EVA™, EPS, ROA and ROE as Measures of Performance in Australian Banks: A Longitudinal Study

Gregory Laing*
Kirsty Dunbar*

Abstract

This research empirically tests the relative and incremental information content of performance measures EVA, EPS, ROA and ROE against the Market Value of the shares in the four major Australian banks. Data was obtained from database sources for the purpose of calculating the EVA and extracting the EPS, ROA, ROE and Share Market Value of the four major banks in Australia for the years 2003 to 2011.

Two null hypotheses were derived from the literature and tested using the Multiple Linear Regression method. In contrast to results commonly reported, no significant relationship was found between EVA and the market value in terms of relevant information content. However, the incremental information content of EVA was found to be significant in the model tested. This study did not test the different models for calculating EVA which future research may investigate. Future research may also examine more performance measures in the model.

Keywords

Economic Value Added
Relative Information Content
Incremental Information Content
Australian Banking Firms

Introduction

The balance sheet is traditionally considered to provide the basis for determining the wealth perspective of shareholders, however, it is only through the application of ratios that the measurement of changes to shareholder wealth are revealed for assessment. Traditional accounting ratios such as return on assets (ROA) and earnings per share (EPS) have been found to provide earnings information (Yee, 2007) but have been criticised for failing to consider differences in earnings capability due to variations in the cost of capital (Jackson, 1996). This is especially important when assessing the relevance of earnings to shareholder wealth.

To address the shortcomings of the traditional ratios Stern and Stewart (1993) proposed the application of the economic value added model (EVA™). This model makes allowances for the cost of capital, both equity and debt, as well as adjusting for any research and development costs expensed rather than capitalised. This approach has been claimed to provide a useful measure for better understanding the earnings performance in terms of value-relevance (Chen and Dodd, 2001; Ratnatunga and Montali, 2008).

The return on assets (ROA) and the earnings per share (EPS) however continue to be reported in the popular financial press. Additionally, the EPS is a ratio that must be included in the financial report of all companies that are designated as either a reporting entity, as defined by the (Australian and International Accounting Standards or a disclosing entity as defined by the Australian Corporations Legislation. Whilst the EPS has the mantle of being a mandatory ratio no such requirement exists for the reporting of EVA. In fact the financial reports of Australian companies make no allowance for the inclusion or the calculation of EVA. If as the literature claim's EVA is a superior method for measuring performance and assessing future performance then it would seem to be an apt time to address this oversight by empirically examining the differences if any between EVA as distinct from ROA and EPS.

* University of the Sunshine Coast, Australia

Literature Review on EVA Model

EVA is an acronym for the term economic value added (EVA), which is the registered tradename held by Stern Stewart and Company and is their version of a metric to measure a concept commonly referred to as residual income (Biddel, Bowen and Wallace, 1999). The notion of residual income is based on the premise that, in order for a firm to create wealth for its owners, it must earn more on its total invested capital than the cost of that capital. In contrast, traditional accounting measures net income as “profits” net of interest expense on debt capital, by comparison residual income measures “profits” net of the full cost of both debt and equity capital (Biddel, Bowen and Wallace, 1999).

In defence of EVA Jackson (1996) argued that the benefits of using EVA in analysis of shares was that it focused on operating cash flow rather than just earnings per share (EPS), which can be manipulated in a variety of ways by managers and their accountants. Jackson (1996) was critical of EPS for its failure to provide a reliable guide in terms of management’s efficiency in allocating and using capital inside the business in addition to its misrepresentation of cash flow. Subsequently, EPS does not provide investors with an insight into the capital intensity of a business or operating division. Jackson (1996) conceded that in most cases cash flow and earnings per share move in tandem but noted that there were exceptions that could arise. For example, where a company changes its inventory valuation method from FIFO to LIFO during a period of rising prices the cash flow (and EVA) will increase, but earnings per share will fall. Another example of where earnings could seriously misrepresent cash flow, can occur where there is a large acquisition made on the basis of a strategic investment resulting in a goodwill component with a significant amortization which results in a large non-cash reduction of future reported earnings. In this situation, the EVA calculation would add back the amortized goodwill expense to both the statement of financial performance and the statement of financial position.

