PURSUING SHAREHOLDER VALUE

Comparing the Information Content of EVA and Accounting Earnings.

A dissertation presented to the University of Cape Town
in fulfilment of the requirements of the
Master of Commerce degree.

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30 April 2000

The financial assistance of the Centre for Science Development (HSRC, South Africa) towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at are those of the author and are not necessarily to be attributed to the Centre for Science Development.

ACKNOWLEDGEMENTS

I extend my sincere gratitude to:

- Professor Enrico Uliana, head of the Department of Accounting at the University of Cape Town, for supervising this research project.

- Eben Kleinsmith, from Stern Stewart & Co. (South Africa), for providing the historical EVA data.

- Anina Morley, regional manager of I-NET Bridge, for assisting in gathering the other financial and market data used in this study.

DECLARATION

I hereby certify that this dissertation and the research conducted are my own work. Furthermore, all references are accurately reported.

Signed by candidate

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SYNOPSIS

This study provides independent empirical evidence of the strength of the relationship between changes in shareholder value and various financial measures of corporate performance. The objective is to assess whether adopting the goal of maximising EVA, instead of accounting earnings, enables management to more effectively pursue shareholder value.

Firstly, the ability of EVA and accounting earnings to explain contemporaneous annual share returns is assessed. This relative information content issue is tested on a sample of 758 company year-ends from 1991 to 1997. Results indicate that accounting earnings explains 26% of the variation in cumulative abnormal returns. The comparative figure for EVA is less than 12%. This suggests that accounting earnings tends to dominate EVA in its association with share returns.

Secondly, components unique to EVA are examined for information content beyond that contained in accounting earnings. The same sample of 758 observations is used to test for incremental information content. Results indicate that the two EVA components, Stern Stewart & Co. adjustments and the cost of capital charge, do not add significantly to the information content of accounting earnings. Together, they explain only 0.6% of the variation in cumulative abnormal returns not explained by accounting earnings.

These findings are supported across a number of alternative specifications. It appears that the market in South Africa is more focussed on accounting earnings than on EVA. As a result, managers should strive to maximise accounting earnings if their primary concern is shareholder value maximisation.

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1. INTRODUCTION

Shareholders, who are the owners of a business, appoint managers as agents to care for their investment. Assuming shareholders seek to gain financially, management's primary goal is to maximise the current value per share of the existing stock. Ross, Westerfield & Jordan (1993: 13) state this goal in more general terms: to maximise the market value of the owners' equity. This is commonly referred to as shareholder value maximisation.

To achieve this goal, management must allocate corporate resources as efficiently as possible. An efficient allocation of scarce resources leads to economic growth and an improvement in the general standard of living, thereby maximising the wealth of society as a whole (see Lipsey, Steiner, Purvis & Courant 1990: 766). Therefore, it can be argued that pursuing a strategy of shareholder value maximisation is in the best interests of shareholders and of the broader body of stakeholders, namely society.

There are two main reasons why managers often fail to maximise shareholder value. The first, termed the agency problem, refers to the lack of congruence between shareholder goals and management goals. This problem exists when the factors used to determine management compensation differ from the factors that determine shareholder value. The second problem refers to management's inability to correctly understand how their operating, investing and financing decisions affect shareholder value.

As a result, companies are in need of a performance evaluation method that links management decision making with changes in shareholder value and the company compensation scheme. In this way, management will be encouraged to allocate corporate resources efficiently and will be compensated for performance that is in the best interests of shareholders.

Assuming managers are able to modify their behaviour in order to maximise their own personal wealth, the best financial performance measure is the one with the strongest relationship to changes in shareholder value. This study provides independent empirical evidence of the strength of the relationship between changes in shareholder value and various financial measures of corporate performance. The objective is to assess whether adopting the goal of maximising Economic Value Added (EVA™)[1], instead of accounting earnings, enables management to more effectively pursue shareholder value.

The next chapter outlines the theoretical case for EVA's link to shareholder value. Chapter 3 investigates the literature for evidence of this link. The hypotheses and the research methodology are detailed in chapter 4. Chapter 5 provides empirical results on the relative and incremental information content of accounting earnings and EVA. Chapter 6 reports the results of various alternative specifications of the performance measures and extends the tests referred to in chapter 5. The final chapter concludes the study with a summary of the findings and provides recommendations for future research.

[1] EVA is a registered trademark of Stern Stewart & Co. The ™ symbol has been omitted elsewhere to promote readability.

2. THE THEORETICAL CASE FOR ECONOMIC VALUE ADDED

2.1 The Search for the Best Financial Performance Measure

Bacidore, Boquist, Milbourn & Thakor (1997: 11) note that shareholder activism reached "unprecedented levels" in the 1980s. This led to increased pressure on companies to consistently maximise shareholder value. For example, Stern (1994) writes, "This decade has been experiencing a positive revolution in the boardroom associated with maximising shareholder value." Lynn (1997) claims in Britain's *Sunday Times* that "shareholder value" has become a commercial cliché of the 1990s.

This "activism" has called for management compensation contracts to be revisited in order to better link rewards with changes in shareholder value. According to Smolowe (1996), "Angry investors closed out the Decade of Greed with demands that executive compensation be tied to company performance".

The most direct metric for judging managerial performance is the company's share price. It is an easily understood and readily communicated scorecard of corporate performance. Share prices (or measures based on share prices) however, have the drawback that they are driven by many factors beyond the control of the company's executives. Furthermore, share-based compensation methods become less efficient as one moves down the organisational ranks. The reason is that managers at lower levels have even less impact on the share price than the managing director.

Therefore, any financial performance measure used for managerial compensation must be highly correlated with changes in shareholder value, but should not be subject to the randomness and "noise" inherent in a company's share price. This is the tension a good corporate performance measure must resolve.

2.1.1. The Traditional Accounting-Based Performance Measures

Theory suggests that traditional accounting performance measures do not encourage managerial behaviour that consistently maximises shareholder value (for example, see Drury 1996: 768). One of the agency problems caused by accounting performance measures is that they provide incentives for either corporate over-investment or corporate under-investment.

Companies that reward managerial performance based on earnings or earnings growth are often overcapitalised. Managers know they can increase their incentive bonuses simply by increasing the amount of capital at their disposal. Additional capital will make a positive contribution to accounting earnings as long as it covers the after-tax cost of debt. The reality is that if it does not earn a return sufficient to cover the full cost of capital, shareholder value is destroyed. The reason for this is that investors will be able to achieve higher returns on other investment opportunities of a similar risk profile.

Corporate under-investment often results from compensation schemes based on one of the return on investment metrics such as return on net assets (RONA). By focussing attention on capital efficiency, these measures encourage divisional managers not to invest capital in projects with satisfactory returns if these projects lower the average return of their particular business. However, the law of diminishing marginal returns indicates that growth in capital invested is likely to be achieved only by investing in projects with lower rates of return than those the company invested in previously.

This means that, especially in the case of already successful companies, expansion of capital investments is likely to lower RONA. As a result, managers may ignore positive net present value projects in order to secure greater year-end bonuses. Similarly, assets may not be replaced as they are written off. This improves the efficiency ratios in the short-term, but jeopardises the long-term wellbeing of the company.

2.1.2. The New Value-Based Performance Metrics

Because of the problems inherent in the accounting-based performance measures, consultants and academics have devised a range of "value-based" metrics to evaluate managerial performance. EVA, developed by Stern Stewart & Co., and Cash Flow Return on Investment (CFROI), promoted by Boston Consulting Group's HOLT Value Associates, are the most widely used measures (Myers 1996). However, there are many other such measures on the market developed by consulting firms attempting to differentiate their services from those of their competitors.

Generally, these new metrics are rooted in the principles of discounted cash flow. They follow the concept that companies should look not at reported earnings, which is subject to accounting distortions, but at how a company's returns exceed the cost of the capital invested in the business. EVA measures a company's after-tax profit from operations less the cost of all capital employed to produce that profit. CFROI is an efficiency measure that compares cash flows with the total assets employed to generate those flows. It is calculated in a similar manner to the internal rate of return measure.

Myers (1997) notes that EVA is the leader in the performance metric market. EVA does not suffer from the theoretical drawbacks of the traditional accounting performance measures. Moreover, it is simple to understand and calculate, can be adapted to many different industries, and can be communicated to all levels in an organisation.

2.2 General Information on EVA

2.2.1. The Origins of EVA

The concept of EVA is not new. For centuries, economists have held that for a firm to create wealth it must earn more than its cost of debt and equity capital (Hamilton

1777 & Marshall 1890). This concept has been operationalised under various other terms this century including abnormal earnings, excess earnings, excess income, excess realisable profit, residual income and super-profits (Biddle, Bowen & Wallace 1998: 1).

General Motors applied the idea of a capital charge in the 1920's by adopting a bonus formula of 10% of after-tax earnings in excess of a 7% return on capital (O' Byrne 1994: 2). According to Kaplan & Atkinson (1998: 506), General Electric's management used the term "residual income" in the 1950s to refer to operating income less a capital charge.

Solomons (1965) proposed residual income as an internal measure capable of separately appraising the performance of both an investment centre and its manager. Today, most management accounting textbooks include a section on residual income (for example, see Drury 1996: 769). EVA is simply a trademarked variant of residual income.

2.2.2. Calculating EVA

EVA is primarily a measure of capital efficiency and captures two important dimensions of corporate performance, namely profitability and growth. It is calculated by taking the spread between the rate of return on capital (r) and the cost of capital (c*), and multiplying by the economic book value of the capital invested in the business.

This calculation is similar to that of residual income, which is defined as operating profits less a capital charge. However, EVA differs from residual income in that it modifies GAAP accounting rules by removing "distortions" that arise from accrual bookkeeping entries and the conservative bias of accounting statements (Stewart

1991: 86)[2]. One of the main motivations for Stern Stewart & Co.'s adjustments is a belief that accounting entries that do not affect cash do not affect value.

To calculate the rate of return, Stern Stewart & Co. divide a company's net operating profits after taxes (NOPAT) by total capital employed in operations. NOPAT is the profits derived from the company's operations after taxes but before financing costs and non-cash bookkeeping entries. NOPAT can be viewed as the total pool of profits available to provide a cash return to all providers of financial capital to the company. Depreciation is the only non-cash item deducted in the calculation of NOPAT. It is deducted because the assets consumed in the business must be replenished before investors achieve a return on their investment.

Stewart (1991:70) defines capital as a measure of all cash that has been invested in a company over its life without regard to the financing source, accounting name, or business purpose, much as if the company were just a savings account. The capital amount used in the calculation is the beginning-of-year capital as it is assumed that new capital investment requires a whole year to become fully productive. To be consistent with NOPAT, capital is reduced by the accumulated depreciation on assets.

Stern Stewart & Co.'s website[3] claims that more than 160 shortcomings in conventional GAAP accounting have been identified that can produce a severely distorted picture of operating performance. Examples of these "shortcomings" include expensing of capital costs such as research and development, focussing on the tax provision instead of taxes paid, and writing off goodwill from acquisitions instead of retaining it in the balance sheet. In practise, a company is unlikely to require more than 5 to 10 key adjustments to GAAP accounting when calculating EVA (Stewart 1994: 74).

[2] Bennett Stewart co-founded Stern Stewart & Co. with Joel Stern in 1982.
[3] Internet address: http://www.sternstewart.com/about_eva/four_ms.html (1 February 1998).

2.3 EVA's Link to Shareholder Value

2.3.1. Investors' Required Return and Market Value

Stewart (1991: 69) argues that the relationship between the rate of return that a company earns within its business and its required return, is what drives a company's market value to a premium or discount to the capital employed. This principle can be expressed as follows:

$$\frac{\text{company return (r)}}{\text{investors' required return (c*)}} \approx \frac{\text{market value}}{\text{capital employed}} \qquad (2.1)$$

The cost of capital (c*) is an opportunity cost equal to the total rate of return that a company's investors can expect to earn by investing in the debt and equity of other companies of comparable riskiness. Earning a rate of return in excess of the cost of capital is a prerequisite for enhancing shareholder value. EVA is consistent with this principle in that it determines the extent to which a company's return exceeds the cost of the capital necessary to generate the return.

2.3.2. Market Value Added

Market Value Added (MVA), another term used by Stern Stewart & Co., is defined as the spread between a company's market value and its capital. Stewart (1991: 153) describes it as a cumulative measure of corporate performance, representing the stock market's assessment at a particular time of the net present value of a company's past and projected capital investment projects.

"Market value" is an approximation of the entire debt and equity capitalisation and is calculated by adding the book value of the preference share capital, outside shareholders' interests and long-term liabilities to the market value of the ordinary shareholders' equity. Ignoring the adjustments Stern Stewart & Co. make to arrive at the capital figure, MVA is simply the difference between the book value and the market value of the ordinary shareholders' interests.

This concept is similar to the market-to-book ratio and Tobin's *q* ratio found in most corporate finance textbooks today (for example, Brealey & Myers 1996: 775). It represents the wealth created by management above the total resources they have been entrusted to manage. It is the difference between the cash investors have contributed and what they could sell their interests for today. Therefore, maximising MVA is tantamount to maximising shareholder value.

2.3.3. EVA, MVA and Company Valuation

Copeland, Koller & Murrin (1996: 72) advocate the discounted cash flow (DCF) method for valuing companies because it captures all the elements that affect value in a comprehensive yet straightforward manner. Using the DCF method, the link between EVA, MVA and the market value of a company can be illustrated.

According to the DCF approach, a firm's market value is the present value of future free cash flows. Because the DCF discount rate and the EVA capital charge rate is the same, it follows that the market value of a firm is equivalent to the capital employed in the business plus the present value of future cash flows, with each cash flow reduced by a capital charge. In other words, the capital employed term is set off by the present value of future capital charges.

As previously stated, EVA is equal to a cash return (NOPAT) less a charge for the capital required to generate that return. Together, this means that the market value of a firm can be defined as the sum of the capital employed in the business and the present value of all future EVA values (see equation 2.2).

Market value of a firm = PV (future cash flows)
= Capital employed + PV (future cash flows – capital charge)
= Capital employed + PV (future EVAs) (2.2)

Furthermore, because MVA is the spread between a firm's market value and its capital employed, MVA is equal to the present value of all future EVA values (see equation 2.3).

MVA = Market value of the firm – capital employed
= [Capital employed + PV (future EVAs)] – capital employed
= PV (future EVAs) (2.3)

The symmetry between the present value of future EVA values, MVA and shareholder value means that shareholder value will be maximised if the present value of future EVAs is maximised. Consequently, Stewart (1991: 153) refers to EVA as the internal measure that leads to the external consequence of building a premium (or discount) into the market value of a company.

Therefore, a company achieving a return above its cost of capital produces positive EVAs and builds a premium into its market value, thereby increasing shareholder value. Conversely, a company achieving a return less than the cost of capital produces negative EVAs and thus discounts the value of the capital it employs.

2.4 The Research Problem and Objective

As indicated before, management's primary goal is to maximise shareholder value or more specifically, to maximise the current value per share of the existing stock. To do this, companies are in need of a performance evaluation method that links management decision making with changes in shareholder value and the company compensation scheme. The performance measure that is best able to meet these

requirements is the one management should use to assist them in fulfilling their role as agents.

Stern Stewart & Co. believe that EVA should be the financial performance measure of choice and that its information content is considerably greater than that of accounting earnings. They argue:

> "Many senior executives believe that the market wants earnings, and wants them now, despite the fact that not one shred of convincing evidence to substantiate that outlandish claim has ever been produced" (Stewart 1991: 2).

> "EVA's most important advantage, however, is that it is the only performance measure to tie directly to the intrinsic market value of a company. It is the fuel that lights up a premium in the stock market value of any company (or accounts for its discount)" (Stewart 1991: 119).

> "EVA stands well out in the crowd as the single best measure of wealth creation on a contemporaneous basis" (Stewart 1994: 75).

> "Our research demonstrates that EVA is the internal financial performance measure that best accounts for changes in share values over time."[4]

Despite these statements and claims, there is little empirical evidence to support the hypothesis that EVA possesses greater information content than accounting earnings (see chapter 3). In contrast, Ball & Brown (1968) first investigated the information content of accounting earnings over three decades ago. One of their conclusions is that, "Of all the information about an individual firm which becomes available during a year, one-half or more is captured in that year's income number. Its content is therefore considerable" (Ball & Brown 1968: 176).

The field of research launched by this seminal article has been referred to as the

[4] Quoted from a Stern Stewart & Co. brochure entitled, "Economic Value AddedThrough Superior Financial Management, Incentive Compensation, Financial Strategies and Transactions".

"most concerted research effort in accounting history" (Lev 1989: 153). Surprisingly though, few subsequent studies have examined questions of relative information content. Biddle, Seow & Siegel (1995: 2) suggest that in part, this may reflect unfamiliarity with the distinction between incremental and relative information content.

According to Biddle *et al* (1995: 2), relative information content comparisons assess which performance measure explains more variation in contemporaneous share returns and apply when rankings by information content are desired. Incremental comparisons apply when one or more accounting measures are viewed as given and an assessment is desired regarding the incremental contribution of another.

The mapping between relative and incremental information content comparisons is depicted in figure (2.1). The areas covered by circles represent the proportions of variation in a dependent variable explained by independent variables X and Y. The left-hand column of figure (2.1) depicts the three relative information content outcomes that are possible for X and Y. The right-hand column depicts corresponding incremental information content conditions for X and Y.

In relative comparisons, only the relative sizes of the circles matter. In incremental comparisons, only the areas beyond the circle intersections matter. Each relative information content condition (Panel A, B & C) maps into two incremental outcome conditions. For example, in Panel A equal relative information content for X and Y is consistent with either incremental information content for neither X nor Y or for both X and Y.

The objective of this study is to assess whether adopting the goal of maximising EVA, instead of accounting earnings, enables management to more effectively pursue shareholder value. To do this the relative and incremental information content of EVA is compared with that of accounting earnings. This will provide independent empirical evidence of the validity of Stern Stewart and Co.'s claims in the context of the Johannesburg Stock Exchange (J.S.E.).

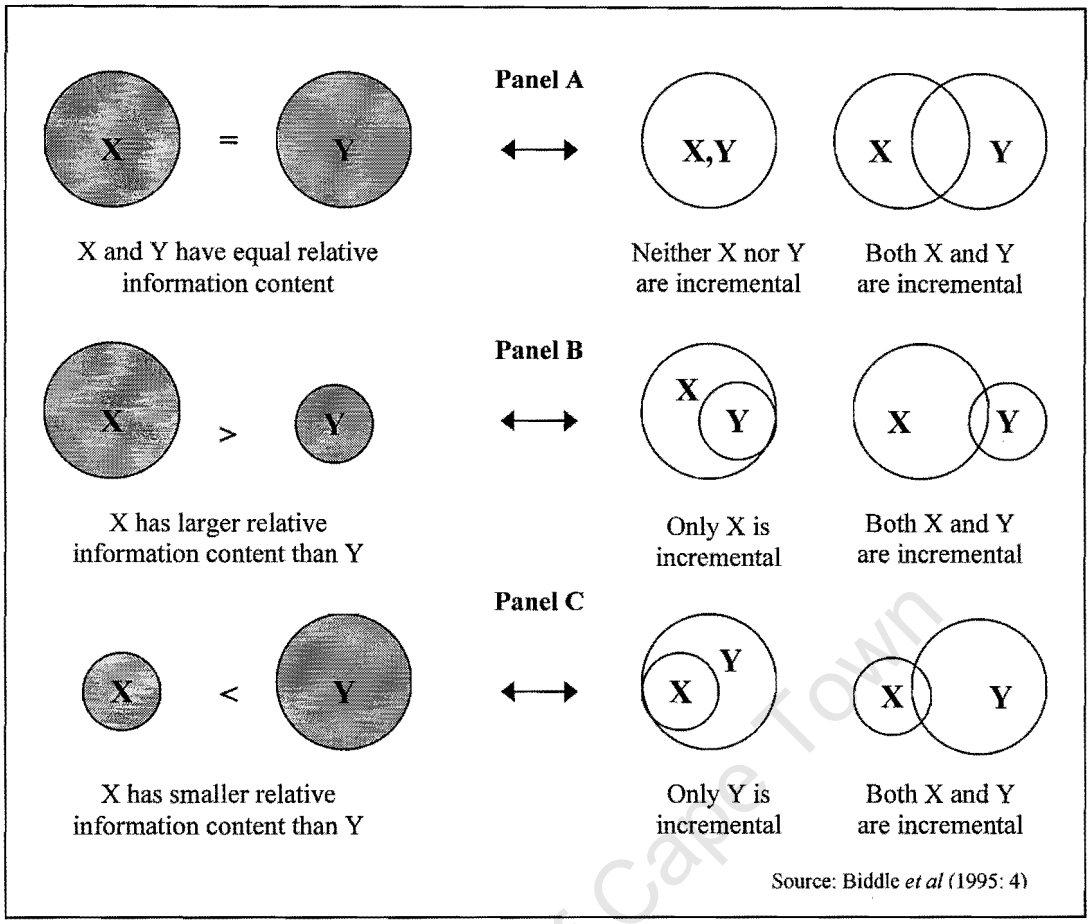


Figure 2.1: Defining relative and incremental information content.

2.5 Motivation for the Research

There are three reasons why this research may be useful to South African business. Firstly, the EVA performance measure is rapidly gaining support in much of the Western business world. There are about 400 companies around the world that use EVA, with 27 operating in South Africa under the guidance of Stern Stewart & Co. (Sharpe 1997: 21)[5]. Nevertheless, converting to an EVA Financial Management System requires a substantial investment in terms of both time and money. These costs must be weighed against the potential benefits.

[5] South African companies that have adopted an EVA Financial Management System include ABSA, Amplats, Bonnita, Investec Bank, JD Group, Murray & Roberts, New Clicks, the Safren Group, and Super Group.

The second reason is that, with South Africa under the international spotlight as an Emerging Market, emphasis is being placed on the need for good management skills to empower local companies to compete on a global basis (Kantor 1997). If EVA is the best measure of value creation on a contemporaneous basis, management should adopt the goal of maximising EVA as opposed to accounting earnings.

Lastly, the changing business and economic climate within South Africa calls for a careful allocation of scarce resources. King (1992: 44) notes that there is increasing resistance from all sectors of the economy to the misallocation of scarce capital. It is becoming increasingly important for all enterprises to justify their utilisation of capital through an ability to add value. Consequently, management needs a performance evaluation method that encourages an efficient allocation of resources, and thereby maximises the value to society.

3. EMPIRICAL EVIDENCE OF EVA'S LINK TO SHAREHOLDER VALUE

Despite increasing interest in EVA, little is known about the efficacy of this measure compared to that of other measures of company performance (Lehn & Makhija 1997: 90). The dearth of empirical studies in the corporate finance literature and the perceived partiality of some of the researchers to a particular result have contributed to a lack of consensus among practitioners and academics.

The first section of this chapter outlines four EVA studies conducted by senior officials of Stern Stewart & Co. The next section describes four further empirical studies by independent researchers. Finally, a number of conclusions drawn from the literature are presented at the end of the chapter.

3.1 Studies Conducted by Stern Stewart & Co.

The Stewart (1991: 215) study was the first empirical test of the association of EVA and a market-related metric published by Stern Stewart & Co. Since then Finegan (1991) and O'Byrne (1996) have both presented papers in Stern Stewart & Co.'s *Journal of Applied Corporate Finance*. The findings of Stewart, Finegan and O'Byrne all support the association between EVA and MVA or market value.

3.1.1. Finegan (1991)

Finegan (1991) selected the middle 467 companies from the 1988 Stern Stewart Performance database, ranked according to the size of MVA. This database discloses the EVA and MVA figures of all companies in the annual *Business Week*

survey, which includes the largest 1000 listed United States (U.S.) companies (excluding financial institutions and public utilities) according to the size of their market capitalisation.

He compared the explanatory power of EVA to that of more conventional performance measures by regressing them on the level and change in MVA. The coefficients of determination (R^2s) achieved by some of the independent variables are presented in table (3.1). Finegan (1991: 38) concludes that sophisticated price-setting investors credit companies with the level of EVA and only "coincidentally" with the growth in EPS.

Independent Variable (standardised)	Year	Level of MVA	Change in MVA
Level of EVA	1988	0.61	0.44
Return on Capital	1988	0.47	0.35
Growth in Cash Flow	1984 – 88	0.20	0.21
Growth in EPS	1984 – 88	0.10	0.15

Table 3.1: Coefficients of determination between the level and change in MVA and various financial performance measures (Finegan 1991).

The methodology employed by Finegan is questionable. Although the association of the level of EVA with the level and change in MVA is noteworthy, it is inconsistent to compare this result to that achieved by the growth in EPS. The level of EVA should rather be compared with the level of EPS, or alternatively the growth in EVA should be compared to the growth in EPS. Furthermore, no explanation is given of the "standardisation" process employed in the study.

3.1.2. O'Byrne (1996)

O'Byrne used a regression model to test the effectiveness of the level of EVA, relative to earnings (NOPAT) and free cash flow (FCF), as a predictor of market value. His sample was taken from the Stern Stewart Performance 1000 database

covering the years from 1985 to 1993. After allowing for companies that were not listed for all nine years and excluding outliers, O'Byrne was left with a total sample of 6551 company valuation years.

His findings indicate that NOPAT and EVA appear to have almost identical explanatory power. That is, both NOPAT and EVA explain about one third of the variation in market value, and with almost identical standard errors. However, O'Byrne (1996: 120) argues that the superiority of EVA over NOPAT as a predictor of market values is evident when the EVA model is expanded to reflect differences in the way the market values companies of different size, and also whether the company is earning positive or negative EVA.

Testing this hypothesis, O'Byrne found that the variance explained by the level of EVA increased from 31% to 38% when positive and negative EVA values were separated. Furthermore, recognising the size effect increased the variance explained from 38% to 42%. He therefore deduces (1996: 121) that levels of EVA are significantly better predictors of current market values than levels of NOPAT or FCF.

O'Byrne also calculated the correlations among changes in EVA, NOPAT and market value over both five-year and ten-year intervals. He found that five-year changes in EVA explained 55% of the variation in five-year changes in market value, and ten-year changes in EVA explained 74% of the variation in ten-year market value changes. In contrast, the NOPAT model explained only 25% of the five-year changes, and 64% of the ten-year changes, in market value.

He concludes (1996: 125) that "EVA, unlike NOPAT or other earnings measures like net income or earnings per share, is systematically linked to market value. It should provide a better predictor of market value than other measures of operating performance." However, when Biddle *et al* (1998: 24) replicated this study, they found that if O'Byrne's adjustments to the EVA regressions are incorporated in the corresponding regressions for the other information variables, EVA's superiority disappears.

3.1.3. Stewart (1991)

Stewart (1991) tested the correlation between EVA and MVA on a sample of 613 companies listed between 1984 and 1988. The EVA and MVA measures for each company were standardised by dividing all years by the initial level of capital in the base year of 1984 and multiplying by 100. The companies were then ranked according to their average 1987-1988 EVA and assigned from highest to lowest into 24 groups of 25 companies and one group of 13 companies. Thereafter, Stewart calculated the average 1987-1988 EVA and MVA measures for each of the 25 groups.

Stewart (1991: 217) reports a "striking" relationship between the levels of EVA and MVA. He then repeated the above procedure, but used changes in EVA and MVA between the 1984-85 average and 1987-88 average as the basis of ranking. The results were even "more pronounced" with an R^2 of 97% and t-statistic of 28. Stewart (1991: 217) concludes that adopting the goal of maximising EVA and EVA growth will build a premium into the market value of a company.

Thomas (1993), replicating the MVA versus EVA study above, calculated an R^2 between these measures of just 4% for the 1000 companies in the Stern Stewart database in 1988. After removing 31 extreme outliers, he found the R^2 increased to 27%.

3.1.4. Other Tests Conducted by Stern, Stewart & Co.

Stern (1993) quotes the results of a study conducted by Stern Stewart & Co. From the data, it appears to be the same study that Stern, Stewart & Chew (1995: 43) and Stewart (1994: 75) refer to in their papers. These other sources note that the research was conducted in 1990 to determine the association between changes in EVA over a five-year period with changes in MVA over the same time frame.

Stern (1993) records the R^2s of the association between the independent variables and MVA as follows: EVA (0.50), return on equity (0.25), cash flow growth (0.22), EPS growth (0.18), asset growth (0.18), dividend growth (0.16), and turnover growth (0.09). Stern *et al* (1995: 43) and Stewart (1994: 75) only mention the R^2s for growth in EVA, return on equity, growth in EPS and growth in turnover. The figures reported correspond with those above, except that both papers state the R^2 for return on equity as 0.35 instead of 0.25.

Stewart (1994: 75) concludes that EVA is almost 50% better than its closest accounting-based competitor in explaining changes in shareholder wealth.

3.2 Studies Conducted by Independent Researchers

Papers from independent researchers have only started appearing in the literature since 1996, whereas Stern Stewart & Co. has been performing tests since at least 1991. Presumably, the body of EVA research will continue to grow as the EVA measure attracts increasing attention from the business and investment communities.

Of the four studies reviewed in this section, only one supports Stern Stewart & Co.'s claims of EVA's superiority over traditional accounting measures of performance. The exception is the Lehn & Makhija (1997) study in which it was found that EVA's correlation with share returns is greater than that of return on assets (ROA), return on equity (ROE), and return on sales (ROS).

3.2.1. Biddle, Bowen & Wallace (1998)

This study provides empirical evidence on the relative and incremental information content of EVA, residual income (RI), accounting earnings and cash flow from operations (CFO). The sample included 773 companies over the period of 1983 to 1994, resulting in 6174 company-year observations after removing outliers and

company-years with insufficient data.

Biddle *et al* (1998) first assessed which performance measure explains more variation in contemporaneous share returns. They used a one-lag specification of the ordinary least squares model, which requires two independent variables: both a current and a lagged observation for each performance measure. All independent variables were deflated by the market value of equity three months after the beginning of the financial year. The dependent variable was reduced by the 12-month compounded value-weighted market-wide return.

Biddle *et al* (1998) found that earnings had a significantly larger adjusted R^2 (9%) than each of the other three performance measures. RI had a significantly larger R^2 (6.2%) than the EVA measure (5.1%), and both had a significantly larger R^2 than CFO (2.4%). According to Biddle *et al* (1998: 15), these results suggest that in terms of relative information content, earnings significantly outperforms RI, RI significantly outperforms EVA (although the gap is smaller here), and all three outperform CFO. This implies that the Stern Stewart & Co. adjustments used in calculating EVA do not add to the information content of RI.

Secondly, they examined whether EVA provides value relevant information beyond that provided by currently mandated performance measures, earnings and CFO. To address this issue, they decomposed EVA into its various components: cash from operations, operating accruals, after-tax interest expense, capital charge, and accounting adjustments. The sum of the first two components is equivalent to accounting earnings, and the sum of all five components is equivalent to EVA. Biddle *et al* (1998) then evaluated the contribution of each component towards explaining contemporaneous share returns.

For the full sample, they found that each component was significantly associated with market-adjusted returns. However, tests across alternative specifications indicated that while cash flow and accrual components were consistently significant, components unique to EVA (capital charge and accounting adjustments) were not frequently significant. Considering the relative and incremental information content results together, neither EVA nor RI appears to dominate earnings in its association

with share market returns (Biddle *et al* 1998: 4).

Biddle *et al* (1998) conclude that there is little evidence to support the Stern Stewart & Co. claim that EVA is superior to earnings in its association with share prices.

3.2.2. Kramer & Pushner (1997)

Kramer & Pushner (1997) tested the relationship between EVA and MVA empirically. They included the 1000 companies listed in the Stern Stewart Performance database from 1982 to 1992 in their sample and used simple univariate regressions to compare EVA with NOPAT in explaining MVA.

They first conducted a series of tests on the relationship between the level of EVA and NOPAT and the level of MVA. The same period and lagged levels of EVA and NOPAT were regressed on MVA. To test the possibility that differences in size among the companies in the sample affected the results, they standardised each company's MVAs, EVAs, and NOPATs by dividing MVA by the same period capital measure and by dividing EVA and NOPAT by lagged capital measures. The same period and lagged levels of standardised EVA and standardised NOPAT were then regressed on standardised MVA.

The results of these tests are summarised in table (3.2). Although all the coefficients were significant at the 1% level, NOPAT explained more of the variation in MVA than EVA did. According to Kramer and Pushner (1997: 44), this suggests that the level of NOPAT is not only a better proxy but also a better predictor of corporate performance than the level of EVA.

	MVA		Std. MVA	
	Coefficient	R^2	Coefficient	R^2
EVA	2.38	0.099		
EVA_{t-1}	1.99	0.056		
NOPAT	2.39	0.180		
$NOPAT_{t-1}$	2.11	0.131		
Std. EVA			6.65	0.048
Std. EVA_{t-1}			5.83	0.037
Std. NOPAT			7.12	0.055
Std. $NOPAT_{t-1}$			6.34	0.043

Table 3.2: Levels of EVA and NOPAT regressed on levels of MVA (Kramer & Pushner 1997).

The second series of tests examined the relationship between changes in MVA and the same period and lagged levels of EVA and NOPAT. Their results in table (3.3) indicate that changes in MVA were negatively related to the levels of EVA in both the same and prior period. In comparison, changes in MVA were positively related to the levels of NOPAT in both the same and prior period. Kramer & Pushner (1997: 45) see this as evidence that the market is more likely to react favourably to profits than EVA, at least in the short-term.

	Change in MVA	
	Coefficient	R^2
EVA	-0.44	0.016
EVA_{t-1}	-0.98	0.066
NOPAT	0.35	0.018
$NOPAT_{t-1}$	0.17	0.004

Table 3.3: Levels of EVA and NOPAT regressed on changes in MVA (Kramer & Pushner 1997).

Kramer & Pushner (1997: 47) conclude, "In all, we have found no clear evidence to support the contention that EVA is the best internal measure of corporate success in adding value to shareholder investments. On the contrary, the market seems more focused on profit than EVA".

3.2.3. Lehn & Makhija (1997)

Lehn & Makhija's (1997) sample consisted of 452 large U.S. companies taken from the 1994 Stern Stewart Performance 1000 database. Their selection criteria required that the data necessary for their study was available for each company from 1985 to 1994. To compare the EVA and MVA data to accounting and share rates of return, they expressed both variables as returns by dividing them by the year-end market value of assets.

They then correlated pairs of performance measures where each performance measure was calculated as a ten-year average over the sample period. Each measure was highly correlated with every other measure (see table 3.4). Accepting annual share returns (avg-ret) as the best proxy of a company's performance, they conclude that EVA and MVA are better long-run performance measures than traditional accounting rates of return.

	AVG-EVA	AVG-MVA	AVG-ROA	AVG-ROE	AVG-ROS
AVG-MVA	0.759				
AVG-ROA	0.731	0.739			
AVG-ROE	0.763	0.623	0.725		
AVG-ROS	0.537	0.459	0.647	0.521	
AVG-RET	0.590	0.580	0.455	0.455	0.388

Table 3.4: Correlations between various financial performance measures (Lehn & Makhija 1997).

3.2.4. Peterson and Peterson (1996)

Peterson and Peterson (1996) compared accounting-based and value-based measures of performance with the market's assessment of company performance. They chose five sample years, 1988 through to 1992. Based on the availability of the required data, the sample sizes ranged from a low of 259 companies for 1989 to a high of 282 companies for 1992.

