debt calculation is problematic, too. Unlike many western countries, in Turkey, companies do not issue company bonds. Moreover, companies'

borrowing rates become useless, since not all of them declared the borrowing rates. Furthermore, borrowing types varies from YTL to Euro and USD. The comparison of two companies in which the first of it borrowed at 3% in dollar terms and the second that borrowed at 20% is inevitable. For those reasons, bank's weighted average up to one year interest rate for deposits data, at the end of each year, gathered from TCMB web page.

Thirdly, for calculating cost of common equity, capital asset pricing model (CAPM) is implemented. CAPM model is simply illustrated as:

$$r_e = r_f + \beta (r_m - r_f)$$

in which r_e symbolizes equity cost, r_f risk free rate, β as beta coefficient, and r_m as market risk.

For risk free rate calculation, year ending government bond rates are used. In detail, for year 2006, 2005 and 2006 year's ending government bond rates; 14% and 18,78% are summed and divided into two. Similarly, average of 2006 and 2007 year's ending government bond rates; 18,78% and 15,38% are computed as year 2007's risk free rate.

For beta coefficient computation, firstly, daily second closing prices of 69 companies' data are mined. Meanwhile, for year 2006, starting on 1st May 2006 to financial table declaration date of companies in 2007, at least 200 closing price data for each company is acquired. Similarly, for year 2007, beginning on 1st May 2007 to financial table declaration date of companies in 2008, again, at least 200 closing price data for 69 companies is gathered. It should be also mentioned that as could be seen in Table 1, companies financial table declaration dates range from February to April in 2006 and 2007, only with one exception of Marmaris Martı. Marmaris Martı's declaration date for 2007 financial tables is on 23rd June 2008. From this viewpoint, approximately 200 to 240 closing price data for each company's beta calculation is available. Compared with Wu (2008) using five year month ending ,60

sample; Chaudhuri (2008) using 2001 to 2007, six year month ending 72 sample, Singla (2008) using 7 year period monthly data, Jones et all. (2007) using ten year period monthly data, and Livingston's (1977) 53 months sample; over 200 sample size for beta coefficient computation is seem to be secure.

Secondly, stock return of 69 companies and return of ISE National index are computed by using those formulas;

$$\text{Stock Return} = (SP_1 - SP_0) / SP_0 * 100$$
$$\text{ISE Return} = (PI_1 - PI_0) / PI_0 * 100$$

In which SP_1 represents closing stock price, SP_0 as previous day's stock price; PI_1 as closing price index and PI_0 as previous day's price index.

As third step, beta coefficients are calculated with MINITAB, by modelling simple regression between company returns and ISE returns:

$$r_c = \alpha + \beta (r_{ise})$$

by using that formula; in which r_c symbolizes company return, dependent variable, and r_{ise} represents ISE National return, independent variable; eventually beta coefficients for 69 company are reached.

Last item of CAPM, market return, r_m, is measured by subtracting previous year's ending ISE National price index (ISE P_0) from relevant year's ending ISE National price index (ISE P_1), and dividing the result to previous year's price index.

$$R_m = (\text{ISE } P_0 - \text{ISE } P_1) / \text{ISE } P_0 * 100$$

4.4 MODEL

In the previous section EVA calculation is displayed in detail. Moreover, this part begins with regression models then indicates sources of the variables.

First model formulated as;

$$P_{it} = \beta_0 + \beta_1 BV_{it} + \beta_2 EPS_{it}$$

Second model represented as;

$$P_{it} = \beta_{0\,it} + \beta_1 BV_{\,it} + \beta_2 EVA_{\,it}$$

And, third model displayed as;

$$P_{it} = \beta_0 + \beta_1 BV_{\,it} + \beta_2 EPS_{\,it} + \beta_3 EVA_{\,it}$$

In which P_{it} represented as the stock price per share at announcement date; BV_{it} as book value per share; EPS_{it} as earnings per share; and EVA_{it} as Economic Value Added of 69 non financial companies for year 2006 and 2007.

First model identifies value relevance of book value per share and EPS. In the second model value relevance of EVA and book value per share is implemented. Comparison between first and second models' R^2 values give useful information on EVA and EPS contribution. Lastly, third model aims to identify value relevance of EVA.

