

Economic Value Added - A General Perspective

Asish K Bhattacharyya & B.V.Phani¹

ABSTRACT

This paper explains the concept of Economic Value Added (EVA) that is gaining popularity in India. The paper examines whether EVA is a superior performance measure both for corporate reporting and for internal governance. It relied on empirical studies in U.S.A. and other advance economies. It concluded that though EVA does not provide additional information to investors, it can be adapted as a corporate philosophy for motivating and educating employees to differentiate between value creating and value destructing activities. This would lead to direct all efforts in creating shareholder value. The paper brings to attention the dangerous trend of reporting EVA casually that might mislead investors.

Introduction

It is now well settled that the aim of every business entity should be to maximize shareholders wealth by enhancing the firm's value and all the activities of a firm should be directed to achieve this objective. Various theories of firm conceptualize a firm in various ways and provide an understanding of factors that contribute to the success of a firm.

The *neo classical view* of the firm envisages a business entity as decision-maker based on the supply and demand of both input and output markets. *Organizational theory view* addresses aspects of a firm ignored by neoclassical economics. Disposing of the notion of the firm as a singular decision-maker and recognizing the firm as a complex organization encompassing multiple individuals, organization theory analyses the internal structure of the firm and the relationships between its constituent units and departments. The best explanation that has revolutionized the way we look at the business entity is given by Richard Coase who defined the business entity from a *Transaction cost view*. It explains the existence of the firm with respect to the reduction in costs of contractual arrangements between the buyers and sellers of productive resources. One can say that the ability of the firm to continue to be competitive for generating surplus depends on its ability to reduce transaction costs between the buyers and sellers of the productive resources. The *network view* argues that the business entity once formed is not an isolated instance but a part of a social network, which can be defined as a set of nodes

(e.g., persons, organizations) linked by a set of social relationships (e.g., friendship, transfer of funds, overlapping membership) of a specified type (Laumann, Galaskiewicz, and Marsden, 1978:458). In other words, an organization's productivity is determined less by its internal resources than by the set of resources that it can mobilize through its contacts. The more such contacts the firm has, the better it is 'plugged in' to the key task and influence processes of the industry, and the stronger is its strategic advantage (Madhavan, Balaji, John, 1998). The *Agency view and Stewardship view*, which are two opposite views regarding the conflict of interests between the various agencies involved in the management of the firm. Agency theory argues that unless managers are monitored constantly they act in self-interest, which might be at variance with interests of residual claimants most importantly those of shareholders. This variance can be reduced only through the added costs of monitoring or designing appropriate incentive structures (Jensen and Meckling, 1976). On the other hand the stewardship theory argues that managers interests lie in the well being of the organization and they are at variance with other stakeholders only when the managers' position is threatened due to environmental threats like mergers, acquisitions and takeovers (Donaldson, 1990). *The resource-based view* argues that the firm is bundle of tangible and intangible resources and an organization's success is dependent upon the efficient deployment of these resources to their best advantage (Grant 1991). *The knowledge based view* argues that the firm is a institution that creates an environment under which multiple individuals can integrate their specialist knowledge with low incentives designed to foster co-ordination between individual specialists, thus avoiding the problems of opportunism associated with high incentives directly related to knowledge transactions (Grant, 1996).

The theories, taken together, explain that the success of the business entity in maximizing the firm-value depends on the effectiveness of integrating interests of the firms stakeholders and managers by designing suitable incentive scheme; by improving productivity of resources in the face of uncertainties, by efficient networking with other institutions and social agents; and by reducing transaction costs. This paper examines the

¹ Corresponding author

effectiveness of Economic Value Added (EVA) in improving the performance of the firm as a whole and also as a measure of performance.

Performance Measurement

Investors measure overall performance of a firm as a whole to decide whether to invest in the firm or to continue with the firm or to exit from it. In order to achieve goal congruence, managers' compensation is often linked with the performance of the responsibility centers and also with firm-performance. Therefore selection of the right measure is critical to the success of a firm. To measure performance of a firm we need a simple method for correctly measuring value created/ enhanced by it in a given time frame. All the current metrics trade off between the precision in measuring the value and its cost of measurement. In other words, each method takes into consideration the degree of complexities in quantifying the underlying measure. The more complex is the process, the more is the level of subjectivity and cost in measuring the performance of the firm. There is a continuous endeavor to develop a single measure that captures the overall performance, yet it is easy to calculate.

Each metric of performance claims its superiority over others. Performance of a firm is usually measured with reference to its past record and the performance of other firms with comparable risk profile. The various performance metrics currently in use are based on the returns on investment generated by the business entity . Therefore to reach a meaningful conclusion, returns generated by the firm in a particular year should be compared with returns generated by assets with similar risk profile (cross sectional analysis). Similarly return on investment for the current period should be compared with returns generated in past (time series analysis). A firm creates value only if it is able to generate return higher than its cost of capital. Cost of capital is the weighted average cost of equity and debt(WACC).

The performance of a firm gets reflected on its valuation by the capital market. Market valuation reflects investor's perception about the current performance of the firm and also their expectation on its future performance. They build their expectations on the

estimated growth of the business in terms of return on capital. This results in an incongruence between current performance and the value of the firm. Even if the current performance is better in relative terms, poor growth prospects adversely affects the value of the firm. Therefore any metric of performance, to be effective, should be able to not only capture the current performance but also should be able to incorporate the direction and magnitude of future growth. Therefore the robustness of a measure is borne out by the degree of correlation the particular metric has with respect to the market valuation. Perfect correlation is impossible because as shown by empirical researchers, fundamentals of a company cannot fully explain its market capitalization, other factors such as speculative activities, market sentiments and macro-economic factors influence movement in share prices. However the superiority of a performance metric over others lies in providing better information to investors.

Metrics of performance have a very important and critical role not only in evaluating the current performance of a firm but also in achieving high performance and growth in the future. The metrics of performance have a variety of users, which include all the stakeholders whose well being depends on the continued well being of the firm. Principal stakeholders are the equity holders, debt holders, management, and suppliers of material and services, employees and the end-users of the products and services. Value creation and maximization depends on the alignment of the various conflicting interests of these stakeholders towards a common goal. This means maximization of the firm value without jeopardizing the interests of any of the stakeholders. Any metric, which measures the firm value without being biased towards any of the stakeholders or particular class of participants, can be hailed as the true metric of performance. However it is difficult, if not impossible, to develop such a metric.

Most of the conventional performance measures directly relate to the current net income of a business entity with equity, total assets, net sales or similar surrogates of inputs or outputs. Examples of such measures are return on equity (ROE), return on assets (ROA) and operating profit margin. Each of these indices measure a different aspect of performance, ROE measures the performance from the perspective of the equity holders,

ROA measures the asset productivity and operating profit margin reflects the margin realized by the firm at the market place. The net income figure in itself is dependent on the operational efficiency, financial leverage and the ability of the entity to formulate right strategy to earn adequate margin in the market place.