Five accounting-based measures of performance were calculated for each company in each year: ROA (before interest & taxes), ROA (after interest & taxes), ROE, cash flow ROA, and a proxy for Tobin's *q* ratio. Similarly, five value-based measures of performance were calculated: economic profit (EVA), return on capital, spread between return on capital and cost of capital, change in MVA, and percentage change in MVA.

Each of these measures was then correlated with each of three market benchmarks: total stock return (TSR), market model adjusted return (MAR) and size adjusted return (SAR). The TSR measure was simply the compounded monthly share return over the year. MAR was the difference between the share's TSR and the expected annual share return based on the parameters from a market model. SAR was determined by first placing each security into a decile based on the size of the market value of equity. It was then calculated as the difference between TSR and the annual average share return for the size decile for which it was a member.

Parametric (Pearson correlation coefficient) and nonparametric (Spearman Rank-correlation coefficient) tests were performed. For the accounting-based measures, Peterson & Peterson (1996: 40) found that no one measure dominated in terms of the correlation with share returns. However, they did find that ROA (before interest & taxes), ROA (after interest & taxes), and Tobin's *q* were more highly correlated with share returns than ROE and cash flow ROA.

Focussing on the value-based measures, Peterson & Peterson (1996: 40) report that economic profit (EVA) bore little relation to share returns, as indicated by the majority of insignificant correlations and the presence of significant negative correlations in 1992. The return on capital measure was an improvement on the economic profit measure and was positively correlated with share returns in the middle three years. They also found that removing the cost of capital from the return on capital measure did not improve the correlations with share returns.

The two MVA measures were significantly correlated with share returns, but Peterson & Peterson (1996) attribute this association to the use of the change in market values directly in the measures. Peterson & Peterson (1996: 45) conclude, "The commonly

used value-added measures, economic profit and market value added, which have gained much attention in the financial press, are only slightly more correlated with stock returns than the traditional measures and thus may not be better gauges of performance than traditional measures."

3.3 Overview of the Literature

Some of the studies in this chapter attempt to evaluate various financial performance measures by examining their degree of correlation with share returns or market value. Other studies investigate the relationship between the measures and MVA. Unlike share returns and market value, MVA is a measure of how effectively management uses capital to enhance the value of all suppliers of capital, and not simply that of the ordinary shareholders.

However, because both EVA and MVA are subject to adjustments Stern Stewart & Co. makes to traditional accounting data, MVA may be an inappropriate test of EVA's information content. Furthermore, Peterson & Peterson (1996: 47) express doubt on the usefulness of MVA. They found that share returns, adjusted for market movements and risk, are superior to market value added measures in evaluating a company's overall performance if the objective of the management of a company is to maximise the value of equity.

It is interesting that the studies conducted by officials of Stern Stewart & Co. substantiate claims for EVA's superiority over accounting earnings as a measure of financial performance. In contrast, studies conducted by independent researchers generally find little or no evidence to support these claims. Furthermore, other researchers refute the findings of two out of the three most important Stern Stewart & Co. studies. In addition, the methodology of the third study is open to criticism (see section 3.1.1.).

It is fair to conclude that the existing evidence and literature does not consistently support the claims made in favour of EVA by Stern Stewart & Co. outlined in section (2.4). The next chapter details the hypotheses and research methodology that are used by this study to test the information content of EVA in the context of the J.S.E.

4. RESEARCH DESIGN

As indicated in chapter 2, the objective of this study is to assess whether adopting the goal of maximising EVA, instead of accounting earnings, enables management to more effectively pursue shareholder value. To do this the relative and incremental information content of EVA is compared with that of accounting earnings. NOPAT is included in the tests as a benchmark.

4.1 Test Hypotheses

Two issues are investigated: the first pertaining to relative information content and the second pertaining to incremental information content. The two sets of null and alternative hypotheses are expressed as follows:

Relative information content:

H_0: The relative information content of EVA is the same as that of accounting earnings.
H_1: The relative information content of EVA is different to that of accounting earnings.

Incremental information content:

H_0: EVA does not provide information content beyond that of accounting earnings.
H_2: EVA provides information content beyond that of accounting earnings.

4.2 Statistical Model for Information Content

In order to measure the information content of an accounting earnings number, it is

necessary to calculate the change in that number not already anticipated by the market. Researchers commonly use the output of time series models or consensus analysts' forecasts as a proxy for market expectations.

However, there are few companies listed on the J.S.E. that have a sufficiently long financial history on which to perform time series regression analysis to estimate the market's expectations of future accounting earnings numbers. There is also no readily available consensus of historical analysts' forecasts to employ as a proxy for market expectations. Furthermore, little is known about suitable proxies for expectations of performance measures other than for accounting earnings.

The methodology employed by Biddle *et al* (1995) for assessing information content is particularly useful given these constraints. A further attraction is that it is simple to apply. Starting with a standard approach, Biddle *et al* (1995: 7) examine the statistical significance of the slope coefficient in the following ordinary least squares (OLS) regression:

$$D_t = b_0 + b_1 FE_{Xt} / P_{t-1} + e_t \qquad (4.1)$$

where D_t is a dependent variable measure of abnormal returns for time period t, b_0 is a constant, b_1 is the response coefficient, FE_{Xt} / P_{t-1} is the forecast error for a given performance measure X scaled by the beginning-of-period market value of the company's equity (P_{t-1}), and e_t is a random error term.

The Biddle *et al* (1995) approach estimates market expectations jointly with response coefficients. They achieve this by first expressing the forecast error as the difference between the realised value of the performance measure (X) and the market's expectation i.e. $FE_t = X_t - E(X_t)$. It is then assumed that the market's expectations evolve according to a discrete linear stochastic process (in autoregressive form):

$$E(X_t) = \delta + \phi_1 X_{t-1} + \phi_2 X_{t-2} + \phi_3 X_{t-3} + \ldots \qquad (4.2)$$

where δ is a constant and ϕ's are autoregressive parameters. Substituting equation (4.2) into equation (4.1) results in:

$$D_t = b_0 + b_1(X_t - (\delta + \phi_1 X_{t-1} + \phi_2 X_{t-2} + \phi_3 X_{t-3} + \ldots)) / P_{t-1} + e_t$$
$$= b'_0 + b'_1 X_t / P_{t-1} + b'_2 X_{t-1} / P_{t-1} + b'_3 X_{t-2} / P_{t-1} + b'_4 X_{t-3} / P_{t-1} + \ldots + e_t \quad (4.3)$$

Biddle *et al* (1995: 8) explain that this expression relates abnormal returns and scaled lagged earnings, where $E(b'_0) = b_0 - b_1\delta$, $E(b'_1) = b_1$, and $E(b'_i) = -b_1\phi_{i-1}$ for $i > 1$. Therefore, the proxy for market expectations is estimated jointly with the response coefficient (b'_1) using the same data and optimisation criterion (i.e. minimum mean squared errors). Although equation (4.3) is flexible in terms of allowing any number of lagged observations to be included as explanatory variables, Biddle *et al* (1995) suggest that, in the presence of possible structural change, equation (4.3) be limited to one lag:

$$D_t = b_0 + b_1 X_t / P_{t-1} + b_2 X_{t-1} / P_{t-1} + e_t \quad (4.4)$$

Equation (4.4) is equivalent to the "levels and changes" earnings model proposed by Easton & Harris (1991: 21). They suggest that studies which use the residual from a regression of annual abnormal returns on unexpected earnings might mitigate the effect of measurement error by including both earnings level and earnings change variables as measures of unexpected earnings. Biddle *et al* (1997: 9) demonstrate the relation between the Easton & Harris (1991) specification (4.4a) and the Biddle *et al* (1995) specification in equation (4.4):

$$D_t = a_0 + a_1 X_t / P_{t-1} + a_2 (X_t - X_{t-1}) / P_{t-1} + e_t \quad (4.4a)$$
$$= a_0 + a_1 X_t / P_{t-1} + a_2 X_t / P_{t-1} - a_2 X_{t-1} / P_{t-1} + e_t \quad (4.4b)$$
$$= a_0 + (a_1 + a_2) X_t / P_{t-1} - a_2 X_{t-1} / P_{t-1} + e_t \quad (4.4c)$$
$$= b_0 + b_1 X_t / P_{t-1} + b_2 X_{t-1} / P_{t-1} + e_t \quad \text{where } b_1 = a_1 + a_2 \text{ and } b_2 = -a_2$$

4.3 Sample Selection and Variable Definitions

4.3.1. Sample Selection

The EVA data was obtained from the 1997 Stern Stewart (South Africa) Performance 200 database. This listing is smaller than the one prepared for U.S. firms and includes a total of 217 companies and 1269 EVA values since 1990. The sample shows a strong bias towards large companies in that it is based on the annual *F&T Finance Week 200* survey of J.S.E. listed companies, which is ranked according to the size of total assets. EVA values are only supplied for industrial companies because of the complexities in accounting for financial institutions and companies in the mining sector.

The initial sample was reduced to 164 companies and 1024 useable EVA values. EVA values were eliminated due to duplications, changes in financial year-ends, incomplete price data, and if there was no comparative value in either the preceding or following year. Further adjustments were necessary as not all EVA values listed for a particular year in the database actually relate to that year.

In order to be ready for publication in the annual *F&T Finance Week Top 200 Companies Survey* in March (based on financial years ending in the previous calendar year), the EVA values in the database are computed before some companies have released their annual reports. In these cases, the information from the previous year's annual report is used to calculate the relevant EVA value. Approximately 20% of the EVA values and other data supplied in the database, such as NOPAT values, were shifted back one year to adjust for this problem.

The adjusted EVA and NOPAT values for a particular company were then each paired with the corresponding adjusted EVA and NOPAT value from the prior year as required by equation (4.4). This resulted in 836 pairs of EVA and NOPAT data. For comparative purposes non-adjusted EVA and NOPAT pairs were also collected,

as were attributable earnings (AE) pairs[6]. This reduced the sample to 153 companies, 950 data points per performance measure and 778 pairs of data per performance measure.

Lastly extreme outlier observations were eliminated resulting in a final sample of 153 companies, 937 data points per performance measure and 758 pairs of data per performance measure. Using the convention employed by Biddle *et al* (1998: 11), an extreme outlier was defined as being greater than or equal to eight standard deviations from the median value. By excluding the 20 extreme outlier observations, the coefficients of variation (CVar) of the performance measures were reduced considerably (see table 4.1). The current period value of the performance measure is denoted by "t_0" and the lagged period value is denoted by "t_{-1}".

	AE (t_0)	AE (t_{-1})	NOPAT (t_0)	NOPAT (t_{-1})	EVA (t_0)	EVA (t_{-1})
CVar (incl. outliers)	234.6	469.4	117.7	117.5	-325.8	-354.0
CVar (excl. outliers)	104.2	91.2	92.6	90.3	-239.9	-262.9
Difference	130.4	378.2	25.1	27.1	-85.9	-91.1
% change	-55.6%	-80.6%	-21.3%	-23.1%	-26.4%	-25.7%

Table 4.1: Effect of eliminating the 20 extreme outlier observations on the dispersion of the independent variables.

From table (4.1), EVA displays different characteristics to those of attributable earnings and NOPAT. Firstly, as a result of a negative mean value EVA has a negative coefficient of variation. Secondly, EVA has a far greater dispersion relative to its mean than the other two variables, as evidenced by the larger absolute coefficient of variation.

Table (4.2) illustrates the spread of the 758 pairs of data over the seven-year period, as well as the size of the sample companies based on each company's market capitalisation (MCap) at the beginning of the financial year.

[6] For the remainder of the report, EVA and NOPAT are used to refer to adjusted EVA and adjusted NOPAT.

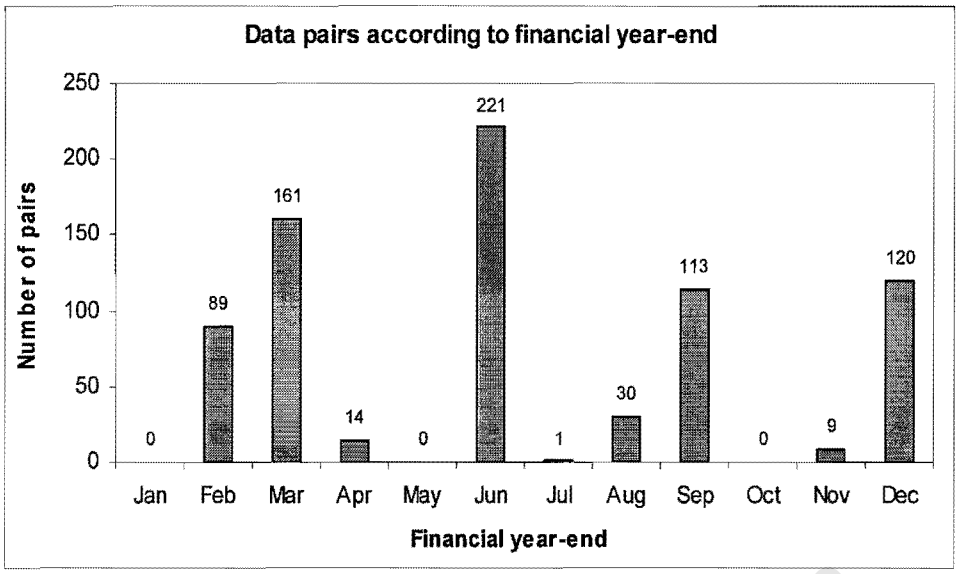
	1991	1992	1993	1994	1995	1996	1997
No. of data pairs	117	112	111	118	104	103	93
Mean MCap (Rm)	813	1,165	1,448	1,477	2,224	2,602	3,191
Median MCap (Rm)	232	350	414	574	781	1,057	1,397
Ranking	83	76	77	76	80	80	69

Table 4.2: Size characteristics of the sample companies.

It is evident that the distribution of market capitalisations is positively skewed and that the sample is biased towards the larger industrial companies listed on the J.S.E. The "ranking" is the position that the median market capitalisation company would assume in a listing of J.S.E. industrial companies ranked according to the size of market capitalisation at the end of the previous calendar year.

For example, a company with a market capitalisation of R232m would be the 83rd largest company according to market capitalisation on the last trading day on the J.S.E. in 1990. The annual *Financial Mail Top Companies Special Survey* is used for the relative ranking. Except for in 1997, the relative size of the sample companies to the universe of listed industrial companies is fairly constant across the seven-year period.

The financial year-ends of the 758 pairs of data are depicted in figure (4.3). There is a bias towards companies that have financial year-ends falling in March (21.2%), June (29.2%), September (14.9%) and December (15.8%). However, these percentages are not dissimilar to those for the universe of all companies listed on the J.S.E. Of the 607 companies included in the July to December 1997 edition of Profile Media's *Stock Exchange Handbook*, 17.0% of the financial year-ends fell in March, 29.2% in June, 10.7% in September, and 18.8% in December.



4.3.2. Sources of Data

Stern Stewart & Co. (South Africa) supplied the EVA data, including NOPAT values and cost of capital figures. All other data was obtained from the Deutsche Morgan Grenfell I-NET system, which is administered by I-Net Bridge. The raw data, excluding the 20 extreme outlier observations, is listed in the appendix to this report.

4.3.3. Dependent Variable

Cumulative abnormal returns (CAR) is commonly used as the dependent variable in information content studies. An abnormal return is the difference between an actual return and a normal (or benchmark) return and is therefore able to control for factors affecting share returns that are not related specifically to the share itself. The change in the J.S.E. Actuaries Financial and Industrial Index is used as a proxy for the normal return[7]. Foster (1986: 404) suggests that this approach yields similar inferences to the CAPM approach, particularly in large samples of companies that have an average beta close to one.

[7] Bowie and Bradfield (1993: 14) provide evidence of segmentation between industrial and mining shares on the J.S.E. As a result, they recommend using the change in the J.S.E. Actuaries Financial and Industrial Index as a proxy for the normal return of all non-mining shares (see also Bradfield 1999: 13).

In South Africa companies are required by the J.S.E. to publish annual financial statements within three months of their financial year-end. To allow sufficient time for this information to be impounded in the share price, the 12-month interval ending three months after the company's financial year-end is chosen for the CAR measure.[8] An annual event window is used because new information becomes available to the market throughout the year. For example, the interval from 1 April 1997 to 31 March 1998 is assumed to capture the financial information released by a company for its 1997 financial year ending in December.

The arithmetic method of cumulating abnormal returns is employed and is expressed as follows:

$$CAR_i = \sum_{t=-9}^{3} U_{i,t} \tag{4.5}$$

where t is the number of the month relative to the financial year-end and $U_{i,t}$ is the abnormal return of share i in month t. In calculating the abnormal return, the actual return on share i in month t includes dividends at the last day to register. For this purpose each company year-end is considered to be a different "share". The arithmetic method of cumulating abnormal returns is chosen for its simplicity and is frequently used in abnormal return studies (see Foster 1986: 405 and Bowen, Burgstahler & Daley 1987: 733).

4.3.4. Independent Variables: Relative Information Content

The earnings figure is defined as I-NET data item IS23, bottom-line attributable earnings (AE). NOPAT, as calculated by Stern Stewart & Co., differs from the earnings measure in that it adds back the after-tax cost of interest and non-cash items (except depreciation). The adjustments Stern Stewart & Co. make to the income statement also modify the balance sheet by converting the book value of capital to its economic value. EVA is determined by subtracting the product of the cost of capital

[8] This approach is similar to that used by Bowen, Burgstahler & Daley (1987) and Peterson & Peterson (1996).

and the economic value of capital, from NOPAT.

All independent variables are deflated by the market value of the company's equity three months after the beginning of the financial year in accordance with equation (4.4). This makes the independent variables consistent with the dependent variable, which is measured as a percentage (Bacidore *et al* 1997: 17). It also reduces heteroscedasticity in the data (Biddle *et al* 1998: 13).

The mean, median and standard deviation (Std Dev) of the dependent variable and the independent variables used to measure relative information content are provided in table (4.4). Attributable earnings has the lowest standard deviation among the performance measures. Biddle *et al* (1998: 13), who obtained the same result in their study, argue that this is consistent with the smoothing effect of accruals. They also found that their EVA measure had a negative mean and median value. Biddle *et al* (1998:13) explain that this is consistent with a competitive economy where even large companies have difficulty earning more than their cost of capital.

	CAR	AE (t_0)	AE (t_{-1})	NOPAT (t_0)	NOPAT (t_{-1})	EVA (t_0)	EVA (t_{-1})
Mean	0.049	0.099	0.092	0.190	0.177	-0.096	-0.084
Median	0.022	0.086	0.079	0.144	0.127	-0.024	-0.013
Std Dev	0.408	0.103	0.084	0.176	0.160	0.229	0.221
P-value of S-W test	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4.4: Descriptive statistics of the independent variable and dependent variables: relative information content.

Shapiro-Wilks' *W* test (S-W test) indicates that each of the variables is normally distributed. As a result, a parametric method of measuring the strength of the relationship between the variables is used. The Pearson Product Moment correlation coefficients (r) between the dependent and current year independent variables are produced in table (4.5). All the correlation coefficients are significant at the 0.2% level or better. However, attributable earnings has the most significant correlation with the dependent variable, cumulative abnormal returns.

		CAR	AE_{t0}	$NOPAT_{t0}$
AE_{t0}	R	0.4626		
	t-stat	14.35		
	P-value	1.87E-41		
$NOPAT_{t0}$	R	0.3441	0.6561	
	t-stat	10.08	23.90	
	P-value	1.69E-22	1.70E-94	
EVA_{t0}	R	0.1992	0.3484	-0.1128
	t-stat	5.59	10.22	3.12
	P-value	3.20E-08	4.76E-23	0.001871

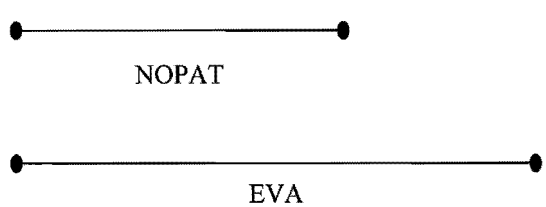
Table 4.5: Pearson Product Moment correlation coefficients between the independent variable and current period dependent variables: relative information content.

4.3.5. Independent Variables: Incremental Information Content

The purpose of the incremental information content tests is to assess whether components specific to EVA add to the information set impounded in share prices. The EVA components are: earnings attributable to ordinary shareholders (AE), Stern Stewart & Co. adjustments to the earnings figure to derive NOPAT (Adj_{ss}), and a capital charge based on the economic book value of the company's assets (CC_{bv}).

The components of EVA are illustrated by equation (4.6). Adj_{ss} is calculated by subtracting AE from NOPAT, and CC_{bv} is calculated by subtracting NOPAT from EVA.

$$EVA = AE + Adj_{ss} - CC_{bv} \quad (4.6)$$



The mean, median and standard deviation of the dependent variable and the

independent variables used to measure incremental information content are provided in table (4.6). Once again, attributable earnings has the lowest standard deviation among the independent variables. In accordance with equation (4.6), the mean Adj_{ss} value is positive and the mean CC_{bv} value is negative.

	CAR	AE (t_0)	AE (t_{-1})	Adj_{ss} (t_0)	Adj_{ss} (t_{-1})	CC_{bv} (t_0)	CC_{bv} (t_{-1})
Mean	0.049	0.099	0.092	0.091	0.084	-0.286	-0.261
Median	0.022	0.086	0.079	0.049	0.046	-0.189	-0.161
Std Dev	0.408	0.103	0.084	0.133	0.120	0.304	0.303
P-value of S-W test	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4.6: Descriptive statistics of the independent variable and dependent variables: incremental information content.

Shapiro-Wilks' W test again indicates that each of the variables is normally distributed. The Pearson Product Moment correlation coefficients between the dependent and current year independent variables are presented in table (4.7). All the correlation coefficients are statistically significant except for that between CC_{bv} and the dependent variable, cumulative abnormal returns. The Adj_{ss} variable is highly correlated with the CC_{bv} variable, as evidenced by a correlation coefficient of minus 0.7846.

		CAR	AE_{t0}	$Adj_{ss,t0}$
AE_{t0}	R	0.4626		
	t-stat	14.35		
	P-value	1.87E-41		
$Adj_{ss,t0}$	R	0.0959	0.0913	
	t-stat	2.65	2.52	
	P-value	0.008257	0.011929	
$CC_{bv,t0}$	R	-0.0490	-0.1171	-0.7846
	t-stat	1.35	3.24	34.79
	P-value	0.177402	0.001239	4.24E-159

Table 4.7: Pearson Product Moment correlation coefficients between the independent variable and current period dependent variables: incremental information content.

4.4 Relative and Incremental Information Content Tests

4.4.1. Relative Information Content Test

By applying equation (4.4) to the various financial performance measures, the coefficients of determination are used to assess relative information content. The larger the adjusted R^2 for a particular performance measure, the larger the relative information content.

4.4.2. Incremental Information Content Test

The methodology of Bowen, Burgstahler & Daley (1987) is used to assess incremental information content. This involves tests of the statistical significance of combinations of the regression slope coefficients in equation (4.7). This equation is based on equation (4.4), but is extended to include the current and lagged period values of the three independent variables.

$$CAR_t = b_0 + b_1 AE_{t0} / P_{t-1} + b_2 AE_{t-1} / P_{t-1} + b_3 Adj_{ss,to} / P_{t-1} + b_4 Adj_{ss,t-1} / P_{t-1} + b_5 CC_{bv,t0} / P_{t-1} + b_6 CC_{bv,t-1} / P_{t-1} + e_t \quad (4.7)$$

In order to assess whether each of attributable earnings, Stern Stewart & Co. adjustments, and the cost of capital charge provide information that is incremental to the information already provided by the other two variables, partial F-tests are used on joint null hypotheses A, B & C below. The partial F-test technique is obtained from Bowerman & O'Connell (1990: 405).

$H_{0\text{-}A}$: $b_1 = b_2 = 0$

$H_{0\text{-}B}$: $b_3 = b_4 = 0$

$H_{0\text{-}C}$: $b_5 = b_6 = 0$

$H_{0\text{-}A}$, for example, tests whether the information in attributable earnings is incremental to that contained in the Stern Stewart & Co. adjustments and the cost of capital charge. A further joint null hypothesis is formulated in order to test whether Stern Stewart & Co. adjustments and the cost of capital charge together provide information incremental to that of attributable earnings.

$H_{0\text{-}D}$: $b_3 = b_4 = b_5 = b_6 = 0$

Finally, to test whether Stern Stewart & Co. adjustments and the cost of capital charge individually provide information incremental to that of attributable earnings, equation (4.8) and equation (4.9) are used.

$$CAR_t = b_0 + b_1 AE_{t0} / P_{t-1} + b_2 AE_{t-1} / P_{t-1} + b_3 Adj_{ss,to} / P_{t-1} + b_4 Adj_{ss,t-1} / P_{t-1} + e_t \quad (4.8)$$

$$CAR_t = b_0 + b_1 AE_{t0} / P_{t-1} + b_2 AE_{t-1} / P_{t-1} + b_5 CC_{bv,t0} / P_{t-1} + b_6 CC_{bv,t-1} / P_{t-1} + e_t \quad (4.9)$$

The joint null hypotheses pertaining to equation (4.8) and equation (4.9) respectively are:

$H_{0\text{-}E}$: $b_3 = b_4 = 0$

$H_{0\text{-}F}$: $b_5 = b_6 = 0$

If any of the null hypotheses are rejected, the variable concerned is determined to provide information incremental to that of the other variables included in the relevant equation.

4.4.3. Multiple Regression Model Assumptions

In both the relative and incremental information content tests, the regression assumptions regarding the error terms are considered to ensure compliance. More

specifically, this means that the error terms are random variables with a mean value of zero and that they are homoscedastic, independent and normally distributed. However, it is unlikely that these assumptions will be seriously violated, or if violated that they will have a material impact on the findings.

As indicated in section (4.3.4.), deflating all independent variables by the market value of the company's equity three months after the beginning of the financial year reduces the possibility of heteroscedasticity in the data. Independence is not a problem because the data is predominantly cross-sectional, there being only a small time series element for each company. Lastly the F-test, which is used to compare relative and incremental information content, is "quite robust" with regards to violations of the normality assumption[9].

Nevertheless, residual plots prepared by *Statistica* are inspected to ensure the residuals are homoscedastic and follow a normal distribution. The *Statistica* output also indicates whether the mean value of the error term is zero. In addition, the Durbin-Watson statistic is calculated to test for independence of the residuals where appropriate. No serious violations of the regression assumptions were detected in any of the tests recorded.

4.5 General Assumptions

Firstly, it is assumed that share market returns can reasonably be used to compare the information content of various financial performance measures. In other words, the best performance measure is the one that provides the best operating proxy for share returns. Such an analysis does not consider the usefulness of the performance measure as a management tool, for example to encourage internal operational efficiency.

Secondly, the J.S.E. is assumed to be efficient in the semi-strong form. This means

[9] See "General Conventions & Statistics 1", 2nd edition, Statsoft, 1995, p.1646.

that all generally available public information is reflected in share prices. If this assumption does not hold, the first assumption will also be invalid because share prices will not react to the information content of the chosen performance measures.

The evidence on the efficiency of the J.S.E. is at best mixed. For example, the impact of changes to dividend policy[10] on share prices is inconclusive, as is the information content of earnings figures[11]. However, research into the impact of share splits[12], capitalisations[13] and new issues[14] is generally supportive of semi-strong efficiency (Thompson & Ward 1995: 59).

Thirdly, market participants are assumed to possess sufficient information within three months of a company's financial year-end to accurately estimate NOPAT and EVA. Lastly, because a considerable amount of financial information becomes available to the market throughout the financial year, an annual event period is considered appropriate.

[10] See Ooms, L.L., A.A. Archer & E. vdM Smit (1987). "The information content of dividends on the Johannesburg Stock Exchange: an empirical analysis", *South African Journal of Business Management*, vol. 18, no. 4, pp. 187-197; Bhana, N. (1991). "Reaction on the Johannesburg Stock Exchange to major shifts in dividend policy",*South African Journal of Business Management*, vol. 22, no. 3, pp. 33-40.

[11] See Knight, R.F. & J.F. Affleck-Graves (1987). "The relative information content of audited andunaudited financial data releases", *South African Journal of Business Management*, vol. 18, no. 2, pp. 61-64.

[12] See Cross, T.A. & C. Firer (1986). "Who benefits from share splits", *South African Journal of Business Management*, vol. 17, no. 2, pp. 87-92.

[13] See Biger, N. & M.J. Page (1992). "The market reaction to stock splits and capitalisation issues: recent JSE experience", *Journal for Studies in Economics and Econometrics*, vol. 16, no. 3, pp. 1-15.

[14] See Bhana, N (1989). "New listings share price behaviour on the Johannesburg Stock Exchange",*South African Journal of Business Management*, vol. 20, no. 4, pp. 195-203; Youds, D., C. Firer & M. Ward (1993). "The impact of rights issue announcements on share prices", *Journal for Studies in Economics and Econometrics*, vol. 17, no. 3, pp. 21-40.

5. ANALYSIS OF THE FINDINGS

This chapter presents the findings of the relative and incremental information content tests involving attributable earnings, NOPAT and EVA.

5.1 Relative Information Content

5.1.1. Test Results

Relative information content is assessed by comparing adjusted coefficients of determination from regressions involving each of the performance measures. Table (5.1) summarises the results of the regressions performed on the sample of 758 observations using equation (4.4). All F-values and *t*-statistics are highly significant as evidenced by the small P-values. The Durbin-Watson (DW) statistics indicate that no serial correlation exists in the data.

	AE	NOPAT	EVA
R^2 adjusted	0.2605	0.1634	0.1157
F-value	134.35	74.90	50.52
P-value	0.000000	0.000000	0.000000
DW statistic	1.90	1.90	1.95
b_1 coefficient	2.39	1.31	1.01
t-stat	16.26	11.92	10.05
P-value	0.000000	0.000000	0.000000
b_2 coefficient	-1.27	-0.79	-0.86
t-stat	-7.05	-6.53	-8.19
P-value	0.000000	0.000000	0.000000

Table 5.1: Relative information content test results (excluding extreme outliers).

Attributable earnings explains 26% of the variation in the dependent variable, cumulative abnormal returns. This is substantially larger than the variation explained

by the other performance metrics, NOPAT (16%) and EVA (12%)[15]. These results indicate that the relative information content of attributable earnings is much greater than that of NOPAT. Similarly, NOPAT displays greater relative information content than EVA.

The coefficients of determination above are larger than those achieved by the Biddle *et al* (1998) study. As mentioned in section (3.2.1.), Biddle *et al* (1998) found that earnings explained only 9%, and EVA only 5%, of the variation in their dependent variable, market adjusted returns. This may be an indication that U.S. investors focus their investment decision on a wider range of quantitative and qualitative factors than their South African counterparts.

5.1.2. The Information Content of the Current and Lagged Period Values

As expected from equation (4.4c), the current period value of each performance measure in table (5.1) is positive and the lagged period value is negative. Although the information content of all the lagged period values is statistically significant, in each case it is less than the information content of the current period values. This is evidenced by the larger absolute *t*-statistics for the b_1 coefficients than for the b_2 coefficients.

The incremental information content of the current and lagged period values of each of the performance measures is tested further using the partial F-test method. Statistics theory (for example, Bowerman & O'Connell 1990: 407) indicates that the partial F-values are equal to the square of the *t*-statistics from table (5.1). These partial F-values, as well as P-values and partial coefficients of determination, are presented in table (5.2).

[15] Non-adjusted NOPAT and non-adjusted EVA explain only 13% and 8% respectively of the variation in the dependent variable. This suggests that the usefulness of the Stern Stewart (South Africa) Performance 200 databaseis impaired by a misallocation of data among financial years (see section 4.3.1.).

		Current Period	Lagged Period
AE	Partial F-value	264.43	49.67
	P-value	3.34E-51	4.11E-12
	Partial R^2	0.2594	0.0617
NOPAT	Partial F-value	142.20	42.64
	P-value	3.71E-30	1.21E-10
	Partial R^2	0.1585	0.0535
EVA	Partial F-value	100.95	67.07
	P-value	2.23E-22	1.11E-15
	Partial R^2	0.1179	0.0816

Table 5.2: Information content of the current and lagged period values of the independent variables.

The P-values and the partial R^2s again illustrate the greater incremental information content of the current period values over the lagged period values of each of the performance measures. For example, the current period value of attributable earnings explains almost 26% of the variation in the dependent variable not explained by the lagged period value of attributable earnings. However, the lagged period value of attributable earnings explains only slightly more than 6% of the variation in the dependent variable not explained by the current period value of attributable earnings.

Analysing the partial R^2s leads to two interesting observations. Firstly, the size of the gap between the explanatory power of the current period and lagged period values of each performance measure is in accordance with the size of the relative information content of that performance measure. For example attributable earnings, which has the greatest relative information content, also has the widest gap between the explanatory power of the current and lagged period variables. Similarly EVA, which has the smallest relative information content, has the narrowest gap between the explanatory power of the current and lagged period variables.

Secondly, the incremental information content of the lagged period values of each of the performance measures is not greatly dissimilar. The partial R^2s range from almost 5.4% for NOPAT to just under 8.2% for EVA. However, the partial R^2s of the current period values of each of the performance measures range from 11.8% for EVA to over 25.9% for attributable earnings. This suggests that the current period value of each performance measure is more important in determining relative information content rankings than the lagged period value.

Therefore, it is not surprising that the relative information content rankings are the same as the rankings according to the correlation of the current period value of each performance measure with the dependent variable. The relevant Pearson Product Moment correlation coefficients were presented in table (4.5).

5.1.3. The Impact of Outliers

To illustrate the impact of outliers on the results, the relative information content tests were repeated using the full sample of 778 observations. This sample includes the 20 extreme outlier observations that were previously excluded[16]. The results of the regressions are presented in table (5.3). All F-values and *t*-statistics are highly significant as evidenced by the small P-values.

	AE	NOPAT	EVA
R^2 adjusted	0.1417	0.2528	0.0466
F-value	65.16	132.41	19.98
P-value	0.000000	0.000000	0.000000
b_1 coefficient	0.88	1.23	0.38
t-stat	10.38	15.77	4.68
P-value	0.000000	0.000000	0.000000
b_2 coefficient	-0.43	-0.50	-0.47
t-stat	-8.01	-5.73	-6.11
P-value	0.000000	0.000000	0.000000

Table 5.3: Relative information content test results (including extreme outliers).

The relative information content rankings are different to those in table (5.1). This time NOPAT performs better than the attributable earnings measure. The explanatory power of NOPAT increased from 16% to 25% of the variation in the dependent variable. Attributable earnings however, experienced a substantial decline in its adjusted R^2, down from 26% to 14%. The EVA measure remained the worst performer with the adjusted R^2 declining from 12% to 5%.

[16] In section (4.3.1.) an extreme outlier was defined as an observation that is greater than or equal to eight standard deviations away from the median value.

A closer investigation of the 20 extreme outlier observations is necessary to understand these changes. Table (5.4) illustrates the number, size and distribution of the outliers for both the current and lagged period values of each of the performance measures. Of the 20 observations, row (J) shows the total number of outliers per current and lagged period value of each performance measure. Together NOPAT has 6, attributable earnings has 13, and EVA has 21. The fact that the performance measure with the least outliers has the greatest relative information content (and vice versa) suggests that this may one of the reasons for the changes in the relative information content rankings from table (5.1) to table (5.3).