First variable, earnings per share values are taken from the income statements' of 69 non financial companies. Secondly, book value per share item is computed by dividing book value of common stock to number of shares outstanding for each firm. 14 of 69 companies declare their outstanding shares' par value in terms of 1 'kuruş' (kr), which is equal to 0,01 Turkish Lira (TL), rather than 1 TL nominal value. Similarly, one company declares its share's par value as 0,001 TL. In order to reach accurate conclusion, those fifteen companies' Earning per Share and Book Value per Share items are converted into TL and those values are divided to 100 for fourteen companies and to 1000 for that company. Thirdly, stock prices of 69 non financial companies at their financial table release date are taken from ISE web page.

Table 4 indicates some large outliers for both dependent variables of Earning Per Share (EPS), Book Value Per Share (BVS), EVA and the independent variable of Stock Price (SP). In order to diminish the outliers all values are tested in three standard deviation level before performing the statistical analysis. That is, if an observation falls outside the three standard deviation level, then the outlier data is set to be equal to upper or lower bound of that interval.

Table 4:

Descriptive Statistics for Variables

This table provides descriptive statistics for Stock Price, Economic Value Added (EVA), Book Value Per Share (BVS) and Earning Per Share (EPS) of 69 nonfinancial companies in ISE 100 begining from year 2006 to end of 2007.

Variable	Mean	Median	Std. Deviation	Minimum	Maximum
Stock Price	7,5673	4,7850	9,33577	0,00	64,50
BVS	5,5792	2,1553	17,43800	0,00	189,79
EPS	0,5484	0,0328	2,68693	- 0,92	29,67
EVA	5E+007	4902,5524	2E+008	- 4E+008	1E+009

Table 5 examines correlation analysis among the variables. Compared with EPS and BVS, EVA has the lowest relationship with stock price. On the other hand, BVS has the strongest relationship with stock price among the variables. Moreover, correlation between EVA with EPS and BVS are relatively low. However, correlation between EPS and BVS is significantly high. Thus, Multicollinearity among EPS and BVS may occur in the regression model. Furthermore, first null hypothesis is rejected. So that H_1 is accepted: There is a relationship between EVA and stock price.

Table 5:

Correlation Coefficients

This table indicates correlation among Stock Price, Economic Value Added (EVA), Book Value Per Share (BVS), and Earning Per Share (EPS) of 69 nonfinancial companies in ISE 100 starting from the beginning of year 2006 to end of 2007.

	Stock Price	EVA	BVS	EPS
Stock Price	1			
EVA	0,2973	1		
BVS	0,7537	0,3461	1	
EPS	0,5636	0,3993	0,9149	1

As indicated in table 6, three models are displayed. In the first model value relevance of BVS and EPS are questioned. BVS and EPS's (0,000) significance level for t stats prove that both variables are significant and have 66% explanatory power in the model. In the second model, instead of EPS, EVA and BVS's impact on stock price are examined. EVA and BVS as independent variables explain just 56% of second model. Compared with the first model's R^2 values (66%); EPS is expected to be stronger indicator than EVA. In the third model, three independent variables named as book value per share, earnings per share and EVA explain 67% of the model. Also, with almost zero F Stats significance level, all three variables are seemed to be significant. Moreover, lower than 0,05 level t stats significance of all three independent variables approve this conclusion. With regard to model 1 and its 66% explanatory power, EVA's contribution, in third model with 0,67 adjusted R^2 value, is proven. Thus, second null hypothesis of the research is rejected, too. Since EVA increased explanatory power of the model, we accept H_1 that EVA has a value relevance of stock price.

Table 6:

Association with Stock Price

This table presents estimated coefficients, t Stats, significance level of t Stats, F Stats, significance level of F Stats and adjusted R^2 for the model. The independent variables in that model are Economic Value Added (EVA), Book Value Per Share (BV Per Share), and Earnings Per Share (EPS); and dependent variable is Stock Price.