The research examining the application of EVA has produced mixed results. Whilst there are various studies which have reported finding evidence that validates the use of EVA (Athanassakos, 2007; Kim, 2006; Zaima, Turetsky and Cochran, 2005; Worthington and West, 2004; Lehn and Makhija, 1997; O'Bryne, 1996, 1997; Grant, 1996; Uyemur, Kantor and Pettit, 1996; Walbert, 1994) there are studies which have found that EVA is not superior to traditional accounting measures (Palliam, 2006; Tsuji, 2006; Griffith, 2004; Chen and Dodd, 2001; Clinton and Chen, 1998; Ray, 2001; Biddle, Bowen and Wallace, 1997). The inconsistency of the findings has been attributed (Chari, 2009) to issues such as use of linear models and methods when returns and earnings are not linear, failing to allow for inflation and not isolating the EVA effect while controlling for the economic effect of the market.

Support for EVA comes mainly from research which compares the result against the traditional accounting measures (Dunbar, 2013; Worthington and West, 2004). For example, Grant (1996) examined the relationship between EVA and company valuation and found that there was a significant relationship to market value. Uyemura et al (1996) also found a strong relationship with market value with reported correlations of EVA 40%, return on assets (ROA) 13%, return on equity (ROE) 10%, net income (NI) 8% and EPS 6%. O'Bryrne (1996) found that EVA was superior in explaining a firm's market value than net operating profit after tax (NOPAT). Milunovich and Tsuei (1996) found EVA explained 42% of changes in MVA in the computer industry. Lehn and Makhija (1997) found the correlation for EVA against share returns (.59) was slightly better than that of the MVA (.58), ROE (.46), ROA (.46), and ROS (.39).

These findings suggest that both EVA and MVA are perhaps better long-term measures than traditional accounting measures. This can be attributed to the difference between accounting profit which merely deducts interest charges as compared to economic profit which subtracts the cost of all capital employed (Ooi and Liow, 2002). Subsequently, higher accounting profits are not indicative of an efficient use of capital and therefore may understate the actual cost of conducting business.

There are also studies that have examined the link between EVA and the balanced score card (Harold and Smith, 2004) activity based costing as well as total quality management (Grant, 2007; Shapiro, 2007). These studies found that linking EVA with the respective tools was beneficial in the design of improved performance measurement frameworks and subsequent value creation.

Not all the research has provided evidence in support of the EVA model as a better predictive indicator than the traditional accounting measures. For instance, Clinton and Chen (1998) found that cash flow return on investment (CFROI) and residual cash flow (RCF) consistently had significant association with share price and share returns whilst the EVA lacked any consistency. Chen and Dodd (2001) reported that higher reliance appeared to be placed on audited accounting earnings than on unaudited EVA measure. Biddle et al (1997) conducted regression analysis and found that earnings were significantly more correlated with market adjusted annual returns than residual income or EVA. The contradictory findings may be due to differences in the calculation of the EVA, as noted there are also some variations on the approach to dealing with non-cash accounting items such as goodwill as well as the treatment of research and development expenditure.

To address this contradiction in the literature this study adopts the more common approach to calculating EVA and provides comments as to the method employed as the paper progresses. However, according to Turvey, Lake, van Duren and Sparling (2000) the real test of EVA is to examine how it relates to share market values as compared to the more traditional performance measures of Earnings per Share (EPS); Return on Assets (ROA); and Return on Equity (ROE).

The primary purpose of this study is to empirically test the relative and incremental information content of EVA against the more traditional measures of performance such as Earnings per Share (EPS); Return on Assets (ROA); and Return on Equity (ROE). The approach to analyse relative information content is to compare one measure against another to determine which one provides greater information content.

The following null hypothesis was developed to test the assertion that EVA is a better measure in terms of the relative information content for explaining the changes in shareholders wealth (Stewart, 1994).

H_{01}: *The relative information content of EVA will not be superior to the traditional performance measures of Earnings per Share (EPS); Return on Assets (ROA); and Return on Equity (ROE) in explaining the market value for firms in the banking industry.*

The approach to evaluating relative information content is to compare the coefficients of determination (R^2) of regression of the various performance measures against the market value of the firms (Hair, Black, Babin, and Anderson, 2010).

The second null hypothesis is aimed at testing whether EVA provides any incremental information by comparison to the traditional performance measures of Earnings per Share (EPS); Return on Assets (ROA); and Return on Equity (ROE).