		CAR	AE (t_0)	AE (t_{-1})	NOPAT (t_0)	NOPAT (t_{-1})	EVA (t_0)	EVA (t_{-1})	Row
Data points excluded that are > median ('positives')	Total number	11	6	6	15	11	2	1	A
	Total outliers	1	0	0	3	2	0	0	B
	Ave. SD from median	3.8	2.5	1.6	4.4	4.5	1.2	1.0	C
	Highest SD from median	14.7	5.2	4.3	18.1	11.6	2.4	1.0	D
Data points excluded that are < median ('negatives')	Total number	9	14	14	5	9	18	19	E
	Total outliers	0	4	9	0	1	10	11	F
	Ave. SD from median	1.1	7.7	16.6	3.1	4.2	9.2	10.3	G
	Highest SD from median	2.5	39.5	90.2	5.8	11.7	35.1	31.4	H
Total data points excluded ('totals')	Total number	20	20	20	20	20	20	20	I
	Total outliers	1	4	9	3	3	10	11	J
	Ave. SD from median	2.6	6.1	12.1	4.1	4.4	8.4	9.9	K
	Highest SD from median	14.7	39.5	90.2	18.1	11.7	35.1	31.4	L

Table 5.4: Number, size and distribution of extreme outliers per dependent and independent variable.

A second factor is the size of the outliers. Row (K) indicates the average size of the 20 extreme outlier observations per variable, measured by the number of standard deviations (SD) the average is away from the median value of the reduced sample of 758 observations. With reference to the current period value of each of the performance measures, the average size of the outliers increases as the relative information content of the performance measures decreases. This suggests that the average size of the outliers may also be a reason for the observed changes in relative information content.

Row (L) shows the size of the largest outlier in the 20 deleted observations, also measured by the number of standard deviations that that observation is away from the median value of the reduced sample. Attributable earnings has both the largest current period outlier and the largest lagged period outlier of the performance measures. This may explain why attributable earnings experienced the largest

decline in relative information content when the 20 extreme outlier observations were again included in the sample.

A third factor is the distribution of the outliers between the positive side and negative side of the median value. The current period and lagged period values of attributable earnings and EVA are heavily skewed towards the negative side of the median. The outliers of NOPAT are more evenly distributed as evidenced by a similar average size of outliers on either side of the median. This can be observed by comparing row (C) with row (G) in table (5.4). With outliers on only one side of the median, there is more chance that the slope of the best-fit line through the data points will be distorted.

The plot on the left-hand side of figure (5.5) illustrates the extent to which cumulative abnormal returns, attributable earnings and EVA are adversely affected by the size and distribution of extreme outliers. In comparison, NOPAT is relatively unaffected. By removing the 20 extreme outlier observations, the data follows a more normal distribution (see right-hand side of figure 5.5). The reduction in the size of the minimum and maximum observations is clearly evident by comparing the vertical scale of the plot including outliers with that of the plot excluding outliers.

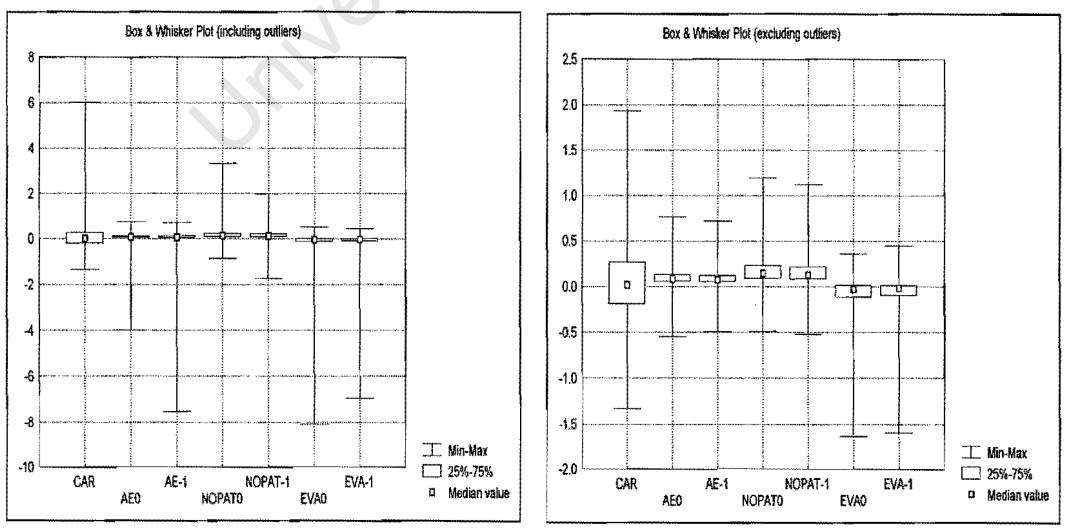


Figure 5.5: Box and Whisker plots of the dependent and independent variables (including and excluding extreme outliers).

The impact of these three factors is further illustrated in figure (5.6), figure (5.7) and figure (5.8). These scatter diagrams plot the current period values of attributable earnings, NOPAT and EVA against the dependent variable. The left-hand side of each figure plots this relationship including the 20 extreme outlier observations and the right-hand side plots this relationship excluding these observations. A trendline is fitted to each scatter diagram and the equation of the trendline and the R^2 is indicated in the top right-hand corner of each diagram.

From figure (5.6) it is clear that outliers have a large impact on the ability of attributable earnings to explain changes in the dependent variable, cumulative abnormal returns. By removing the outliers, the slope coefficient of the trendline increases from 0.65 to 1.83 and the R^2 increases from 7% to 21%. This explains the reason for the decline in the explanatory power of attributable earnings from 26% in table (5.1) to 14% in table (5.3).

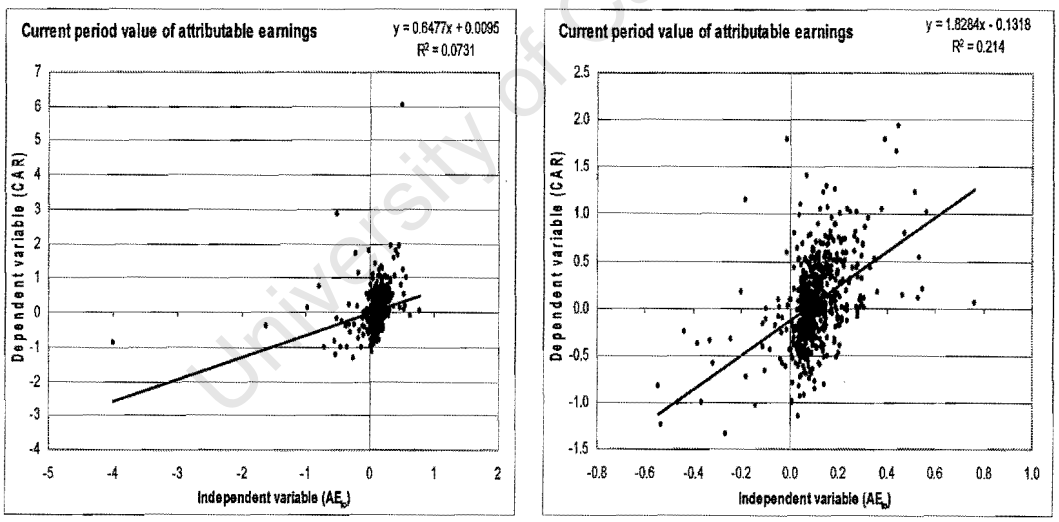


Figure 5.6: Current period values of attributable earnings plotted against cumulative abnormal returns (including and excluding extreme outliers).

Conversely, the outliers of NOPAT actually improve the relationship between NOPAT and cumulative abnormal returns. The left-hand side of figure (5.7) illustrates that most of the observations, even the outliers, fall relatively close to the trendline. Therefore, removing the outliers almost halves the R^2 of the trendline

from 22% to 12%. This explains the reason for the increase in the explanatory power of NOPAT from 16% in table (5.1) to 25% in table (5.3).

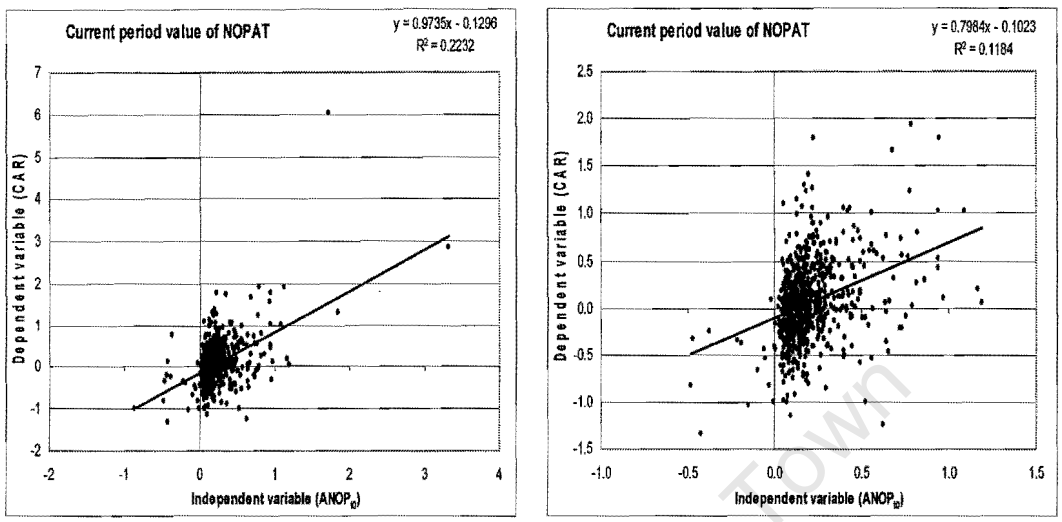


Figure 5.7: Current period values of NOPAT plotted against cumulative abnormal returns (including and excluding extreme outliers).

Figure (5.8) plots the relationship between EVA and cumulative abnormal returns including and excluding extreme outliers. The first noticeable difference between the scatter plots of the three performance measures is that most of the EVA values are negative, whereas most of the attributable earnings and NOPAT values are positive. As suggested in section (4.3.4), this is probably indicative of a competitive economy where even large companies have difficulty earning more than the cost of capital.

It is clear that outliers adversely affect the explanatory power of the EVA values. Removing the outliers improves the R^2 from 0.3% to 4% and changes the slope of the trendline from negative 0.06 to positive 0.35. This explains the reason for the decrease in the explanatory power of EVA from 12% in table (5.1) to 5% in table (5.3).

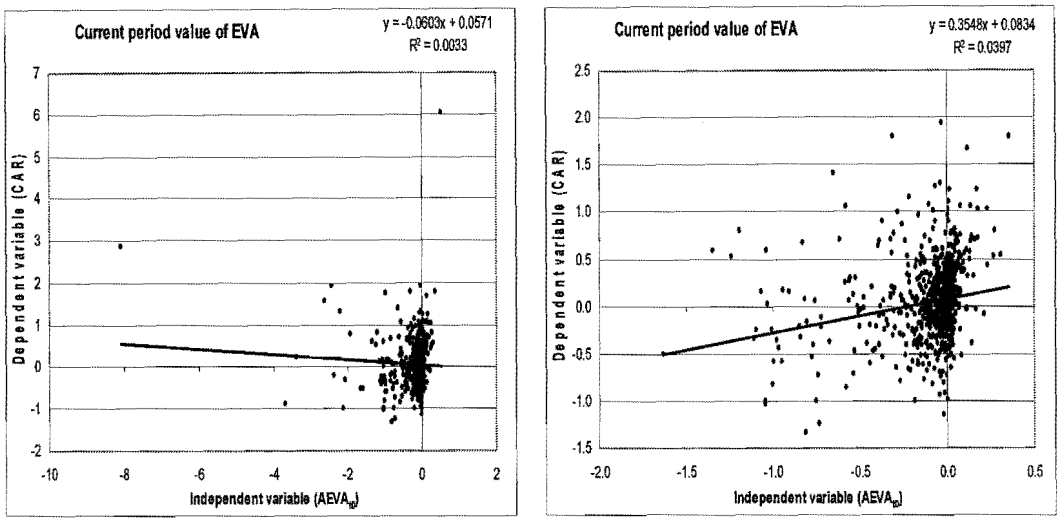


Figure 5.8: Current period values of EVA plotted against cumulative abnormal returns (including and excluding extreme outliers).

Therefore, it appears that the market may be better able to price companies with extreme NOPAT values than it is able to price companies with extreme attributable earnings values or extreme EVA values. Whereas there is no apparent reason for this finding, it is clear that care must be exercised when comparing the information content of performance measures when extreme outliers are present in the data.

To assess whether the occurrence of the 20 extreme outlier observations follows a particular pattern in the complete sample, all observations within a particular financial year were ranked according to the size of market capitalisation taken at the beginning of the financial year. Fourteen of the 20 observations were in the tenth decile within their respective financial years. A further four were in the ninth decile, one was in the sixth decile and the last one was in the fourth decile. This suggests that extreme outlier observations are more likely to occur in small companies than in large companies.

By changing the criterion for an observation to be considered an outlier, it is possible to test the robustness of the relative information content results in table (5.1). The first test defines an outlier as being greater than or equal to six standard deviations from the median value, rather than the eight used in table (5.1). This reduces the initial sample of 778 observations by 39 observations, resulting in a sample of 739

observations. The relative information content of each performance measure is presented in table (5.9). All F-values and *t*-statistics are highly significant as evidenced by the small P-values.

	AE	NOPAT	EVA
R^2 adjusted	0.2807	0.2162	0.1578
F-value	145.03	102.76	70.16
P-value	0.000000	0.000000	0.000000
b_1 coefficient	2.89	1.73	1.35
t-stat	16.97	14.02	11.79
P-value	0.000000	0.000000	0.000000
b_2 coefficient	-1.77	-1.14	-1.35
t-stat	-8.20	-8.05	-9.95
P-value	0.000000	0.000000	0.000000

Table 5.9: Relative information content test results (excluding observations greater than or equal to six standard deviations from the median).

The results are similar to those in table (5.1), with the main difference being that each performance measure is able to explain slightly more variation in the dependent variable than before. Attributable earnings still performs substantially better than the other performance measures. Similarly, NOPAT still performs better than the EVA measure.

The second test defines an outlier as being greater than or equal to four standard deviations from the median value, rather than the eight used in table (5.1). This reduces the initial sample by 159 observations to leave a total of 619 observations. The results of the relative information content tests are presented in table (5.10). Again, all F-values and *t*-statistics are highly significant as evidenced by the small P-values.

By further widening the definition of an outlier, attributable earnings increases the percentage of the variation in the dependent variable explained to almost 30%. However, the adjusted R^2s of NOPAT and EVA decrease when the outlier definition is widened from six to four standard deviations from the median value. Despite this, the rankings according to relative information content are the same as in table (5.1).

	AE	NOPAT	EVA
R^2 adjusted	0.2975	0.1712	0.1326
F-value	131.84	64.82	48.25
P-value	0.000000	0.000000	0.000000
b_1 coefficient	5.17	2.97	2.48
t-stat	15.90	10.69	9.51
P-value	0.000000	0.000000	0.000000
b_2 coefficient	-3.42	-2.17	-1.68
t-stat	-9.14	-6.99	-5.62
P-value	0.000000	0.000000	0.000000

Table 5.10: Relative information content test results (excluding observations greater than or equal to four standard deviations from the median).

These tests indicate that the results of the relative information content tests in table (5.1) are robust to changes in the definition of an outlier. Only when extreme observations are included in the sample does NOPAT perform better than attributable earnings. Nevertheless, attributable earnings performs better than EVA regardless of whether outliers are included in the sample or not.

5.2 Incremental Information Content

Findings on the incremental information content of the EVA components from equation (4.7) are presented in table (5.11). In accordance with equation (4.4c), the signs of all the current period variables are positive and the signs of all the lagged period variables are negative. The *t*-statistics indicate that the only coefficients that are significant at a 10% level or better are those for the current period and lagged period values of attributable earnings.

		b_1 AE (t_0)	b_2 AE (t_{-1})	b_3 Adj$_{ss}$ (t_0)	b_4 Adj$_{ss}$ (t_{-1})	b_5 CC$_{bv}$ (t_0)	b_6 CC$_{bv}$ (t_{-1})
758 observations	Coefficient	2.36	-1.20	0.28	-0.17	0.19	-0.21
adj. R^2 = 0.2611	*t*-stat	15.89	-6.19	1.56	-0.79	0.95	-1.09
F-value = 45.58	P-value	0.000000	0.000000	0.119475	0.429400	0.342622	0.276536
P-value = 0.000000	Partial F-value	129.88		1.22		0.60	
	P-value	3.62E-49		0.295720		0.549182	
	Partial R^2	0.2570		0.0032		0.0016	
	Partial F-value			1.14			
	P-value			0.334620			
	Partial R^2			0.0061			

Table 5.11: Incremental information content test results of hypotheses $H_{0\text{-}A}$, $H_{0\text{-}B}$, $H_{0\text{-}C}$ and $H_{0\text{-}D}$ using EVA components.

The partial F-value and partial coefficient of determination suggest that the Stern Stewart & Co. adjustments provide a negligible amount of information incremental to that contained in attributable earnings and the cost of capital charge. The variation in the dependent variable explained by the Stern Stewart & Co. adjustments is only 0.3%. Similarly, the cost of capital charge explains only 0.2% of the variation in the dependent variable not explained by attributable earnings and the Stern Stewart & Co. adjustments together.

Furthermore, the Stern Stewart & Co. adjustments and the cost of capital charge together explain only 0.6% of the variation in the dependent variable not explained by attributable earnings. Referring to section (4.4.2.), $\boldsymbol{H_{0\text{-}A}}$ is rejected but $\boldsymbol{H_{0\text{-}B}}$, $\boldsymbol{H_{0\text{-}C}}$ and $\boldsymbol{H_{0\text{-}D}}$ cannot be rejected. In other words, attributable earnings possesses a significant amount of incremental information content, but the Stern Stewart & Co. adjustments and the cost of capital charge possess only a very small amount of incremental information content.

The fact that attributable earnings makes by far the largest contribution to explaining the variation in the dependent variable is also evident from changes in the adjusted coefficients of determination. From table (5.1), the adjusted R^2 of attributable earnings on its own is 26.05%. By including Stern Stewart & Co. adjustments and the cost of capital charge in the regression equation, the adjusted R^2 increases to only 26.11% (see table 5.11).

Table (5.12) considers whether the Stern Stewart & Co. adjustments and the cost of

capital charge individually add to the information content of attributable earnings in isolation. Again, the information content of the Stern Stewart & Co. adjustments and the cost of capital charge is negligible. Consequently, $H_{0\text{-}E}$ and $H_{0\text{-}F}$ cannot be rejected.

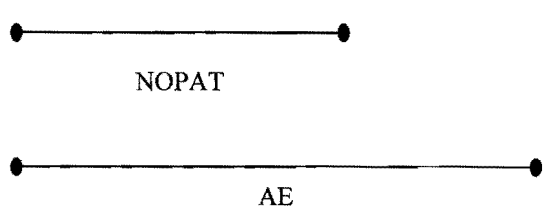
	Adj_{ss}	CC_{bv}
Partial F-value	1.69	1.07
P-value	0.185284	0.344659
Partial R^2	0.0045	0.0028

Table 5.12: Incremental information content test results of hypotheses $H_{0\text{-}E}$ and $H_{0\text{-}F}$ using EVA components.

These findings do not necessarily imply that the Stern Stewart & Co. adjustments and the cost of capital charge possess an insignificant amount of information content. Instead, it means that they add very little information to that already contained in attributable earnings. If the information content of the Stern Stewart & Co. adjustments and the cost of capital charge is tested with reference to EVA, a different result is obtained.

Changing the subject of equation (4.6) provides the components of attributable earnings in equation (5.1). Adj_{ss} is calculated by subtracting NOPAT from attributable earnings and CC_{bv} is calculated by subtracting EVA from NOPAT.

$$AE = EVA + CC_{bv} - Adj_{ss} \quad (5.1)$$



The methodology of Bowen *et al* (1987) is again used to assess incremental information content. This involves tests of the statistical significance of

combinations of the regression slope coefficients in equation (5.2). This equation is adapted from equation (4.7).

$$CAR_t = b_0 + b_1EVA_{t0} / P_{t-1} + b_2EVA_{t-1} / P_{t-1} + b_3CC_{bv,t0} / P_{t-1} + b_4CC_{bv,t-1} / P_{t-1} + b_5Adj_{ss,to} / P_{t-1} + b_6Adj_{ss,t-1} / P_{t-1} + e_t \quad (5.2)$$

The joint null hypotheses A, B, C, D, E and F in section (4.4.2.) are used to assess the incremental information content of EVA, Stern Stewart & Co. adjustments, and the cost of capital charge. Results are presented in table (5.13).

		b_1 EVA (t_0)	b_2 EVA (t_{-1})	b_3 CC_{bv} (t_0)	b_4 CC_{bv} (t_{-1})	b_5 Adj_{ss} (t_0)	b_6 Adj_{ss} (t_{-1})
758 observations	Coefficient	2.36	-1.20	2.17	-0.99	2.08	-1.03
adj. R^2 = 0.2611	*t*-stat	15.89	-6.19	8.19	-3.33	8.50	-3.41
F-value = 45.58	P-value	0.000000	0.000000	0.000000	0.000906	0.000000	0.000691
P-value = 0.000000	Partial F-value	129.88		48.81		37.23	
	P-value	3.62E-49		1.18E-20		3.85E-16	
	Partial R^2	0.2570		0.1150		0.0902	
	Partial F-value			38.14			
	P-value			4.45E-29			
	Partial R^2			0.1689			

Table 5.13: Incremental information content test results of hypotheses $H_{0\text{-}A}$, $H_{0\text{-}B}$, $H_{0\text{-}C}$ and $H_{0\text{-}D}$ using attributable earnings components.

It may be surprising that the overall regression statistics, as well as the statistics for b_1 and b_2, are exactly the same as in table (5.10). This means that EVA and attributable earnings explain the same variation in the dependent variable not explained by Stern Stewart & Co. adjustments and the cost of capital charge. This is correct because EVA is calculated by adding the Stern Stewart & Co. adjustments to attributable earnings and then subtracting the cost of capital charge.

The partial F-value and partial coefficient of determination suggest that the Stern Stewart & Co. adjustments provide a significant amount of information incremental to that contained in EVA and the cost of capital charge. The variation in the dependent variable explained by the Stern Stewart & Co. adjustments is 11.5%. Similarly, the cost of capital charge explains 9% of the variation in the dependent

variable not explained by EVA and the Stern Stewart & Co. adjustments together.

Furthermore, the Stern Stewart & Co. adjustments and the cost of capital charge together explain almost 17% of the variation in the dependent variable not explained by EVA. Therefore, $H_{0\text{-}A}$, $H_{0\text{-}B}$, $H_{0\text{-}C}$ and $H_{0\text{-}D}$ are all rejected. In other words EVA, Stern Stewart & Co. adjustments and the cost of capital charge all possess a significant amount of incremental information content relative to each other.

The information content of the Stern Stewart & Co. adjustments and the cost of capital charge is also evident from changes in the adjusted coefficients of determination. From table (5.1), the adjusted R^2 of EVA on its own is 11.57%. By including Stern Stewart & Co. adjustments and the cost of capital charge in the regression equation, the adjusted R^2 increases to 26.11% (see table 5.13).

Finally, table (5.14) considers whether the Stern Stewart & Co. adjustments and the cost of capital charge individually add to the information content of EVA in isolation. The information content of the Stern Stewart & Co. adjustments and the cost of capital charge is significant. Consequently, $H_{0\text{-}E}$ and $H_{0\text{-}F}$ are rejected.

	CC_{by}	Adj_{ss}
Partial F-value	35.63	24.38
P-value	1.64E-15	5.49E-11
Partial R^2	0.0865	0.0608

Table 5.14: Incremental information content test results of hypotheses $H_{0\text{-}E}$ and $H_{0\text{-}F}$ using attributable earnings components.

To summarise the incremental information content tests, it is found that the Stern Stewart & Co. adjustments and the cost of capital charge do possess information content in and of themselves. However, the information content they possess that is incremental to the information content of attributable earnings is negligible. Therefore, EVA possesses very little information content incremental to that contained in attributable earnings. Attributable earnings however, possesses a significant amount of information that is incremental to that contained in EVA. The information content of NOPAT falls between that of EVA and attributable earnings.

Considering the results of both the relative and incremental information content tests, no evidence is found to support the claims made by Stern Stewart & Co. in section (2.4). On the other hand it appears that in the context of the J.S.E., the information content of attributable earnings is far superior to that of EVA.

6. ALTERNATIVE SPECIFICATIONS

This chapter presents findings on a number of alternative specifications of the performance measures and extends the tests referred to in chapter 5. The sample used contains 758 observations and excludes the 20 extreme outliers, defined as greater than or equal to eight standard deviations from the median. This chapter also focuses on whether attributable earnings contains greater relative information content than that of other accounting-based and cash flow performance measures. In addition, refinements to the EVA measure proposed by Bacidore *et al* (1997: 13) are tested for improved information content.

6.1 Sign of Current Period EVA

O' Byrne (1996: 120) suggests that the market values companies with positive EVA differently to how it values companies with negative EVA (see section 3.1.2.). This is principally a result of the turnaround potential for companies generating negative EVA. To verify this hypothesis, the relative information content tests were repeated after partitioning the performance measures according to whether the sign of current period EVA is positive or negative.

This resulted in a sample of 297 companies with positive current period EVA and a sample of 461 companies with negative current period EVA. Table (6.1) presents the results of the relative information content tests using equation (4.4). All F-values and *t*-statistics are highly significant as evidenced by the small P-values. In both the positive and negative current period EVA samples, attributable earnings performs better than NOPAT. Similarly, NOPAT performs better than the EVA measure.

	Positive current period EVA			Negative current period EVA		
	AE	NOPAT	EVA	AE	NOPAT	EVA
R^2 adjusted	0.3623	0.2731	0.2501	0.2156	0.1186	0.0818
F-value	85.09	56.60	50.36	64.21	31.95	21.50
P-value	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
b_1 coefficient	4.10	2.11	3.57	1.97	1.03	0.71
t-stat	12.18	8.87	9.53	11.33	7.87	6.15
P-value	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
b_2 coefficient	-3.16	-1.60	-1.26	-1.02	-0.55	-0.72
t-stat	-7.12	-5.11	-4.44	-4.99	-4.02	-6.22
P-value	0.000000	0.000001	0.000013	0.000001	0.000068	0.000000

Table 6.1: Relative information content test results partitioning data according to the sign of current period EVA.

For each of the three performance measures, the sample based on positive current period EVA values performs better than the sample including both positive and negative current period EVA values (compare table 5.1 and table 6.1). The converse is true for the sample based on negative current period EVA values. This finding supports the O' Byrne (1996: 120) assertion that the market values companies with positive EVA differently to how it values companies with negative EVA.

It is interesting that EVA displays the largest percentage point increase in adjusted R^2 (13.44%) for the sample based on positive current period EVA values. EVA is followed by NOPAT (10.97%) and then by attributable earnings (10.18%). Conversely, EVA shows the smallest percentage point decrease in adjusted R^2 (3.39%) for the sample based on negative current period EVA values. Again, EVA is followed by NOPAT (4.48%) and by attributable earnings (4.49%).

Therefore, it appears that separating the sample according to the sign of the current period EVA does improve the performance of EVA relative to the other performance measures, but the relative information content rankings remain the same. Table (6.2) presents the results of incremental information content tests based on the samples of positive and negative current period EVA values.

		b_1 AE (t_0)	b_2 AE (t_{-1})	b_3 Adj_{ss} (t_0)	b_4 Adj_{ss} (t_{-1})	b_5 CC_{bv} (t_0)	b_6 CC_{bv} (t_{-1})
Positive EVA	Coefficient	5.66	-3.41	0.65	-0.71	0.45	0.70
	t-stat	10.11	-7.08	1.27	-1.36	0.61	1.27
297 observations	P-value	0.000000	0.000000	0.204156	0.176191	0.541646	0.205203
Adj. R^2 = 0.3920	Partial F-value	53.16		1.25		2.92	
F-value = 32.80	P-value	2.14E-20		0.286938		0.055579	
P-value = 0.000000	Partial R^2	0.2683		0.0086		0.0197	
Negative EVA	Coefficient	1.97	-1.07	0.00	-0.09	0.09	-0.25
	t-stat	11.35	-4.89	0.01	-0.39	0.40	-1.21
461 observations	P-value	0.000000	0.000001	0.992914	0.699718	0.691788	0.227356
adj. R^2 = 0.2222	Partial F-value	64.47		0.09		1.98	
F-value = 22.91	P-value	2.26E-25		0.918358		0.139173	
P-value = 0.000000	Partial R^2	0.2212		0.0004		0.0086	

Table 6.2: Incremental information content test results partitioning data according to the sign of current period EVA.

Consistent with the relative information content test results in table (6.1), the adjusted R^2 of the sample based on positive current period EVA values (39.2%) is greater than for the sample based on negative current period EVA values (22.2%). For both the positive and negative EVA samples, attributable earnings explains a significant amount of the variation in the dependent variable not explained by the other two EVA components. However, the Stern Stewart & Co. adjustments and the cost of capital charge possess only a relatively small amount of incremental information content.

The incremental information content of the Stern Stewart & Co. adjustments in the positive EVA sample is similar to that in the sample including both positive and negative current period EVA values. This is evidenced by a similar P-value in table (5.11) and for the positive EVA sample in table (6.2). The information content of the Stern Stewart & Co. adjustments for the negative EVA sample is negligible, explaining only 0.04% of the variation in the dependent variable not explained by the other EVA components. This compares with 0.86% for the positive EVA sample.

The incremental information content of the cost of capital charge in both positive and negative EVA samples is larger than for the complete sample in table (5.11). The partial F-values are significant at the 6% level for the positive EVA sample and at the 14% level for the negative EVA sample. This compares with the 55% level in the sample including both positive and negative EVA values. The improvement in incremental information content supports O' Byrne's (1996: 120) findings that EVA

performs better when the positive and negative values are separated (see section 3.1.2.).

6.2 Sign of the Change in EVA

Another method of partitioning the data is according to whether the sign of the change in EVA from the lagged period value to the current period value is positive or negative. This results in a sample of 347 companies with increasing EVA and 411 companies with decreasing EVA. Equation (4.4) is used to assess relative information content. The results of the test are presented in table (6.3). All F-values and *t*-statistics are significant at the 1.2% level or better.

	Increasing EVA from t_{-1} to t_0			Decreasing EVA from t_{-1} to t_0		
	AE	**NOPAT**	**EVA**	**AE**	**NOPAT**	**EVA**
R^2 adjusted	0.2826	0.1385	0.0853	0.1507	0.0834	0.0393
F-value	69.15	28.82	17.12	37.37	19.66	9.39
P-value	0.000000	0.000000	0.000000	0.000000	0.000000	0.000103
b_1 coefficient	2.45	1.06	1.28	1.75	1.06	0.63
t-stat	11.38	6.37	5.83	8.26	5.99	4.00
P-value	0.000000	0.000000	0.000000	0.000000	0.000000	0.000075
b_2 coefficient	-1.05	-0.57	-0.86	-0.76	-0.49	-0.60
t-stat	-3.80	-2.53	-5.28	-3.06	-3.18	-2.81
P-value	0.000173	0.011730	0.000000	0.002332	0.001605	0.005165

Table 6.3: Relative information content test results partitioning data according to the sign of the change in EVA.

In both the increasing EVA and decreasing EVA samples, attributable earnings performs better than NOPAT. Similarly, NOPAT performs better than the EVA measure. However, only attributable earnings in the increasing EVA sample performs better than in the sample including both increasing and decreasing EVA values (compare table 5.1 and table 6.3). In all other cases, the performance measures display lower relative information content than in table (5.1). For each of the three performance measures however, the sample based on increasing EVA values performs better than the sample based on decreasing EVA values.

Table (6.4) presents the results of incremental information content tests based on the samples of increasing and decreasing EVA values. As expected from the relative information content tests, the adjusted R^2 of the sample based on increasing EVA values (28.1%) is greater than for the sample based on decreasing EVA values (16.1%). For both the increasing and decreasing EVA samples, attributable earnings explains a significant amount of the variation in the dependent variable not explained by the other two EVA components. The Stern Stewart & Co. adjustments and the cost of capital charge possess an insignificant amount of incremental information content.

		b_1 AE (t_0)	b_2 AE (t_1)	b_3 Adj_{ss} (t_0)	b_4 Adj_{ss} (t_1)	b_5 CC_{DV} (t_0)	b_6 CC_{DV} (t_1)
Increasing EVA	Coefficient	2.53	-1.10	0.18	-0.33	-0.25	0.28
	t-stat	10.43	-3.84	0.62	-0.92	-0.71	0.94
347 observations	P-value	0.000000	0.000147	0.537715	0.356945	0.480585	0.347238
Adj. R^2 = 0.2810	Partial F-value	55.80		0.45		0.54	
F-value = 23.54	P-value	1.11E-21		0.637490		0.581455	
P-value = 0.000000	Partial R^2	0.2471		0.0026		0.0032	
Decreasing EVA	Coefficient	2.01	-1.10	0.29	-0.13	0.46	-0.62
	t-stat	8.55	-3.76	1.09	-0.44	1.55	-1.94
411 observations	P-value	0.000000	0.000191	0.277686	0.660517	0.122378	0.052780
Adj. R^2 = 0.1608	Partial F-value	40.68		0.62		2.17	
F-value = 14.09	P-value	8.01E-17		0.538963		0.115929	
P-value = 0.000000	Partial R^2	0.1676		0.0031		0.0106	

Table 6.4: Incremental information content test results partitioning data according to the sign of the change in EVA.

Therefore, regardless of whether the sample is partitioned according to the sign of current period EVA or the sign of the change in EVA, attributable earnings displays greater relative and incremental information content than either NOPAT or EVA.

6.3 Size of the Sample Companies

O' Byrne (1996: 121) also suggests that the market pays less of a premium relative to capital employed for large companies than for small companies. The reason is that as the size of companies increases, improvement in profitability due to greater

experience and economies of scale occurs at slower rates and may even have diminishing effects. To test whether relative information content is affected by company size, the complete sample of 758 company year-ends was ranked according to the market value of equity at the beginning of the financial year. This approach is similar to that used by Foster, Olsen & Shevlin (1984: 84).

The companies were grouped according to size into three quintiles of 152 observations and two quintiles of 151 observations. Quintile 1 includes the largest 20% of the companies and quintile 5 includes the smallest 20% of the companies. Equation (4.4) is used to assess relative information content of each of the performance measures for each of the five groupings. Table (6.5) presents the results. All of the regression models are significant at the 2.5% level or better.