	Model 1		Model 2		Model 3	
Variable	Coefficients	t Stat (Sig)	Coefficients	t Stat (Sig)	Coefficients	t Stat (Sig)
EVA	----------	----------	0,043	0,699 (0,486)	0,120	2,142 (0,034)*
BVS	1,462	11,363 (0,000)*	0,738	12,052 (0.000)*	1,476	11,621 (0,000)*
EPS	-0,774	-6,018 (0,000)*	----------	----------	-0,835	-6,424 (0,000)*
Adjusted R2	0,660		0,561		0,670	
F Stats (Sig)	123,451 (0,000)*		86,151 (0,000)*		86,210 (0,000)*	

(*) within 0,05 significance level.

Although EVA has incremental value relevance, EVA's contribution to the model is significantly low. In detail, as stated in Model 2, BVS and EPS explain 66% of the model, and EVA could raise R^2 only for one percent in the third model. Meanwhile, on contrast to literature and correlation results presented in tables, EPS is found to be negatively related with stock price. This is resulted from multicolliniarity in the model caused by high correlation between EPS and BVS. The VIF values of EPS and BVS are 6,449 and 6,159, respectively. In order to eliminate the multicolliniarity problem, variables are centered. However, the procedure did not solve the problem.

CONCLUSION

In this study, relationship between EVA and stock price; and value relevance of EVA along with EPS and BVS are examined. As a sample pool, 69 listed non financial companies of ISE are observed. Moreover, two questions are asked: 'Is there any relationship between EVA and stock price?' and, 'Does EVA have value relevance along with EPS and BVS?' Furthermore, both of the null hypotheses are rejected.

To begin with, stock price and EVA are found positively correlated. However, compared with other two variables, EVA has the weakest correlation of all. In detail, BVS is highly and EPS is moderately correlated with Stock price.

Also, with regard to 66% and 56% explanatory powers, Model 1 has higher adjusted R^2 value than Model 2. Since BVS is constant in both models, like Biddle's, Bowen and Wallace's (1997); DeVilliers and Auret's (1997); and Keefe and Roush's (2002) studies, EPS is founded to have more value relevance then EVA.

Results of Model 3 show that EVA has incremental value relevance when added to Model; thus second null hypothesis rejected and H_1, EVA has value

relevance along with EPS and BVS, is accepted. However EVA's contribution expands the explanatory power of the model just from 66% to 67%.

As an implication, this research supports that EVA is a valuable tool both on firm management and for stock market participants' estimations.

Although in literature it is suggested that there are over 120 adjustments for EVA calculation, generally 5 to 15 of them are implemented. For that reason, there is no rigid way to compute EVA. For instance, Weaver (1991) indicates in his study including 29 companies and their adjustments that most of the companies used different adjustments for their EVA computation. Thus, number of adjustments used can be seen as a general limitation for all EVA studies.

Meanwhile, since forecasting future cost of issuing debt, preferred stock and risk free rate are highly complex, cost of capital calculation is doubtful, too. Furthermore, Turkish companies do not issue company bonds, thus bank's weighted average up to one year interest rate for deposits is used for cost of debt computation. Moreover, as there is no preferred stock example in Turkey, that part is omitted from cost of capital calculation. Indeed, government bond rates are submitted as the risk free rate.

In this research because of data limitation not all the adjustments for all companies are realized. Some companies do not declares their inventory obsolescence reserves, doubtful allowances reserves and even their interest expense. At that point, it is important of the companies to declare their financial tables and footnotes in a more illuminative way.

Also, this research's sample is composed of the biggest firms in their sectors. On the other hand, results may change for the smaller firms. For that reason, for future studies small firms may be examined, too.

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APPENDIX

Appendix 1 :

Non financial companies, their declaration dates and stock prices at that date.