It is important to note that none of these measures truly reflect the complete picture by themselves but have to be seen in conjunction with other metrics. These measures are also plagued by the firm level inconsistencies in the accounting figures as well as the inconsistencies in the valuation methods used by accountants in measuring assets, liabilities and income of the firm. Accounting valuation methods are in variance with the methods that are being used to value individual projects and firms. The value of an asset or a firm, which is a collection of assets, is computed by discounting future stream of cash flows. The net present value (NPV) is the surplus that the investment is expected to generate over the cost of capital. Measures of periodical performance of a firm, which is the collection of assets in place, should follow the same underlying principles. Economic value added (EVA)² is a measure that captures the valuation principles.

ECONOMIC VALUE ADDED – the concept

EVA is the most misunderstood term among the practitioners of corporate finance. The proponents of EVA are presenting it as the wonder drug of the millennium in overcoming all corporate ills at one stroke and ultimately help in increasing the wealth of the shareholder, which is synonymous with the maximization of the firm value. The attractiveness of the EVA lies in its use of cash flow and cost of capital that are determinant of the value of the firm.

In the process, EVA is being bandied about with utmost impunity by all and sundry, which includes the popular press. The academic world in its turn has come up with various empirical studies which either supports the superiority of EVA or questions the claim of its proponents. Currently the empirical evidence is split almost half way.

EVA is nothing but a new version of the age-old residual income concept recognized by economists since the 1770's. Both EVA and 'residual income' concepts are based on the principle that a firm creates wealth for its owners only if it generates surplus over the cost of the total invested capital. So what is new? Perhaps EVA could bring back the lost focus on 'economic surplus' from the current emphasis on accounting profit. In a lighter vein it can be said that in an era where commercial sponsorship is the ticket to the popularity of even the concept of god, the concept of residual income has not found a good sponsor until Stern Stewart and Company has adopted it and relaunched it with a brand new name of EVA.

Technically speaking EVA is nothing but the residual income after factoring the cost of capital into net operating profit after tax. But this is only the tip of the iceberg as will be seen in the next few sections. The paper examines EVA both as a measure of overall performance and a management philosophy that helps to improve the productivity of resources.

Mathematically:

$$EVA = (\text{adjusted NOPAT} - \text{cost of capital}) \times \text{capital employed} \text{-----}(I)$$

Or

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

Where;

Rate of Return = NOPAT/Capital

Capital = total assets minus non interest bearing debt, at the beginning of the year

Cost of capital = cost of equity x proportion of equity + cost of debt (1-tax rate) x proportion of debt in the capital.

The above cost of capital is nothing but the weighted average cost of capital (WACC)

² EVA is the registered trademark of Stern Stewart and Co.

Cost of equity is normally estimated using capital asset pricing model (CAPM) that estimates the expected return commensurate with the riskiness of the assets.

If we define ROI as NOPAT/capital then the above equation can be rewritten as

$$EVA = (ROI - WACC) \times CAPITAL EMPLOYED \text{-----(III)}$$

Capital being used in EVA calculation is not the book capital, capital is defined as an approximation of the economic book value of all cash invested in going-concern business activities, capital is essentially a company's net assets (total assets less non-interest-bearing current liabilities), but with three adjustments:

- Marketable securities and construction in progress are subtracted.
- The present value of noncapitalized leases is added to net property, plant, and equipment.
- Certain equity equivalent reserves are added to assets:
 - Bad debt reserve is added to receivables.
 - LIFO reserve is added to inventories.
 - The cumulative amortization of goodwill is added back to goodwill
 - R&D expense is capitalized as a long-term asset and smoothly depreciated over 5 years (a period chosen to approximate the economic life typical of an investment in R&D).
 - Cumulative unusual losses (gains) after taxes are considered to be a long-term investment.

A firm can motivate its managers to direct their effort towards maximizing the value of the firm only by, first measuring the firm value correctly and secondly by providing incentives to managers to create value. Both are interdependent and they complement each other. Therefore this paper examines the EVA concept from two perspectives, EVA as a performance measure and EVA as a corporate philosophy.

We shall examine EVA as a performance measure to assess whether it conveys any additional information to investors over conventional performance measures. In other words, whether information on EVA leads to better decision by investors.

Examining EVA as a corporate philosophy we intend to look at the efficacy of EVA when implemented at every level of managerial decision making process to encourage managers to deploy resources only on value enhancing activities and to align the interests of shareholders with managers. This involves two things, one is linking managerial compensation package with EVA and second is to inculcate the culture of evaluating every action from the viewpoint that it should generate EVA. The ultimate outcome should be enhancement in the firm-value measured by the capital market. When EVA is used as a management philosophy, it results in the enhancement of productivity by continuously focusing on return vis-à-vis cost of capital. However as market discounts expected long term performance of the firm, any compensation that motivates enhancement of short term EVA, may not maximize the firm value.

However with EVA culture, the firm as a whole focuses on the economic surplus and that definitely improves value enhancement process. Of course, this can be achieved even by implementing the other practices but the simplicity of EVA in communicating the very fundamental principle, that generation of surplus over cost of capital can only enhance the firm value, makes it a management technique superior to other planning and control techniques. We shall examine the appropriateness of this perception.

EVA AS A PERFORMANCE MEASURE

Proponents of EVA argue that EVA is a superior measure as compared to other performance measures on four counts:

- it is nearer to the real cash flows of the business entity;
- it is easy to calculate and understand;
- it has a higher correlation to the market value of the firm and
- its application to employee compensation leads to the alignment of managerial interests with those of the shareholders, thus minimizing the supposedly dysfunctional behavior of the management.

The last two merits can be considered as a reflection of the first two. If EVA truly represents the real cash flows of a business entity and it is easy to calculate and

understand, then it automatically follows that it should be closely related to the market valuation and it should minimize the dysfunctional behavior of the management when used as an incentive measure. In other words, close relation to market valuation and convergence of managerial interests with shareholders interests is a vindication of EVA as a superior metric.

EVA as a performance measure looks into the efficacy of EVA both as an absolute measure in comparison with net income, residual income and similar measures as well as a ratio in relation with performance measures like ROE, ROA and Operating Profit Margin, which are commonly used by both managers and equity analysts alike. These measures are normally used internally by the management to evaluate employee performance, incentive calculation and investment decisions and externally by equity analysts to ascertain the performance and growth of the firm. Along with these measures valuation models like NPV, IRR, Payback period and Book rate of return are used both internally and externally by managers for investment decisions. The former measures are backward looking measures which take into account past and current performance and facilitates prediction of future performance, whereas latter measures are more forward looking and discount the expected future cash flow streams associated with a given investment or new investment to ascertain the economic viability of the same.

EVA a superior performance measure?