		R^2 adj.	F-value	P-value	b_1	*t*-stat	P-value	b_2	*t*-stat	P-value
Quintile 1	AE	0.1984	19.69	0.000000	5.80	6.02	0.000000	-3.30	-3.82	0.000193
	NOPAT	0.0359	3.81	0.024354	1.43	1.98	0.049536	-0.70	-1.11	0.267257
152 obs.	EVA	0.0834	7.87	0.000564	1.63	3.20	0.001654	-1.97	-3.73	0.000275
Quintile 2	AE	0.2909	31.97	0.000000	7.47	7.94	0.000000	-7.43	-6.18	0.000000
	NOPAT	0.1368	12.97	0.000006	3.00	4.66	0.000007	-2.37	-3.17	0.001865
152 obs.	EVA	0.1405	13.34	0.000005	2.47	4.99	0.000002	-2.49	-5.04	0.000001
Quintile 3	AE	0.1682	16.27	0.000000	3.25	5.54	0.000000	-1.93	-2.85	0.004921
	NOPAT	0.2033	20.27	0.000000	3.16	6.08	0.000000	-1.88	-3.64	0.000370
152 obs.	EVA	0.1027	9.64	0.000116	2.04	4.36	0.000024	-2.11	-4.06	0.000080
Quintile 4	AE	0.3148	35.46	0.000000	3.60	8.38	0.000000	-2.44	-4.66	0.000007
	NOPAT	0.0366	3.85	0.023540	0.82	2.69	0.007905	-0.40	-1.21	0.228671
151 obs.	EVA	0.0477	4.76	0.009945	0.74	2.84	0.005082	-0.40	-1.48	0.140133
Quintile 5	AE	0.3228	36.75	0.000000	1.91	8.55	0.000000	-1.13	-4.01	0.000097
	NOPAT	0.2585	27.14	0.000000	1.25	7.28	0.000000	-0.94	-4.74	0.000005
151 obs.	EVA	0.2592	27.25	0.000000	1.11	7.30	0.000000	-0.73	-4.66	0.000007

Table 6.5: Relative information content test results partitioning data according to company size ranked across all companies and all years.

In each of the five quintiles attributable earnings performs better than the EVA measure. Similarly EVA performs marginally better than NOPAT, except for in quintile 3. In this case NOPAT performs better than both attributable earnings and EVA. The relative information content of each of the performance measures is greatest for the sample with the smallest companies, but it does not appear to decrease uniformly as the size of the companies increases. For example, NOPAT and EVA perform particularly poorly in quintile 4 despite a good performance from attributable

earnings.

Table (6.6) presents the results of incremental information content tests partitioning data according to company size ranked across all companies and all years. The small P-values indicate that the regression models are all highly significant.

		b_1 AE (t_0)	b_2 AE (t_{-1})	b_3 Adj_{ss} (t_0)	b_4 Adj_{ss} (t_{-1})	b_5 CC_{bv} (t_0)	b_6 CC_{bv} (t_{-1})
Quintile 1	Coefficient	5.62	-3.40	-1.07	1.23	0.88	-0.86
	t-stat	5.90	-2.93	-0.96	0.99	1.13	-1.25
152 observations	P-value	0.000000	0.003937	0.338303	0.322437	0.258447	0.213447
adj. R^2 = 0.2207	Partial F-value	17.91		0.51		0.80	
F-value = 8.13	P-value	1.12E-07		0.601863		0.451860	
P-value = 0.000000	Partial R^2	0.1981		0.0070		0.0109	
Quintile 2	Coefficient	7.29	-7.10	-0.46	1.83	1.47	-1.28
	t-stat	7.65	-5.35	-0.51	1.81	2.11	-1.98
152 observations	P-value	0.000000	0.000000	0.608262	0.072091	0.036647	0.049330
adj. R^2 = 0.3176	Partial F-value	29.72		2.56		2.22	
F-value = 12.72	P-value	1.52E-11		0.080910		0.111785	
P-value = 0.000000	Partial R^2	0.2908		0.0341		0.0298	
Quintile 3	Coefficient	3.93	-2.83	2.11	-1.76	0.37	-0.85
	t-stat	6.47	-3.70	2.38	-1.83	0.43	-1.08
152 observations	P-value	0.000000	0.000308	0.018596	0.069087	0.668347	0.281093
adj. R^2 = 0.2172	Partial F-value	21.69		2.90		2.03	
F-value = 7.98	P-value	5.76E-09		0.058058		0.134936	
P-value = 0.000000	Partial R^2	0.2303		0.0385		0.0272	
Quintile 4	Coefficient	3.70	-2.45	-0.04	0.18	0.25	-0.35
	t-stat	8.16	-4.41	-0.12	0.45	0.64	-0.92
151 observations	P-value	0.000000	0.000020	0.906266	0.656276	0.521371	0.357735
adj. R^2 = 0.3073	Partial F-value	33.58		0.10		0.48	
F-value = 12.09	P-value	1.07E-12		0.905166		0.616789	
P-value = 0.000000	Partial R^2	0.3180		0.0014		0.0067	
Quintile 5	Coefficient	1.84	-0.95	0.62	-0.55	0.07	0.05
	t-stat	8.00	-3.08	1.85	-1.41	0.18	0.14
151 observations	P-value	0.000000	0.002474	0.066888	0.161536	0.854497	0.889004
adj. R^2 = 0.3280	Partial F-value	32.06		1.96		0.27	
F-value = 13.20	P-value	3.04E-12		0.145148		0.763021	
P-value = 0.000000	Partial R^2	0.3081		0.0264		0.0037	

Table 6.6: Incremental information content test results partitioning data according to company size ranked across all companies and all years.

In each of the size quintiles attributable earnings explains a significant amount of the variation in the dependent variable not explained by the other two EVA components. However, the incremental information content of the Stern Stewart & Co. adjustments and the cost of capital charge is generally very small. The best performing quintiles for the Stern Stewart & Co. adjustments are quintiles 2 and 3. Respectively, they

explain 3.4% and 3.9% of the variation in the dependent variable not explained by attributable earnings and the cost of capital charge. The cost of capital charge also performs best in quintiles 2 and 3 with partial R^2s of 3.0% and 2.7% respectively.

Another method of grouping the data on size is to rank the companies *in each year* according to the market capitalisation at the beginning of the year. Within each year the data is then separated into five quintiles. The quintiles with the largest 20% of companies in each year are then grouped together. This procedure is repeated for the quintiles of the next largest companies and so on. This means that the quintile with the largest companies does not necessarily include the largest 152 companies according to market capitalisation as in table (6.3). Rather it includes the largest 20% of companies in each year. Table (6.7) presents results of the relative information content tests performed on the reconstructed size quintiles.

		R^2 adj.	F-value	P-value	b_1	*t*-stat	P-value	b_2	*t*-stat	P-value
Quintile 1	AE	0.3581	43.13	0.000000	7.27	8.82	0.000000	-4.42	-5.34	0.000000
	NOPAT	0.1329	12.58	0.000009	2.56	4.07	0.000077	-1.55	-2.61	0.010062
152 obs.	EVA	0.2108	21.17	0.000000	2.45	5.61	0.000000	-2.74	-6.36	0.000000
Quintile 2	AE	0.2065	20.65	0.000000	4.86	6.26	0.000000	-3.07	-3.82	0.000197
	NOPAT	0.1301	12.29	0.000011	3.25	4.57	0.000010	-2.35	-3.30	0.001206
152 obs.	EVA	0.0953	8.95	0.000213	1.94	4.03	0.000088	-2.07	-4.14	0.000058
Quintile 3	AE	0.1425	13.55	0.000004	2.75	4.97	0.000002	-1.27	-1.96	0.051896
	NOPAT	0.0839	7.92	0.000539	1.24	3.79	0.000219	-0.59	-1.89	0.060630
152 obs.	EVA	0.0204	2.57	0.079712	0.68	2.25	0.025754	-0.60	-1.64	0.103322
Quintile 4	AE	0.3418	39.95	0.000000	3.58	8.92	0.000000	-3.29	-6.44	0.000000
	NOPAT	0.0379	3.96	0.021177	1.09	2.70	0.007781	-0.48	-1.21	0.227047
151 obs.	EVA	0.0182	2.39	0.095189	0.75	2.17	0.031328	-0.57	-1.73	0.085041
Quintile 5	AE	0.3208	36.43	0.000000	1.95	8.53	0.000000	-0.92	-3.26	0.001404
	NOPAT	0.2630	27.77	0.000000	1.25	7.42	0.000000	-0.94	-4.74	0.000005
151 obs.	EVA	0.2870	31.19	0.000000	1.14	7.73	0.000000	-0.69	-4.47	0.000015

Table 6.7: Relative information content test results partitioning data according to company size ranked per year.

Except for EVA in quintiles 3 and 4, the regression models are significant at the 2.5% level or better. Attributable earnings performs better than both NOPAT and EVA in each of the five size quintiles. NOPAT performs better than EVA in quintiles 2, 3 and 4, but EVA performs better than NOPAT in quintiles 1 and 5. The relative information content of NOPAT and EVA is greatest for the sample with the smallest companies, but again the information content does not appear to decrease uniformly

as the size of the companies increases. Similar to the findings in table (6.5), NOPAT and EVA perform particularly poorly in quintile 4 despite a good performance from attributable earnings.

Finally, table (6.8) presents the results of incremental information content tests partitioning data according to company size ranked per year.

		b_1 AE (t_0)	b_2 AE (t_{-1})	b_3 Adj_{ss} (t_0)	b_4 Adj_{ss} (t_{-1})	b_5 CC_{bv} (t_0)	b_6 CC_{bv} (t_{-1})
Quintile 1	Coefficient	6.75	-3.44	-0.43	0.71	1.75	-1.55
	t-stat	7.93	-2.96	-0.43	0.64	2.47	-2.53
152 observations	P-value	0.000000	0.003599	0.671009	0.520606	0.014812	0.012576
adj. R^2 = 0.3951	Partial F-value	35.78		0.26		3.20	
F-value = 17.44	P-value	2.34E-13		0.771935		0.043599	
P-value = 0.000000	Partial R^2	0.3304		0.0036		0.0423	
Quintile 2	Coefficient	4.88	-2.90	0.78	-0.75	1.50	-1.62
	t-stat	6.14	-3.20	0.80	-0.69	2.24	-2.51
152 observations	P-value	0.000000	0.001694	0.425378	0.492436	0.026708	0.013074
adj. R^2 = 0.2229	Partial F-value	20.12		0.33		3.16	
F-value = 8.22	P-value	1.94E-08		0.717095		0.045335	
P-value = 0.000000	Partial R^2	0.2173		0.0046		0.0418	
Quintile 3	Coefficient	2.83	-1.54	0.01	0.02	-0.12	0.00
	t-stat	4.53	-1.81	0.03	0.03	-0.19	0.00
152 observations	P-value	0.000012	0.071594	0.979213	0.974287	0.848393	0.999208
adj. R^2 = 0.1247	Partial F-value	11.83		0.00		0.10	
F-value = 4.59	P-value	1.74E-05		0.998578		0.908677	
P-value = 0.000272	Partial R^2	0.1403		0.0000		0.0013	
Quintile 4	Coefficient	4.03	-3.58	0.17	-0.12	0.25	-0.58
	t-stat	8.39	-6.82	0.47	-0.26	0.51	-1.23
151 observations	P-value	0.000000	0.000000	0.641281	0.798287	0.613764	0.219256
adj. R^2 = 0.3629	Partial F-value	37.03		0.11		2.23	
F-value = 15.24	P-value	1.06E-13		0.894481		0.111769	
P-value = 0.000000	Partial R^2	0.3396		0.0015		0.0300	
Quintile 5	Coefficient	1.76	-0.63	0.91	-0.66	0.32	-0.10
	t-stat	7.33	-2.04	2.54	-1.59	0.89	-0.32
151 observations	P-value	0.000000	0.042931	0.012047	0.113256	0.373848	0.750189
adj. R^2 = 0.3420	Partial F-value	28.30		3.36		0.96	
F-value = 14.00	P-value	4.31E-11		0.037481		0.386381	
P-value = 0.000000	Partial R^2	0.2821		0.0446		0.0131	

Table 6.8: Incremental information content test results partitioning data according to company size ranked per year.

The regression models are all highly significant as evidenced by the small P-values. However, the adjusted coefficient of determination of quintile 3 is weaker than that of the other quintiles.

Once again, in each of the size quintiles attributable earnings explains a significant amount of the variation in the dependent variable not explained by the other two EVA components. In general, the incremental information content of the Stern Stewart & Co. adjustments and the cost of capital charge is very small. For the first time though, the Stern Stewart & Co. adjustments are statistically significant in quintile 5 at the 4% level or better. The cost of capital charge is statistically significant in quintiles 1 and 2 at the 5% level or better.

Overall, the relative and incremental information content tests performed on the samples based on size quintiles reaffirm the dominance of attributable earnings over NOPAT and EVA. However in a few cases, the incremental information content of the EVA components was statistically significant. It is not clear from the results which of NOPAT or EVA possesses greater information content.

6.4 Financial Year-ends

As a result of the market placing increasing emphasis on maximising shareholder value over the last number of years (see section 2.1), one would expect value-based performance measures such as EVA to show an increasing relationship with share returns over time. To test this hypothesis the 758 observations were grouped according to financial years. This resulted in 7 groups of data from 1991 to 1997. The 1997 group had the fewest observations (93) and the 1994 group had the most observations (118) (see table 4.2).

Equation (4.4) is used to test the relative information content of each of the performance measures in each of the financial years. The results are presented in table (6.9). All of the regression models are significant at the 4% level or better.

		R^2 adj.	F-value	P-value	b_1	*t*-stat	P-value	b_2	*t*-stat	P-value
1997	AE	0.2977	20.50	0.000000	3.35	6.40	0.000000	-1.26	-2.97	0.003841
	NOPAT	0.1522	9.26	0.000221	1.35	4.30	0.000043	-1.19	-2.67	0.009042
93 obs.	EVA	0.1447	8.78	0.000328	1.22	4.17	0.000071	-0.97	-3.59	0.000534
1996	AE	0.1027	6.84	0.001649	2.01	3.69	0.000370	-1.11	-1.31	0.192070
	NOPAT	0.0822	5.57	0.005089	1.55	3.12	0.002396	-1.58	-3.09	0.002568
103 obs.	EVA	0.0561	4.03	0.020687	0.82	2.03	0.044836	-0.38	-0.57	0.572091
1995	AE	0.3174	24.94	0.000000	3.93	6.92	0.000000	-3.07	-3.47	0.000769
	NOPAT	0.2586	18.96	0.000000	2.30	5.37	0.000001	-2.47	-3.55	0.000579
104 obs.	EVA	0.2694	19.99	0.000000	3.50	6.32	0.000000	-2.78	-5.72	0.000000
1994	AE	0.3285	29.62	0.000000	3.16	6.70	0.000000	-2.11	-2.61	0.010128
	NOPAT	0.3643	34.53	0.000000	1.71	5.79	0.000000	-0.33	-0.74	0.460032
118 obs.	EVA	0.3302	29.84	0.000000	1.76	5.95	0.000000	-2.46	-7.59	0.000000
1993	AE	0.3107	25.79	0.000000	2.60	7.12	0.000000	-1.10	-2.76	0.006858
	NOPAT	0.0634	4.72	0.010831	0.69	2.30	0.023665	0.03	0.10	0.920763
111 obs.	EVA	0.0405	3.32	0.039764	0.65	2.49	0.014124	-0.40	-1.65	0.102073
1992	AE	0.1669	12.12	0.000018	1.45	4.92	0.000003	-0.83	-2.13	0.035115
	NOPAT	0.1380	9.88	0.000114	1.22	4.37	0.000028	-1.02	-3.79	0.000245
112 obs.	EVA	0.2019	15.04	0.000002	0.98	3.94	0.000145	-0.50	-1.76	0.081929
1991	AE	0.2787	23.41	0.000000	1.80	6.82	0.000000	-1.25	-3.78	0.000254
	NOPAT	0.1438	10.74	0.000053	0.84	4.42	0.000023	-0.73	-3.84	0.000206
117 obs.	EVA	0.2471	20.04	0.000000	0.86	5.91	0.000000	-0.29	-1.88	0.062485

Table 6.9: Relative information content test results partitioning data according to financial year-end.

There is no evidence to suggest that the relative information content of EVA has increased over the seven-year period from 1991 to 1997. As with both attributable earnings and NOPAT, the performance of EVA has been erratic. Of the seven years, attributable earnings performs better than NOPAT six times and better than EVA five times. NOPAT performs better than EVA four times. Therefore, attributable earnings ranks first according to relative information content. The ranking between NOPAT and EVA is unclear.

The same data was also used to test the incremental information content of the EVA components from 1991 to 1997. Results from equation (4.7) are presented in table (6.10). Except for 1996, the overall regressions are highly significant as evidenced by the small P-values.

Together the components of EVA explain over 48% of the variation in the dependent variable in 1994 and nearly 44% of the variation in the dependent variable in 1995. In each year attributable earnings explains a significant amount of the variation in the dependent variable not explained by the other two EVA components. In general, the incremental information content of the Stern Stewart & Co. adjustments and the cost

of capital charge is again very small.

		b_1 AE (t_0)	b_2 AE (t_{-1})	b_3 Adj_{ss} (t_0)	b_4 Adj_{ss} (t_{-1})	b_5 CC_{bv} (t_0)	b_6 CC_{bv} (t_{-1})
1997	Coefficient	3.27	-1.46	0.60	-2.23	-0.41	0.04
	t-stat	5.61	-2.76	0.73	-1.62	-0.61	0.06
Observations = 93	P-value	0.000000	0.007065	0.468652	0.108332	0.541107	0.953269
adj. R^2 = 0.2890	Partial F-value	15.83		1.34		0.57	
F-value = 7.23	P-value	1.40E-06		0.266198		0.566120	
P-value = 0.000003	Partial R^2	0.2691		0.0303		0.0131	
1996	Coefficient	1.91	-0.47	0.32	0.17	-0.13	0.57
	t-stat	3.19	-0.32	0.35	0.14	-0.15	0.66
Observations = 103	P-value	0.001950	0.746701	0.729729	0.885469	0.882043	0.509596
adj. R^2 = 0.0810	Partial F-value	5.52		0.14		0.50	
F-value = 2.50	P-value	0.005372		0.871741		0.607927	
P-value = 0.027380	Partial R^2	0.1032		0.0029		0.0103	
1995	Coefficient	5.03	-3.41	1.71	-0.64	0.73	0.26
	t-stat	7.60	-3.93	2.50	-0.79	0.72	0.26
Observations = 104	P-value	0.000000	0.000157	0.014024	0.433919	0.472185	0.793813
adj. R^2 = 0.4354	Partial F-value	29.35		4.00		9.95	
F-value = 14.24	P-value	1.08E-10		0.021426		0.000117	
P-value = 0.000000	Partial R^2	0.3770		0.0762		0.1703	
1994	Coefficient	3.05	-2.28	-0.18	0.03	-0.31	-0.38
	t-stat	7.00	-3.20	-0.31	0.04	-0.42	-0.54
Observations = 118	P-value	0.000000	0.001767	0.758541	0.965929	0.678622	0.590678
adj. R^2 = 0.4809	Partial F-value	28.56		0.06		6.96	
F-value = 19.07	P-value	9.84E-11		0.944972		0.001415	
P-value = 0.000000	Partial R^2	0.3398		0.0010		0.1115	
1993	Coefficient	2.41	-0.93	-0.01	0.99	0.37	-0.15
	t-stat	6.20	-1.94	-0.04	1.89	0.77	-0.33
Observations = 111	P-value	0.000000	0.055626	0.970548	0.061180	0.445171	0.738362
adj. R^2 = 0.3258	Partial F-value	19.29		2.13		0.75	
F-value = 9.86	P-value	7.50E-08		0.123703		0.473143	
P-value = 0.000000	Partial R^2	0.2706		0.0394		0.0143	
1992	Coefficient	1.48	-0.51	0.85	-0.10	0.88	-0.41
	t-stat	4.52	-1.30	1.67	-0.20	1.94	-0.93
Observations = 112	P-value	0.000016	0.194935	0.098652	0.839178	0.055538	0.353454
adj. R^2 = 0.2265	Partial F-value	10.46		1.73		4.26	
F-value = 6.42	P-value	0.000072		0.182442		0.016582	
P-value = 0.000009	Partial R^2	0.1662		0.0319		0.0751	
1991	Coefficient	1.69	-1.06	0.19	0.26	0.25	0.16
	t-stat	5.84	-2.41	0.61	0.70	0.55	0.39
Observations = 117	P-value	0.000000	0.017428	0.544612	0.487828	0.582406	0.694445
adj. R^2 = 0.2993	Partial F-value	17.80		0.72		2.60	
F-value = 9.26	P-value	2.01E-07		0.487305		0.079115	
P-value = 0.000000	Partial R^2	0.2445		0.0130		0.0451	

Table 6.10: Incremental information content test results partitioning data according to financial year-end.

In 1995 Stern Stewart & Co. adjustments explain 7.6% of the variation in the dependent variable not explained by attributable earnings and the cost of capital

charge. This amount is a statistically significant at the 2.2% level. The Stern Stewart & Co. adjustments explain 3.9% and 3.2% of the variation in the dependent variable in 1993 and 1992 respectively, but are not statistically significant.

The cost of capital charge is significant at the 0.01% level in 1995, explaining over 17% of the variation in the dependent variable not explained by attributable earnings and Stern Stewart & Co. adjustments. In addition, the 11.2% explained in 1994 and the 7.5% explained in 1992 are statistically significant at the 2% level or better. The cost of capital charge is statistically significant at the 8.0% level in 1991. From these percentages, it appears that the incremental information content of the cost of capital charge has possibly improved over time. However, this EVA component is not significant in the two most recent years, 1996 and 1997.

6.5 Two-year Returns as the Dependent Variable.

The final variation of the tests referred to in chapter 5 is to extend the return interval from one year to two years. By increasing the return interval, the data becomes less sensitive to the choice of expectations model. Therefore, this test is able to assess whether the weaker performance of EVA is due to a poor expectations model. Biddle et al (1998: 21) performed a similar test, except they used a five-year return interval. They were able to use a longer interval because the companies in their sample generally had longer trading histories.

Equation (6.1) is used to evaluate the two-year relative information content comparisons. It is derived from equation (4.4), but the dependent and independent variables reflect two-year sums. For example, if the dependent variable is the sum of the cumulative abnormal returns in 1997 and 1996, the non-lagged term of the independent variable will be the sum of the performance measures in 1997 and 1996 scaled by the beginning-of-period market value of the company's equity in 1996.

Similarly, the lagged term of the independent variable will be the sum of the performance measures in 1995 and 1994 also scaled by the beginning-of-period market value of the company's equity in 1996.

$$\Sigma CAR_t = b_0 + b_1 \Sigma X_t / P_{t-2} + b_2 \Sigma X_{t-2} / P_{t-2} + e_t \quad (6.1)$$

By grouping the data into two-year intervals, 454 observations were obtained. Six outliers, defined as greater than or equal to eight standard deviations from the median value, were excluded. This resulted in a final sample of 448 observations. The findings of the relative information content test are presented in table (6.11).

Attributable earnings performs better than NOPAT once again. Similarly, NOPAT performs better than the EVA measure. Comparing table (6.11) with table (5.1), attributable earnings increased the variation of the dependent variable explained by 5.6%. NOPAT improved by 7.2%, but the adjusted R^2 for EVA declined by 4.3%. Therefore, increasing the length of the return interval actually weakens the explanatory power of EVA.

	AE	NOPAT	EVA
R^2 adjusted	0.3164	0.2362	0.0725
F-value	104.46	70.13	18.47
P-value	0.000000	0.000000	0.000000
b_1 coefficient	1.79	1.07	0.56
t-stat	12.89	9.63	4.88
P-value	0.000000	0.000000	0.000002
b_2 coefficient	-0.14	-0.40	-0.76
t-stat	-0.72	-2.97	-6.07
P-value	0.471961	0.003170	0.000000

Table 6.11: Relative information content test results using returns measured over a two-year period.

The same two-year return interval data was used to test the incremental information content of the EVA components. For this purpose, equation (6.2) is adapted from equation (4.7) to allow for the changes to the data.

$$\Sigma CAR_t = b_0 + b_1 \Sigma AE_t / P_{t-2} + b_2 \Sigma AE_{t-2} / P_{t-2} + b_3 \Sigma Adj_{ss,t} / P_{t-2} + b_4 \Sigma Adj_{ss,t-2} / P_{t-2} + b_5 \Sigma CC_{bv,t} / P_{t-2} + b_6 \Sigma CC_{bv,t-2} / P_{t-2} + e_t \quad (6.2)$$

Results are presented in table (6.12). The information content that the Stern Stewart & Co. adjustments and the cost of capital charge add to attributable earnings is negligible. This is evidenced by the small increase in the adjusted R^2 from 31.6% for attributable earnings to 32.7% for all three EVA components. The incremental information content of the cost of capital charge is only significant at the 10% level.

		b_1 AE (t_0)	b_2 AE (t_{-1})	b_3 Adj_{ss} (t_0)	b_4 Adj_{ss} (t_{-1})	b_5 CC_{bv} (t_0)	b_6 CC_{bv} (t_{-1})
	Coefficient	1.78	-0.51	0.08	-0.16	-0.06	-0.11
448 observations	*t*-stat	12.78	-2.24	0.37	-0.70	-0.43	-0.81
adj. R^2 = 0.3274	P-value	0.000000	0.025561	0.708481	0.487270	0.666292	0.419719
F-value = 37.27	Partial F-value	87.00		0.24		2.31	
P-value = 0.000000	P-value	1.42E-32		0.785407		0.100025	
	Partial R^2	0.2829		0.0011		0.0104	

Table 6.12: Incremental information content test results using returns measured over a two-year period.

Considering the results of the relative and incremental information content tests in this chapter so far, no evidence is found to support the claims made in favour of EVA in section (2.4). The only occasions that the relative information content of EVA exceeded that of attributable earnings was in table (6.9) for the 1994 and 1992 financial years. The difference between the adjusted R^2 of the two performance measures was only 0.2% in 1994 and 3.5% in 1992.

In terms of incremental information content, the ability of attributable earnings to explain variations in the dependent variable not explained by the other two EVA components was significant each and every time. The information content of the Stern Stewart & Co. adjustments and the cost of capital charge was seldom statistically significant.

6.6 Relative Information Content of Other Accounting Measures

Three additional performance measures are included in the relative information content tests. Attributable earnings before extraordinary items (AE-EOI) is defined as attributable earnings (I-Net data item IS23) less the after-tax effect of extraordinary items (I-Net data item IS51). The tax rate used is the South African corporate tax rate that prevailed at each financial year-end.

Gross cash (GCASH) is the gross amount of cash received from operating activities before interest, tax and working capital changes (I-Net data item CD25). Lastly, free cash flow (FCF) is the gross cash flow from operations (I-Net data item CD25) after allowing for taxes paid (I-Net data item CD08), working capital changes (I-Net data item CD05), and cash utilised to maintain operations (I-Net data item CD14).

By including these three performance measures in the relative information content tests, it was necessary to exclude a further six extreme outliers from the sample. This resulted in a final sample of 752 observations, all of which are within eight standard deviations of the median value. Equation (4.4) is used to test relative information content. The results are presented in table (6.13).

	AE	NOPAT	EVA	AE-EOI	GCASH	FCF
R^2 adjusted	0.2646	0.1636	0.1196	0.1804	0.1851	0.0250
F-value	136.13	74.46	51.99	83.67	86.31	10.61
P-value	0.000000	0.000000	0.000000	0.000000	0.000000	0.000029
b_1 coefficient	2.44	1.33	1.03	2.01	1.32	0.21
t-stat	16.38	11.92	10.20	12.69	12.96	3.23
P-value	0.000000	0.000000	0.000000	0.000000	0.000000	0.001295
b_2 coefficient	-1.27	-0.77	-0.87	-1.01	-1.06	0.15
t-stat	-7.10	-6.35	-8.07	-5.36	-10.03	2.02
P-value	0.000000	0.000000	0.000000	0.000000	0.000000	0.043996

Table 6.13: Relative information content test results of three additional performance measures.

The results for attributable earnings, NOPAT and EVA are similar to those presented in table (5.1). Both attributable earnings before extraordinary items and gross cash

flow explain a greater amount of variation in the dependent variable than NOPAT and EVA. The only measure to perform worse than EVA is the free cash flow measure.

As noted in section (2.2.2), NOPAT can be viewed as the total pool of profits available to provide a cash return to all providers of financial capital to the company. However, the market appears to value the information content of the gross cash flow measure more highly than NOPAT. Furthermore, the more complex the cash flow measure becomes, the less emphasis the market tends to place on the measure. This is evidenced by the poor performance of the free cash flow measure. In other words, subtracting taxes paid, working capital changes and cash utilised to maintain operations does not add to the information content of the gross cash flow measure.

Excluding extraordinary items from attributable earnings decreases the explanatory power of attributable earnings. This suggests that extraordinary items possesses incremental information content. To test whether this is true, an incremental information content test is performed using equation (6.3). The variable EOI is defined as extraordinary items after tax.

$$CAR_t = b_0 + b_1 AE\text{-}EOI_{t0} / P_{t-1} + b_2 AE\text{-}EOI_{t-1} / P_{t-1} + b_3 EOI_{to} / P_{t-1} + b_4 EOI_{t-1} / P_{t-1} + e_t \quad (6.3)$$

The results of this test are presented in table (6.14). The information content of each of the four independent variables is individually significant. However, the information content of the two attributable earnings before extraordinary items measures exceeds that of the two extraordinary items measures. This is evidenced by the greater partial F-value for the first two variables than for the second two variables.

Extraordinary items do add to the information content of attributable earnings before extraordinary items. This is evident from the partial coefficient of determination, which suggests that extraordinary items explain as much as 10% of the variation in cumulative abnormal returns that is not explained by attributable earnings before extraordinary items.

		b_1 AE-EOI (t_0)	b_2 AE-EOI (t_{-1})	b_3 EOI (t_0)	b_4 EOI (t_{-1})
	Coefficient	2.45	-1.27	-2.35	1.38
752 observations	*t*-stat	15.56	-6.76	-9.15	4.14
adj. R^2 = 0.2631	P-value	0.000000	0.000000	0.000000	0.000039
F-value = 68.03	Partial F-value	124.61		43.00	
P-value = 0.000000	P-value	1.99E-47		2.11E-18	
	Partial R^2	0.2502		0.1032	

Table 6.14: Incremental information content test results of extraordinary items

Therefore, attributable earnings (after extraordinary items) performs better than attributable earnings (before extraordinary items) because of the incremental information content of extraordinary items.

6.7 Information Content of "Refined" EVA

The final information content tests assess whether refinements to the EVA measure improve its association with cumulative abnormal returns. Bacidore *et al* (1997: 13) argue that to be consistent a market-derived cost of capital should be applied to the market value, instead of the economic book value, of the company's assets when calculating the capital charge used in the EVA formula (see section 2.2.2.).

A further reason given by Bacidore *et al* (1997: 13) for using the market value of the company's assets is that the company's financiers as a group could sell the entire company for its market value at the beginning of the period. They could then invest the proceeds from the sale in assets identical in risk to the company and earn an expected return equal to the company's weighted-average cost of capital. Therefore, the true opportunity cost or capital charge ought to be calculated with reference to the market value of the assets entrusted to management's care.

The refined EVA (REVA) values were calculated by subtracting from EVA the difference between the market value and the book value of the company's assets, multiplied by the company's cost of capital. The book value of the company's assets and the cost of capital figure were obtained from the Stern Stewart & Co.

performance database. The market value of the company's assets at the beginning of the financial year was estimated by adding the market value of the company's equity to the book value of the company's debt. The book value of the company's debt was calculated by taking the difference between the company's capital employed (I-Net data item LI19) and ordinary shareholders equity (I-Net data item LI05).

Because of insufficient data in the Stern Stewart & Co. database, the sample was reduced from 758 observations to 614 observations. After removing five outliers, again defined as greater than or equal to eight standard deviations from the median value, a final sample of 609 observations was obtained. Equation (4.4) is used to assess relative information content. The attributable earnings, NOPAT, and EVA measures are included in the test to provide suitable comparisons against which to measure REVA. The results are summarised in table (6.15).

	AE	NOPAT	EVA	REVA
R^2 adjusted	0.2430	0.1990	0.1426	0.2132
F-value	98.59	76.55	51.54	83.38
P-value	0.000000	0.000000	0.000000	0.000000
b_1 coefficient	2.59	1.80	1.45	1.51
t-stat	13.91	11.74	10.03	12.80
P-value	0.000000	0.000000	0.000000	0.000000
b_2 coefficient	-1.82	-1.26	-1.53	-0.81
t-stat	-6.80	-6.93	-9.49	-5.56
P-value	0.000000	0.000000	0.000000	0.000000

Table 6.15: Relative information content test results of refined EVA.

Ignoring the REVA measure, rankings according to relative information content are the same as those in table (6.13). First is attributable earnings, next is NOPAT and lastly EVA. REVA performs substantially better than EVA and marginally better than NOPAT. This supports the findings of Bacidore *et al* (1997: 19), who conclude that REVA outperforms EVA in its ability to predict shareholder value creation.

Results on the incremental information content of REVA components from equation (4.7) are presented in table (6.16). CC_{mv} denotes the cost of capital charge based on the market value of the company's assets. All coefficients are significant at the 1%

level or better, except for the lagged period value of the Stern Stewart & Co. adjustments. The partial F-values indicate that attributable earnings provides by far the largest information content of the three REVA components. The capital charge ranks second, and the Stern Stewart & Co. adjustments rank a close third.

		b_1 AE (t_0)	b_2 AE (t_{-1})	b_3 Adj_{ss} (t_0)	b_4 Adj_{ss} (t_{-1})	b_5 CC_{mv} (t_0)	b_6 CC_{mv} (t_{-1})
609 observations	Coefficient	2.42	-1.85	0.70	0.15	0.90	-0.56
adj. R^2 = 0.2772	*t*-stat	12.85	-6.90	2.77	0.52	4.50	-3.25
F-value = 39.85	P-value	0.000000	0.000000	0.005787	0.605237	0.000008	0.001206
P-value = 0.000000	Partial F-value	82.94		8.08		10.49	
	P-value	1.53E-32		3.44E-04		3.33E-05	
	Partial R^2	0.2160		0.0261		0.0337	

Table 6.16: Incremental information content test results of refined EVA.

Of greater importance however, is the difference between the information content of the capital charge based on the market value of assets and the capital charge based on the economic book value of assets. In section (5.2) the incremental information content of the EVA components for the full sample of 758 observations was tested. In order to compare results with those in table (6.16), the same test as in section (5.2) is performed using the reduced sample of 609 observations. These results are presented in table (6.17).

		b_1 AE (t_0)	b_2 AE (t_{-1})	b_3 Adj_{ss} (t_0)	b_4 Adj_{ss} (t_{-1})	b_5 CC_{pv} (t_0)	b_6 CC_{pv} (t_{-1})
609 observations	Coefficient	2.59	-1.99	0.60	-0.25	0.37	-0.44
Adj. R^2 = 0.2573	*t*-stat	13.85	-7.10	2.18	-0.84	1.56	-1.97
F-value = 36.10	P-value	0.000000	0.000000	0.029459	0.400041	0.120151	0.048776
P-value = 0.000000	Partial F-value	96.82		2.60		2.15	
	P-value	3.48E-37		0.074921		0.117508	
	Partial R^2	0.2434		0.0086		0.0071	

Table 6.17: Incremental information content test results of EVA using the REVA sample of 609 observations.

Although the cost of capital charge based on the economic book value of the company's assets performed better than it did in the larger sample in table (5.11), it

performed worse than the cost of capital charge based on the market value of the company's assets in table (6.16). The market value based cost of capital charge explains 3.4% of the variation in the dependent variable not explained by attributable earnings and the Stern Stewart & Co. adjustments. From table (6.17), the same variation explained by the economic book value cost of capital charge is only 0.7%.

Therefore, the evidence suggests that REVA contains greater information content than Stern Stewart & Co.'s EVA measure on both a relative and incremental basis. However, the information content of attributable earnings is greater than that of REVA.