			2006		2007	
1	**ADANA**	**ADANA ÇİMENTO (A)**	16.03.2007	8,35	13.03.2008	5,90
2	**SASA**	**ADVANSA SASA**	16.03.2007	0,77	11.03.2008	0,51
3	**AKENR**	**AK ENERJİ**	19.03.2007	4,62	07.03.2008	10,60
4	**AKCNS**	**AKÇANSA**	08.03.2007	8,70	21.02.2008	5,90
5	**AKSA**	**AKSA**	19.03.2007	4,06	07.03.2008	1,80
6	**AEFES**	**ANADOLU EFES**	02.04.2007	46,25	28.03.2008	11,80
7	**ANELT**	**ANEL TELEKOM**	29.03.2007	3,04	11.04.2008	2,70
8	**ARCLK**	**ARÇELİK**	15.03.2007	8,95	10.03.2008	6,80
9	**ASELS**	**ASELSAN**	13.03.2007	25,75	14.03.2008	20,30
10	**AYGAZ**	**AYGAZ**	04.04.2007	4,00	04.04.2008	4,72
11	**BAGFS**	**BAGFAŞ**	23.02.2007	31,50	13.02.2008	119,00
12	**BANVT**	**BANVİT**	13.04.2007	1,84	07.04.2008	3,20
13	**BEKO**	**BEKO ELEKTRONİK**	15.03.2007	1,71	10.03.2008	0,96
14	**BOSSA**	**BOSSA**	05.03.2007	1,88	04.03.2008	1,34
15	**BOYNR**	**BOYNER MAĞAZACILIK**	28.02.2007	2,08	12.03.2008	1,94
16	**CCOLA**	**COCA COLA İÇECEK**	30.03.2007	11,20	28.03.2008	10,70
17	**CLEBI**	**ÇELEBİ**	10.04.2007	31,25	10.03.2008	7,35
18	**CIMSA**	**ÇİMSA**	15.03.2007	10,10	18.03.2008	6,60
19	**DGZTE**	**DOĞAN GAZETECİLİK**	06.04.2007	4,72	28.03.2008	2,14
20	**DOAS**	**DOĞUŞ OTOMOTİV**	13.03.2007	6,20	10.03.2008	6,40
21	**DYOBY**	**DYO BOYA**	25.04.2007	0,73	11.04.2008	0,61
22	**ECILC**	**ECZACIBAŞI İLAÇ**	12.04.2007	6,55	09.04.2008	3,88
23	**ECYAP**	**ECZACIBAŞI YAPI**	16.03.2007	3,14	14.03.2008	2,66
24	**EGSER**	**EGE SERAMİK**	09.04.2007	2,72	11.04.2008	1,81
25	**ENKAI**	**ENKA İNŞAAT**	23.03.2007	17,40	28.03.2008	16,30
26	**EREGL**	**EREĞLİ DEMİR CELİK**	07.03.2007	11,90	29.02.2008	8,70
27	**FROTO**	**FORD OTOSAN**	08.03.2007	11,60	10.03.2008	12,00
28	**GOLDS**	**GOLDAS KUYUMCULUK**	10.04.2007	1,72	11.04.2008	2,12
29	**GOODY**	**GOOD-YEAR**	13.03.2007	18,40	11.03.2008	12,60
30	**GOLTS**	**GÖLTAŞ ÇİMENTO**	06.04.2007	64,50	24.04.2008	59,50
31	**HURGZ**	**HÜRRİYET GZT.**	06.04.2007	4,30	10.04.2008	2,16
32	**ISAMB**	**IŞIKLAR AMBALAJ**	04.04.2007	1,12	03.04.2008	0,64