First let us look into the claim of EVA being superior than the conventional measures such as ROI, ROE and ROA, which are based on the accounting figures. Most of these measures give us the rate of return earned by the firm with respect to capital invested in the firm. The most important limitation of these measures are derived from limitations inherent in the measurement of accounting profit. As per current accounting practices, while historical-cost-based accounting measures are being used to carry most of the assets in the balance sheet, revenue and expenses (other than depreciation) are recognized in the profit and loss account at their current value. Therefore accounting rate of returns do not reflect the true return from an investment and tend to be biased downwards in the

initial years and upwards in the latter years. Similarly as noted by Malkelainen (Esa Malkelainen 1998), distortion occurs basically due to the historical cost and straight line depreciation schedule used by most businesses to value their assets. This leads to a bias in these measures due to the composition of assets of a firm at any given point in time. By composition he refers to the current nature of the assets, more current the assets are, the accounting rate of return is closer to the true rate of return. This distortion will not be significant if there is a continuous stream of investments in assets i.e. the value of the mix of assets is nearer to the current value of the assets. But the probability, that at any point of time, a firm should have such a composition of assets is rare, in most cases either the assets are old or relatively new. This precludes these accounting measures from being used to reach any meaningful conclusion regarding the true performance of the firm.

The other important limitation of accounting measures is that they ignore the cost of equity and only consider the borrowing cost. As a result it ignores the risk inherent in the project and fails to highlight whether the return is commensurate with the risk of the underlying assets. This might result in selecting projects that produce attractive rate of return but destroys firm value because their cost of capital is higher than the benchmark return established by the management. On the other hand accounting measures encourage managers to select projects that will improve the current rate of return and to ignore projects even if their return is higher than their cost of capital. Selection of projects with returns higher than the current rate of return does not automatically increase shareholders' wealth. Taking up only those projects, which provide returns that are higher than the hurdle rate (cost of capital) results in increasing the wealth of the shareholder. Therefore use of ROE, ROA or similar accounting measures as the benchmark, might result in selection of those projects that though provide rate of return higher than the current rate of return destroys firm-value. Similarly use of these measures result in continuing with activities that destroys firm value until the rate of return falls below the benchmark rate of return.

EVA proponents claim that because of these imperfections, the accounting based measures are not good proxies for value creation. Managerial compensation based on

these measures does not encourage value enhancement actions by managers. Value enhancement and earnings are two different things and might be at cross-purposes because short-term performance might be improved at the cost of long term health of the firm. Activities involving enhancement of current earnings may be short term in nature, whereas any value enhancing activities should focus on long term well being of the firm. Avoidance of discretionary costs improves current performance while destroying value of the firm. Managers' focus on short-term performance will increase as long as their rewards are tied to the current performance over long-term value enhancement (Damodaran 1998, David Young 1999).

The question arises whether EVA is an improvement over conventional measures and serves the purpose of motivating managers to pay attention to shareholders value even if that results in compromising current performance. The answer may be negative because all the above limitations are also associated with EVA. As shown in equation III the calculation of EVA entails the usage of an accounting rate of return, the difference lies only in the fact that the cost of equity is also factored in to arrive at the residual income figure. Though incorporation of the cost of equity capital is the virtue of EVA, because it measures economic surplus, it does not remove the limitations of the accounting profit that forms the basis for computing EVA. Moreover the virtue might not be realized in practice since it is not easy to calculate the cost of equity. Market returns cannot be used as a proxy for cost of equity that supports assets in place because market discounts the expectations. Similarly it is difficult to use CAPM in measuring cost of equity because it is difficult to measure risk-free-rate of return, beta and market premium. Difficulties get compounded in an economic environment like India, where interest rates fluctuate frequently, the capital market is volatile and the regulators are yet to have a complete grip on the capital market to enhance its efficiency. Empirical studies show that the volatility in the Indian capital markets, like capital markets in other developing economies, is higher than capital markets in developed economies (Tushar Waghmare 2000). Similarly studies show that beta for companies listed in Indian capital markets is not stable (Sanyal, Guha Roy and Sanyal 2000). It is difficult to ascertain the market premium because of the short history of the Indian capital market, which has become active only in the last

decade and also because of its high volatility. Therefore even if for the sake of argument it can be said that the potential of EVA as a measure of performance can be realized fully in an advanced economy, the argument that EVA is a better measure is not tenable in the Indian context.

In India EVA is being used with impunity. A case at point is the study published by Economic times (11th December 2000)³, on corporate performance. While computing EVA it used a flat rate of 13 percent as the cost of capital of all the enterprises included in the study. The study explains that an average 13 percent interest for both the years covered by the study is used as it is almost equal to the prime-lending rate of the commercial bank and financial institution. It is a basic principle of economics that 'higher the risk higher is the expected return'. By estimating WACC at 13% this basic principle is violated. It may be argued that cost of debt should be taken post-tax and therefore effective cost of equity incorporated in the calculation is higher than 13 percent. Even if this argument is accepted the computation cannot be defended because the cost of capital is estimated without using any accepted economic model. Moreover by using a flat rate, variation in risk profiles of firms have been ignored. This shows both the popularity of EVA in India and difficulties in measuring the same. The study has also ignored adjustments in capital and operating income suggested by proponents of EVA

Is EVA simple to understand and calculate ?

The proponents of EVA propose certain adjustments in accounting figures to calculate a proxy for economic capital. The objectives of such adjustments are:

- 1) to measure capital at closer to the current value;
- 2) to include all investments that are treated as period costs by accountants (such as R&D expenditure) and
- 3) to bring EVA closer to the real cash flows of the company.

The Stern Stewart & Co. which is the front runner in eulogizing the utility of EVA, recommends nearly 160 adjustments to the accounting figures for a realistic estimate of

EVA. These adjustments truly complicate the calculation of EVA. Most enterprises do not maintain in-depth data required for these adjustments and even if it is maintained it is not accessible to outsiders and it further complicates the computation. For the insiders who have access to the data these adjustments make the calculation too complicated to necessitate the hiring of a consultant. This involves additional costs, which are often not insignificant. Taking this into account most of the EVA proponents recommend that these adjustments have to be scaled down based on the relevance and incremental information that they offer.

Stewart argues that distortions in GAAP-based accounting should be corrected to the extent that it is practical to do so, which means that adjustments should be made only if:

- 1) the amounts are significant;**
- 2) managers can influence the outcome of the item being adjusted;**
- 3) the required information is readily available; and**
- 4) non-finance professionals can understand them. (Stewart 1991).**

Thus Out of these 160 odd adjustments around 15 adjustments are considered crucial by die hard EVA proponents but in recent years this requirement has been scaled down significantly by many consultants to around five to six adjustments.