H_{02}: *The EVA will not add any additional information content to that which is provided by the traditional performance measures of Earnings per Share (EPS); Return on Assets (ROA); and Return on Equity (ROE.*

The approach for assessing incremental information content is to analyse the increase in the R^2 that occurs from the inclusion of additional variables into the model (Hair, Black, Babin, and Anderson, 2010).

Method

This study examines the EVA of the four major Australian banks, ANZ Bank, Commonwealth Bank Australia (CBA), National Australia Bank (NAB), and Westpac Banking Corporation (WBC). The banking industry was chosen for the readily available financial data and their regular trading on the Australian Stock Exchange (ASX). A longitudinal study was selected on the basis that any variation in the performance of the share market and the individual companies which would alleviate problems associated with outliers and the issue of sample size.

The data was obtained from the databases of Data Analysis Premium, Risk Measurement Services and the Reserve Bank of Australia.

Of the 165 adjustments suggested by Stern and Stewart (1993) only 5 to 6 have been found to make any significant difference to the EVA (Chari, 2009). According to Weaver (2001) the nature and number of adjustments to accounting figures in the calculation of EVA is generally tailored to suit the needs of the individual company. In this study the formula for calculating EVA is based on the formula provided by Biddel, Bowen and Wallace (1999) and is identified as:

EVA = (ROIC - WACC) x IC

where the abbreviations stand for:
ROIC = return on invested capital
WACC = weighted average cost of capital
IC = invested capital (at the beginning of the year)

This formula when broken down into its component parts reveals the following insights (Stewart, 1991; Langfield-smith, Thorne and Hilton, 2009):

- Given that the rate of return on invested capital = net operating profit after tax / invested capital
- Then the rate of return x invested capital = net operating profit after tax
- Therefore EVA = net operating profit after tax – (invested capital x weighted average cost of capital)
- Where weighted average cost of capital is averaged between the various sources of capital utilised by a business. For example the cost of equity relates to the opportunity cost to investors while the cost of bonds or debentures is derived as the after tax value of the interest rate.

The weighted average cost of capital was shown to be linked to the Capital Asset Pricing Model (CAPM) which is a common method for estimating the cost of equity (Copeland, Koller and Murrin, 1996). There are three main elements required for the calculation of CAPM, which would therefore also apply to the formulation of EVA, risk free rate, market risk premium, and beta values of the shares of the company. For the purposes of this study these elements are operationalized in the following manner.

Data and Variables

The risk free rate of return provides a benchmark against which the risk of assets can be compared. Whilst a truly risk free asset is virtually a theoretical perspective the common approach is to use 10 year treasury bond rates as a proxy as they are considered to share similar characteristics with shares specifically a long life (Brailsford, Heaney and Bilson, 2006). Thus for this study the Australian 10 year treasury bond rates are used as a proxy for the risk free rate of return. The data pertaining to the 10 year Treasury bond rates were derived from Reserve Bank of Australia and the averages calculated for each of the years from 2003 to 2011 are presented in Table 1.

Table 1: Averages of 10 Year Treasury Bond Rates 2003 to 2011

Year	Average Rate
2003	5.86
2004	5.23
2005	5.72
2006	5.19
2007	5.83
2008	6.15
2009	6.37
2010	5.49
2011	5.15
2012	5.02

Market risk premium is by definition the difference between the expected return on the market portfolio and the risk free rate of return (Brailsford, Heaney and Bilson, 2006). Estimates of the market risk premium have ranged from 5% to 8% for the USA (Brealey, Myers and Allen, 2006; Ibbotson, 2005; Copeland, Koller and Murrin, 1995). In Australia a study by Brailsford, Handley and Maheswaran (2006) found the market risk premium to be 6% per annum and in view of the research being conducted on Australian firms this value is used for the purposes of this study.

Beta values measure the risk of a particular company's shares relative to the changes occurring in the market portfolio (Brailsford, Heaney and Bilson, 2006).