7. CONCLUSION

The objective of this study has been to assess whether adopting EVA, instead of accounting earnings, enables management to more effectively pursue shareholder value. The empirical analysis focuses on which of the corporate performance measures possesses the greatest information content in the context of the Johannesburg Stock Exchange. It follows that the performance measure with the greatest information content is the one that managers should strive to maximise.

Concerning relative information content, the null hypothesis of no difference in the information content of EVA and accounting earnings is rejected. The research findings strongly indicate that the relative information content of accounting earnings is superior to that of EVA. These findings are also supported when the non-adjusted EVA measure is used (see section 5.1.1.). With regard to incremental information content, the null hypothesis that EVA does not provide information content beyond that of accounting earnings cannot be rejected. The components of EVA seldom add significantly to the information content of accounting earnings.

These findings refute the claims made in favour of EVA. As in the United States (see section 3.2.1), the market in South Africa appears more focussed on accounting earnings than on EVA. However, this does not necessarily imply that accounting earnings is superior to EVA as a measure of true economic performance, but rather that accounting earnings is more useful than EVA in determining changes in share prices.

One of the possible reasons for this is that current period realisations of accounting earnings may be more useful than current period realisations of EVA in estimating future cash flows. As advocated by Copeland *et al* (1996), the market value of a firm is equal to the present value of future cash flows. This suggests that the Stern Stewart & Co. adjustments to accounting earnings may remove accrual data that is useful in predicting future cash flows. Alternatively, the market may use different

accrual and capital charge adjustments to those employed by Stern Stewart & Co.

A second possible reason is that the market may not possess sufficient information within three months of the financial year-end to accurately calculate an EVA figure. Most companies publish their full annual financial statements several months after the financial year-end and only include abbreviated statements in the financial results press release. If companies disclosed EVA with the accounting earnings number, EVA may demonstrate a closer association with changes in share prices.

Thirdly, the market in South Africa may be focussed on accounting earnings due to the emphasis placed on this measure by both analysts and company executives. This suggests that the J.S.E. may not be efficient in the semi-strong form. If this were a factor, one would expect EVA to perform better in a more efficient market such as the New York Stock Exchange. However, the results of the Biddle *et al* (1998) study do not support this contention.

Lastly, it is possible that one or more of the assumptions required by the empirical analysis does not hold. It was assumed that share returns can reasonably be used to compare the information content of various financial performance measures; that the J.S.E. is efficient in the semi-strong form; that market participants possess sufficient information within three months of a company's financial year-end to accurately estimate EVA; and that an annual event window is appropriate.

Further research is required to establish whether adopting EVA-based compensation plans in South Africa is effective in changing the operating, investing and financing decisions of management. If it is, reasons need to be found for the market not rewarding the characteristics of companies managed on EVA principles. In this regard, it may be helpful to analyse cases where the change in accounting earnings and EVA move in opposite directions.

The effect that market-wide conditions have on the relative and incremental information content of the performance measures should also be explored. For example, NOPAT and EVA performed particularly well in 1994 and particularly poorly in 1993, while attributable earnings performed well in both years (see table

6.9). The impact of the size of the performance measure on information content should also be addressed. Lastly, detailed testing of the individual Stern Stewart & Co. adjustments and the calculation of the cost of capital charge may establish whether improvements to the EVA measure can be made.

Overall, it appears that the benefits of implementing an EVA Financial Management System are unlikely to outweigh the costs in the short-term. The reason is that even if an EVA-based compensation plan is effective in aligning management interests with shareholder interests, the market appears unable to recognise the benefits of the resultant changes in management behaviour. Until the market's assessment of the EVA performance measure is better understood, management ought to continue to maximise accounting earnings if their primary concern is shareholder value maximisation.

REFERENCES

BACIDORE, J.M., J.A. BOQUIST, T.T. MILBOURN & A.J. THAKOR (1997). "The search for the best financial performance measure", *Financial Analysts Journal*, May/June, pp. 11-20.

BALL, R. & P. BROWN (1968). "An empirical evaluation of accounting income numbers", *Journal of Accounting Research*, Autumn, pp. 159-178.

BIDDLE, G.C., R.M. BOWEN & J.S. WALLACE (1998). "Does EVA® beat earnings? Evidence on associations with stock returns and firm values", final manuscript for *Journal of Accounting and Economics*, vol. 24.

BIDDLE, G.C., G.S. SEOW & A.F. SIEGEL (1995). "Relative versus incremental information content", *Contemporary Accounting Research*, vol. 12, no. 1, Summer, pp. 1-23.

BOWEN, R.M., D. BURGSTAHLER & L.A. DALEY (1987). "The incremental information content of accrual versus cash flows", *The Accounting Review*, vol. 52, no. 4, October, pp. 723-747.

BOWERMAN, B.L. & O'CONNELL R.T. (1990). "Linear statistical models", 2nd edition, PWS-Kent Publishing Company.

BOWIE, D.C. & D.J. BRADFIELD (1993). "A review of systematic risk estimation on the JSE", *De Ratione*, vol. 7, no. 1, Winter, pp. 6-22.

BRADFIELD, D.J. (1999). "Equity risk service on the Johannesburg Stock Exchange", Cadiz Stockbroking, vol. 1, no. 4.

BREALEY, R.A. & S.C. MYERS (1996). "Principles of corporate finance", 5th edition, McGraw-Hill Inc.

COPELAND, T., T. KOLLER & J. MURRIN (1996). "Valuation. Measuring and managing the value of companies", 2nd edition, John Wiley & Sons, Inc.

DRURY C. (1996). "Management and cost accounting", 4th edition, International Thomson Business Press.

EASTON, P.D. & T.S. HARRIS. (1991). "Earnings as an explanatory variable for returns", *Journal of Accounting Research*, vol. 29, no. 1, Spring, pp. 19-36.

FINANCIAL MAIL. "Top companies special survey". 1991, 1992, 1993, 1994, 1995, 1996 & 1997.

FINEGAN P.T. (1991). "Maximising shareholder value at the private company", *Journal of Applied Corporate Finance*, vol. 4, no. 1, Spring, pp. 30-45.

FOSTER, G. (1986). "Financial statement analysis", 2nd edition, Prentice-Hall International.

FOSTER, G., C. OLSEN & T. SHEVLIN (1984). "Earnings releases, anomalies, and the behavior of security returns", *The Accounting Review*, vol. 59, no. 4, October, pp. 63-92.

HAMILTON, R. (1777). "An introduction to merchandise", Edinburgh, cited in BIDDLE, G.C., R.M. BOWEN & J.S. WALLACE (1998).

KANTOR, B. (1997). "Message from the dean of the faculty of commerce", *Investing in the Future*, brochure sent to University of Cape Town Alumni.

KAPLAN, R.S. & A.A. ATKINSON. (1998). "Advanced Management Accounting", 3rd edition, Prentice-Hall International.

KING, D. (1992). "Value creation", *The Finance Week 200*, March 19-25, pp. 42-44.

KRAMER, J.K. & G. PUSHNER (1997). "An empirical analysis of economic value added as a proxy for market value added", *Financial Practice and Education*, Spring / Summer, pp. 41-49.

LEHN, K & A.K. MAKHIJA (1997). "EVA, accounting profits, & CEO turnover: an empirical examination, 1985-1994", Journal of Applied Corporate Finance, vol. 10, no. 2, Summer, pp. 90-97.

LEV, B. (1989). "On the usefulness of earnings research: lessons and directions from two decades of empirical research", *Journal of Accounting Research*, vol. 27, supplement, pp. 153-192.

LIPSEY R.G., P.O. STEINER, D.D. PURVIS & P.N. COURANT (1990). "Economics", 9th edition, Harper & Row Publishers.

LYNN, M. (1997). "How shareholder value was changed by firms in 1997", *The Sunday Times (U.K.)*, September 21, *article published on the Internet* (http://www.sunday-times.co.uk/news/pages/sti/97/09/21/stibusbfc03003.html?2090085 on 01/02/98).

MARSHALL, A. (1890). "Principles of economics", The MacMillan Press Ltd., cited in BIDDLE, G.C., R.M. BOWEN & J.S. WALLACE (1998).

MYERS, R. (1996). "Metric wars", *CFO Magazine*, October, *article published on the Internet* (http://www.cfonet.com/cgi-bin/vdkw_cgi/xb1032dcl-4866/Search/3304096/2 on 09/02/98)

MYERS, R. (1997). "Measure for measure", *CFO Magazine*, November, *article published on the Internet* (http://www.cfopub.com/html/Articles/CFO/1997/97Nomeas.html on 01/02/98)

O' BYRNE (1994). "EVA™, management compensation, and shareholder return", *Directorship*, September.

O' BYRNE, S.F. (1996). "EVA and market value", *Journal of Applied Corporate Finance*, vol. 9, no. 1, Spring, pp. 116-125.

PETERSON, P.P. & D.R. PETERSON (1996). "Company performance and measures of value added", The Research Foundation of the Institute of Chartered Financial Analysts.

ROSS, S.A., R.W. WESTERFIELD & B.D. JORDAN (1993). "Fundamentals of corporate finance", 2nd edition, Irwin.

SHARPE, S. (1997). "Focus on shareholder wealth", *Business Day Newspaper*, November 20, p. 21.

SMOLOWE, J. (1996). "Reap as ye shall sow", *Time Magazine*, February 5, vol. 147, no. 6, *article published on the Internet* on 15/04/98. (http://www.pathfinder.com/time/magazine/domestic/1996/960205/executive.html)

SOLOMONS, D (1965). "Divisional performance: measurement and control", R.D. Irwin cited in Drury (1996).

STERN, J. (1993). "Value and people management", *Corporate Finance*, July, pp. 35-37.

STERN, J. (1994). "Management: its mission and its measure", *Director, October.*

STERN, J.M., G.B. STEWART III & D.H. CHEW (1995). "The EVA financial management system", *Journal of Applied Corporate Finance*, vol. 8, no. 2, Summer, pp. 32-46.

STEWART III, G. B. (1991). "The quest for value. A guide for senior managers", Harper Business.

STEWART III, G. B. (1994). "EVA: fact and fantasy", *Journal of Applied Corporate Finance*, vol. 7, no. 2, Summer, pp. 71-84.

THE STOCK EXCHANGE HANDBOOK (1997). July – December. Profile Media.

THOMAS, R. (1993). "Replication of Stern Stewart market value added (MVA) versus economic value added (EVA): empirical results", St. Charles, IL, BCG/Holt Planning Associates cited in Kramer & Pushner (1997: 42).

THOMPSON, A.R. & M.J.D. WARD (1995). "The Johannesburg Stock Exchange as an efficient market: a review", *Journal for Studies in Economics and Econometrics*, vol. 19, no. 3, pp. 33-63.

APPENDIX

Below is a listing of the dependent and independent variables that are used in the relative information content tests. The dependent variables are expressed prior to being deflated by the market value of the company's equity three months after the beginning of the financial year (see column 2). Company names and financial year-ends are omitted as the EVA values are only available to the public from Stern Stewart & Co. on the payment of a fee. All variables are stated in thousands of Rands.

No.	MCap	CAR	AE0	AE-1	NOPAT0	NOPAT-1	EVA0	EVA-1	AE-EC0	AE-EC-1	GCASH0	GCASH-1	FCF0	FCF-1	REVA0	REVA-1
1	37,640,652	-0.01297	1,934,500	1,582,400	3,622,463	2,897,155	641,070	232,806	1,934,500	1,582,400	5,016,100	4,618,100	2,081,300	1,981,800	-5,230,949	-3,540,267
2	32,318,811	0.13977	2,522,000	2,237,150	3,936,118	3,258,773	-543,412	-978,374	2,516,800	2,237,150	5,314,000	4,488,000	2,385,000	1,891,000	-2,341,054	-1,522,546
3	29,602,328	-0.01163	1,582,400	1,325,600	2,897,155	2,358,300	232,806	173,719	1,582,400	1,325,600	4,618,100	3,928,100	1,981,800	1,558,400	-3,540,267	-2,641,487
4	23,146,400	0.14671	1,325,600	962,500	2,358,300	1,984,104	173,719	188,401	1,325,600	984,820	3,926,100	3,048,100	1,558,400	927,800	-2,641,487	-1,529,888
5	21,245,400	0.06071	1,927,000	1,476,000	1,052,288	1,028,517	-1,304,796	-927,830	1,752,150	1,476,650	1,361,000	1,556,000	1,326,000	733,000	-3,335,336	-2,477,529
6	20,445,869	-0.21747	1,885,355	1,550,900	2,774,033	2,308,083	-936,265	-1,507,896	1,885,355	1,550,900	3,945,200	3,427,600	1,601,700	1,590,800	-722,846	-389,089
7	17,573,422	0.43747	2,237,150	1,885,355	3,258,773	2,774,033	-978,374	-936,265	2,237,150	1,885,355	4,488,000	3,945,200	1,891,000	1,601,700	-1,522,546	-722,846
8	16,770,497	0.12338	962,500	812,000	1,984,104	1,673,124	188,401	128,621	984,820	820,320	3,048,100	3,132,300	927,800	1,406,200	-1,529,888	-1,686,505
9	15,417,775	0.00490	812,000	837,700	1,673,124	1,563,222	128,621	211,891	820,320	843,264	3,132,300	2,466,500	1,406,200	763,400	-1,686,505	-1,315,092
10	14,479,301	-0.08083	837,700	770,400	1,563,222	1,337,622	211,891	102,351	843,264	775,350	2,466,500	2,118,600	763,400	804,200	-1,315,092	-873,973
11	13,833,000	-0.25536	1,043,300	944,300	1,013,276	835,125	-409,516	-670,990	1,052,660	925,112	1,538,800	1,357,900	1,063,800	889,400	-1,855,906	-2,936,351
12	13,833,000	-0.06620	944,300	927,500	835,125	929,592	-670,990	-415,231	925,112	808,156	1,357,900	1,273,400	889,400	795,500	-2,936,351	-1,568,835
13	13,311,000	-0.07261	1,204,800	1,043,300	1,003,975	1,013,276	-722,432	-409,516	1,304,900	1,052,660	1,558,000	1,538,800	1,109,000	1,063,800	-2,229,732	-1,855,906
14	13,167,365	-0.16625	725,100	629,400	1,895,268	1,653,647	-128,001	-220,688	685,190	657,415	3,151,900	2,761,900	1,887,800	1,461,300	-1,351,447	-857,399
15	13,050,000	0.28975	1,476,000	1,204,800	1,028,517	1,003,975	-927,830	-722,432	1,476,650	1,304,900	1,556,000	1,558,000	733,000	1,109,000	-2,477,529	-2,229,732
16	12,755,906	-0.09609	948,000	991,000	2,664,717	2,589,322	-1,279,957	-978,704	940,850	991,000	3,365,000	3,303,000	2,253,000	1,534,000	-1,166,152	-1,493,669
17	11,964,567	-0.17285	991,000	704,000	2,589,322	1,738,140	-978,704	-1,250,799	991,000	646,800	3,303,000	2,115,000	1,534,000	1,312,000	-1,493,669	-1,066,252
18	10,962,000	0.11317	927,600	863,100	929,592	691,678	-415,231	-463,091	808,156	675,050	1,273,400	1,111,600	795,500	714,000	-1,568,835	-1,285,661
19	10,522,348	0.10391	770,400	696,400	1,337,622	1,264,118	102,351	227,235	775,350	632,500	2,118,600	1,766,700	804,200	704,400		
20	10,450,899	-0.20162	632,600	514,300	1,047,302	744,452	-479,412	-643,076	631,885	508,710	1,649,100	1,431,400	34,100	511,000	-1,078,162	-836,930
21	10,226,242	-0.07019	518,900	450,700	619,556	529,388	-11,083	1,244	517,405	449,075	1,055,800	943,100	534,400	257,400	-1,297,823	-964,843
22	10,054,062	0.45627	1,550,900	1,403,800	2,308,083	2,448,316	-1,507,896	-1,112,598	1,550,900	1,403,800	3,427,600	2,737,600	1,590,800	522,700	-389,089	-410,833
23	9,832,350	0.04372	704,000	434,000	1,738,140	740,707	-1,250,799	-1,296,656	646,800	439,400	2,115,000	932,000	1,312,000	570,000	-1,066,252	-699,160
24	9,719,672	0.01879	652,500	557,500	1,084,870	889,132	84,331	70,515	622,210	497,220	1,650,200	1,416,100	1,048,300	923,900	-1,176,693	-925,164
25	9,531,450	-0.13941	802,000	709,200	2,407,298	2,036,178	-529,354	-1,203,846	996,480	934,360	4,036,000	3,650,000	2,099,000	1,957,000	-828,746	-640,784
26	9,493,633	0.04181	557,500	453,565	889,132	711,894	70,515	-66,070	497,220	448,235	1,416,100	1,177,600	923,900	803,500	-925,164	-720,900
27	9,418,062	-0.23990	536,000	518,900	671,378	619,556	63,677	-11,083	531,060	517,405	1,096,900	1,055,800	858,600	534,400	-1,275,584	-1,297,823
28	9,337,746	0.04651	1,403,800	1,150,300	2,448,316	2,182,755	-1,112,598	-1,263,981	1,403,800	1,150,300	2,737,600	2,485,800	522,700	786,500	-410,833	-161,720
29	9,051,182	-0.38205	620,600	749,400	1,268,950	1,298,009	-1,614,301	-1,490,041	469,150	749,400	1,822,000	1,848,200	910,000	1,595,200	-1,326,962	-575,137
30	8,948,583	0.25500	629,400	525,400	1,653,647	1,233,327	-220,688	-363,634	657,415	613,020	2,761,900	2,100,100	1,461,300	1,130,500	-857,399	-645,910
31	8,851,830	0.03249	1,150,300	1,020,412	2,182,755	2,077,928	-1,263,981	-1,129,830	1,150,300	1,020,412	2,485,800	2,686,561	786,500	1,107,116	-161,720	-321,722
32	8,796,150	0.02383	681,000	802,000	2,327,817	2,407,298	-805,844	-529,354	739,600	996,480	3,775,000	4,036,000	2,336,000	2,099,000	-1,186,787	-828,746
33	8,719,191	-0.24538	749,400	572,900	1,298,009	1,050,706	-1,490,041	-1,397,279	749,400	572,900	1,848,200	1,371,900	1,595,200	984,400	-575,137	105,838
34	8,560,592	-0.00036	683,600	632,600	1,340,318	1,047,302	-520,556	-479,412	683,405	631,885	1,876,000	1,649,100	829,600	34,100	-1,163,871	-1,078,162
35	8,310,478	0.01599	488,500	428,500	201,508	176,803	-327,051	-220,358	313,910	390,215	151,200	81,800	105,700	3,000	-1,552,738	-995,057
36	8,100,759	-0.52220	370,960	375,865	669,894	627,153	-405,616	-387,429	288,150	375,865	845,600	968,800	66,800	269,700	-1,064,138	-925,396
37	8,032,450	-0.23039	1,020,412	1,064,135	2,077,928	1,726,755	-1,129,830	-723,980	1,020,412	1,064,135	2,686,561	1,691,338	1,107,116	28,885		
38	7,932,317	0.21269	373,053	238,293	472,287	319,878	-115,955	-119,937	374,718	237,986	756,996	532,072	2,285	-256,783	-1,057,454	-405,754
39	7,813,447	-0.20303	392,825	352,480	529,006	573,265	-121,645	1,520	487,010	371,320	915,300	975,800	803,300	685,300	-732,256	-728,446
40	7,678,967	-0.35058	344,335	319,880	431,978	388,863	92,600	99,198	312,420	296,480	747,200	674,100	109,400	357,300	-1,215,241	-879,242
41	7,616,891	-0.24613	507,725	479,600	972,974	835,103	-276,411	-201,088	506,165	513,790	1,354,500	1,281,400	454,500	431,300	-1,178,196	-729,670
42	7,534,170	0.16879	450,700	359,600	529,388	419,947	1,244	-53,680	449,075	359,925	943,100	720,100	257,400	216,000	-964,843	-562,330
43	7,522,360	0.08804	453,565	392,825	711,894	529,006	-66,070	-121,645	448,235	487,010	1,177,600	915,300	603,500	803,300	-720,900	-732,256
44	7,481,948	-0.25233	301,513	229,510	344,741	301,351	109,958	143,839	301,513	229,510	605,048	525,170	163,439	14,008	-691,033	-231,450
45	7,300,159	0.02355	525,400	429,700	1,233,327	1,229,776	-363,634	-146,388	613,020	460,660	2,100,100	2,103,500	1,130,500	1,337,000	-645,910	-466,091
46	7,177,509	0.22620	863,100	749,500	691,878	566,291	-463,091	-437,716	875,050	725,050	1,111,600	905,700	714,000	487,200		
47	7,156,472	-0.07186	366,000	620,600	1,053,563	1,268,950	-1,857,862	-1,614,301	1,027,050	469,150	1,521,000	1,822,000	160,000	910,000	-1,326,267	-1,326,962
48	6,913,079	0.02078	709,200	827,000	2,038,178	2,359,294	-1,203,846	-418,079	934,360	884,500	3,650,000	3,497,000	1,957,000	1,839,000		
49	6,902,807	-0.39266	445,225	507,725	1,034,255	972,974	-390,186	-276,411	447,175	506,165	1,186,400	1,354,500	267,400	454,500	-936,820	-1,178,196
50	6,829,240	-0.06236	352,480	328,592	573,265	555,390	1,520	60,861	371,320	347,572	975,800	923,900	665,300	465,300	-728,446	-477,066
51	6,772,964	-0.36560	454,400	434,920	755,339	596,238	104,463	54,409	454,400	432,320	931,000	626,000	373,000	457,000	-431,461	-398,317
52	6,673,956	-0.19492	528,300	481,692	1,403,248	1,218,517	-460,705	-224,600	501,065	446,787	1,574,100	1,417,671	969,100	1,195,461	-899,361	-653,706
53	6,670,325	-0.13754	305,344	326,228	428,675	414,982	26,763	80,096	305,344	326,228	698,592	690,506	280,016	331,238	-1,435,172	-965,894
54	6,558,173	0.30198	419,500	344,335	496,567	431,978	59,752	92,600	417,485	312,420	870,500	747,200	-147,000	109,400	-824,722	-1,218,241
55	6,506,095	0.06041	479,600	411,430	835,103	721,833	-201,088	-25,861	513,790	312,435	1,261,400	1,056,700	431,300	436,400	-729,670	-261,670
56	6,352,520	-0.06993	429,700	407,000	1,229,776	1,225,012	-146,388	-29,511	460,660	377,724	2,103,500	1,976,000	1,337,000	1,033,200	-466,091	-343,154
57	6,247,858	-0.13574	326,228	301,513	414,982	344,741	80,096	109,958	326,228	301,513	690,506	605,048	331,238	163,439	-965,894	-691,033
58	6,206,194	0.10237	319,880	244,700	388,863	294,646	99,198	79,821	296,480	232,220	674,100	531,000	357,300	346,600	-879,242	-125,648
59	6,080,275	0.11204	434,920	384,450	596,238	526,667	54,409	53,097	432,320	384,450	626,000	596,481	457,000	461,827	-398,317	-123,436
60	5,977,227	-0.25081	262,534	281,520	528,545	434,840	123,002	165,578	262,534	281,520	768,667	563,961	153,664	-71,597	-822,279	-242,340
61	5,969,830	-0.01955	481,692	337,890	1,218,517	1,080,816	-224,600	-348,799	446,787	341,920	1,417,671	1,270,099	1,195,461	705,245	-653,706	-902,427
62	5,918,836	0.14490	375,885	289,820	627,153	482,616	-387,429	-393,402	375,865	289,820	968,800	822,200	269,700	510,900	-925,396	-369,943
63	5,822,471	-0.08299	337,890	268,811	1,080,816	959,458	-348,799	-323,836	341,920	278,366	1,270,099	1,113,179	705,245	870,579	-902,427	-456,484
64	5,754,677	-0.32693	296,200	325,600	590,980	583,586	-905,316	-779,138	306,132	328,356	839,000	633,100	388,500	236,100	-737,326	-487,202
65	5,621,973	-0.26151	-197,630	370,960	179,352	669,894	-998,128	-405,616	-120,735	288,150	553,700	845,600	-9,200	66,800	-1,416,403	-1,064,138
66	5,581,543	-0.43503	-444,381	-272,218	-337,831	-155,242	-461,019	-501,778	-1,993,906	-409,453	-260,239	-125,874	-256,825	-59,949		

No.	MCap	CAR	AEO	AE-1	NOPAT0	NOPAT-1	EVA0	EVA-1	AE-EOI0	AE-EOI-1	GCASH0	GCASH-1	FCF0	FCF-1	REVA0	REVA-1
67	5,505,642	-0.04516	356,756	183,902	359,678	209,078	125,647	24,385	356,956	180,205	563,774	323,179	408,297	251,144	-154,640	-228,860
68	5,505,437	0.06739	328,592	280,540	555,390	445,907	60,881	57,997	347,572	292,344	923,900	794,400	465,300	387,000	-477,066	-253,326
69	5,353,810	0.12401	359,600	291,180	419,947	378,447	-53,680	-34,109	359,925	292,860	720,100	711,500	216,000	388,500	-562,330	-434,789
70	5,347,776	-0.02600	162,264	167,218	218,477	190,474	-32,181	51,378	-169,351	136,593	330,669	299,852	112,260	39,600	-680,588	-170,975
71	5,297,489	0.26994	444,344	325,336	533,294	453,350	-249,307	-265,701	361,016	278,832	732,140	536,297	370,902	186,696	-675,963	-490,993
72	5,290,530	-0.41763	170,000	476,650	606,371	851,887	-465,581	41,026	170,000	476,650	747,000	885,000	584,000	599,000	-779,136	-341,851
73	5,248,254	-0.26402	476,650	454,400	851,887	755,339	41,026	104,463	476,650	454,400	885,000	931,000	599,000	373,000	-341,851	-431,481
74	5,171,364	0.15925	407,000	371,300	1,225,012	1,092,797	-29,511	-204,669	377,724	383,832	1,976,000	1,756,200	1,030,200	839,400	-343,154	-72,922
75	4,995,326	-0.01363	340,300	228,069	640,925	751,961	-210,678	-108,787	338,740	31,789	916,700	1,068,217	104,200	325,946	-772,086	-515,551
76	4,919,243	0.01992	411,430	332,240	721,833	564,985	-25,861	-119,876	312,435	338,960	1,096,700	965,200	436,400	570,600	-281,670	-459,022
77	4,886,126	-0.18646	225,152	199,648	403,748	319,795	95,894	66,119	225,152	199,648	516,766	480,040	334,301	230,666	-560,512	-437,050
78	4,846,061	-0.42430	191,520	188,772	247,720	267,388	-36,013	12,582	191,975	199,891	368,400	475,888	122,400	-88,231	-618,293	-403,382
79	4,834,879	-0.23771	197,224	254,050	485,002	518,249	-273,686	-56,062	323,654	287,719	949,356	823,221	180,968	442,529	-1,185,278	-525,291
80	4,826,470	-0.27614	233,225	390,078	857,181	945,013	-166,897	155,602	232,265	422,422	1,013,911	1,074,883	818,331	704,910	-645,479	-163,420
81	4,755,780	-0.30347	401,000	452,000	790,998	873,970	-1,462,275	-1,071,494	392,680	453,500	907,000	1,028,000	648,000	579,000	-799,348	-786,560
82	4,715,755	-0.49369	159,320	225,810	220,785	266,250	-43,170	59,865	159,320	225,810	372,400	459,600	137,700	71,200	-686,474	-583,233
83	4,661,592	-0.03318	198,882	142,345	212,617	161,206	67,658	46,043	198,882	160,626	392,955	310,389	14,060	-35,366	-495,343	-261,790
84	4,626,132	-0.09422	350,000	401,000	629,442	790,998	-1,674,207	-1,462,275	359,360	392,680	798,000	907,000	837,000	648,000	-955,803	-799,348
85	4,616,735	-0.21544	176,221	145,139	213,455	190,477	-240,410	-162,060	198,056	153,349	373,505	312,790	212,524	90,134	-621,154	-229,107
86	4,611,457	-0.19548	225,810	198,882	266,250	212,617	59,865	67,658	225,810	198,882	459,600	392,955	71,200	14,060	-583,233	-495,343
87	4,565,772	0.13295	238,293	116,387	319,678	174,028	-119,937	-39,667	237,986	115,870	532,072	281,447	-256,793	-201,653	-405,754	-253,149
88	4,493,480	0.08866	199,648	164,023	319,795	255,049	66,119	25,236	199,648	162,700	480,040	405,248	230,666	175,196	-437,050	-452,166
89	4,469,007	0.19881	79,500	296,200	414,492	590,980	-1,409,570	-905,316	109,560	306,132	665,900	839,000	121,100	388,500	-875,248	-737,326
90	4,368,789	-0.40685	180,396	176,221	249,452	213,455	-112,889	-240,410	184,494	198,056	354,938	373,505	120,585	212,524	-605,034	-621,154
91	4,349,408	0.13092	503,800	385,300	1,147,784	788,359	-181,786	-391,163	578,550	365,150	1,436,000	1,060,000	1,381,000	1,027,000	-185,907	-285,522
92	4,294,576	-0.91376	254,050	229,425	518,249	395,717	-56,062	-115,507	287,719	247,679	823,221	568,431	442,529	264,043		
93	4,284,495	0.09631	332,240	274,372	564,985	535,223	-119,876	-97,642	338,960	242,808	965,200	913,100	570,600	462,400	-459,022	-313,294
94	4,244,768	0.00715	291,180	254,400	378,447	364,501	-34,109	-29,404	292,860	254,036	711,500	668,900	388,500	464,400	-434,789	-310,951
95	4,224,247	0.11841	561,000	443,000	747,660	621,480	73,843	135,030	564,900	443,000	1,102,000	837,000	786,000	407,000		
96	4,214,671	-0.16283	364,000	275,000	511,281	587,119	-389,147	-219,698	364,000	275,000	803,000	692,000	480,000	340,000	-531,506	-61,067
97	4,176,004	-0.05835	391,000	364,000	774,725	511,281	-217,692	-389,147	391,000	364,000	982,000	803,000	698,000	480,000	-175,831	-531,506
98	4,171,645	-0.00140	280,540	255,700	445,907	401,915	57,957	67,768	292,344	263,350	794,400	673,500	367,000	334,800		
99	4,028,850	0.13865	390,078	311,044	945,013	858,821	155,602	34,158	422,422	306,832	1,074,883	1,051,632	704,910	983,532	-163,420	95,225
100	4,023,665	0.40175	229,510	181,264	361,351	215,147	143,839	31,320	229,510	183,656	525,170	475,110	14,006	359,598	-231,450	-281,117
101	4,018,700	0.69925	434,000	350,000	740,707	629,442	-1,296,656	-1,674,207	439,400	359,360	932,000	798,000	570,000	837,000	-659,160	-955,803
102	4,000,221	-0.42074	239,459	240,510	328,802	321,915	-117,363	-63,601	239,459	240,510	370,667	420,522	73,578	126,541	-646,529	-446,230
103	3,958,462	-0.33061	212,115	172,778	606,423	589,924	-244,188	-285,144	169,852	119,899	912,134	901,072	619,554	716,925	-584,724	-428,244
104	3,947,737	0.05370	214,662	137,088	362,128	127,477	39,625	35,036	211,758	121,429	545,530	404,777	116,762	88,565	-224,317	-290,516
105	3,929,689	0.07613	228,069	197,224	751,961	485,002	-108,787	-273,686	31,789	323,654	1,068,217	949,356	325,946	180,968	-515,551	-1,185,278
106	3,870,860	0.15153	268,811	233,225	959,458	857,181	-323,836	-166,897	278,366	232,265	1,113,179	1,013,911	870,579	818,331	-456,484	-645,479
107	3,831,412	0.01244	385,300	170,000	788,359	606,371	-391,163	-465,581	365,150	170,000	1,060,000	747,000	1,027,000	584,000	-285,522	-779,136
108	3,798,867	-0.47581	344,665	319,911	414,199	374,064	-135,831	-25,087	363,350	319,911	653,445	648,177	398,060	424,063	-359,322	-198,799
109	3,795,413	0.11990	325,336	244,826	453,350	353,743	-285,701	-363,112	278,832	220,742	536,297	481,193	186,696	138,610	-490,993	-327,939
110	3,711,657	0.05187	371,300	351,600	1,092,797	1,002,055	-204,669	-171,923	383,832	349,800	1,756,200	1,577,600	839,400	708,300		
111	3,706,287	-0.13517	192,680	155,239	292,045	245,490	89,865	79,492	192,680	159,161	479,030	464,292	75,558	205,047	-271,876	6,655
112	3,660,472	-0.85378	384,400	631,700	1,086,827	1,222,748	-2,109,354	-1,454,504	383,620	640,956	1,293,000	1,341,200	752,300	-128,100	-191,928	229,257
113	3,573,793	-0.01775	244,826	157,256	353,743	255,305	-363,112	-394,046	220,742	161,196	481,193	334,998	138,610	71,420	-327,939	-137,980
114	3,519,439	-0.18783	268,105	268,421	309,401	299,307	55,266	89,890	268,105	268,421	367,109	323,144	375,614	319,069	-566,100	-303,531
115	3,517,329	-0.00543	325,600	373,100	583,586	627,610	-779,136	-730,323	328,356	373,100	633,100	695,900	236,100	581,400	-487,202	-481,486
116	3,513,006	-0.10580	268,421	178,328	299,307	275,334	89,890	142,288	268,421	178,328	323,144	273,789	319,069	299,257	-303,531	-115,024
117	3,502,379	-0.08908	281,520	192,680	434,840	292,045	165,578	89,865	281,520	192,680	563,961	479,030	-71,597	75,558	-242,340	-271,876
118	3,459,773	-0.23702	274,709	266,007	311,577	294,347	-43,566	-19,010	274,709	266,007	407,128	388,660	289,267	212,063	-634,030	-314,635
119	3,458,838	-0.09522	240,510	181,669	321,915	258,062	-63,601	-99,509	240,510	181,669	420,522	346,641	126,541	215,503	-446,230	-194,730
120	3,412,800	0.06909	142,345	103,178	161,206	112,676	46,043	17,582	150,626	103,178	310,389	258,726	-35,366	73,252		
121	3,322,205	-0.20294	631,700	949,750	1,222,748	1,450,192	-1,454,504	-647,910	640,956	948,250	1,341,200	1,663,700	-128,100	-399,200		
122	3,319,003	-0.17629	177,017	146,658	247,093	254,791	-44,002	41,653	177,017	146,658	371,477	388,263	242,426	322,457	-521,061	-254,649
123	3,287,275	0.09413	274,372	231,376	535,223	474,918	-97,642	-77,368	242,808	244,324	913,100	884,400	462,400	400,400	-313,294	-52,658
124	3,282,539	-0.40407	196,289	172,289	268,811	199,798	-17,884	-542	230,443	171,685	421,750	358,221	-11,303	-622	-437,950	-242,956
125	3,269,942	-0.07382	384,450	208,583	526,867	287,393	53,097	86,060	384,450	208,583	596,481	262,661	481,827	53,543		
126	3,248,003	0.18383	275,000	199,000	587,119	406,933	-219,698	-334,843	275,000	199,000	692,000	701,000	340,000	307,000	-61,067	99,699
127	3,214,070	-0.42502	195,820	116,095	396,870	269,489	-309,901	-318,614	195,820	116,095	349,394	242,213	72,243	147,452	-608,595	-118,767
128	3,196,101	0.22644	254,400	229,500	364,501	335,032	-29,404	-50,225	254,036	234,076	668,900	590,900	454,400	237,700	-310,951	-70,365
129	3,185,191	-0.15184	232,549	207,958	628,195	548,125	-155,238	-99,969	234,022	211,020	797,233	726,869	523,339	575,477	-565,888	-305,340
130	3,167,926	-0.01602	373,100	595,500	627,610	958,868	-730,323	-373,261	373,100	595,500	695,900	923,900	581,400	570,500		
131	3,146,689	-0.33519	160,900	147,050	218,836	152,450	11,630	-36,727	137,825	160,050	288,000	297,000	120,000	136,000	-295,516	-216,964
132	3,136,686	-0.11386	264,840	242,176	445,642	373,357	-238,357	-81,159	264,840	242,176	740,900	622,384	340,900	305,263	-357,696	69,798
133	3,108,454	0.31604	188,772	164,111	267,388	221,851	12,582	27,864	199,891	168,188	475,888	379,892	-88,231	168,889	-403,382	-118,758
134	3,073,350	-0.56033	132,300	191,520	249,750	247,720	-14,699	-38,013	171,625	191,975	269,700	368,400	226,400	122,400	-458,184	-618,293
135	3,070,544	0.24065	164,023	137,041	255,049	220,789	25,236	35,939	162,700	132,303	405,248	336,275	175,196	144,128	-452,166	-294,920
136	3,055,566	-0.23686	120,608	110,350	192,031	179,428	18,930	14,416	114,727	109,773	289,641	291,647	108,607	127,403	-351,074	-242,868
137	3,019,727	0.15274	172,778	232,549	589,924	628,195	-265,144	-155,238	119,899	234,022	901,072	797,233	716,925	523,339	-428,244	-555,888
138	2,997,356	-0.18950	155,760	148,822	231,276	183,126	84,992	55,938	155,760	148,822	424,100	399,780	60,017	127,315	-267,559	-170,964
139	2,995,653	-0.17202	137,041	120,608	220,789	192,031	35,939	18,930	132,303	114,727	336,275	289,641	144,128	108,607	-294,920	-351,074
140	2,982,563	-0.06532	266,007	268,105	294,347	309,401	-19,010	55,266	266,007	268,105	388,660	367,109	212,063	375,614	-314,635	-566,100
141	2,975,574	0.48195	244,700	146,980	294,846	215,063	79,821	18,701	232,220	145,060	531,000	375,200	346,900	266,900	-125,648	-172,604
142	2,963,725	0.32879	213,700	160,468	272,969	197,579	-94,505	-20,365	213,700	160,468	396,344	297,584	183,438	206,941	-398,271	-249,254
143	2,907,356	0.30741	145,139	120,551	190,477	155,535	-162,060	-191,668	153,349	97,452	312,790	261,146	90,134	144,959	-229,107	-196,486
144	2,897,061	0.28889	181,264	155,760	215,147	231,276	31,320	84,992	183,656	155,760	475,110	424,100	359,598	60,017	-281,117	-267,559
145	2,857,739	-0.41044	144,222	233,169	295,752	310,070	-80,636	-30,424	83	230,389	417,579	474,278	142,078	48,888	-361,737	-316,153
146	2,827,924	-0.00155	209,720	180,396	283,342	249,452	-162,763	-112,889	204,390	184,494	409,300	354,938	174,200	120,585	-476,377	-605,034
147	2,825,969	0.50082	289,820	264,840	482,616	445,642	-393,402	-238,357	289,820	264,840	822,200	740,900	510,900	340,900	-369,943	-357,696
148	2,819,973	-0.34143	193,671	195,419	223,633	219,742	-409,423	-136,220	212,520	195,419	254,510	259,489	182,116	-103,882		
149	2,803,609	-0.03234	319,911	274,709	374,064	311,577	-25,087	-43,566	319,911	274,709	648,177	407,128	424,063	289,267	-198,799	-634,030
150	2,800,790	-0.15744	228,888	231,432	558,053	546,814	3,908	101,784	217,205	215,868	616,889	615,799	478,112	624,292	-258,087	23,742
151	2,797,147	0.13690	181,669	125,173	258,062	237,839	-99,509	-71,474	181,669	123,992	346,641	274,001	215,503	190,308	-194,730	35,369
152	2,785,575	0.38091	154,472	114,897	191,923	116,532	-8,050	-26,358	153,803	114,897	297,422	272,950	31,372	-29,052	-487,078	-301,931
153	2,777,111	0.00653	183,902	131,301	203,078	141,384	24,385	67,065	180,205	124,483	323,179	227,798	251,144	86,358	-228,860	-187,521
154	2,687,954	-0.23279	163,299	129,192	153,979	139,936	-77,141	-35,640	225,498	195,968	227,165	256,765	164,905	254,425	-444,026	-375,236
155	2,664,128	0.26188	176,100	148,088	306,353	293,153	-29,055	5,684	174,241	146,236	399,000	364,081	171,000	182,781	-330,507	-41,443
156	2,589,819	0.06644	137,088	134,875	127,477	148,032	35,036	62,669	121,429	123,004	404,777	401,898	88,565	116,516	-290,516	-130,257
157	2,578,986	-0.19319	129,192	159,431	139,936	241,453	-35,640	103,265	195,968	101,955	256,765	262,550	254,425	161,758	-375,236	-158,670
158	2,538,865	-0.30508	41,104	117,932	94,943	123,858	-193,257	-107,435	41,471	118,452	145,210	167,041	125,802	105,982	-470,751	-287,060
159	2,526,150	-0.12935	197,073	228,866	496,466	556,053	-88,491	3,908	199,086	217,205	605,845	616,889	576,538	478,112	-468,116	-258,087
160	2,478,819	0.17271	122,207	99,404	155,134	127,477	39,625	35,036	122,207	97,154	228,667	188,176	46,216	75,070	-180,501	-262,694
161	2,478,642	-0.47521	91,540	146,172	185,312	206,595	-13,089	50,196	64,860	139,308	303,600	363,500	167,000	99,300	-322,572	-86,144
162	2,477,995	0.01957	233,169	196,289	316,070	266,611	-30,424	-17,884	230,389	230,443	474,278	421,750	48,888	-11,303	-316,153	-437,950
163	2,443,412	-0.14657	92,964	105,811	98,595	133,152	47,396	72,391	99,509	107,735	173,334	196,105	87,556	162,939		
164	2,438,304	-0.23519	63,642	185,820	250,348	396,870	-728,655	-309,901	60,670	195,820	214,295	349,394	169,296	72,243	-470,492	-606,595
165	2,435,703	-0.53437	32,363	102,646	117,181	177,465	-269,708	-148,445	42,266	106,433	219,467	260,510	180,007	238,043	-410,830	-126,021
166	2,429,619	1.05595	572,900	329,600	1,050,706	762,548	-1,397,279	-2,015,765	572,900	605,760	1,371,900	1,172,800	984,400	373,100	105,838	-208,267
167	2,397,285	0.02953	159,431	127,079	241,453	128,878	103,265	10,409	101,955	126,764	262,550	177,474	161,758	64,410	-156,670	-96,622
168	2,358,062	-0.05576	184,111	107,842	221,851	167,695	27,864	40,946	168,188	112,995	379,892	318,039	168,889	174,555	-118,758	-13,106
169	2,352,904	0.15063	147,050	113,650	152,450	130,234	-36,727	-6,586	160,050	245,600	297,000	217,000	136,000	61,000	-216,964	-211,228
170	2,341,636	0.26203	125,126	102,325	122,560	104,399	15,626	10,253	125,126	102,325	175,781	146,502	71,890	111,583	-367,926	-277,530
171	2,339,287	0.30217	116,387	74,485	174,028	105,198	-39,667	-4,354	115,870	74,485	281,447	160,496	-201,653	28,799	-253,149	-91,995
172	2,338,651	0.17099	146,658	183,299	254,791	153,979	41,653	-77,141	146,658	225,498	388,263	227,165	322,457	164,905	-254,649	-444,026