These adjustments are aimed at :

- 1) producing an EVA figure that is closer to cash flows, and less subject to the distortions of accrual accounting;**
- 2) removing the arbitrary distinction between investments 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;**
- 4) eliminate the use of successful efforts accounting;**
- 5) bring off-balance sheet debt into the balance sheet; and**
- 6) correct biases caused by accounting depreciation. (S David Young,1999)**

Although many adjustments to GAAP-based accounting profit are possible, the following are the most commonly proposed:

³ see annexure 1

- 1. Non-recurring gains and losses.*
- 2. Research and development expenses.*
- 3. Deferred taxes.*
- 4. Provisions for warranties and bad debts.*
- 5. LIFO reserves.*
- 6. Goodwill.*
- 7. Depreciation.*
- 8. Operating leases.*

Studies that endeavored to find out the benefits of these adjustments concluded that they are largely irrelevant and result in only incremental addition to the information produced by EVA, even if adjustments are tailored to the nature of the business of the company. The main argument put forward is that even though the logic behind these adjustments is impeccable, whether these adjustments help in countering any dysfunctional or sub-optimal behavior of the managerial staff is suspect. It is argued that these adjustments are more crucial for the external user. But for most firms, adjusted EVA offers few advantages over unadjusted EVA. Moreover it carries the costs of increased complexity and any other costs that arise when profit measures deviate from GAAP. In short, the residual income measure first proposed by Alfred Sloan seventy-five years ago is likely to offer the same advantages as today's highly advertised EVA. (S.David Young 1999).

As mentioned above the veracity of EVA is dependant on the various adjustments proposed to minimize the accounting biases, which in itself is a complicated process. Other than this the increase in the number of adjustments increase the subjectivity involved in measuring EVA(Damodaran 1998). It is very difficult to and almost impossible to quantify all the value enhancement activities of a firm without involving lot of subjective estimates and therefore even with the various accounting adjustments proposed to remove the accounting biases in the estimation, EVA computation tends to increase the subjectivity in its estimate.

Though the idea of EVA is simple and theoretically elegant, its implementation is difficult and often takes away much of the potential benefits.

Is EVA a better signal to the capital market ?

Capital market theories have established cash flow based valuation models that are extensively used by analysts for valuation of firms and equity. It is highly improbable that a single number can capture all the inputs required by those models. Aggregation results in loss of information. Therefore accounting standard setters and regulators, all over the globe, require firms to be transparent and disclose information that financial statements fail to capture, either as a part of financial statements or by way of a separate report. Analysts use those information along with information collected from other sources, to value firms. However they often use a single figure, like ROI, as a signal for 'good and bad news'. EVA should be considered a superior substitute of ROI or similar measures only if it provides a better signal.

Independent researchers concluded that even though EVA is correlated to stock returns, it is not much greater than the correlation between accounting profit and stock return. Therefore though EVA might be incrementally better over other measures, it does not really provide any significant informational advantage. It is pertinent to note that this conclusion is drawn by empirical studies that used the database created and maintained by Stern Stewart & Co (Dodd & Chen 1997; Biddle, Bowen & Wallace 1999). Therefore chances of bias due to incomplete data are almost eliminated. Empirical studies in other countries have also confirmed that EVA does not provide better signal to the capital market. If the empirical studies globally do not provide evidence to support the argument that EVA provides a better signal to the capital market, it may be easily concluded that results of similar studies will not be different for companies listed in the Indian stock exchanges because Indian capital markets are less efficient as compared to markets in advanced economies. In India it is even more difficult to have a database for conducting such studies and therefore even if some studies show results different from the conclusions of global studies, the same should be viewed with utmost caution.

EVA as a Corporate Philosophy

Though EVA may not have better informational value to capital markets, it can be very useful in improving productivity of a firm, if adapted as a corporate philosophy. Productivity should be measured in terms of creation of wealth for shareholders. An appropriate corporate philosophy should result in goal congruence and should channel all efforts of the management and employees towards a pre-determined goal and strategies of the firm. A firm can enhance its value only if it is able to achieve optimal productivity, in terms of value over a long period of time. Over the years management experts and consultants have proposed many tools and techniques for improving productivity. Firms have tried these tools with varied degree of success. Many of the success stories in relation with implementation of those tools and techniques have taken their place in the annals of history.

Some of the most notable of these are Management Information Systems (MIS), Business Process Reengineering (BPR), Enterprise Resource Planning (ERP), and Brand Valuation in capital budgeting . Though all these tools have different perspectives, they aim at improving the productivity in physical terms and ignore the concept of value. They facilitate increase in the productivity and efficiency of the firm that ultimately contributes to the bottom-line of the firm but increased bottom-line is no guarantee for increase in the shareholders value.

Almost all the tools and techniques are used to reorient the employees' perception of managing 'value drivers' and that culminates into empowerment of employees cutting across the hierarchical levels. All these tools aims at improving productivity by reducing redundancies in the 'value chain', BPR by simplifying existing processes and eliminating non value added activities, MIS by improving the quality and flow of information and ERP by ensuring efficient allocation and utilization of enterprise resources.

The success of these tools reflects in reduced costs for delivering products or services to customers, though it may not always result in increasing shareholder value. These tools fail to distinguish between activities that create value and those that destroy value

because they do not measure 'economic surplus' being generated by different activities. Moreover successful implementation of these tools and techniques involve extensive retraining of employees and constant monitoring of performance. In most cases the success or failure of these techniques depends on the effectiveness of communication of the philosophy and process of implementation to employees at all levels. The success of these tools to a great extent depends on how well the firm is able to resolve the problem of resistance to change and the ability of the management to earn commitment of employees, to the implementation of these techniques. Given this scenario the implementation of these management tools across the firm is a long drawn process and the possibility of success is not very high.

In contrast EVA is an easy to understand concept. EVA, as a corporate philosophy, entails using of EVA at every decision level in the organization. In fact EVA should be adapted as a culture within the organization rather than as a project. EVA when used as a corporate philosophy does not require precise estimation, therefore hurdles in estimating EVA does not come in the way of building the EVA culture in an organization. A firm can roughly estimate its WACC a hurdle rate that is being used by firms in capital budgeting decisions. Therefore it is not difficult for employees to use EVA for decision-making including operational decisions.

There are more than 300 corporates, world wide that have adapted EVA as a corporate philosophy. Many of these organizations are successful multinationals like Coca-Cola, Bausch & Lomb, Briggs & Stratton and Herman Miller. Some of the state owned enterprises in U.S.A. including the U.S. Postal service that has the largest civilian labor force in the world, have adapted EVA culture to improve efficiency in services and to motivate the employees.

The advantage of EVA over other similar tools is that it improves business literacy because of easy understandability and conceptual clarity. The one component that sets it apart over conventional measures is its consideration of the cost of capital and this is the one component, which should be understood by everyone involved in operations.

Business literacy is the effort of management to convey to all the employees the fact that for any activity to be value enhancing the return generated should be over and above the cost of capital employed for that activity. This small shift in the outlook of the employees immediately raises the threshold limit of the returns generated to create value. Usually employees do not look at their actions from this perspective and therefore there is a need to continuously highlight the concept.