Table 2: Average Beta Values 2003 to 2011

Year	ANZ	CBA	NAB	WBC
2003	0.6525	0.99	0.9425	1.27
2004	0.205	0.86	0.635	0.805
2005	0.2625	0.82	0.7575	0.825
2006	0.3475	0.6575	0.465	0.5925
2007	0.265	0.25	0.69	0.3125
2008	0.795	0.875	1.2175	0.7225
2009	0.9025	0.9775	1.0625	0.7775
2010	0.9675	0.84	1.08	0.97
2011	0.9975	1.1525	1.0675	0.9775

Table 3: Averages of Money Market Interest Rates 2003 to 2011

Year	Average Rate
2003	4.75
2004	5.25
2005	5.50
2006	5.75
2007	6.25
2008	7.25
2009	3.00
2010	4.50
2011	4.75
2012	3.50

Table 4: EPS, ROE and ROA for the years 2003 to 2011

	ANZ			CBA			NAB			WBC		
Year	*EPS*	*ROE (%)*	*ROA (%)*	*EPS*	*ROE (%)*	*ROA (%)*	*EPS*	*ROE (%)*	*ROA (%)*	*EPS*	*ROE (%)*	*ROA (%)*
2003	141.3	17.06	1.2	157.3	10.05	0.76	243.6	16.2	1	115.3	15.64	0.99
2004	145.07	15.25	1.05	196.8	11.48	0.84	211.45	13.36	0.83	127.7	17.1	1.04
2005	159.54	15.71	1.04	303	16.45	1.21	224.67	13.7	0.9	143.3	17.34	1.09
2006	188.65	18.05	1.07	296.71	18.18	1.03	250.98	15.6	0.87	165.7	21.73	1.03
2007	204.81	17.83	1	339.7	18.7	1.05	268.4	16.02	0.81	185.3	21.77	0.92
2008	147.83	11.44	0.64	344.44	18.5	0.97	260.9	13.26	0.69	196.73	21.34	0.86
2009	166.52	11.66	0.79	293.05	14.93	0.74	188.72	10.16	0.59	123.2	9.97	0.58
2010	194.93	14.74	0.95	370.53	16.91	0.92	207.74	11.76	0.67	191.86	15.42	0.95
2011	209.85	14.91	0.95	439.68	18.6	1.02	242.76	12.95	0.72	201.53	15.09	0.94

Accordingly, a company's beta is expected to change over time as circumstances in the market vary. For this reason the approach employed in this study involved the use of the average beta values for each year examined. The data pertaining to the average beta values of the Banks for each of the years from 2003 to 2011 are presented in Table 2.

The other prime source of capital in the banking industry is the money which they have at their disposal and for which they pay an interest. For the purpose of this study the interest rate for money which effectively may be considered to be borrowed acts as a proxy for bonds or debentures considered in other industries. The official money market rates as reported by the Reserve Bank of Australia are presented in Table 3.

The traditional performance measures (EPS, ROA and ROE) for the years from 2003 to 2011 were obtained from the DataAnalysis Premium “Financial Data” database (2014) and are presented in Table 4.

The market values (share prices) for the years from 2003 to 2011 were obtained from the DataAnalysis Premium “Price history” database (2014) and are presented in Table 5.

Table 5: Market Values for the years 2003 to 2011

Year	ANZ	CBA	NAB	WBC
2003	17.78	29.55	33.50	16.25
2004	18.28	32.58	29.84	17.60
2005	21.75	37.95	30.76	19.95
2006	26.59	44.41	35.16	23.28
2007	28.99	55.25	41.02	25.66
2008	18.72	40.17	26.50	20.00
2009	16.49	39.00	22.44	20.25
2010	21.61	48.64	23.28	21.23
2011	22.00	52.30	25.62	22.26

Results

To test the first null hypothesis a multiple regression analysis was conducted using the various performance measures as the independent variables and the market value for the banks as the dependent variable. The result pertaining to the standardised coefficients of the regression analysis are shown in Table 6.

Table 6: Coefficients

Model	*Standardised Coefficients*	*t*	Sig.
(Constant)		.772	.446
EPS	.884	11.544	.000
ROE	-.029	-.287	.776
ROA	-.020	-.176	.861
EVA	.151	1.639	.111

The comparison of the coefficients of determination (R2) shows that the EPS was significantly related whilst the others were not. More importantly the coefficient for EVA was not significant and as such the null hypothesis cannot be rejected but rather is upheld. That is the relative information content of EVA was not superior to the traditional performance measure of Earnings per Share (EPS). However, EVA was stronger than the other 2 measures ROE and ROA.

To test the second null hypothesis a series of multiple regressions were conducted progressively adding the independent variables to assess the impact on the R2. The details of results from the regressions are presented in Table 7.