No.	MCap	CAR	AE0	AE-1	NOPAT0	NOPAT-1	EVA0	EVA-1	AE-EQI0	AE-EQI-1	CCASH0	CCASH-1	FCF0	FCF-1	REVA0	REVA-1
173	2,333,195	0.04376	172,289	154,535	199,798	222,136	-542	23,377	171,685	159,345	358,221	360,449	-622	174,595	-242,956	-203,953
174	2,328,575	-0.33234	111,903	122,154	136,889	133,431	-15,980	32,280	111,903	122,154	233,958	236,268	153,247	179,490	-356,979	-228,632
175	2,320,681	-0.14880	184,607	149,281	325,812	371,605	66,514	144,732	184,607	150,000	473,846	493,771	76,440	193,855	-169,071	44,129
176	2,320,681	0.15886	163,802	184,607	422,035	325,812	161,234	66,514	143,596	184,607	327,300	473,846	213,012	76,440	-111,038	-169,071
177	2,309,841	0.00436	207,958	197,073	548,125	496,466	-99,989	-88,491	211,020	199,086	726,869	605,845	575,477	576,538	-305,340	-466,116
178	2,308,742	-0.30324	84,500	101,800	110,107	124,244	-11,404	11,894	92,365	101,800	222,900	232,900	85,100	102,600	-306,195	-286,148
179	2,281,335	-0.61860	178,920	244,600	389,995	458,931	-370,554	-286,248	178,920	244,600	611,000	704,000	307,000	261,000	-186,555	-177,109
180	2,276,958	-0.13165	136,306	123,438	233,338	202,310	70,411	41,918	130,962	123,123	404,564	364,643	227,239	60,221	-170,909	-41,948
181	2,270,217	0.05569	160,468	122,205	197,579	149,805	-20,385	-16,331	160,468	122,205	297,584	226,356	206,941	105,577	-249,254	-143,914
182	2,246,740	0.27116	110,350	101,589	179,428	197,481	14,418	44,085	109,773	101,042	291,647	263,890	127,403	124,866	-242,668	-49,582
183	2,223,259	-0.52217	140,222	193,671	197,987	223,633	-532,823	-409,423	140,222	212,520	229,278	254,510	192,436	182,116		
184	2,191,348	0.25983	137,700	105,900	187,881	150,567	58,320	7,557	139,780	105,900	325,200	294,900	236,600	292,700	-263,984	-134,828
185	2,163,034	-0.03045	99,934	98,927	148,032	116,064	62,669	48,594	82,776	108,188	199,078	182,575	13,182	10,517	-135,415	-119,713
186	2,152,090	0.00834	117,932	116,675	123,858	112,801	-107,435	-109,093	118,452	116,675	167,041	162,261	105,982	122,778	-287,060	-191,909
187	2,118,468	0.04816	154,535	136,306	222,136	233,338	23,377	70,411	159,345	130,962	360,449	404,564	174,595	227,239	-203,953	-170,909
188	2,116,828	0.77171	167,218	94,058	190,474	139,721	51,978	34,160	136,593	-57,671	299,852	263,170	39,600	107,155		
189	2,107,762	-0.07347	113,650	98,350	130,234	106,760	-6,586	-8,743	245,600	123,050	217,000	181,000	61,000	122,000	-211,228	-157,206
190	2,104,409	-0.18153	120,966	94,966	112,370	102,475	49,929	47,291	148,711	98,055	202,296	178,172	100,138	103,845	-257,862	-203,853
191	2,093,500	0.01761	122,154	89,790	133,431	113,638	32,280	25,739	122,154	89,790	236,266	197,459	179,490	113,537	-228,632	-240,963
192	2,079,044	0.15032	229,500	199,800	335,032	315,736	-50,225	-48,810	234,076	197,650	590,900	531,500	237,700	234,700		
193	2,075,834	0.15059	131,301	120,966	141,384	112,370	67,065	49,929	124,483	148,711	227,798	202,296	86,356	100,138	-187,521	-257,862
194	2,034,709	0.30106	116,095	49,370	269,489	170,268	-318,614	-349,906	116,095	35,263	242,213	145,688	147,452	105,252	-118,767	-157,456
195	2,017,617	0.48690	141,355	111,903	159,559	136,889	-9,905	-15,980	141,355	111,903	290,910	233,958	174,748	153,247	-263,008	-356,979
196	2,014,000	-0.19675	89,790	79,526	113,638	107,163	25,739	22,954	89,790	79,526	197,459	202,158	113,537	112,789	-240,963	-182,610
197	2,006,372	-0.23250	71,807	56,861	80,689	63,681	17,021	6,666	71,807	56,861	112,179	92,954	63,195	74,946	-271,951	-171,032
198	1,998,421	-0.24737	91,452	98,303	138,441	104,896	3,412	-1,223	65,244	98,303	172,981	154,930	40,992	90,007	-322,089	-195,789
199	1,983,979	-0.32251	148,100	141,055	169,300	171,871	-33,141	-66,161	140,820	139,105	266,800	279,300	140,100	150,300	-179,115	-224,856
200	1,978,929	-0.05259	99,404	99,934	127,477	148,032	35,036	62,669	97,154	82,776	188,176	199,078	75,070	13,182	-282,694	-135,415
201	1,951,213	0.11917	114,897	89,328	116,532	99,171	-26,356	717	114,897	90,764	272,950	179,542	-29,052	73,109	-301,931	-181,936
202	1,936,453	1.10118	84,813	51,819	108,475	75,502	18,281	16,202	84,813	51,819	163,677	98,452	141,410	68,684	-156,734	-40,051
203	1,931,015	0.02994	122,205	91,979	149,805	111,602	-16,331	-19,446	122,205	90,893	226,356	167,128	105,577	130,875	-143,914	-39,081
204	1,924,360	0.45135	311,044	245,893	858,821	702,276	34,156	-929	306,632	241,043	1,051,632	914,993	983,532	415,193		
205	1,924,230	-0.13910	94,966	75,849	102,475	96,299	47,291	45,772	98,055	67,681	178,172	163,997	103,845	85,620	-203,853	-198,477
206	1,908,035	0.31575	134,875	96,274	148,032	183,496	62,669	28,137	123,004	57,110	401,898	269,302	116,516	41,408	-130,257	-12,397
207	1,896,875	-0.18186	85,954	71,807	86,596	80,689	17,410	17,021	85,954	71,807	123,623	112,179	73,006	63,195	-236,230	-271,951
208	1,876,288	-0.18373	83,900	86,600	118,329	112,311	-4,277	1,301	83,900	86,600	198,500	179,300	151,400	67,200	-319,611	-150,011
209	1,866,549	-0.02553	89,300	83,900	112,576	118,329	3,798	-4,277	89,300	83,900	221,200	198,500	182,800	151,400	-230,940	-319,611
210	1,854,624	-0.01966	102,325	85,954	104,389	86,596	10,253	17,410	102,325	85,954	146,502	123,623	111,583	73,006	-277,530	-236,230
211	1,833,845	0.32184	96,473	91,452	133,150	138,441	10,156	3,412	96,361	65,244	170,071	172,981	91,969	40,992	-286,413	-322,089
212	1,792,548	0.18055	102,646	41,104	177,465	94,943	-148,445	-193,257	106,433	41,471	260,510	145,210	238,043	125,802	-126,021	-470,751
213	1,764,000	-0.00911	164,622	137,546	187,585	147,842	11,204	-24,819	161,973	137,546	301,317	250,774	-20,925	104,629	-179,021	-133,295
214	1,761,663	0.36017	178,328	152,326	275,334	184,276	142,288	87,979	178,328	152,326	273,789	245,718	299,257	179,055		
215	1,760,895	-0.00315	101,800	89,300	124,244	112,576	11,894	3,798	101,800	89,300	232,900	221,200	102,600	182,800	-286,148	-230,940
216	1,758,605	0.52944	157,256	129,819	255,305	242,451	-394,046	-412,506	161,196	120,259	334,998	334,651	71,420	176,155	-137,980	-224,478
217	1,749,181	0.33268	150,692	124,910	219,026	168,197	34,668	29,709	148,788	124,910	301,214	283,238	92,544	113,287	-159,610	-135,520
218	1,731,000	-0.14488	137,850	128,000	154,842	191,159	-80,014	-39,465	137,850	73,400	273,000	256,000	126,000	84,000	-238,387	-131,699
219	1,727,887	0.07102	89,328	64,862	99,171	79,604	717	-3,939	90,764	60,755	179,542	123,494	73,109	270,682	-181,936	-100,913
220	1,722,500	-0.16295	72,024	58,945	95,373	79,166	17,105	15,438	71,377	58,945	174,907	160,598	132,615	87,254	-202,869	-73,536
221	1,709,820	0.29823	231,376	196,700	474,918	467,754	-77,368	14,232	244,324	205,200	884,400	805,200	400,400	334,400		
222	1,696,000	0.12122	79,526	72,024	107,163	95,373	22,954	17,105	79,526	71,377	202,158	174,907	112,789	132,615	-182,610	-202,869
223	1,676,231	-0.41169	188,244	140,222	382,474	197,987	-385,124	-532,823	200,636	140,222	415,071	229,278	557,868	192,436		
224	1,668,990	0.14217	105,900	84,500	150,567	110,107	7,557	-11,404	105,900	92,365	294,900	222,900	292,700	85,100	-134,828	-306,195
225	1,646,568	0.06513	129,619	132,265	242,451	240,008	-412,506	-513,503	120,259	160,291	334,651	352,390	176,155	316,682	-224,478	-138,795
226	1,641,109	0.06243	98,303	81,570	104,896	85,711	-1,223	5,704	98,303	81,808	154,930	132,844	90,007	91,752	-195,789	-179,257
227	1,630,766	0.63965	155,239	72,859	245,490	152,046	79,492	-63,516	159,161	74,448	464,292	370,546	205,047	206,826	6,655	-82,107
228	1,618,007	0.01395	99,063	78,602	97,173	79,462	18,437	29,510	108,324	80,906	153,514	133,550	32,315	86,568		
229	1,617,664	0.07022	146,172	130,600	206,595	166,297	50,196	39,498	139,308	126,700	363,500	322,200	99,900	98,700		
230	1,616,240	-0.06390	115,056	115,304	164,064	172,670	-179,120	-223,228	115,056	117,598	256,594	241,669	115,438	86,062	-194,818	-31,454
231	1,601,964	0.10998	75,849	63,656	96,299	71,706	45,772	26,869	67,681	64,801	163,997	137,840	65,620	63,342	-198,477	-107,685
232	1,600,263	0.43313	148,822	122,407	183,126	175,444	55,938	71,250	148,822	122,407	399,780	325,000	127,315	47,200		
233	1,595,352	-0.18383	92,310	78,107	112,669	97,465	38	11,619	92,310	61,925	221,028	153,459	64,794	43,747	-266,903	-38,561
234	1,571,877	0.12809	242,176	164,986	373,357	252,844	-81,159	78,985	242,176	164,986	622,384	377,539	305,263	191,428	69,798	71,476
235	1,569,014	0.62867	146,980	91,640	215,083	165,212	18,701	-13,089	145,060	64,860	375,200	303,600	266,800	167,000	-172,604	-322,572
236	1,568,375	0.47631	120,551	115,056	155,535	164,064	-191,688	-178,120	97,452	115,056	261,146	256,594	144,959	115,436	-196,486	-194,818
237	1,562,696	-0.30629	105,750	95,000	128,878	136,112	-43,802	-34,001	118,750	99,800	252,000	274,000	32,000	102,000		
238	1,538,667	-0.28828	155,800	137,850	187,581	154,842	-51,872	-80,014	151,900	137,850	138,000	273,000	-69,000	126,000	-142,478	-238,387
239	1,538,667	0.01834	128,000	105,750	191,159	128,878	-39,465	-43,802	73,400	118,750	256,000	252,000	84,000	32,000	-131,699	-118,427
240	1,529,745	0.00059	98,350	64,557	106,760	89,111	-8,743	-4,069	123,050	76,748	181,000	155,441	122,000	72,031		
241	1,503,500	0.04270	123,438	100,517	202,310	142,045	41,918	23,485	123,123	104,961	364,643	268,423	60,221	52,809		
242	1,496,150	0.58460	329,600	384,400	762,546	1,096,827	-2,015,765	-2,109,354	605,780	383,620	1,172,800	1,293,000	373,100	752,300	-208,267	-191,928
243	1,493,560	-0.09802	127,040	107,691	158,626	119,781	6,184	-41,298	122,201	148,905	238,011	227,389	99,588	179,555	-118,144	-127,336
244	1,481,057	-0.06664	94,683	79,095	125,046	105,310	11,323	23,543	94,683	103,995	193,130	168,648	86,200	62,460	-205,448	-34,007
245	1,464,801	0.05638	153,000	178,920	345,092	389,995	-542,517	-370,554	153,000	178,920	627,000	611,000	531,000	307,000	-122,489	-186,555
246	1,462,848	0.14338	101,589	79,473	197,481	155,758	44,085	30,027	101,042	78,505	263,890	232,701	124,866	49,038		
247	1,476,102	0.18151	124,910	92,310	168,197	112,669	29,709	38	124,910	92,310	283,238	221,028	113,287	64,794	-135,520	-266,903
248	1,465,789	-0.58706	-43,031	-66,591	185,507	122,624	-247,305	-273,343	-62,424	-67,188	260,277	253,880	83,854	185,253	-338,207	-352,138
249	1,464,044	-0.08037	-66,591	32,363	122,624	117,181	-273,343	-269,708	-67,188	42,266	253,880	219,467	185,253	180,007	-352,138	-410,830
250	1,453,942	0.26682	150,511	123,144	309,027	319,766	-189,497	-330,075	145,684	145,482	373,450	398,302	135,581	172,491		
251	1,450,238	0.06638	116,675	99,071	112,801	90,013	-109,093	-110,807	116,675	99,071	162,261	129,612	122,778	77,352		
252	1,442,000	-0.16836	133,630	115,679	161,245	131,480	-23,109	-40,854	135,961	115,679	233,007	217,929	-9,634	78,946	-108,250	-962
253	1,422,935	0.67911	199,000	153,000	408,933	345,092	-334,843	-542,517	199,000	153,000	701,000	627,000	307,000	531,000	99,689	-122,489
254	1,414,964	0.22645	98,927	88,330	116,064	102,101	48,594	50,933	108,188	88,330	182,575	168,273	10,517	116,516	-119,713	-21,862
255	1,409,332	-0.19698	62,071	68,220	71,408	91,146	-71,752	-41,292	64,986	77,697	142,652	154,596	76,166	27,982	-193,523	-106,767
256	1,369,721	-0.28686	96,430	95,520	147,222	165,218	-35,706	1,818	110,065	116,700	221,600	246,600	131,600	169,100	-93,115	-34,997
257	1,356,449	-0.01214	193,978	124,150	383,608	173,045	-9,779	-98,711	177,578	108,042	511,548	282,527	243,566	213,578	41,509	-112,446
258	1,350,605	0.54582	127,079	102,029	128,878	92,282	10,409	21,556	126,764	102,298	177,474	131,203	64,410	47,108	-96,622	-28,277
259	1,341,631	0.01190	68,220	56,640	91,146	87,152	-41,292	-12,733	77,697	58,997	154,596	141,570	27,982	91,605	-106,767	-89,516
260	1,341,293	-0.44821	57,677	76,485	117,621	107,336	-4,932	21,687	57,324	76,485	199,130	183,334	130,996	77,589	-159,587	-58,541
261	1,340,153	-0.32106	67,911	77,499	100,909	100,440	-51,541	-53,435	79,713	82,278	190,410	165,098	9,471	42,029	-183,264	-139,229
262	1,324,739	-0.28940	143,934	174,230	336,326	384,765	-351,611	-233,441	140,377	170,920	373,856	438,261	89,625	57,648		
263	1,308,031	-0.06676	92,965	82,071	122,461	71,408	-21,658	-71,752	102,573	64,986	215,814	142,652	123,737	76,166	-219,277	-193,523
264	1,286,675	-0.12991	61,408	46,780	73,498	68,384	5,833	16,424	60,587	45,265	116,534	106,287	64,038	42,199	-154,553	-141,584
265	1,286,050	-0.10194	96,594	59,601	112,193	69,708	-13,204	4,279	96,594	59,601	198,772	127,357	81,622	31,199	-51,279	7,575
266	1,283,051	-0.04540	81,570	61,408	85,711	73,498	5,704	5,833	81,808	60,587	132,844	116,534	91,752	64,038	-179,257	-154,553
267	1,282,367	-0.17795	145,514	127,040	185,508	158,626	17,706	8,184	98,740	122,201	280,049	238,011	109,872	99,588	-131,244	-118,144
268	1,276,515	-0.20358	31,695	54,654	66,944	87,150	-44,436	1,862	31,695	54,654	89,633	113,756	11,045	30,180		
269	1,274,830	0.50303	231,432	136,930	546,814	364,221	101,784	-27,272	215,868	138,865	615,799	486,688	624,292	298,245		
270	1,264,824	-0.38637	55,388	74,023	78,290	90,621	-32,001	-4,229	56,857	74,023	142,526	144,252	-25,583	-3,758	-172,941	-95,698
271	1,262,205	-0.00749	53,164	43,881	92,965	66,769	25,412	13,333	53,164	43,881	108,860	85,810	36,323	4,190		
272	1,248,366	0.58209	149,281	116,157	371,605	251,673	144,732	73,838	150,000	115,522	493,771	390,678	193,855	421,784	44,129	111,831
273	1,248,154	-0.11814	94,047	107,215	208,816	237,087	-105,782	-61,736	97,655	107,215	208,079	179,643	105,394	17,975	-39,375	68,072
274	1,247,980	-0.00236	48,780	43,333	68,384	57,934	16,424	5,424	45,265	47,049	106,287	93,229	42,199	31,852	-141,584	-42,659
275	1,236,718	-0.21461	83,660	95,861	163,328	211,741	-499,086	-388,369	60,805	98,114	137,847	185,535	151,231	-31,501	-169,226	-167,990
276	1,235,429	0.32927	72,859	44,105	152,046	140,775	-63,516	-41,949	74,448	83,571	370,546	246,567	206,826	204,107	-82,107	-141,076
277	1,230,215	0.46639	56,861	46,967	83,681	56,556	6,666	2,559	56,861	46,967	92,954	77,774	74,946	64,661	-171,032	-122,649
278	1,205,775	0.07477	85,941	91,945	129,249	98,623	14,992	-13,983	40,695	91,945	187,106	184,812	42,873	91,259	-112,907	-118,923

No.	MCap	CAR	AE0	AE-1	NOPAT0	NOPAT-1	EVA0	EVA-1	AE-EOI0	AE-EOI-1	GCASH0	GCASH-1	FCF0	FCF-1	REVA0	REVA-1
279	1,205,235	0.34177	86,600	82,800	112,311	108,680	1,301	15,845	86,600	80,700	179,300	170,600	67,200	53,000		
280	1,202,665	-0.06813	80,833	67,304	100,804	94,229	-35,796	-29,632	86,671	72,147	186,635	169,667	27,669	21,747	-92,122	-169,068
281	1,199,706	-0.12892	286,391	275,344	318,731	307,471	-137,489	-79,448	286,391	275,344	570,395	567,155	77,548	76,775	-57,796	33,605
282	1,197,504	0.20206	132,265	143,934	240,006	336,326	-513,503	-351,611	160,291	140,377	352,390	373,856	316,682	89,625	-138,795	-49,701
283	1,192,320	-0.26506	67,304	85,941	94,229	129,249	-29,632	14,992	72,147	40,695	169,667	187,106	21,747	42,873	-169,068	-112,907
284	1,190,000	0.31443	137,546	109,251	147,842	121,053	-24,819	-32,758	137,546	111,033	250,774	200,617	104,629	39,112	-133,285	-93,778
285	1,152,000	-0.52052	86,927	87,643	75,636	97,107	19,680	47,994	72,437	92,140	89,373	110,678	16,026	32,324		
286	1,128,426	0.09289	115,304	106,312	172,670	165,538	-223,228	-227,165	117,598	106,037	241,669	229,171	86,062	35,697		
287	1,118,370	-0.30791	174,103	137,777	193,537	164,793	-116,383	-115,635	174,103	137,777	404,644	359,058	-32,958	165,489	-29,600	-44,941
288	1,113,723	0.07984	74,023	69,494	90,621	79,002	-4,229	-23,114	74,023	69,494	144,252	134,885	-3,758	40,521	-95,698	-57,676
289	1,109,395	-0.62057	61,935	80,833	56,441	100,804	-114,445	-35,796	100,435	86,671	112,496	186,635	20,579	27,669	-134,071	-92,122
290	1,107,160	0.35744	74,485	43,439	105,198	78,860	-4,354	9,710	74,485	41,221	160,496	127,778	28,789	147,370	-91,995	-14,231
291	1,103,846	-0.15556	92,378	52,094	163,686	112,250	-76,236	-90,673	90,858	49,766	248,335	157,564	126,215	77,197	-61,285	-29,891
292	1,100,235	0.42133	148,068	111,888	293,153	226,701	5,684	4,098	146,236	111,888	364,081	291,390	182,761	4,565		
293	1,082,736	0.88634	125,173	94,047	237,839	208,816	-71,474	-105,782	123,992	97,655	274,001	208,079	190,308	105,394	35,389	-39,375
294	1,082,049	-0.25380	95,861	151,165	211,741	270,378	-388,369	-184,654	98,114	151,223	165,535	259,699	-31,501	58,367	-167,990	2,500
295	1,078,566	0.61928	107,842	87,577	167,695	151,172	40,946	35,633	112,995	108,093	318,039	295,819	174,555	204,468	-13,106	-188
296	1,071,215	-0.08771	98,320	89,529	124,292	109,364	-56,692	-94,065	100,141	89,529	194,412	183,607	95,285	99,329	-168,613	-93,526
297	1,070,444	0.32865	124,150	92,378	173,045	163,686	-98,711	-76,236	108,042	90,858	282,527	248,335	213,578	126,215	-112,446	-61,285
298	1,060,826	0.44562	110,548	44,602	120,813	65,506	53,501	10,440	110,138	41,219	181,708	111,017	205,006	50,067	-6,322	-58,294
299	1,055,233	-0.26240	99,553	67,911	162,910	100,909	-41,253	-51,541	101,366	79,713	208,213	190,410	-1,763	9,471	-126,685	-183,264
300	1,046,816	-0.15234	89,529	73,202	109,364	96,213	-94,065	-92,055	89,529	71,873	183,607	163,497	99,329	57,923	-93,526	-109,727
301	1,044,962	0.26499	64,862	55,449	79,604	81,034	-3,939	-9,368	60,755	59,461	123,494	108,210	270,682	55,870		
302	1,029,116	0.24271	107,691	73,327	119,781	78,807	-41,299	-105,426	149,905	150,854	227,389	146,799	179,555	-14,527	-127,338	-72,759
303	1,019,970	-0.01095	95,520	89,503	165,216	151,953	1,816	-59,357	116,700	113,215	246,600	241,143	169,100	77,966	-34,997	-47,780
304	1,019,970	0.04154	89,503	80,760	151,953	122,276	-59,357	-59,558	113,215	107,665	241,143	166,419	77,966	149,365	-47,780	23,437
305	1,008,368	0.18776	77,499	57,358	100,440	90,529	-53,435	-47,499	82,278	57,358	165,098	150,837	42,029	73,481	-139,229	-141,838
306	1,008,000	-0.30914	105,686	113,219	105,323	129,124	-27,431	9,717	114,685	110,712	197,555	214,644	115,896	58,604	-113,741	-70,345
307	996,368	-0.07008	98,230	145,621	146,303	185,744	-124,161	-47,924	98,230	145,621	323,266	414,285	-8,792	-42,293	-85,540	60,668
308	987,354	0.45680	125,135	86,910	269,122	225,720	-124,779	-92,442	125,794	93,032	410,963	328,475	191,249	150,297	-58,370	-6,843
309	967,668	-0.09327	73,327	61,159	78,807	86,207	-105,426	-68,800	150,854	99,657	146,799	129,066	-14,527	67,371	-72,759	-33,793
310	966,000	0.15153	109,251	105,686	121,053	105,323	-32,758	-27,431	111,033	114,685	200,617	197,555	39,112	115,896	-93,778	-113,741
311	964,656	0.13797	96,274	80,181	183,498	118,049	28,137	34,807	57,110	80,728	269,302	189,204	41,408	129,821	-12,397	-7,911
312	960,112	-0.01210	91,945	81,850	96,623	104,454	-13,983	11,840	91,945	81,850	184,812	193,584	91,259	153,391	-118,923	-64,599
313	951,723	-0.04366	66,172	77,365	195,001	197,996	-195,284	-90,486	23,948	70,285	261,824	248,926	54,042	27,228		
314	945,000	-0.01574	102,796	100,045	119,696	130,320	8,494	24,024	102,796	100,045	205,732	210,817	107,954	64,410	-41,117	13,547
315	939,707	-0.51000	48,353	54,742	54,233	52,082	-63,242	-31,012	48,353	54,742	91,544	83,473	40,503	28,614	-137,544	-67,130
316	937,035	0.03258	46,967	34,116	56,556	41,760	2,559	-7,748	46,967	34,116	77,774	62,946	64,661	24,006	-122,649	-74,463
317	935,364	0.01116	137,777	98,230	164,793	146,303	-115,635	-124,161	137,777	98,230	359,058	323,266	165,489	-8,792	-44,941	-85,540
318	931,265	-0.17492	65,204	59,470	66,801	44,760	30,237	16,475	17,954	61,096	119,920	90,611	50,611	28,496	-100,075	-108,148
319	924,000	0.09195	113,219	102,796	129,124	119,696	9,717	8,494	110,712	102,796	214,644	205,732	58,604	107,954	-70,345	-41,117
320	906,561	0.68086	49,370	63,660	170,268	163,328	-349,908	-499,066	35,263	60,805	145,698	137,847	105,252	151,231	-157,458	-169,226
321	902,310	0.09441	107,215	109,367	237,087	227,295	-61,736	-26,095	107,215	111,890	179,643	216,337	17,975	99,525	88,072	96,916
322	894,696	0.10482	275,344	174,103	307,471	193,537	-79,448	-116,383	275,344	174,103	567,155	404,644	78,775	-32,958	33,605	-29,600
323	889,509	-0.18280	44,105	66,396	140,775	231,690	-41,949	40,373	83,571	104,220	248,567	206,027	204,107	84,317	-141,076	-61,925
324	886,373	0.35627	63,656	49,773	71,706	60,125	26,669	24,431	64,801	49,773	137,840	112,644	63,342	55,513		
325	880,000	-0.70114	62,427	69,437	73,853	84,483	-35,628	-16,436	65,901	69,032	104,651	128,495	45,113	-6,687	-115,319	-70,291
326	877,455	-0.12569	57,358	55,386	90,529	78,290	-47,499	-32,001	57,358	56,857	150,837	142,526	73,481	-25,583	-141,839	-172,941
327	874,500	0.51715	58,945	46,607	79,166	75,790	15,438	16,892	58,945	46,607	160,598	128,905	87,254	73,327		
328	869,820	-0.24982	60,185	49,654	92,625	62,998	37,318	7,474	63,499	52,678	129,513	97,945	46,271	33,819	-75,052	-75,084
329	861,576	0.38793	78,107	63,033	97,465	81,871	11,519	18,276	61,926	70,355	153,459	127,130	43,747	3	-38,561	9,580
330	860,200	0.54116	91,979	36,366	111,602	63,962	-19,448	-25,062	90,893	34,577	167,128	88,160	130,875	47,068	-39,081	-5,519
331	855,544	0.04595	65,441	46,908	119,818	60,181	44,851	24,043	60,242	46,908	99,068	80,959	75,178	72,320	-50,770	-63,344
332	845,570	-0.98385	6,313	7,748	47,336	65,026	6,428	36,465	6,313	7,748	13,649	18,929	-4,313	7,396	-102,564	-22,406
333	840,091	-0.09041	66,396	51,483	231,690	183,272	40,373	-16,651	104,220	86,322	206,027	234,720	84,317	-84,441		
334	834,147	-0.15747	7,748	4,354	65,026	40,544	36,465	14,959	7,748	4,354	18,929	13,057	7,396	2,669		
335	833,478	-0.22367	74,540	81,997	85,123	79,861	-76,064	-66,947	74,540	89,876	126,256	129,819	-65,318	18,710	-85,558	-96,647
336	832,000	-0.44980	60,756	66,927	76,234	75,636	5,150	19,880	59,370	72,437	83,788	88,373	139,379	16,026	-46,358	-113,223
337	830,196	-0.01928	44,802	36,702	65,506	56,715	10,440	6,640	41,219	122,114	111,017	106,402	50,067	58,300		
338	817,783	0.04683	54,742	39,702	52,082	41,035	-31,012	-24,936	54,742	44,204	83,473	65,035	28,614	13,472	-67,130	-6,852
339	806,592	-0.72852	37,235	33,455	52,749	42,090	1,044	10,262	37,235	33,455	71,553	66,158	44,889	34,458		
340	796,311	0.18619	29,015	20,619	35,376	26,923	1,528	1,130	29,015	20,619	43,459	40,650	-15,530	-3,485		
341	780,868	-0.14773	81,997	77,339	79,604	73,918	-86,947	-72,448	89,878	78,449	129,819	132,295	18,710	85,792	-96,647	-57,245
342	760,455	-0.37040	23,702	147,973	64,669	218,776	-89,615	100,164	6,105	134,187	64,695	207,016	40,511	222,762	-134,968	26,035
343	774,074	0.41974	79,095	57,524	105,310	71,968	23,543	18,418	103,995	58,101	158,646	112,022	62,460	-32,937	-34,007	-17,082
344	768,000	0.16845	69,437	61,014	84,493	75,885	-16,436	6,270	69,032	64,850	128,495	117,228	-6,687	87,266	-70,291	-46,340
345	760,450	-0.02363	42,848	37,260	68,227	43,573	26,779	4,937	37,951	36,269	94,078	78,679	60,880	59,039	-62,115	-87,404
346	757,383	-0.17213	33,606	42,657	66,817	52,882	34,867	21,961	57,932	24,140	85,797	72,726	91,356	-11,511	-47,090	-57,905
347	736,956	0.50542	44,229	29,506	33,594	22,037	12,008	2,712	44,453	29,374	57,495	33,560	42,823	27,240	-30,043	7,503
348	735,475	0.09359	44,150	25,443	49,029	30,166	-5,590	2,165	44,150	25,443	86,702	56,453	68,011	13,737	-73,657	-30,882
349	729,648	-0.36805	68,546	60,424	120,762	99,884	-86,906	-69,123	74,001	60,808	183,933	161,080	90,913	49,583	-91,470	-14,609
350	718,893	0.51015	88,330	79,843	102,101	84,877	50,933	36,245	88,330	79,843	168,273	133,452	116,516	35,875		
351	714,000	0.56703	115,679	73,267	131,480	83,519	-40,854	-62,691	115,679	74,401	217,929	147,534	78,946	19,302	-962	-75,799
352	711,879	-0.31788	42,699	26,538	66,874	23,959	-19,103	-66,820	45,086	58,712	80,279	40,328	40,615	70,912		
353	707,367	-0.38678	147,973	52,613	218,776	98,007	100,164	10,950	134,187	52,613	207,016	90,490	222,762	-42,951	26,035	12,025
354	705,748	0.14035	73,202	44,664	96,213	64,180	-92,055	-88,665	71,873	59,172	163,497	95,726	57,923	60,075	-109,727	-48,371
355	704,701	-0.07795	52,613	-2,001	98,007	33,358	10,950	-46,068	52,613	-2,001	90,490	31,743	-42,951	20,749	12,025	-20,157
356	697,406	0.33858	102,029	61,530	92,282	90,927	21,556	28,966	102,298	81,704	131,203	128,520	47,108	36,884		
357	692,880	-0.01920	71,713	61,674	248,748	231,859	-87,532	-158,336	79,557	71,327	398,740	357,552	226,019	272,744		
358	690,537	-0.62118	24,901	48,353	25,031	54,233	-95,171	-63,242	24,901	48,353	62,291	91,544	33,854	40,503	-174,116	-137,544
359	684,448	0.10063	77,339	63,739	73,918	68,508	-72,448	-64,103	78,449	63,739	132,295	114,290	85,792	64,729	-57,245	-54,215
360	683,201	-0.16973	36,627	40,305	50,500	59,227	12,048	14,716	38,572	40,319	87,264	90,281	37,504	74,891	-68,363	14,579
361	679,090	0.44001	56,640	45,556	87,152	74,781	-12,733	-40,165	58,997	45,341	141,570	130,566	91,605	81,114	-89,516	-72,634
362	671,867	0.24629	68,946	61,935	129,710	56,441	-19,648	-114,445	65,618	100,435	223,963	112,496	129,716	20,579	-89,105	-134,071
363	670,999	0.40323	59,470	33,606	44,760	66,817	16,475	34,867	61,096	57,932	90,611	85,797	28,496	91,356	-108,148	-47,090
364	658,236	0.33690	86,510	71,713	225,720	248,748	-92,442	-87,532	93,032	79,557	328,475	398,740	150,297	226,019	-6,843	-16,887
365	656,728	0.32205	164,986	150,339	252,844	213,823	78,985	83,306	164,986	150,339	377,539	363,583	191,428	165,554		
366	653,979	0.12292	46,908	46,427	60,181	57,331	24,043	24,714	46,908	47,505	80,959	70,022	72,320	49,283	-63,344	-12,319
367	651,626	-0.57120	52,413	87,716	78,561	104,161	-34,679	-336	52,413	87,716	118,274	156,577	41,996	53,140	-69,049	28,402
368	650,720	0.44310	145,621	140,508	185,744	212,471	-47,924	34,060	145,621	140,508	414,285	458,426	-42,293	173,486	60,668	119,646
369	648,211	0.19960	49,814	40,479	102,792	73,691	13,054	-4,960	50,003	40,352	187,761	154,158	180,734	36,959	-68,422	-73,094
370	640,119	-0.38826	90,279	96,876	121,318	282,267	-291,753	-149,047	95,136	111,707	449,299	398,544	389,083	44,537	-184,465	58,694
371	640,000	0.03513	61,014	60,758	75,885	76,234	6,270	5,150	64,850	59,370	117,228	83,788	87,266	139,379	-46,340	-46,358
372	631,800	-0.82548	24,777	37,280	-17,713	47,049	-52,140	14,631	-168,428	35,414	55,486	83,978	39,926	63,842	-119,610	-28,986
373	625,000	-0.52921	40,257	41,194	45,781	51,233	2,764	12,514	40,257	44,887	82,770	88,507	24,084	39,156		
374	616,527	0.06821	33,455	23,784	42,090	31,249	10,262	5,763	33,455	24,434	66,158	51,909	34,458	45,724		
375	616,345	0.21321	81,850	70,502	104,454	59,488	11,840	-34,645	81,850	118,007	193,584	184,384	153,391	57,834		
376	616,730	0.25536	52,495	44,089	77,020	56,575	15,867	8,613	52,495	44,089	122,000	102,953	41,500	34,153	-42,451	-29,089
377	607,500	-0.15178	37,280	30,826	47,049	42,283	14,631	4,549	35,414	30,826	83,978	75,898	63,842	27,696	-28,986	-30,461
378	607,290	-0.19656	32,749	36,627	45,621	50,500	2,068	12,048	37,040	38,572	86,090	87,264	71,083	37,504	-106,839	-68,363
379	606,656	-0.43805	1,382	6,674	4,907	46,273	-65,839	-19,473	4,803	7,841	5,041	16,284	-2,373	-851	-133,885	-52,441
380	604,793	0.35154	61,159	55,207	86,207	61,040	-68,800	-75,041	59,657	53,529	129,066	88,328	87,371	53,524	-33,793	-36,212
381	604,699	0.09209	49,654	41,024	62,998	49,765	7,474	8,486	52,678	46,948	97,945	82,337	33,819	63,698	-75,084	-21,217
382	604,637	-0.21874	89,957	113,484	169,635	155,783	-133,316	-86,232	95,560	114,524	207,246	235,641	16,342	92,907	672	3,902
383	600,226	-1.15235	21,313	39,550	58,669	58,350	-10,123	12,490	21,313	39,550	74,776	92,693	11,956	51,843	-46,743	-3,596
384	599,230	0.54098	52,094	43,759	112,250	93,699	-90,673	-101,897	49,766	43,359	157,564	159,673	77,197	154,479	-29,691	-68,114