As explained earlier compensation methods based on EVA work better in achieving the objective of goal congruence and minimize the agency cost. Use of EVA improves ‘internal corporate governance’ in the sense that it motivates manager to get rid of value destructive activities and to invest only in those projects that are expected to enhance shareholder value.

Ideally a management control system should motivate managers for ‘self control’ rather than managers are being controlled because human beings have general resistance to controls. Linking compensation with EVA helps employees in conducting a self-examination of every action taken by them to ensure that it enhances EVA of the firm. Care should be taken to tie compensation to the enhancement of long term EVA rather than short term EVA. As discussed earlier, managers do have scope to enhance the short term EVA at the cost of long term value creation by rejecting good investment opportunities that have long gestation period or, avoiding discretionary costs or by targeting a capital structure that might reduce the WACC in the short run while enhancing the financial risk in the long run. One way to counter this limitation is to defer payment of a part of incentives.

Empirical evidence supports the above observations. Empirical studies concluded that EVA, when used as an incentive compensation measure, tends to improve the value of the firm by inducing managers towards value creating activities (Biddle, Bowen and Wallace 1999). Using EVA or Residual Income measures for incentive compensation leads to:

- the improvement in operating efficiency by increasing asset turnover;

- disposal of selected assets and reduce new investments (the assumption is that these assets have failed in earning adequate returns when compared to the overall cost of capital) and
- more share repurchases (consistent with distributing under performing capital to shareholders).

It may be concluded that though EVA fails to provide additional information to the capital market, it can be used to improve the internal governance of a firm.

The Indian Context

India has found supporters for EVA. It has already earned favor with journalists and leaders in corporate reporting. However most of them do not calculate EVA rigorously, rather they take casual approach in calculating and reporting EVA. We have examined a study by Economic Times, the most popular business daily in India and the annual report of Infosys Technologies limited that has won prestigious ‘ best presented annual report’ being awarded by the Institute of Chartered Accountants of India (ICAI) for five years in this context.

The study published by Economic Times neither adjusted book capital to bring it closer to economic capital nor used rigorous model to compute the cost of equity. Perhaps the short cut was adopted by the study to circumvent difficulties in estimating equity and converting book capital into economic capital.

Infosys Technologies Limited known for its transparency in financial statements, may be considered a pioneer in reporting EVA in annual report. A perusal of the EVA statement published by Infosys⁴ in its annual report for the year 99-2000 reveals certain important shortcomings.

Infosys has used book capital for computing EVA. It has not carried out any adjustment for converting book capital into economic capital. This distortion may not be material because in year 2000 it spent less than 1 percent of total revenue in research and

development expenditure. Similarly it has not adjusted the net income figure to bring it closer to the amount of cash flow generated by the firm. According to proponents of EVA, these adjustments are important in computing EVA.

The cost of equity used by Infosys is also questionable. It has used CAPM for estimating the cost of equity. It has a uniform beta variant of 1.48, The average beta variants for software stocks in US for all the four years (1997-2000) covered in the statement. It appears that the beta variant has not been adjusted for sovereign risks and other factors. This might have distorted cost of equity. Moreover, it is not clear why a uniform beta should be used for all the years. It is now well established that beta does not remain constant over a long period, therefore it is appropriate to compute beta separately for each year. Similarly it has used market premium of 8 percent, 9 percent, 10 percent and 10 percent for all the years 2000, 1999, 1998 and 1997 respectively. It appears that market premium has been estimated on certain assumptions best known to the preparers of the EVA statement. It is difficult to estimate the market premium in volatile markets, therefore in computing EVA there is no option but to estimate market premium based on certain assumptions. This makes EVA computation highly subjective therefore, in the absence of disclosures of those assumptions, the informative value of the EVA reduces very significantly and it carries only ornamental value to decorate the annual report.

The EVA statement also shows a reduction in the cost of equity from 27.97 percent in 1997 to 22.29 percent in 2000. This reduction is explained by the reduction in risk free debt cost from 13.6 percent in 1997 to 10.45 percent in 2000 and the reduction in market premium from 10 percent in 1997 to 8 percent in 2000. These reductions do not reflect the market reality because according to one calculation return on 91 day T-bills increased from 6.79 percent for fiscal year 1997-98 to 9 percent in fiscal year 1999-2000. If we use the cost of capital of 27.97% for 1999 and 2000, EVA for the year 2000 comes to Rs.8907.70 lakhs as against Rs.12,905.67 lakhs and for the year 1999 it comes to Rs. 6427.25 lakhs as against Rs. 7077.60 lakhs reported in the EVA statements. Though it

⁴ See annexure 2

may not be concluded that Infosys has overstated EVA in its report, it may not be inappropriate to conclude that EVA figures reported in the annual report are incorrect.

The above analysis shows the difficulties in computing EVA and also that companies are unable to resolve those difficulties. However the popularity of EVA has tempted the companies to report EVA as a public relations measure, even if such reporting is misleading.

Indian companies have started using EVA for improving internal governance. The Tata Iron and Steel Company (TISCO) is using EVA to measure performance of its mines and other business segments. Managers of the company find the measure quite useful and are highly enthused by the use of this measure. It is expected that EVA will gain popularity more as a management planning and control tool.

Conclusion

The concept of EVA is based on the sound economic principle that firm value increases only if it is able to generate surplus over its cost of capital and therefore it is based on strong theoretical foundation. However its calculation involves significant subjectivity and this reduces its informative value. Moreover it fails to provide better signals to the capital market as compared to conventional accounting measures like ROI, however hard selling of EVA has contributed positively in highlighting the fundamental economic principle, long forgotten by managers. In India companies are using EVA internally as a performance measure for improving productivity that would lead to enhancement of shareholder value. However a dangerous trend has also set in, to use EVA casually for external reporting. This trend should be stalled as such reporting might mislead users of those reports.