Table 7: Increase in the R^2

Perform-ance Measure	*Model R^2*	*Increase in R^2 incremental*	*Pearson Correlation / Sig.*
EPS	.825	Base figure	.909 (.000)**
ROE	.826	+ .001	.265 (.118)
ROA	.829	+ .003	.149 (.386)
EVA	.842	+ .013	.329 (.050)*
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

Null hypothesis 2 is rejected since there is an increase in the R^2 with the inclusion of EVA into the model. EPS is, by its very nature, closely aligned with the movement in market value and as such was expected to be strongly correlated hence it was selected as the base from which to build the multiple regression model. The subsequent increase, from adding EVA, is noticeably greater than those associated with ROE and ROA which supports the claim that EVA provides incremental information content. More importantly, the correlation of EVA is significant at the 0.05 level.

Conclusion

The empirical results of this study do not support the claim that EVA is a superior tool to the traditional performance measures in explaining a firm's market value (as indicated by the share price). That is to say that the relative information content of the EVA performance measure was not significant in the model. However, there was evidence that the incremental information content was significant in the model. It is therefore difficult to dismiss EVA since there was strong correlation between EVA and market value (share price) to justify the argument that EVA is a viable performance metric.

A practical implication from this study is that companies may benefit from the use of EVA by disclosing the EVA in the annual financial reports. Since the study found that there was a significant incremental information content in the EVA model disclosure would be a way of demonstrating to shareholders the company's commitment to adding economic value.

This research may be extended by investigating the alternative approaches to calculating EVA as espoused in the literature. This study did not aim to test the different models for calculating EVA so it is certainly something for future research to investigate.

While this study has produced some useful empirical evidence pertaining to EVA it is important to note limitations. This study examined and compared EVA against the more common, but arguably, limited number of performance measures associated with market value. This focus was in response to the claims made in the literature however, this is only one way to evaluate the usefulness of a

performance measure. Here too future research may benefit from including more performance measures in the model.

References

Athanassakos, G., (2007), Value-based management: EVA and stock price performance in Canada, *Management Decision*, 45(9): 1397-1411.

Biddle, G.C., Bowen, R.M. and Wallace, J.S., (1999), Evidence on EVA, *Journal of Applied Corporate Finance*, 12(2): 69-79.

Brailsford, T., Heaney, R. and Bilson, C., (2006), *Investments: Concepts and Applications* (3rd Edition), Cengage Learning South Brisbane, Australia.

Brailsford, T., Handley, J. and Maheswaran, K., (2006), A Re-examination of the Historical Equity Risk Premium in Australia, *Working Paper*, University of Melbourne.

Brealey, R., Myers, S. and Allen, J., (2006), *Principles of Corporate Finance* (8th Edition), Irwin McGraw-Hill: Boston, NJ.

Chari, L., (2009), Measuring Value Enhancement Through Economic Value Added: Evidence from Literature, IUP *Journal of Applied Finance*, 15(9): 46-62.

Chen, S. and Dodd, J., (2001), Operating Income, Residual Income and EVA™: Which Metric is More Value Relevant?, *Journal of Managerial Issues*, 13(1): 65-86.

Clinton, B. and Chen, S., (1998), Do new performance measures measure up?, *Management Accounting*, 80(4): 38-43.

Copeland, T., Koller, T. and Murrin, J., (1995), *Valuation: Measuring and managing the Value of Companies* (2nd Edition), John Wiley and Sons: New York.

DataAnalysis Premium, (2014), *Price History and Financial Data*, Morningstar.

De Villiers, J. and Auret, C., (1998), A comparison of EPS and EVA as explanatory variables for share price, *Studies in Economics and Econometrics*, 22(2): 47-63.

Dunbar, K., (2013), Economic Value Added (EVA^{TM}): A Thematic-Bibliography, *Journal of New Business Ideas and Trends*, 11(1): 54-66.

Grant, J., (1996), Foundations of EVA for Investment Managers, *Journal of Portfolio Management*, 23(1): 41-48.

Grant, J., (2007), Primer on EVA for Health Care Providers, *Journal of Health Care Finance*, 33(3): 22-38.

Griffith, M., (2004), The True Value of EVA, *Journal of Applied Finance*, 14(2): 25-29.