No.	MCap	CAR	AE0	AE-1	NOPAT0	NOPAT-1	EVA0	EVA-1	AE-EOit	AE-EOi-1	GCASH0	GCASH-1	FCFD	FCF-1	REVA0	REVA-1
385	597,202	-0.25492	42,142	68,546	108,665	120,762	-117,926	-86,906	42,046	74,001	152,833	183,933	57,558	90,913	-68,840	-91,470
386	586,640	0.77961	51,819	26,864	75,502	26,606	16,202	6,937	51,819	26,864	98,452	42,833	68,684	37,972		
387	583,050	-0.02070	43,651	35,141	53,104	40,493	-4,150	-11,177	43,651	35,141	77,168	70,722	52,704	39,640	-74,785	-61,660
388	575,468	-0.41035	23,264	30,526	56,313	46,261	22,079	18,236	-5,041	34,458	59,317	66,088	23,852	35,347	-31,706	-9,381
389	569,730	0.49135	43,333	32,180	57,934	46,059	5,424	2,560	47,049	31,864	93,229	72,200	31,852	18,360		
390	566,880	0.66825	87,577	73,416	151,172	122,255	35,633	24,807	108,093	85,825	295,619	190,419	204,468	245,479	-188	-2,638
391	565,168	-0.42162	62,812	56,527	67,973	63,502	6,686	7,607	61,909	54,964	129,429	114,154	67,857	-4,209		
392	560,520	0.06002	45,556	40,191	74,781	70,521	-40,165	-41,350	45,341	40,191	130,566	140,233	81,114	34,377	-72,634	-47,301
393	557,300	0.09374	42,657	39,558	52,882	38,006	21,961	9,659	24,140	39,415	72,726	64,697	-11,511	21,829	-57,905	-56,216
394	551,922	-0.08478	43,759	85,032	93,699	137,177	-101,897	-24,036	43,359	83,985	159,673	194,622	154,479	-40,923		
395	549,689	-0.11559	56,016	55,456	83,672	96,860	-76,847	-57,452	55,926	55,456	156,687	149,220	68,372	95,258	-57,639	-24,712
396	547,971	0.08004	37,260	31,784	43,573	41,415	4,937	5,898	36,269	32,292	78,679	66,148	59,039	22,714	-87,404	-55,004
397	542,409	0.19743	63,739	56,864	68,508	59,962	-54,103	-70,991	63,739	56,864	114,290	111,101	64,729	44,457	-54,215	-59,213
398	542,393	0.39623	69,494	57,753	79,002	92,924	-23,114	5,085	69,494	58,628	134,885	118,480	40,521	72,324		
399	538,161	0.14414	62,906	47,933	83,561	64,393	40,788	27,858	54,730	45,050	146,241	121,777	48,610	39,278	-22,360	-24,661
400	530,640	-0.38022	-202,075	-158,172	-102,108	-96,345	-357,238	-348,317	-202,075	-158,172	-57,586	-24,289	-185,229	36,295	-341,408	-357,210
401	528,947	0.27178	25,443	18,430	30,166	24,648	2,165	2,582	25,443	18,430	56,453	47,274	13,737	19,516	-30,882	-2,799
402	528,515	0.45966	80,181	68,219	116,049	94,365	34,807	14,945	80,728	65,924	189,204	149,464	129,821	29,697		
403	519,396	0.01315	40,479	38,316	73,691	65,838	-4,960	-4,800	40,352	40,680	154,158	131,842	36,959	80,557		
404	516,049	0.34790	57,524	45,598	71,988	53,426	18,416	10,606	58,101	46,397	112,022	103,728	-32,937	34,982	-17,082	5,451
405	515,475	0.07843	41,024	34,139	49,765	47,049	8,485	8,422	46,948	37,504	82,337	73,660	63,698	47,214	-21,217	-21,925
406	515,000	0.08112	56,527	49,387	63,502	55,725	7,607	5,795	54,964	64,636	114,154	105,444	-4,209	70,820		
407	513,755	0.05526	39,558	41,193	38,006	40,685	9,859	21,381	39,415	40,810	64,697	75,758	21,829	25,563	-56,216	-7,058
408	512,401	-0.00005	38,032	32,749	50,507	45,621	3,132	2,068	36,966	37,040	87,727	86,090	55,899	71,083	-74,936	-106,839
409	510,923	0.72778	116,157	76,384	251,673	186,332	73,838	50,554	115,522	87,692	390,676	299,596	421,784	279,614		
410	504,000	0.40252	100,045	87,141	130,320	101,394	24,024	10,136	100,045	87,141	210,817	184,207	64,410	17,759		
411	496,248	0.16576	56,722	37,915	108,961	62,577	38,929	6,615	56,722	37,915	134,780	89,574	63,180	37,421	11,092	-13,909
412	494,726	-0.16951	-54,711	90,279	3,260	121,318	-398,948	-291,753	58,884	95,136	330,904	449,299	452,747	389,083	-331,321	-184,465
413	493,139	0.22652	55,207	41,164	61,040	42,213	-75,041	-112,743	53,529	43,120	88,326	75,036	53,524	70,395	-36,212	-47,814
414	490,000	0.35429	73,267	51,831	83,519	61,127	-62,691	-68,504	74,401	60,763	147,534	113,452	19,302	51,588	-75,799	-9,195
415	487,205	0.10237	47,933	34,806	64,393	52,512	27,858	24,461	45,050	29,135	121,777	98,143	39,278	26,430	-24,661	10,775
416	480,000	-0.78432	50,353	60,277	89,956	119,412	-61,970	1,262	88,076	68,654	111,710	156,759	75,623	26,259	-42,485	8,211
417	475,920	0.02198	113,484	97,785	155,783	160,991	-86,232	-76,488	114,524	104,492	235,641	215,859	92,907	31,305		
418	475,620	0.63402	13,914	54,170	87,705	138,470	-186,615	-136,856	37,944	89,944	135,763	110,853	-7,382	34,911	-42,155	-27,341
419	466,992	-0.29243	26,387	56,016	65,968	83,672	-86,167	-76,847	31,681	55,926	104,130	156,687	94,625	68,372	-54,956	-57,659
420	462,128	-0.04573	55,456	69,920	96,860	113,070	-57,452	-28,787	55,456	70,052	149,220	175,626	95,258	68,181	-24,712	-17,025
421	458,511	0.07074	44,089	35,248	56,575	43,698	8,613	749	44,089	35,248	102,953	80,784	34,153	33,537	-29,089	-18,513
422	451,822	0.64290	43,439	28,193	78,860	39,655	9,710	7,245	41,221	28,392	127,778	84,174	147,370	28,200	-14,231	-18,477
423	451,612	-0.05129	54,170	89,957	138,470	169,635	-136,856	-133,316	89,944	95,560	110,853	207,246	34,911	16,342	-27,341	672
424	451,039	0.11561	35,141	27,969	40,493	45,410	-11,177	9,193	35,141	12,126	70,722	52,808	39,640	55,779	-61,660	2,775
425	444,999	-0.00498	31,784	22,162	41,415	33,034	5,898	7,267	32,292	23,001	66,148	57,234	22,714	19,384	-55,004	-50,199
426	443,210	0.03825	40,191	42,324	70,521	85,985	-41,350	-14,646	40,191	42,890	140,233	153,116	34,377	113,250	-47,301	-11,172
427	440,438	0.35395	30,826	27,639	42,283	38,929	4,549	3,936	30,826	27,639	75,898	65,222	27,686	37,396	-30,461	1,067
428	440,000	0.05904	49,367	40,257	55,725	45,781	5,795	2,764	64,636	40,257	105,444	82,770	70,620	24,084		
429	438,420	-0.66453	-45,279	1,657	-41,510	11,624	-95,695	-22,309	-43,404	20,228	-31,537	55,486	-43,453	-92,955	-130,952	-22,536
430	434,648	-0.14708	22,162	24,597	33,034	32,339	7,267	5,618	23,001	25,867	57,234	57,618	19,384	25,115	-50,199	-53,413
431	431,429	-0.17095	41,062	36,581	44,775	39,357	-9,447	-12,743	41,062	36,581	60,016	53,976	47,813	27,711	-37,157	-20,933
432	427,281	0.29922	46,761	39,763	66,900	58,806	12,747	10,969	47,570	41,612	92,199	77,624	40,617	28,672	-9,317	3,852
433	426,446	-0.61624	-6,803	53,438	74,762	84,758	-71,460	-20,688	-6,803	53,438	134,604	138,195	43,151	-28,021	-106,771	-27,717
434	425,000	-0.22534	-5,418	-21,864	32,291	11,010	-40,866	-55,059	-5,145	-21,598	34,638	16,118	10,417	-15,552	-57,553	-83,216
435	423,216	0.28219	56,864	52,413	59,982	78,561	-70,991	-34,679	56,864	52,413	111,101	118,274	44,457	41,996	-59,213	-69,049
436	420,950	0.06773	34,133	29,252	47,049	42,660	8,422	10,682	37,504	33,915	73,660	73,899	47,214	48,300	-21,925	-10,154
437	420,000	-0.18424	60,277	74,801	119,412	100,096	1,262	36,966	68,654	84,009	156,759	119,902	28,259	101,419		
438	418,765	-0.49695	4,605	23,264	26,405	58,313	-21,828	22,079	3,049	-5,041	56,621	59,317	168,270	23,852	-64,355	-31,706
439	417,246	-0.34399	27,514	22,305	34,380	24,968	13,385	9,844	27,709	23,443	54,565	44,513	-8,550	-5,567	-48,532	-3,985
440	413,816	0.44017	46,427	36,143	57,331	47,797	24,714	12,497	47,505	37,804	70,022	45,714	49,283	45,077	-12,319	-25,662
441	410,490	0.50791	80,760	70,476	122,270	96,509	-59,558	-18,961	107,665	86,467	186,419	173,450	149,365	56,788		
442	409,398	-0.06483	41,164	35,451	42,213	51,830	-112,743	-77,381	43,120	33,305	75,036	80,502	70,395	43,471		
443	406,088	-0.44696	32,739	36,676	61,492	64,935	7,943	14,379	37,034	36,832	117,472	121,297	32,320	61,358	-30,052	-8,374
444	403,764	0.46837	60,424	26,387	99,884	65,968	-69,123	-86,167	60,808	31,681	161,080	104,130	49,583	94,625	-14,609	-54,956
445	403,382	-0.66073	25,030	39,836	35,801	45,254	-45,364	-39,516	30,309	42,605	61,163	75,427	26,629	59,342	-54,031	-46,049
446	403,382	-0.20330	39,836	46,561	45,254	54,196	-39,516	-27,726	42,605	42,277	75,427	78,441	59,342	49,488		
447	402,243	-0.05894	43,840	36,684	20,919	11,206	-40,109	-50,047	45,004	35,020	25,672	17,132	22,667	18,954	-70,583	-60,546
448	401,466	-0.33693	36,600	32,100	43,452	37,343	-23,972	-30,712	35,040	31,710	75,200	62,100	49,900	49,000	-49,741	-57,754
449	396,908	-0.18757	60,639	68,257	74,624	70,439	-20,937	-19,986	60,639	71,041	77,077	81,127	38,000	13,671	22,133	-6,887
450	391,987	0.12705	73,416	72,449	122,255	126,255	24,807	29,294	85,825	81,456	190,419	177,785	245,479	114,457		
451	390,403	0.09076	24,597	25,548	32,339	30,786	5,616	6,573	25,867	28,155	57,618	54,396	25,115	10,912	-53,413	-22,932
452	387,692	-0.19995	32,243	34,405	55,201	54,932	9,802	20,717	33,754	34,178	75,852	85,897	31,418	28,076	-3,262	17,996
453	382,192	0.00489	33,754	25,351	62,210	44,356	-25,821	-1,646	33,754	25,351	92,316	64,527	-102,399	72,178	-10,456	17,781
454	381,686	0.07666	29,252	24,922	42,660	34,271	10,682	9,953	33,915	26,654	73,899	56,231	48,300	38,412	-10,154	-9,294
455	379,500	0.75274	63,033	48,416	81,871	65,296	18,276	811	70,355	48,416	127,130	106,415	3	-6,277	9,580	-37,629
456	378,674	-0.13921	36,684	30,525	11,206	9,807	-50,047	-64,222	35,020	29,778	17,132	16,502	18,954	7,548	-60,546	-102,985
457	377,690	-0.23661	53,917	60,639	62,857	74,624	-35,652	-20,937	54,928	60,639	65,552	77,077	14,296	38,000	3,192	22,133
458	374,146	0.13382	53,436	33,754	84,758	62,210	-20,688	-25,821	53,436	33,754	138,195	92,316	-28,021	-102,399	-27,717	-10,456
459	374,000	-0.18526	-21,864	70,995	11,010	79,423	-55,059	35,841	-21,598	71,111	16,118	93,997	-15,552	69,577		
460	365,700	0.06523	48,416	53,980	65,296	72,165	811	18,951	48,416	55,026	106,415	116,166	-6,277	-5,581	-37,629	17,432
461	361,514	-0.41198	-40,404	-5,418	605	32,291	-68,537	-40,866	-40,026	-5,145	-9,514	34,638	4,256	10,417	-76,254	-57,553
462	360,365	-0.34678	25,607	27,328	67,631	68,969	9,513	27,303	21,210	17,301	111,792	100,488	9,454	8,494	-25,024	30,177
463	359,933	-0.24155	36,048	40,468	47,954	52,061	-492	12,686	36,437	41,513	95,328	100,208	31,191	6,449		
464	357,822	-0.06259	37,012	31,856	96,305	81,405	-56,122	-54,262	37,012	31,856	127,518	121,807	39,667	12,730	-49,446	-35,891
465	355,126	0.14534	37,915	32,243	62,577	55,201	6,615	9,802	37,915	32,243	69,574	75,852	37,421	31,418	-13,909	-3,262
466	355,103	-0.10906	-10,884	38,388	155,695	132,507	-32,950	-22,159	-13,371	39,544	165,662	118,466	81,841	-168,589	-32,177	-15,818
467	351,894	-0.29094	26,880	27,514	41,017	34,380	10,632	13,385	26,880	27,709	58,769	54,565	3,583	-8,550	-38,562	-48,532
468	351,450	0.44097	44,176	42,399	182,110	110,400	-51,842	-4,413	44,176	42,399	215,412	193,927	159,097	178,611	6,650	-16,442
469	348,961	0.32919	47,313	52,555	47,557	94,406	-1,167	38,626	51,531	64,472	95,225	99,390	101,358	-17,613		
470	348,727	0.15985	35,248	24,615	43,896	31,485	749	-4,045	35,248	28,400	80,794	64,947	33,537	20,015	-18,513	-8,427
471	347,037	0.03081	28,619	24,748	35,503	31,815	-2,330	2,981	25,004	24,748	73,585	54,949	17,384	-19,763	-26,544	-8,242
472	346,786	-0.67205	29,965	42,204	37,844	50,442	-24,478	-9,636	29,965	42,204	53,260	65,032	1,266	36,702		
473	338,557	0.43366	6,674	6,313	48,273	47,336	-19,473	6,426	7,841	6,313	16,284	13,649	-851	-4,313	-52,441	-102,564
474	337,962	-0.22203	47,068	48,389	63,055	60,808	-3,482	4,263	47,068	48,389	95,323	98,878	19,509	-7,087	-20,788	17,962
475	327,124	0.00679	36,143	30,055	47,797	40,969	12,497	4,225	37,604	32,688	45,714	47,975	45,077	52,721	-25,862	-16,146
476	322,000	-0.05086	57,401	53,796	77,663	73,104	-29,404	-35,691	58,226	56,164	132,827	127,072	31,145	34,866	20,803	21,589
477	321,750	0.00065	42,399	50,602	110,400	100,345	-4,413	1,472	42,399	50,602	193,927	156,918	178,611	126,987	-16,442	-3,317
478	318,532	0.10002	30,525	16,712	9,807	9,522	-84,222	-81,442	29,778	22,954	16,502	16,996	7,548	-4,674	-102,985	-64,377
479	317,895	0.13212	36,581	28,105	39,357	29,105	-12,743	-13,664	36,581	28,105	53,976	46,289	27,711	32,459	-20,933	-21,961
480	317,363	-0.17057	27,869	32,739	42,143	61,492	-14,713	7,943	42,364	37,034	111,981	117,472	9,127	32,320	-31,658	-30,052
481	313,950	0.18678	36,676	42,265	64,935	65,751	14,379	16,142	36,832	45,865	121,297	137,214	61,358	68,441		
482	311,224	-0.64104	29,991	25,607	82,037	67,631	6,755	9,513	28,393	21,210	108,913	111,792	84,423	9,454	-22,420	-25,024
483	309,778	0.88644	59,601	30,777	69,706	38,051	4,279	-10,106	59,601	30,826	127,357	77,305	31,199	44,864	7,575	459
484	308,000	0.30834	51,831	53,434	61,127	78,352	-66,504	-39,664	60,763	54,413	113,452	111,688	51,588	45,342	-9,195	18,703
485	304,722	0.05866	31,856	19,638	61,405	64,515	-54,262	-44,249	31,656	19,638	121,807	104,727	12,730	26,686	-35,891	-25,299
486	304,103	0.01470	25,548	22,449	30,766	30,656	6,573	7,927	28,155	24,073	54,396	53,748	10,912	17,199	-22,932	-12,761
487	303,140	0.25590	28,590	19,795	63,664	68,376	-64,721	-46,984	28,590	19,795	115,313	103,533	110,201	-33,639	-69,612	-42,497
488	301,007	-0.07482	38,388	13,626	132,507	100,531	-22,159	-9,284	39,544	13,251	118,466	117,866	-168,589	-143,992	-15,818	8,531
489	301,000	0.06061	53,434	57,401	78,352	77,663	-39,664	-29,404	54,413	58,226	111,688	132,827	45,342	31,145	18,703	20,803
490	299,626	0.07543	51,805	53,917	64,615	62,857	-23,255	-35,652	59,720	54,928	78,150	85,552	34,750	14,296	3,593	3,192