33	**IZMDC**	**İZMİR DEMİR ÇELİK**	21.03.2007	6,35	09.04.2008	2,64
34	**KRDMD**	**KARDEMİR (D)**	12.03.2007	0,72	28.03.2008	1,02
35	**KARSN**	**KARSAN OTOMOTİV**	08.03.2007	1,74	11.03.2008	2,37
36	**KARTN**	**KARTONSAN**	20.02.2007	94,50	15.02.2008	54,50
37	**KOZAD**	**KOZA DAVETİYE**	13.04.2007	11,80	11.04.2008	5,70
38	**MMART**	**MARMARİS MARTI**	11.04.2007	1,72	23.06.2008	1,08
39	**MNDRS**	**MENDERES TEKSTİL**	09.04.2007	0,53	09.04.2008	0,40
40	**MIGRS**	**MİGROS**	16.03.2007	17,00	07.04.2008	19,50
41	**NTTUR**	**NET TURİZM**	12.04.2007	1,47	11.04.2008	0,80
42	**NETAS**	**NETAŞ TELEKOM.**	07.03.2007	31,25	06.03.2008	17,70
43	**OTKAR**	**OTOKAR**	09.03.2007	13,80	06.03.2008	15,40
44	**PRKTE**	**PARK ELEK.MADENCİLİK**	02.03.2007	5,50	27.02.2008	4,90
45	**PETKM**	**PETKİM**	13.02.2007	6,80	13.02.2008	6,80
46	**PTOFS**	**PETROL OFİSİ**	25.04.2007	6,25	11.03.2008	5,75
47	**PETUN**	**PINAR ET VE UN**	13.04.2007	3,44	11.04.2008	3,70
48	**PNSUT**	**PINAR SÜT**	13.04.2007	6,05	11.04.2008	5,90
49	**RYSAS**	**REYSAŞ LOJİSTİK**	03.04.2007	4,36	21.03.2008	4,88
50	**SARKY**	**SARKUYSAN**	28.03.2007	3,54	09.04.2008	2,64
51	**SELEC**	**SELÇUK ECZA DEPOSU**	16.03.2007	3,46	14.03.2008	2,01
52	**SISE**	**ŞİŞE CAM**	29.03.2007	5,45	10.04.2008	1,74
53	**TUDDF**	**T.DEMİR DÖKÜM**	23.03.2007	11,70	11.04.2008	10,80
54	**TATKS**	**TAT KONSERVE**	16.03.2007	3,00	13.03.2008	2,64
55	**TEKTU**	**TEK-ART TURİZM**	13.04.2007	2,22	11.04.2008	1,24
56	**TIRE**	**TİRE KUTSAN**	13.04.2007	6,75	10.04.2008	8,00
57	**TOASO**	**TOFAŞ OTO. FAB.**	21.03.2007	5,20	27.03.2008	4,28
58	**TRKCM**	**TRAKYA CAM**	14.03.2007	3,88	03.04.2008	1,81
59	**TRCAS**	**TURCAS PETROL**	13.04.2007	6,45	11.04.2008	8,60
60	**TCELL**	**TURKCELL**	27.02.2007	7,20	27.02.2008	12,20
61	**TUPRS**	**TÜPRAŞ**	04.04.2007	29,50	26.03.2008	28,00
62	**THYAO**	**TÜRK HAVA YOLLARI**	06.04.2007	7,75	03.04.2008	6,25
63	**TTRAK**	**TÜRK TRAKTÖR**	15.03.2007	15,00	13.03.2008	14,40
64	**UCAK**	**USAŞ**	09.03.2007	5,45	14.03.2008	1,52
65	**UZEL**	**UZEL MAKİNA**	13.04.2007	2,54	21.04.2008	0,00
66	**ULKER**	**ÜLKER BİSKÜVİ**	13.04.2007	5,60	11.04.2008	2,78
67	**VESTL**	**VESTEL**	13.04.2007	3,74	11.04.2008	2,05
68	**VESBE**	**VESTEL BEYAZ EŞYA**	09.03.2007	2,26	07.03.2008	2,30
69	**ZOREN**	**ZORLU ENERJİ**	11.04.2007	3,66	11.04.2008	4,85

Appendix 2:

NOPAT Calculation

NOPAT Calculation (Financing Approach)	
Start:	Income Avail. To Common
Add:	Increase in Equity Equivalents
Equals:	Adj. Income Avail. To Common
Add:	Interest Expense After Taxes
Equals:	NOPAT
Increase in Equity Equivalents:	
Add:	Increase in Net Capitalized Intangibles
Add:	Increase in Bad Debt Reserve
Add:	Incr. İn Inventory Obsolescence Reserve
Add:	Goodwill Amortization
Add:	Incr. İn Deferred Income Taxes
Interest Expense After Taxes:	
Add:	Interest Expense
Subtract:	Tax Benefit of Interest Expense

Appendix 3:

Capital Calculation

Start:	Short Term Debt
Add:	Current Portion of LTD
Add:	Senior Long Term Debt
Add:	Capitalized Lease Obligations
Equals:	Total Debt & Leases
Add:	Adjusted Common Equity
Equals:	CAPITAL
Adjusted Common Equity:	
	Common Equity
	Equity Equivalents
Equity Equivalents:	
	Net Capitalized Intangibles
	Bad Debt Reserve
	Inventory Obsolescence Reserve
	Accumulated Goodwill Amortization
	Deferred Income Taxes