Hair, J., Black, W., Babin, B. and Anderson, R., (2010), *Multivariate Data Analysis* (7th Edition), Prentice Hall: Upper Saddle River, NJ.

Harold, D. and Smith, D., (2004), Managing for Value: Developing a Performance Measurement System Integrating Economic Value Added and the Balanced Scorecard in Strategic Planning, *Journal of Business Strategies*, 21(1): 1-17

Ibbotson Associates, (2005*), Stocks, Bonds, Bills and Inflation Yearbook*, Ibbotson Associates: Chicago.

Jackson, A., (1996), The How and Why of EVA® at CS First Boston, *Journal of Applied Corporate Finance*, 9(1): 98-103.

Kim, W., (2006), EVA and Traditional Accounting Measures: Which Metric is a Better Predictor of Market Value of Hospitality Companies?, *Journal of Hospitality and Tourism Research*, 30(1): 34-49.

Langfield-smith, K., Thorne, H. and Hilton, R., (2009), Management Accounting: Information for creating and managing value (5th Edition), McGraw-Hill North Ryde, Australia.

Lehn, K. and Makhija, A., (1997), EVA, accounting profits, and CEO turnover: Empirical examination, 1985-1994, *Journal of Applied Corporate Finance*, 10(2): 90-97.

Milunovich, S. and Tsuei, A., (1996), EVA in the computer industry, *Journal of Applied Corporate Finance*, 9(1): 104-115.

O'Byrne, S., (1996), EVA and market value, *Journal of Applied Corporate Finance*, 9(1): 116-125.

O'Byrne, S., (1997), EVA and shareholder return, *Financial Practice and Education, 7*(1): 50-54.

Ooi, J. and Liow, K., (2002), Realestate corporations: The quest for value, *Journal of Property Investment and Finance*, 20(1): 23-35.

Palliam, R., (2006), Further Evidence on the Information Content of Economic Value Added, *Review of Accounting and Finance*, 5(3): 204-215.

Ray, R., (2001), Economic value added: Theory, evidence, a missing link, *Review of Business*, 22(1/2): 66-70.

Ratnatunga, J. and Montali, L., (2008) Performance Management Measures that Enhance Organisational Value: A Review, *Journal of Applied Management Accounting Research*, 6(2): 1:16

Shapiro, M., (2007), Economic Value Added: Can it Apply to an S Corporation Medical Practice?, *Healthcare Financial Management*, 61(8): 78-82.

Stewart, G. B., (1993), Reform your governance from within, *Directors and Boards*, 17(3): 48-48.

Stewart, G. B., (1994), EVA – fact and fantasy, *Journal of Applied Corporate Finance*, 7(2): 71-84.

Stern, J. and Stewart, G., (1993), *The Stern Stewart Performance 1000 Database Package: Introduction and Documentation*, Stern Stewart Management Services: New York.

Stern, J., Stewart, G. and Chew, D., (1995), The EVA Financial System, *Journal of Applied Corporate Finance*, 3(2): 38-55.

Tsuji, C., (2006), Does EVA beat earnings and cash flow in Japan?, *Applied Financial Economics*, 16(16): 1199-1216.

Turvey, C., Lake, L., van Duren, E. and Sparling, D., (2000), The Relationship between Economic Value Added and the Stock Market Performance of Agribusiness Firms, *Agribusiness*, 16(4): 399-416.

Uyemura, D., Kantor, C. and Pettit, J., (1996), EVA® for banks: Value creation, risk, management, and profitability measurement, *Journal of Applied Corporate Finance*, 9(2): 94-113.

Walbert, L., (1994), The Stern Stewart performance 1000: Using EVA® to build market value, *Journal of Applied Corporate Finance*, 6(4): 109-120.

Weaver, S., (2001), Measuring EVA: A Survey of Practices of EVA Proponents, *Journal of Applied Finance*, 11(1): 50-60.

Worthington, A. and West, T., (2004), Australian Evidence Concerning the Information Content of Economic Value Added, *Australian Journal of Management*, 29(2): 201-224.

Yee, K., (2007), Using accounting information for consumption planning and equity valuation, *Review of Accounting Studies*, 12 (2/3): 227-256.

Zaima, J. and Turetsky, H., (2005), The MVA-EVA Relationship: Separation of Market Versus Firm Driven Effects, *Review of Accounting and Finance*, 4(1): 32-48.