References

- Al Ebrhar and G.Bennett Stewart III; The EVA revolution; *Journal of Applied Corporate Finance* Vol 12, No.2, Summer 1999.
- Al Ebrhar , Gary Hamel; Debate : Duking it out over EVA; *Fortune*, Chicago, Aug 4, 1997, p 232
- Alfred Rappaport; Creating Shareholder Value, The New Standard for Business performance; *The Free Press*, 1986.
- Aswati Damodaran; Value Creation and Enhancement: Back to the future; *Working paper series*; Stern School of Business 1998.
- Bacidore, Jeffrey M; Boquist, John A; Milbourn, Todd T, Thakor, Anjan V; The search for the best financial performance measure; *Financial Analysts Journal*, Charlottesville, May/June, 1997, p 11-20.
- Banerjee, Ashok; Economic Value Added and shareholder wealth : An Empirical examination; *Paradigm, Vol 3 No.1, January-June 1999, p99-133*
- Bennett III, Stewart G; EVA works: but not if you make these common mistakes; *Fortune*, Chicago, May 1, 1995.p 117-118
- Biddle, Bowen & Wallace; Evidence on EVA; *Journal of Applied Corporate Finance*; Volume 12, No.2 Summer 1999.
- Blair, Allistair; Watching the new metrics; *Management Today*, Apr 97, p 48-50
- Brewer, Peter C, Chandra, Gyan; Economic Value Added : Its uses and Limitations; *SAM Advanced Management Journal*, Cincinnati, Spring, 1999 p 4-11
- Richard A. Brealey, Stewart C, Myers; *Principles of Corporate Finance*; 6th Edition, 2000, Tata McGraw-Hill Publishing Company; New Delhi.
- Calabrese, Vincent J; Economic Value Added : Finance 101 on steroids; *The Journal of Bank cost & Management Accounting*, San Francisco, 1999. P 3-34
- Campbell J, and R Shiller; Stock Prices, Earnings, and Expected Dividends; *Journal of Finance* July 1988
- David S Young; Some reflections on accounting adjustments and Economic Value Added; *Journal of Financial Statement Analysis*; New York, Winter 1999.p 7-19.
- Dierks Paul A, Patel Ajay; What is EVA and how can it help your company; *Management Accounting*, New York, Nov 1997.p 52-58
- Easton P D, and T S Harris; Earnings as a Explanatory Variable for Returns; *Journal of Accounting Research* Spring : 19-36.
- G Sanyal, P Guha Roy and J Sanyal; Beta Forecasts in India and Possible Improvement; *Indian Capital Markets Trends and Dimensions* Ed. Tata McGraw-Hill Publishing Company Limited New Delhi 2000
- Karmakar , Shyamal, Rajesh S N; Evaluating Economic Value Added ; *The Economic Times*, Calcutta, July 15, 1999.
- Lev B; On the Usefulness of Earnings and Earnings Research: Lessons and Directions from Two Decades of Empirical Research; *Journal of Accounting Research*, Supplement 1989; 153-192
- Esa Makaleinen 1998; Economic Value Added as a management Tool; *unpublished Master's thesis*; Helsinki School of Economics and Business Administration, Helsinki, Finland. 79 pages
- Fritsche, Steven R; Dugan, Michael T,' A simulation-based investigation of errors in accounting-based surrogates for internal rate of return', *Journal of Business Finance & Accounting* [JBF]Vol: 24 Iss: 6 Date: Jul 1997 p: 781-802
- Lane, Peter J; Cannella, Albert A Jr; Lubatkin, Michael H,' Agency problems as antecedents to unrelated mergers and diversification: Amihud and Lev reconsidered', *Strategic Management Journal* [SMJ] Vol: 19 Iss: 6 Date: Jun 1998 p: 555-578
- McCormack , John L, Vytheeswaran Jawanth; EVA revisited; *Oil and Gas Investor*, Denver, Apr 1999.p 49-53
- McCormack , John L and Vytheeswaran Jawanth; How to use EVA in the oil and gas industry; *The Bank of America Journal of Applied Corporate Finance*; New York, Fall 1998. p 109-131
- Micheal C. Jensen, "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, " *American Economic Review*, vol.76, no.2, May 1986, pp.323-329.
- Micheal C.Jensen and William H.Meckling, "Theory of the Firm: managerial Behavior, Agency Costs, and Ownership Structure," *Journal of Financial Economics*, vol.3, no.4, October 1976, pp.305-360.

Micheal C.Jensen and Richard S.Ruback, "The Market for Corporate Control: The Scientific Evidence," *Journal of Financial Economics*, vol. 11, nos. 1- 4, April 1983, pp. 211-233.

Myers Randy; Metric wars ; *CFO*, Boston, Oct, 1996, p 41-50.

Russo, Michael V; Fouts, Paul A,' A resource-based perspective on corporate environmental performance and profitability', *Academy of Management Journal [AMA]* Vol: 40 Iss: 3 Date: Jun 1997 p: 534-559

Rahul Kochhar, "Explaining Firm Capital Structure: The Role of Agency Theory vs. Transaction Cost Economics," *Strategic Management Journal*, vol. 17, 713-728(1996).

Shimin Chen, James L Dodd; EVA A new Panacea?' *Business and Economic Review*; July-Sep, 1996, p26-28

Shimin Chen, James L Dodd; Economic value added : An empirical examination of a new corporate performance measure; *Journal of Managerial Issues*; Pittsburg, Fall 1997

Spero Lee; Getting EVA right; *TMA Journal*; Atlanta, Nov/Dec 1997.p19-22

Stern Joel; EVA share options that maximize value; *Corporate Finance*; London, Aug 1993. p 31

Stern Joel; Management : Its mission and measure; *Director*, London, Oct 1994. P-42

'Stern stewart roundtable on eva in europe'; *The Bank of America Journal of Applied Corporate Finance*; New York, Winter 1999. P 98-121

Szewczyk, Samuel H; Tsetsekos, George P; Zantout, Zaher,' The valuation of corporate R&D expenditures: Evidence from investment opportunities and free cash flow', *Financial Management [FMG]*Vol: 25 Iss: 1 Date: Spring 1996 p: 105-110

Teitelbaum Richard; America's greatest wealth creators; *Fortune*; Chicago, Nov 10, 1997.

Topkins Maggie; A new way to find bargains; *Fortune*; Chicago, Dec 9, 1996, p 29.

Tully Shawn; The Real Key to Creating Wealth; *Fortune*; September 20,1993, p. 50.

Tushar Waghmare; Volatility in Indian Stock Markets: A Study of Badla and Short Sales Restriction; *Indian Capital Markets Trends and Dimensions Ed.; Tata McGraw-Hill Publishing Company Limited*; New Delhi, 2000.