No.	MCap	CAR	AE0	AE-1	NOPAT0	NOPAT-1	EVA0	EVA-1	AE-EOI0	AE-EOI-1	GCASH0	GCASH-1	FCF0	FCF-1	REVA0	REVA-1
491	293,905	-0.51854	20,538	30,341	44,253	49,436	-37,251	4,357	16,682	30,341	51,886	57,837	22,568	34,925	-27,209	3,063
492	291,984	-0.67401	25,661	36,792	14,205	12,632	-60,508	-39,920	41,023	40,363	22,894	15,910	12,579	-5,553	-44,604	-39,732
493	291,731	0.06018	49,840	35,560	56,619	52,311	-32,246	-29,233	51,790	37,060	95,200	77,400	30,600	64,500	19,972	25,382
494	289,377	0.40693	34,806	28,537	52,512	35,277	24,461	13,120	29,135	40,016	98,143	75,056	26,430	11,559	10,775	-3,791
495	286,883	0.25006	36,804	35,660	42,030	59,510	-167,575	-135,922	28,164	27,138	107,867	93,766	-43,864	20,243	-6,737	6,950
496	283,912	-1.23512	-151,893	-54,711	176,779	3,260	-208,143	-398,948	132,266	58,684	234,912	330,904	86,921	452,747		
497	282,838	-0.05426	37,763	4,605	42,855	26,405	-8,141	-21,828	34,822	3,049	86,222	56,621	-11,967	158,270	-29,644	-64,355
498	280,136	0.38657	45,598	40,173	53,425	49,079	10,608	6,135	46,397	39,008	103,728	95,940	34,982	39,480	5,451	8,246
499	279,612	-0.44929	38,290	36,680	52,148	46,053	-6,634	-3,869	38,290	36,680	86,713	80,709	37,410	12,750		
500	278,362	0.09040	1,657	19,885	11,624	33,376	-22,309	10,634	20,228	19,885	55,486	62,923	-92,955	4,628	-22,536	4,637
501	276,000	-0.02867	53,960	47,409	72,165	63,653	18,951	19,722	55,026	47,409	116,186	98,673	-5,581	12,344		
502	275,772	0.68709	38,366	27,091	63,962	54,472	-26,062	798	34,577	27,091	88,160	74,537	47,068	56,200	-5,519	-5,502
503	273,724	-0.13085	16,710	26,818	32,793	35,791	-1,673	2,196	10,437	26,818	48,415	67,608	34,689	25,976	-20,926	3,466
504	272,482	0.14346	28,105	20,526	29,105	67,710	-13,664	27,092	28,105	-30,770	46,289	49,307	32,459	23,553	-21,961	31,362
505	269,523	0.52629	27,969	15,271	45,410	24,182	9,193	-5,537	12,126	15,271	52,808	37,192	55,779	6,576	2,775	-4,679
506	267,436	0.38680	42,324	36,439	85,985	78,412	-14,646	-14,251	42,890	36,439	153,116	140,244	113,250	61,350		
507	265,633	0.08607	27,574	17,737	41,607	28,258	1,204	2,239	27,574	17,737	57,350	39,655	23,046	19,356	-9,265	-724
508	261,457	0.74254	40,305	35,044	59,227	46,235	14,716	-5,037	40,319	36,472	90,291	71,111	74,691	65,010		
509	258,876	0.50700	9,647	-45,279	37,337	-41,510	-16,967	-95,895	3,421	-43,404	102,212	-31,537	83,697	-43,453	-45,671	-130,952
510	258,201	-0.06808	28,537	22,494	35,277	30,040	13,120	8,621	40,016	23,209	75,056	65,497	11,559	16,450	-3,791	2,749
511	257,400	-0.08629	37,264	33,765	59,476	32,187	-7,385	2,351	37,264	33,765	121,692	89,311	137,185	20,745	22,337	-18,528
512	253,554	1.07018	39,792	27,192	41,035	65,539	-24,936	-19,147	44,204	3,086	65,035	57,060	13,472	46,461	-6,852	-12,127
513	253,478	0.56375	30,526	22,434	46,281	28,229	18,236	5,803	34,458	30,542	66,088	42,530	35,347	-15,410	-9,381	-7,211
514	252,450	0.15785	50,602	37,264	100,345	58,476	1,472	-7,385	50,602	37,264	166,918	121,692	126,987	137,185	-3,317	22,337
515	251,263	0.53060	41,193	25,017	40,685	27,355	21,381	6,863	40,810	24,035	75,758	56,659	25,563	16,024	-7,058	-4,021
516	249,966	-0.69199	23,259	30,778	41,365	47,492	-5,514	7,189	23,160	30,778	70,509	80,802	10,433	26,186	-11,845	923
517	249,937	-0.19326	26,235	16,744	31,477	25,567	-35,478	-34,295	26,235	16,744	49,860	37,570	53,266	-13,644	-2,677	-2,354
518	248,996	-0.78736	2,924	16,841	13,714	40,712	-66,552	-29,132	3,459	18,623	25,946	46,047	-6,587	5,715	-47,563	-3,419
519	247,500	0.11939	33,765	29,496	32,187	45,614	2,351	21,663	33,765	29,496	89,311	77,068	20,745	1,514	-18,528	8,032
520	245,368	0.02282	30,341	21,808	49,436	40,213	4,357	2,545	30,341	21,808	57,837	44,419	34,925	-3,222	3,063	3,901
521	244,549	-0.01383	16,841	18,842	40,712	22,049	-29,132	-43,435	18,623	19,312	46,047	42,025	5,715	41,794	-3,419	-28,294
522	242,874	0.05529	35,660	58,189	59,510	77,173	-135,922	-105,601	27,138	68,272	93,766	99,907	20,243	90,524	6,950	30,725
523	240,831	-0.39293	4,864	4,157	14,247	12,933	-35,543	-28,428	4,864	4,378	22,384	20,761	19,555	12,312	-46,505	-12,181
524	240,000	0.90100	44,664	46,572	64,160	47,316	-88,865	-109,547	59,172	104,766	95,726	124,680	60,075	78,344	-48,371	-67,956
525	238,875	0.33148	32,407	27,889	56,358	42,143	-9,925	-14,713	34,841	42,364	111,624	111,981	-18,772	9,127	-11,001	-31,658
526	238,692	-0.19818	27,135	49,840	32,782	56,619	-81,681	-32,246	27,395	51,790	53,000	95,200	-3,300	30,600	-99,778	19,972
527	238,341	0.81693	39,763	30,744	58,806	53,932	10,969	14,565	41,612	32,436	77,624	72,480	28,672	52,490	3,852	17,787
528	236,336	0.43541	28,193	22,501	39,655	31,597	7,245	10,043	28,392	22,532	84,174	67,872	28,200	35,825	-18,477	-4,263
529	235,912	0.12186	40,173	36,358	49,079	48,743	6,135	12,405	39,008	36,358	95,940	88,876	39,480	41,452	8,248	17,731
530	235,400	-0.02907	11,410	8,865	13,734	18,226	1,867	7,427	11,410	7,518	26,656	28,860	-16,473	5,365		
531	233,994	0.14087	13,626	23,274	100,531	76,227	-9,284	-24,452	13,251	23,929	117,866	28,587	-143,992	-147,616	8,531	4,865
532	233,485	0.04706	24,922	24,010	34,271	35,128	9,953	11,695	26,654	25,747	56,231	59,695	38,412	30,977	-9,294	-3,499
533	233,370	-0.21813	12,259	17,527	170,787	163,993	-168,368	-114,030	22,427	25,354	203,896	244,790	231	111,000	-40,696	-36,969
534	230,998	0.74293	39,550	29,171	58,350	42,055	12,490	265	39,550	32,683	92,693	72,617	51,843	57,654	-3,596	5,571
535	230,177	0.18957	24,615	16,710	31,465	32,793	-4,045	-1,673	28,400	10,437	64,947	48,415	20,015	34,689	-8,427	-20,926
536	229,376	-1.00024	2,471	4,864	16,616	14,247	-42,852	-35,543	-3,677	4,864	21,959	22,384	-20,527	19,555	-51,068	-46,505
537	227,942	-0.21286	17,527	19,798	163,993	187,886	-114,030	-96,695	25,354	19,798	244,790	221,442	111,000	50,128		
538	227,813	0.47466	27,639	22,404	38,929	31,296	3,936	-3,632	27,639	22,404	65,222	54,381	37,396	14,841	1,067	1,281
539	225,019	-0.18288	46,910	41,141	121,852	68,356	-36,242	3,274	45,479	37,996	219,360	107,204	120,689	718	53,886	12,314
540	223,301	0.23827	27,192	25,030	65,639	35,801	-19,147	-45,364	3,086	30,309	57,060	61,163	46,461	26,629	-12,127	-54,031
541	222,318	-0.26121	18,842	26,696	22,049	32,958	-43,435	-24,576	19,312	27,066	42,025	59,243	41,794	38,393		
542	217,959	1.29802	33,126	30,699	37,362	35,354	-7,614	-5,589	11,310	30,699	43,576	39,908	50,051	33,279		
543	217,825	-0.32831	-53,527	26,813	-102,001	47,843	-162,842	-30,019	45,672	27,603	5,266	86,858	79,361	32,596		
544	217,175	0.59925	58,123	48,438	118,881	87,034	-4,687	-7,271	52,073	48,838	181,400	138,400	57,600	41,700		
545	210,831	0.18245	38,404	39,583	55,663	61,167	4,697	2,574	41,506	39,583	86,686	85,885	22,687	77,004		
546	210,424	-0.80165	30,530	51,101	41,598	41,206	-3,368	-19,904	30,530	51,101	52,685	85,968	-36,285	-6,482	-9,926	4,131
547	210,000	0.30444	46,572	50,353	47,316	89,956	-109,547	-61,970	104,766	88,076	124,680	111,710	79,344	75,623	-67,956	-42,465
548	209,574	0.53681	30,055	22,803	40,969	36,965	4,225	3,300	32,688	24,675	47,975	51,408	52,721	19,120	-16,146	1,495
549	209,062	0.33064	19,795	11,412	68,376	40,177	-48,964	-86,702	19,795	11,412	103,533	89,509	-33,639	23,615	-42,497	-48,841
550	207,298	-0.58250	5,992	38,290	21,768	52,148	-40,959	-6,634	5,992	38,290	38,616	86,713	-13,239	37,410	-45,406	-6,956
551	205,449	0.55182	34,405	19,237	54,832	37,197	20,717	-6,702	34,178	17,558	85,897	64,805	28,076	16,118	17,998	1,229
552	204,030	-0.51502	29,222	26,235	36,327	31,477	-29,856	-35,478	29,222	26,235	55,514	49,860	15,778	53,266	-6,024	-2,677
553	201,852	0.96075	34,931	9,331	42,842	19,528	1,672	-13,578	36,121	9,563	85,791	40,518	-10,295	-31,242	6,643	1,052
554	199,004	0.57316	22,305	15,262	24,968	15,477	9,844	5,642	23,443	15,262	44,513	30,657	-5,567	16,134	-3,965	6,915
555	197,145	-0.18823	40,162	32,093	49,426	48,371	6,945	10,750	40,162	32,949	79,732	77,011	27,592	49,280	27,228	27,574
556	196,861	0.11971	58,189	18,624	77,173	47,167	-105,601	-132,709	68,272	9,576	89,907	64,141	90,524	80,381	30,725	19,056
557	196,791	0.28816	24,748	19,128	31,815	21,530	2,981	5,279	24,748	19,128	54,949	40,030	-19,763	-14,726	-8,242	1,311
558	196,704	0.02607	22,207	20,550	33,319	30,804	9,219	9,818	23,942	21,254	44,401	43,200	-34,046	95,153	-564	7,342
559	193,050	-0.03569	29,496	23,656	45,614	38,003	21,653	20,437	29,496	23,656	77,068	62,953	1,514	10,205		
560	192,444	0.14311	36,792	44,151	12,632	125,251	-39,920	86,274	40,363	-49,051	15,910	31,807	-5,553	61,410		
561	191,541	0.27283	22,434	22,207	28,229	33,319	5,803	9,219	30,542	23,942	42,530	44,401	-15,410	-34,046	-7,211	-564
562	191,192	-0.30731	21,459	18,582	27,266	27,955	-5,001	-367	22,703	19,556	56,037	60,343	2,989	30,243	-15,116	-6,067
563	189,653	0.67977	30,543	18,688	42,497	28,940	9,775	5,192	36,790	18,789	44,183	33,779	-13,256	-8,800	3,877	17,884
564	188,730	-0.40039	21,096	29,965	28,480	37,844	-31,600	-24,476	21,096	29,965	41,482	53,260	49,409	1,268	-21,203	-42,209
565	188,582	0.06540	27,689	46,910	120,310	121,852	-142,143	-36,242	25,852	45,479	216,470	219,360	2,306	120,689	-63,482	53,886
566	187,909	-0.71888	8,916	38,350	36,063	61,665	-100,376	-41,626	13,440	38,350	71,500	87,600	46,500	51,700		
567	186,747	0.07169	6,442	12,259	123,773	170,787	-152,416	-168,366	17,367	22,427	109,062	203,896	31,643	231	-94,164	-40,896
568	185,879	0.42596	48,389	40,162	60,808	49,426	4,263	6,945	48,389	40,162	98,878	79,732	-7,087	27,592	17,962	27,228
569	184,626	0.16995	22,494	17,464	30,040	22,516	8,621	2,437	23,209	16,083	85,497	59,162	16,450	53,007	2,749	-1,235
570	180,726	0.79520	3,276	6,442	72,020	123,773	-215,271	-152,416	-5,654	17,367	146,628	109,062	-11,051	31,643	-118,801	-94,164
571	180,612	-0.49105	16,890	14,935	26,822	31,893	-12,232	-6,485	13,832	18,254	52,683	57,314	7,337	27,284	-15,057	-10,267
572	180,565	0.41776	27,091	17,167	54,472	31,525	798	-527	27,091	17,255	74,537	46,509	56,200	23,048	-5,502	17,048
573	179,775	-0.29146	17,465	16,440	31,363	36,453	313	4,377	22,602	16,440	71,353	56,289	32,374	15,946	-5,666	-1,824
574	178,370	-0.00519	18,582	15,346	27,955	23,289	-387	-2,090	19,556	14,391	60,343	49,561	30,243	28,127	-6,067	-683
575	175,200	-0.09973	15,723	11,497	17,441	21,444	-12,351	-2,253	15,637	2,636	26,462	21,281	14,337	13,467	-16,554	-3,636
576	174,576	-0.24246	21,184	27,176	47,567	41,820	13,295	17,501	20,904	27,176	60,190	45,640	-5,128	11,789	9,677	21,365
577	173,030	-0.48066	11,694	18,011	24,579	24,241	-7,711	-6,801	16,451	18,952	56,447	58,858	39,677	25,364	-14,196	-11,672
578	172,436	0.32161	20,526	12,709	67,710	27,040	27,092	-5,819	-30,770	12,709	49,307	48,038	23,553	23,919	31,362	-3,433
579	171,078	0.24474	26,818	23,069	35,791	32,172	2,196	5,725	26,818	23,069	67,608	62,038	25,976	25,208	3,466	4,900
580	170,566	0.30140	19,237	28,308	37,197	50,563	-6,702	6,992	17,558	28,308	64,805	75,388	16,118	74,529	1,229	22,193
581	169,290	0.04337	22,894	17,401	76,027	57,415	-16,349	-26,066	23,255	20,926	36,050	55,290	-72,127	-71,915	3,229	-10,759
582	168,138	0.17767	23,274	22,994	76,227	76,027	-24,452	-16,349	23,929	23,255	28,567	36,050	-147,616	-72,127	4,865	3,229
583	164,600	-0.20335	2,498	-26,389	14,476	-10,184	-16,508	-43,836	770	-31,731	19,107	-8,658	-8,379	-1,182	-36,642	-101,862
584	163,361	-0.11734	11,046	14,522	25,506	27,507	-11,183	-10,563	11,046	14,522	46,965	47,818	29,816	28,249	-7,786	-380
585	162,364	0.30460	30,777	21,459	38,051	27,266	-10,108	-5,001	30,826	22,703	77,305	56,037	44,864	2,989	459	-15,116
586	162,015	0.16288	30,778	25,119	47,492	39,874	7,189	2,131	30,778	25,119	80,802	65,771	26,186	4,065		
587	161,000	0.42714	53,796	55,640	73,104	73,469	-35,891	-21,635	56,164	55,640	127,072	126,564	34,886	10,176		
588	158,823	0.16153	12,709	11,046	27,040	25,506	-5,819	-11,183	12,709	11,046	48,038	46,965	23,919	29,816	-3,433	-7,786
589	151,766	0.71555	27,329	21,184	66,969	47,567	27,303	13,295	17,301	20,904	100,488	60,190	8,494	-5,128	30,177	9,677
590	151,557	0.37862	25,017	25,312	27,355	28,288	8,883	13,867	24,035	25,273	56,659	54,411	16,024	52,260		
591	151,060	0.33155	26,871	26,426	43,957	38,790	7,216	8,685	26,871	26,426	65,092	111,662	34,405	45,785		
592	150,149	0.37072	29,171	22,276	42,055	45,479	265	4,659	32,683	20,882	72,617	65,209	57,854	50,408	5,571	15,165
593	150,000	-0.94304	6,420	7,117	11,509	8,296	-6,123	-7,153	6,420	7,117	9,838	9,593	6,902	6,591		
594	148,869	1.79151	-2,001	-40,404	33,358	605	-46,068	-68,537	-2,001	-40,028	31,743	-9,514	20,749	4,256	-20,157	-76,254
595	148,230	0.12443	17,167	5,650	31,525	13,010	-527	1,990	17,255	5,810	46,509	23,522	23,048	17,544		
596	148,171	0.45999	17,737	14,785	28,258	22,225	2,239	3,831	17,737	14,785	39,655	29,495	19,356	12,217	-724	1,222

No.	MCap	CAR	AE0	AE-1	NOPAT0	NOPAT-1	EVA0	EVA-1	AE-EOI0	AE-EOI-1	CCASH0	CCASH-1	FCF0	FCF-1	REVA0	REVA-1
597	147,411	0.06841	-6,812	11,953	-2,689	10,892	-47,803	-32,871	-8,926	11,953	6,023	14,666	-9,721	2,037		
598	146,395	0.32803	41,141	27,797	68,356	53,465	3,274	398	37,996	25,311	107,204	69,261	718	58,395	12,314	26,960
599	145,992	-0.03803	24,874	25,881	21,549	14,205	-72,491	-60,508	46,423	41,023	31,434	22,894	28,454	12,578	-60,403	-44,604
600	145,660	-0.14578	14,785	7,428	22,225	14,536	3,831	3,199	14,785	7,481	29,495	21,681	12,217	4,414	1,222	-1,333
601	144,980	-0.21534	16,751	17,692	32,975	33,272	4,579	992	16,503	17,608	63,481	48,690	-4,784	-19,446		
602	143,423	-0.17341	14,905	37,352	31,893	45,921	-6,485	11,300	18,254	37,496	57,314	72,897	27,284	-15,774		
603	143,320	-0.40383	4,572	16,890	31,402	26,822	-20,538	-12,232	370	13,832	83,718	52,683	29,915	7,337	-5,659	-15,057
604	143,256	-0.31753	14,374	20,594	23,380	29,474	52	13,640	16,068	21,360	47,070	50,480	12,936	26,136		
605	137,720	-0.15171	20,261	29,222	24,575	36,327	-47,242	-29,856	20,261	29,222	43,100	55,514	22,088	15,778	-9,561	-6,024
606	137,528	0.40485	22,501	16,886	31,597	25,828	10,043	7,634	22,532	17,552	67,872	57,434	35,825	18,927		
607	136,281	0.54721	19,885	17,465	33,376	31,363	10,634	313	19,885	22,602	62,923	71,353	4,628	32,374	4,637	-5,666
608	133,913	-0.01528	18,011	14,374	24,241	23,380	-6,801	52	18,952	16,068	58,858	47,070	26,364	12,936	-11,672	-11,747
609	133,382	0.18185	16,440	16,751	36,453	32,975	4,377	4,579	16,440	16,503	66,289	63,461	15,946	-4,784	-1,824	-1,657
610	132,720	0.69645	16,712	24,674	9,522	21,549	-81,442	-72,491	22,954	46,423	16,996	31,434	-4,674	28,454	-64,377	-60,403
611	132,000	1.22687	18,430	13,984	24,648	20,306	2,562	-846	18,430	13,984	47,274	38,481	19,516	11,823	-2,799	-2,055
612	131,488	0.33873	17,464	12,001	22,516	15,405	2,437	-5,034	16,083	11,652	59,162	40,340	53,007	8,766	-1,235	-9,475
613	130,427	0.45212	36,358	23,254	48,743	30,504	12,405	-1,533	36,358	23,254	88,876	64,014	41,452	22,490	17,731	3,046
614	130,105	-0.01949	30,744	26,370	53,932	37,611	14,585	6,754	32,436	36,102	72,480	73,367	52,490	15,497	17,787	12,024
615	127,376	0.26109	15,346	13,171	23,289	20,365	-2,090	-766	14,391	13,171	49,561	37,157	28,127	27,641	-683	267
616	126,242	0.17135	15,271	9,242	24,182	15,871	-5,537	-5,052	15,271	8,124	37,192	24,309	6,576	3,053	-4,679	-3,709
617	125,704	0.44327	21,808	16,355	40,213	27,277	2,545	-2,430	21,808	16,355	44,419	25,923	-3,222	10,201	3,901	7,882
618	124,922	0.27633	12,939	11,659	21,143	17,587	-1,184	-1,185	12,939	11,574	32,202	29,134	6,019	4,759		
619	124,216	-0.03870	7,311	10,973	18,249	26,586	-17,623	-10,902	7,311	11,524	42,388	57,758	41,116	72,807	-14,049	-1,164
620	122,638	0.41594	19,128	15,065	21,530	15,921	5,279	5,559	19,128	15,382	40,030	35,684	-14,726	41,335	1,311	9,186
621	122,046	-0.60833	15,452	23,471	16,684	53,507	-53,503	-7,435	20,016	23,471	54,629	79,186	20,812	42,153	-42,893	6,102
622	121,270	0.12942	22,276	18,786	45,479	42,555	4,659	-3,993	20,882	17,600	65,209	63,563	50,408	37,884	15,168	14,789
623	120,916	-0.02418	20,690	23,259	34,142	41,365	-10,709	-5,514	20,690	23,160	64,693	70,509	46,150	10,433	-11,369	-11,845
624	120,172	0.18659	28,308	26,929	50,563	46,416	6,992	1,710	28,308	26,607	75,388	62,051	74,529	45,278	22,193	13,987
625	119,318	-0.06752	12,588	8,916	35,196	36,063	-60,211	-100,376	10,620	13,440	73,000	71,500	73,800	46,500	-20,549	-16,698
626	118,015	-0.12082	23,254	16,621	30,504	32,564	-1,533	-253	23,254	16,621	64,014	53,114	22,490	5,616		
627	116,993	-1.33284	-30,934	-3,907	-49,518	8,608	-94,947	-21,436	-30,934	-3,907	-35,866	19,098	-54,482	-15,773	-116,410	-15,396
628	116,270	-0.37535	11,065	19,687	20,437	21,525	-21,565	-17,303	11,065	19,687	34,653	48,670	-23,525	37,260	-4,760	-10,512
629	115,323	-0.35291	1,499	18,056	17,655	33,747	-19,094	266	3,998	18,205	44,266	67,109	14,113	-26,325		
630	114,040	0.86493	35,560	12,588	52,311	35,196	-29,233	-60,211	37,060	10,820	77,400	73,000	64,500	73,800	25,382	-20,549
631	114,000	0.26800	11,487	10,179	21,444	13,335	-2,253	-4,582	2,636	10,106	21,281	17,562	13,467	13,293	-3,636	-920
632	113,814	-0.09850	17,401	17,826	57,415	67,672	-26,066	2,516	20,926	17,717	55,290	75,568	-71,915	22,481	-10,759	23,990
633	112,215	0.76033	16,744	21,096	25,567	28,480	-34,295	-31,600	16,744	21,096	37,570	41,462	-13,644	49,409	-2,354	-21,203
634	111,159	1.40180	7,972	2,924	22,116	13,714	-72,358	-66,552	7,972	3,459	42,621	25,946	25,908	-6,587	-23,789	-47,563
635	110,385	-0.40642	14,296	34,262	33,491	17,012	-42,579	-22,336	14,893	33,150	56,952	71,785	-47,282	26,326	12,706	-2,226
636	107,854	-0.36821	14,413	12,716	20,605	15,623	3,217	2,880	14,413	12,716	22,397	18,778	9,324	9,041	-118	1,619
637	106,934	0.50788	22,803	12,102	36,965	29,046	3,300	-207	24,675	12,655	51,408	30,172	19,120	57,796	1,496	4,024
638	106,638	0.24845	14,522	13,593	27,507	28,397	-10,563	-3,769	14,522	13,593	47,818	40,039	28,249	22,431		
639	105,700	-0.12710	13,539	15,122	30,240	26,638	-3,778	-4,132	13,539	14,183	36,050	35,548	-24,396	-3,450	7,872	9,709
640	105,391	0.39760	18,040	11,694	32,288	24,579	-1,092	-7,711	20,767	16,451	59,611	56,447	33,514	39,677	6,449	-14,196
641	105,019	0.03942	12,001	13,332	15,405	25,975	-5,034	6,969	11,652	14,107	40,340	39,053	8,786	2,746		
642	103,125	-0.21467	13,825	12,662	19,518	14,839	1,311	-575	15,069	12,662	36,111	31,405	4,820	5,970	527	-394
643	103,058	0.07880	19,687	13,539	21,525	30,240	-17,303	-3,776	19,687	13,539	48,670	36,050	37,260	-24,396	-10,512	7,872
644	102,450	0.36957	20,550	17,480	30,804	28,262	9,818	10,371	21,254	17,613	43,200	34,176	95,153	31,557		
645	100,679	0.99379	4,157	-4,156	12,933	6,226	-26,428	-30,960	4,378	-4,156	20,761	13,303	12,312	-2,804	-12,181	-15,112
646	100,627	1.25954	18,760	13,443	22,330	16,474	-6,379	-8,698	18,550	12,940	38,328	33,171	41,038	13,117		
647	98,505	0.16318	35,914	19,305	48,517	40,978	6,523	-5,227	35,402	13,724	96,742	79,790	114,595	64,443	25,446	22,148
648	98,352	1.01572	27,176	20,109	41,820	28,237	17,501	12,762	27,176	20,109	45,640	33,463	11,789	24,478		
649	96,512	-0.02663	10,973	1,499	26,566	17,655	-10,902	-19,094	11,524	3,998	57,758	44,266	72,807	14,113	-1,164	-9,585
650	96,300	-0.55048	7,007	7,771	11,153	11,693	4,127	5,796	7,296	7,771	20,634	22,306	12,318	-1,914	-6,583	4,130
651	96,267	0.62563	9,331	7,311	19,529	18,249	-13,578	-17,623	9,563	7,311	40,518	42,368	-31,242	41,118	1,062	-14,049
652	95,813	0.00243	26,370	18,078	37,611	38,992	6,754	18,402	36,102	18,078	73,367	55,006	15,497	26,649		
653	94,875	0.42800	13,984	13,625	20,306	19,516	-846	1,311	13,984	15,089	38,481	36,111	11,823	4,820	-2,055	527
654	93,945	-0.99867	-34,204	9,847	-636	20,522	-70,461	-78,322	-34,204	9,847	76	55,429	21,025	1,540	-54,697	-29,921
655	93,158	1.00149	19,398	4,572	52,175	31,402	-7,428	-20,538	18,440	370	104,231	83,718	-45,147	29,915	12,984	-6,659
656	92,499	-0.20698	9,847	18,320	20,522	36,001	-78,322	-55,088	9,847	18,320	55,429	66,478	1,540	34,718		
657	90,458	0.00764	-3,907	7,925	8,608	19,046	-21,436	7,219	-3,907	4,805	19,098	24,431	-15,773	7,493	-15,396	11,638
658	90,238	-0.74713	7,629	13,314	9,756	17,359	-3,098	3,842	7,466	13,706	17,335	27,791	6,613	13,378	-6,805	2,087
659	90,128	-0.33410	11,377	22,408	25,939	30,337	-7,573	-1,971	7,318	22,408	42,253	47,425	-697	12,098	3,532	10,893
660	88,625	0.48898	18,786	13,452	42,555	32,964	-3,993	-14,319	17,600	13,534	63,563	53,059	37,884	56,213	14,789	225
661	85,200	0.23952	10,179	4,549	13,335	6,138	-4,582	-9,365	10,106	4,549	17,562	11,111	13,293	5,950	-920	-2,942
662	84,787	-0.29203	7,428	4,287	14,536	7,535	3,199	2,766	7,481	4,287	21,661	16,053	4,414	-2,565	-1,333	630
663	84,560	-0.47428	4,327	11,065	16,786	20,437	-35,880	-21,565	6,355	11,065	23,990	34,853	-13,336	-23,525	-16,737	-4,760
664	82,192	0.52448	16,355	14,413	27,277	20,605	-2,430	3,217	16,355	14,413	25,923	22,397	10,201	9,324	7,662	-118
665	81,820	0.71710	23,007	10,812	29,011	22,012	4,840	-5,468	23,007	10,812	49,744	36,994	34,351	31,456		
666	79,638	-0.30509	12,299	29,091	32,341	53,088	-19,729	3,237	13,212	29,091	72,934	88,408	30,036	48,026	-2,351	21,283
667	79,190	0.26072	19,638	1,788	64,515	42,503	-44,249	-55,934	19,638	-723	104,727	82,223	26,686	4,636	-25,299	-36,951
668	78,294	0.32191	23,471	21,969	53,507	46,606	-7,436	-12,445	23,471	21,958	79,188	61,312	42,153	16,292		
669	77,316	0.35138	13,171	11,276	20,365	19,788	-766	-1,600	13,171	11,276	37,157	31,635	27,641	22,559		
670	75,608	0.75074	15,262	10,345	15,477	12,676	5,642	1,330	15,262	10,871	30,657	22,908	16,134	20,644		
671	75,263	-0.58469	9,041	14,296	37,102	33,491	-71,105	-42,579	17,893	14,893	78,444	56,952	21,139	-47,282	-54,704	12,706
672	73,668	-0.43187	2,308	15,452	23,909	16,684	-71,246	-53,503	18,109	20,016	105,237	54,629	52,637	20,812	-20,350	-42,893
673	73,590	0.13510	34,262	30,219	17,012	43,234	-22,338	4,282	33,150	30,219	71,785	68,120	26,326	45,199		
674	73,229	0.01459	22,408	11,741	30,337	18,946	-1,971	-9,009	22,408	13,148	47,425	36,077	12,098	271	10,893	2,389
675	73,157	-0.81874	-40,013	-16,989	-35,356	-8,607	-73,307	-41,416	-27,466	-14,255	-17,983	-2,147	63,665	-22,857	-68,038	-28,862
676	70,800	-0.32043	7,209	7,110	9,968	13,352	-6,805	-1,960	4,303	7,110	10,055	11,312	7,162	7,724	-3,444	1,677
677	70,400	0.01603	13,314	13,390	17,359	16,946	3,842	5,739	13,706	13,390	27,791	25,202	13,378	9,351	2,087	3,729
678	68,878	-0.64465	4,127	8,604	9,402	12,941	-19,906	-5,229	6,723	8,604	15,420	16,038	3,233	-22,984		
679	67,763	-0.41399	3,540	8,272	7,595	12,807	-11,670	-3,736	6,047	11,065	12,387	18,043	12,117	8,448		
680	66,063	0.00550	14,193	-5,039	27,477	7,530	-2,398	-21,697	15,502	-9,202	35,963	935	22,243	-2,471	10,214	-2,770
681	66,000	-0.06496	7,110	6,420	13,352	11,509	-1,960	-6,123	7,110	6,420	11,312	9,838	7,724	6,902	1,677	-11,437
682	63,066	0.58870	9,242	6,425	15,871	19,465	-5,052	4,402	8,124	6,425	24,309	23,281	3,053	21,253	-3,709	7,810
683	62,906	0.67727	19,022	11,197	22,444	14,831	8,737	-2,721	20,830	13,685	20,401	15,321	-8,469	11,043	11,234	1,414
684	62,043	0.38184	8,667	6,715	12,800	9,270	6,357	3,803	8,667	6,715	17,454	13,618	4,347	-2,234	1,816	-35
685	61,952	1.23886	32,093	11,377	48,371	25,939	10,750	-7,573	32,949	7,318	77,011	42,253	49,280	-697	27,574	3,532
686	61,274	0.26976	12,716	10,203	15,623	11,674	2,880	160	12,716	10,203	18,778	13,711	9,041	-1,795		
687	58,864	-0.44105	259	12,050	7,550	17,305	-9,940	592	259	12,800	14,593	23,632	4,771	18,868	-9,526	504
688	58,864	-0.10345	12,050	12,067	17,305	19,752	592	4,583	12,800	12,087	23,632	26,139	18,868	11,489		
689	58,556	-0.09345	16,537	12,299	44,292	32,341	-5,026	-19,729	20,589	13,212	68,919	72,934	54,649	30,036	13,477	-2,351
690	56,323	1.93169	25,351	11,859	44,356	21,354	-1,646	-25,160	25,351	16,123	64,527	56,513	72,178	-59,024		
691	56,054	-0.03802	15,809	15,805	36,025	22,182	9,412	4,674	16,552	15,805	43,169	38,934	38,473	17,477		
692	55,493	0.81176	15,122	14,193	26,638	27,477	-4,132	-2,398	14,183	15,502	35,548	35,983	-3,450	22,243	9,709	10,214
693	54,810	0.11309	29,091	23,138	53,088	54,683	3,237	5,541	29,091	23,138	88,408	85,490	48,026	60,384		
694	54,228	-0.53169	-2,105	8,155	-2,775	11,549	-20,121	-5,655	7,171	11,487	620	19,164	9,795	2,241	-17,837	-1,920
695	52,200	0.40861	4,549	7,209	6,138	9,968	-9,365	-6,605	4,549	4,303	11,111	10,055	5,950	7,162	-2,942	-3,444
696	50,866	-0.24568	-22,285	-473	-19,130	15,595	-55,621	-19,205	-13,532	-609	4,498	26,670	-4,456	10,038	-38,296	-1,740
697	50,195	-0.32512	9,241	12,231	12,636	17,483	754	7,009	9,389	12,558	24,844	25,073	786	30,461	4,100	12,244
698	49,188	1.01989	27,797	16,537	53,465	44,292	398	-5,026	25,311	20,589	89,261	68,919	58,395	54,649	26,960	13,477
699	48,384	0.58881	11,197	259	14,831	7,550	-2,721	-9,940	13,685	259	15,321	14,593	11,043	4,771	1,414	-9,526
700	47,446	-1.02664	-6,629	9,377	-7,016	24,704	-49,288	-11,196	-4,797	10,477	10,805	35,055	34,119	825		
701	46,579	-0.01073	8,155	3,540	11,549	7,595	-5,656	-11,670	11,487	6,047	19,164	12,387	2,241	12,117	-1,920	-14,047
702	46,564	-0.40721	4,989	3,917	20,774	30,176	-35,678	-19,344	4,989	-3,672	37,693	40,570	13,827	8,335	-8,097	7,243

No	MCap	CAR	AE0	AE-1	NOPAT0	NOPAT-1	EVA0	EVA-1	AE-EOI0	AE-EOI-1	GCASH0	GCASH-1	FCF0	FCF-1	REVA0	REVA-1
703	45,240	0.77209	12,102	-20,169	29,046	-23,582	-207	-72,224	12,655	3,641	30,172	-29,066	57,796	4,909		
704	45,134	0.52206	1,789	2,308	42,503	23,909	-55,934	-71,246								
705	45,046	0.55304	13,452	3,146	32,964	24,840	-14,319	-18,081	13,534	3,396	53,059	43,605	56,213	48,062		
706	43,038	-0.11125	-4,156	54	6,226	11,719	-30,960	-19,157	-4,156	-228	13,303	18,673	-2,804	1,881	-15,112	-7,744
707	42,654	1.66142	18,688	8,307	28,940	10,401	5,192	-5,399	18,789	9,346	33,779	14,475	-8,800	14,947	17,864	-1,333
708	40,479	-0.36415	7,585	7,070	7,068	7,657	785	2,326	8,016	7,316	13,273	12,827	-420	11,709	-369	1,483
709	40,350	0.08264	54	-3,991	11,719	7,368	-19,157	-20,581	-228	-3,991	18,873	13,597	1,881	3,101	-7,744	-10,042
710	40,179	-0.00675	-3,991	4,127	7,368	9,402	-20,581	-19,908	-3,991	6,723	13,597	15,420	3,101	3,233	-10,042	-11,956
711	40,106	0.50016	9,183	7,629	10,636	9,756	-1,353	-3,098	9,612	7,466	18,197	17,335	4,700	6,613	-128	-6,605
712	39,928	1.05030	15,085	10,809	15,921	7,357	5,559	-3,186	15,382	16,043	35,684	15,961	41,335	-6,567	9,186	-552
713	39,600	0.73645	8,700	-4,756	28,752	6,291	-4,939	-32,132	8,391	-5,796	30,470	31,636	40,706	7,370		
714	39,222	-0.34988	-13,020	2,832	-8,491	6,968	-43,381	-34,112	-8,061	3,736	1,451	13,391	19,651	12,269	-24,297	-13,872
715	36,506	0.03441	10,809	9,241	7,357	12,636	-3,186	754	18,043	9,389	15,961	24,844	-6,567	786	-552	4,100
716	36,380	0.70635	7,771	6,510	11,693	9,423	5,796	4,557	7,771	6,510	22,306	17,519	-1,914	9,869		
717	35,808	0.11567	5,126	-206	13,176	2,796	-11,435	-18,585	2,898	1,818	20,940	9,759	10,185	-5,818	4,523	-2,781
718	35,213	0.19971	19,305	10,059	40,978	31,923	-5,227	-10,939								
719	34,925	-0.54121	2,629	3,864	19,513	29,530	-27,022	-20,107	2,796	3,864	43,872	53,013	19,466	13,605		
720	34,923	0.29428	3,917	1,811	30,176	19,090	-19,344	-22,862	-3,672	1,678	40,570	32,838	8,336	15,263	7,243	917
721	34,560	1.06172	4,287	3,580	7,535	6,282	2,766	2,365	4,287	3,580	16,053	13,213	-2,565	5,010	630	2,797
722	34,528	-0.58459	-10,957	7,428	2,781	18,356	-34,277	-12,355	-10,957	7,428	15,605	30,490	34,888	-34,360	-26,293	-1,614
723	34,205	-0.08967	6,757	6,790	15,277	8,184	7,431	1,379	6,761	6,790	12,702	11,524	5,621	7,905	9,973	2,661
724	33,829	-0.35224	1,419	4,989	21,702	20,774	-32,755	-35,878	1,419	4,989	33,266	37,693	11,795	13,827	-9,475	-8,097
725	33,193	0.56655	6,425	6,042	19,465	20,523	4,402	5,108	6,425	6,011	23,281	22,613	21,253	17,556	7,810	8,823
726	32,782	0.11896	6,790	7,585	8,184	7,068	1,379	785	6,790	8,016	11,524	13,273	7,905	-420	2,661	-369
727	32,496	-0.01252	7,428	5,494	18,356	10,205	-12,355	-15,126	7,428	5,494	30,490	16,202	-34,360	-41,333	-1,614	-5,187
728	32,091	0.15909	2,832	14,116	6,968	25,897	-34,112	-16,517	3,736	10,762	13,391	34,516	12,269	6,602		
729	29,714	0.95309	9,665	-2,105	9,123	-2,775	-4,776	-20,121	11,373	7,171	16,835	620	9,601	9,795	-10	-17,837
730	29,000	0.59976	2,759	2,521	16,526	9,420	-1,812	2,347	2,337	2,212	20,683	9,929	27,525	1,751	10,114	5,301
731	27,550	-0.50512	4,265	5,339	7,396	8,269	645	1,936	4,381	6,253	13,667	16,677	16,450	8,941		
732	26,250	-1.00314	-12,215	-1,897	13,734	12,355	-27,328	-22,701	-12,215	-1,897	27,862	18,337	28,294	-23,194		
733	25,375	-0.73096	-4,522	-3,316	4,243	5,405	-18,771	-15,381	-5,191	-4,754	9,994	5,815	12,110	5,142	-16,154	-13,266
734	23,086	-0.51279	4,521	7,362	9,223	9,732	1,875	4,014	4,693	7,586	18,572	18,646	6,286	-9,967		
735	22,816	0.54153	12,231	9,927	17,483	17,989	7,009	10,183	12,558	9,535	25,073	21,580	30,481	9,642		
736	22,341	0.03274	-142	-10,957	17,723	2,781	-23,028	-34,277	-142	-10,957	23,428	15,865	31,203	34,888		
737	21,890	-0.50785	1,738	2,629	8,956	19,513	-35,923	-27,022	1,815	2,796	36,147	43,872	19,176	19,466		
738	21,758	0.43484	6,042	3,606	20,523	12,080	5,108	1,064	6,011	444	22,613	13,399	17,556	9,493		
739	20,374	0.09661	5,917	13,412	9,767	20,605	-3,522	7,066	10,335	13,412	10,380	26,879	4,105	-7,959		
740	20,176	1.79097	7,925	2,514	19,048	8,700	7,219	2,642	4,605	348	24,431	9,451	7,493	4,224	11,638	7,087
741	18,314	-0.02665	2,225	3,661	7,307	6,806	-9,235	-6,569	2,225	3,661	18,454	20,214	6,206	-3,392	-1,192	1,488
742	18,825	0.19369	3,396	2,225	9,286	7,307	-5,625	-9,235	3,396	2,225	20,180	18,454	-2,482	6,206	1,614	-1,192
743	18,432	0.49710	3,580	2,600	6,282	4,631	2,365	2,002							2,797	2,323
744	18,279	0.67640	5,494	2,373	10,205	8,000	-15,126	-14,722							-5,187	-5,438
745	17,904	-0.24513	363	591	5,788	6,061	-17,979	-23,285	-4,745	633	13,187	15,595	10,344	16,634	-1,623	-6,255
746	17,904	0.59150	-206	363	2,796	5,788	-18,585	-17,979	1,818	-4,745	9,759	13,187	-5,818	10,344	-2,781	-1,623
747	17,100	-0.12965	3,710	4,265	5,943	7,396	-224	645	3,976	4,381	11,195	13,667	1,095	16,450	2,044	870
748	17,060	-0.47908	3,499	1,742	11,216	12,186	-9,037	-16,489								
749	16,900	-0.09635	3,661	5,893	8,806	12,210	-6,569	-941	3,661	5,893	20,214	22,985	-3,392	6,871	1,488	3,055
750	16,313	0.17155	-3,316	1,688	5,405	11,456	-15,381	-9,688	-4,754	1,573	5,815	12,241	5,142	6,624		
751	16,248	0.15034	2,373	11,649	8,000	18,176	-14,722	-3,873	2,373	11,649	14,002	22,609	26,687	4,488		
752	15,233	0.05621	11,649	3,499	18,176	11,216	-3,873	-9,037	11,649	3,499	22,609	16,771	4,488	-4,517	4,823	-331
753	15,200	0.00595	4,403	3,710	7,038	5,943	174	-224	4,676	3,976	12,852	11,195	2,282	1,095	3,554	2,044
754	13,976	-0.44900	999	2,587	5,613	8,730	-5,780	-1,513	999	2,587	13,427	17,688	8,216	5,198		
755	13,300	0.80476	6,340	4,403	10,909	7,038	3,643	174	6,716	4,676	17,097	12,852	14,284	2,282	6,967	3,554
756	10,000	1.01608	2,521	-2,661	9,420	832	2,347	-8,025	2,212	-641	9,929	3,400	1,751	2,214		
757	7,395	0.51674	2,600	1,324	4,631	4,091	2,002	1,430								
758	3,026	1.14413	-553	-72	389	756	-644	-33	-428	41	1,368	1,607	495	858	-623	-81