ANNEXURE 1

Economic Times Study On Corporate Performance Monday 11 December 2000

TOP 100 INDIAN MANUFACTURING SECTOR COMPANY	99-2000	98-99	Rise/Fall (Rs crore)	%
RELIANCE INDUSTRIES	639.27	-203.15	842.42	
BAJAJ AUTO LTD.	382.73	384.16	-1.43	-0.37
HINDALCO INNDUSTRIES	356.14	288.31	67.83	23.53
HERO HONDA MOTORS	251.19	152.32	98.87	64.91
WIPRO	229.03	72.88	156.15	214.26
INFOSYS TECH	225.07	79.59	145.48	182.79
GLOBAL TELE SYSTEMS	168.34	44.66	123.68	276.94
PUNJAB TRACTORS	144.08	140.13	3.95	2.82
MAHINDRA & MAHINDRA	137.92	70.99	66.93	94.28
MRF	128.97	155.61	-26.64	-17.12
NIIT	118.86	92.50	26.36	28.50
SATYAM COMPUTER	107.04	52.49	54.55	103.92
RANBAXY LABARATORIES	103.42	31.06	72.36	232.97
ASIAN PAINTS	101.82	66.91	34.91	52.17
CIPLA	101.32	99.18	2.14	2.16
GUJARAT POWER GEN	87.44	34.16	53.28	155.97
ESCORTS	84.60	41.36	43.24	104.55
TVS SUZUKI	79.44	74.57	4.87	6.53
BPL	76.49	72.79	3.70	5.08
KIRLOSKAR OIL ENGINES	74.84	15.76	59.08	374.87
NAGARJUNA FERTILISERS	73.31	84.91	-11.60	-13.66
BSES	72.18	66.58	5.60	8.41
AUROBINDO PHARMA	71.00	50.77	20.23	39.85
MUKAND	70.24	5.76	64.48	1119.44
INDO GULF CORPORATION	67.78	-74.19		
GODREJ SOAPS	62.74	-41.44		
APPOLLO TYRES	61.87	43.28	18.59	42.95
NIRMA	61.76	82.60	-20.84	-25.23
TATA TEA	61.33	134.45	-73.12	-54.38
HCL INFO SYSTEMS	57.60	31.15	26.45	84.91
BRITANIA INDUSTRIES	55.25	38.27	16.98	44.37
DABUR INDIA	51.76	28.07	23.69	84.40
GUJ AMBUJA CEMENTS	49.83	8.28	41.55	501.81
TRIVENI ENGINEERING	48.75	9.64	39.11	405.71
TRACTORS AND FARM EQUIP	48.44	69.07	-20.63	-29.87
CEAT	46.19	58.90	-12.71	-21.58
SRF	42.19	32.36	9.83	30.38
RALLIS INDIA	39.53	43.32	-3.79	-8.75
KEC INTERNATIONAL	39.39	40.13	-0.74	-1.84
MIRC ELECTRONICS	38.42	24.53	13.89	56.62
VIDEOCON APPLIANCES	38.09	19.99	18.10	90.55
SAMTEL COLOR	36.59	-5.79		
DUNCANS INDUSTRIES	36.32	69.07	-32.75	-47.42
TATA CHEMICALS	32.04	89.31	-57.27	-64.12
MAHAVIR SPINNING	30.15	30.90	-0.75	-2.43
EXIDE INDUSTRIES	28.96	18.67	10.29	55.12
SPIC	26.67	15.62	11.05	70.74
SUASHISH DIAMONDS	25.69	25.89	-0.20	-0.77
PAINTS LIMITED	24.29	18.33	5.96	32.52
MODI RUBBER	23.92	17.03	6.89	40.46
GODREJ AND BOYCE	22.15	0.33	21.82	6612.12
EID PARRY	22.07	5.02	17.05	339.64
MCDOWELL & CO	21.48	18.71	2.77	14.80
FINOLEX INDUSTRIES	15.01	-51.95		

SURYA ROSHNI	14.94	5.49	9.45	172.13
TITAN INDUSTRIES	13.94	13.62	0.32	2.35
RUCHI SOYA	13.71	12.08	1.63	13.49
IVP	13.19	19.23	-6.04	-31.41
BUSHAN STEEL	9.22	-0.20		
VOLTAS	5.84	21.75	-15.91	-73.15
TUBE INVESTMENTS	5.69	-23.41		
VAM ORGANIC CHEM	4.29	17.81	-13.52	-75.91
TATA SSL	1.88	-44.17		
EVEREADY INDUSTRIES	0.57	38.55	-37.98	-98.52
SURAT ELECTRICITY	0.19	-4.05		
JAIPRAKASH INDUSTRIES	-1.90	-23.72		
STERLITE INDUSTRIES	-2.27	-70.35		
INDIAN ALUMINIUM	-2.52	-9.35		
CENTURY ENKA	-2.63	-20.29		
LML	-3.99	26.31		
MADRAS CEMENTS	-4.76	12.99		
KESORAM INDUSTRIES	-5.72	-12.43		
JINDAL IRON AND STEEL	-6.76	-37.32		
EICHER	-8.34	10.27		
JK INDUSTRIES	-9.25	-19.12		
UNITED PHOSPHORUS	-9.82	-12.44		
BOMBAY DYEING	-13.11	-63.77		
USHA BELTRON	-16.94	4.42		
CENTURY TEXTILES	-17.57	-156.47		
BAJAJ TEMPO	-19.33	-31.51		
WOCKHARDT	-20.70	-30.48		
ZUARI INDUSTRIES	-29.31	-42.99		
HIMACHAL FUTURISTIC	-30.51	-27.78		
BIRLA CORPORATION	-34.12	-49.66		
CHAMBAL FERTILISERS	-35.90	-19.34		
JINDAL POLYESTER	-37.32	-8.40		
HINDUSTAN MOTORS	-41.57	-27.42		
ORIENT PAPER	-41.85	-70.27		
GREAVES	-43.00	38.99		
RAYMOND	-43.65	11.43		
LARSEN AND TUBRO	-47.68	21.21		
CESC	-54.16	-231.63		
VIDEOCON INTERNATIONAL	-70.68	-115.39		
TATA ENGINEERING	-81.54	-148.97		
GRASIM INDUSTRIES	-92.68	-161.68		
USHA ISPAT	-115.21	-100.36		
ACC	-140.20	-14.46		
TATA STEEL	-185.82	-339.04		
SR STEEL	-658.23	-756.39		
MANGALORE REFINERY	-738.57	-319.80		

TOP 100 MULTINATIONAL COMPANIES OPERATING IN INDIA

HINDUSTAN LEVER	1132.16	882.85	249.31	28.24
ITC	1035.33	724.82	310.51	42.84
CASTROL INDIA	209.41	163.28	46.13	28.25
NESTLE INDIA	134.16	108.06	26.10	24.15
NOVARTIS INDIA	121.19	85.09	36.10	42.43
MOTOR INDUSTRIES	107.97	70.14	37.83	53.93
SMITH LINE BEECHAM CON HEALTH	104.77	90.81	13.96	15.37
CUMMINS INDIA	80.23	56.06	24.17	43.11
GLAXO INDIA	66.94	84.71	-17.77	-20.98
SHAW WALLACE	66.46	53.25	13.21	24.81
KNOLL PHARMACEUTICALS	62.44	18.37	44.07	239.90
COLGATE PALMOLIVE	50.20	37.10	13.10	35.31
PROCTOR & GAMBLE	47.78	32.24	15.54	48.20
INGERSOLL RAND	47.48	52.81	-5.33	-10.09
I-FLEX SOLUTIONS	44.53	34.27	10.26	29.94
PFIZER	42.81	16.74	26.07	155.73
RHONE - POULENC	42.80	28.46	14.34	50.39
JOHNSON AND JOHNSON	41.08	31.84	9.24	29.02
ICI INDIA	34.85	54.67	-19.82	-36.25
CADBURY INDIA	33.96	18.65	15.31	82.09
SEIMENS	33.41	-42.12		
BURROUGHS WELCOME	32.94	23.42	9.52	40.65
HOECHST MARION ROUSSEL	31.99	18.95	13.04	68.81
BATA INDIA	30.42	12.58	17.84	141.81
WYETH LEDERIE	27.47	22.74	4.73	20.80
PHILIPHS INDIA	26.28	17.64	8.64	48.98
GERMAN REMEDIES	26.19	26.10	0.09	0.34
VIDIA	25.75	23.97	1.78	7.43
HUGHES SOFTWARE	24.44	8.31	16.13	194.10
POLARIS SOFTWARE	24.30	10.06	14.24	141.55
BAYER	23.68	27.72	-4.04	-14.57
INDIAN SHAVING PRODUCTS	22.77	14.31	8.46	59.12
GVK INDUSTRIES	22.10	32.83	-10.73	-32.68
VST INDUSTRIES	20.01	-83.17		
SEIMENS INFORMATION SYS	18.80	17.04	1.76	10.33
PARK DAVIS	18.36	10.41	7.95	76.37
E MERCK	17.48	27.07	-9.59	-35.43
CLARIANT	17.20	16.94	0.26	1.53
KRUPP INDUSTRIES	17.18	19.27	-2.09	-10.85
DIGITAL EQUIPMENT	16.82	23.56	-6.74	-28.61
CIBA SPECIALITY CHEM	16.49	11.17	5.32	47.63
SANDVIK ASIA	16.30	-5.26		
WARTSILA NSD	15.45	8.13	7.32	90.04
GOOD YEAR INDIA	14.82	18.62	-3.80	-20.41
HONDA SIEL POWER	14.36	17.35	-2.99	-17.23
BASF	14.16	6.31	7.85	124.41
ASTRA-IDL	14.05	11.15	2.90	26.01
SMITHKLINE BEECHAM PHARMA	13.92	30.97	-17.05	-55.05
GOODRICKE GROUP	12.99	32.91	-19.92	-60.53
SILVER LINE TECHNOLOGIES	12.60	25.56	-12.96	-50.70
STRIDES ARCOLAB	12.25	2.44	9.81	402.05
ASEA BROWN BOVERI	11.62	-0.26		
INFAR	11.28	7.92	3.36	42.42
COLOR CHEM	10.91	-12.35		
GULF OIL INDIA	10.82	11.11	-0.29	-2.61
KSB PUMPS	10.13	12.46	-2.33	-18.70
SEIMENS PUBLIC CUMMU	10.02	-13.89		
TIMKEN INIDA	9.20	-1.58		

DUPHAR-INTERFRAN	9.14	1.19	7.95	668.07
MONSANTO INDIA	8.90	10.17	-1.27	-12.49
ALFA LVEL	8.87	-4.92		
VESUVIUS INDIA	8.50	7.10	1.40	19.72
ASHOK LEYLAND	7.27	-50.75		
RECKITT AND COLEMAN	6.25	26.69	-20.44	-76.58
ATLAS COPCO	6.25	9.63	-3.38	-35.10
COATES INDIA	5.86	3.43	2.43	70.85
ZENSAR TECHNOLOGIES	5.69	13.55	-7.86	-58.01
FAG BEARINGS	5.16	3.71	1.45	39.08
ITW SIGNODE	4.73	-34.83		
GRINDWELL NORTON	4.72	1.17	3.55	303.42
SKF BEARINGS	4.52	-62.36		
IDL INDUSTRIES	3.93	3.24	0.69	21.30
YOKOGAWA BLUESTAR	3.91	0.89	3.02	339.33
FALCON TYRES	3.60	5.66	-2.06	-36.40
MATSUSHITA LAKHANPAL	3.14	5.11	-1.97	-38.55
VANAVIL DYES AND CHEM	2.31	3.45	-1.14	-33.04
CHICAGO PNEUMATIC	2.27	1.63	0.64	39.26
GEOFFREY MANNERS	2.04	1.30	0.74	56.92
CARRIER AIRCON	1.47	24.33	-22.86	-93.96
ASSAM CO	1.38	5.79	-4.41	-76.17
VASHISTI DETERGENTS	0.95	0.55	0.40	72.73
ELECTRIC LAMP MFRS	-0.17	1.94		
CABOT INDIA	-0.28	3.44		
GKN DRIVE SHAFTS	-0.71	-3.71		
ABBOT LABARATORIES	-0.83	0.93		
MATSUSHITA TELEVISION	-2.64	-6.59		
AVERY INDIA	-3.49	-0.92		
BAUSCH AND LOMB	-3.91	7.46		
ETERNIT EVEREST	-5.58	-9.51		
DENSO INDIA	-7.10	-3.07		
WIMCO	-11.91	-12.98		
ION EXCHANGE	-11.95	-5.14		
HENKEL SPIC	-12.40	-7.50		
SAURASHTRA CEMENT	-22.36	-2.55		
WHIRLPOOL OF INDIA	-23.16	-90.30		
ISPAT ALLOYS	-29.00	-16.23		
MADHURA COATS	-31.73	-1.67		
GONTERMANN PEIPERS	-51.10	-43.92		
ITC BADRACHALAM	-58.84	-124.85		
ISPAT INDUSTRIES	-642.46	-532.87		

ANNEXURE 2

EVA Statement Of Infosys As Published In The Annual Report 1999-2000

Economic Value Added (EVA) Statement

Economic Value-Added, Analysis

Year ended march 31,	2000	1999	1998	1997
Average Capital Employed (Rs. In lakhs)	70386.70	24541.61	14289.67	9846.75
Average debt/total capital (%)				2.16
Beta variant	1.48	1.48	1.48	1.48
Risk-free debt cost (%)	10.45	12.00	12.15	13.60
Market Premium	8.00	9.00	10.00	10.00
Cost of equity (%)	22.29	25.32	26.95	28.40
Cost of Debt (post tax) (%)	NA	NA	NA	7.70
Weighted average cost of capital (WACC) (%)	22.29	25.32	26.95	27.97
PAT as a percentage of average capital employed (%)	40.63	54.16	42.24	33.91
Economic Value Added (EVA)				
operating profit				
(PBT excluding extraordinary income)	32564.86	15585.54	6586.33	3893.03
Less: tax	3970.00	2294.00	550.00	554.00
Less:cost of capital	15689.19	6213.94	3851.07	2754.34
Economic value-added	12905.67	7077.60	2185.26	584.69
Enterprise value				
Market value of equity	593317.00	967279.95	296342.20	73104.17
Less:cash and cash equivalents	50837.38	41665.91	5114.20	2877.82
Add: debt				
Enterprise value	5882979.62	925614.04	291228.00	70226.35
Ratios				
EVA as a percentage of average capital employed (%)	18.34	28.84	15.29	5.94
Enterprise value/average capital employed	83.58	37.72	20.38	7.13

Notes

the cost of equity is calculated by using the following formula:

return on risk-free investment + expected risk premium on equity investment/adjusted for average beta variant for software stocks in the US

The figures above are based on Indian GAAP financial statements