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Corporate shareholder value creation as contributor to economic growth

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Abstract

Purpose – The purpose of this paper is to determine if there is a link between corporate shareholder value creation and economic growth. The first objective of this paper is to determine which specific shareholder value measurement best explains shareholder value creation for a particular industry. The next objective of the study is to establish, for each of nine different categories of firms examined, a set of value drivers that are unique and significant in expressing shareholder value for that particular category of firms. Lastly, the relationship between shareholder value creation and economic growth is tested.

Design/methodology/approach – To quantify and measure value creation, the paper investigates the various value creation measurements that are being applied. The next step is to ascertain whether various industries have different value creation measures that best explain value creation for the respective industries. Then, the value drivers of these specific value creation measures can be determined and their relationship with economic growth tested.

Findings – The results of this study indicate that each industry does have a specific shareholder value creation measurement that best explains shareholder value creation for that industry; for example, for five of the nine categories (industries) that were analyzed, market value added was found to be the best shareholder value creation measurement, but for capital-intensive firms and manufacturing firms, the Qratio is the best measure, while for the food and beverage industry, the market to book ratio was found to be a better measure of shareholder value creation than other measures tested. It was further found that an increase in corporate shareholder value creation is to the detriment of economic growth.

Originality/value – The contribution of the present study is its determination of a unique shareholder value creation measurement for particular industries. In addition, a specific set of variables per industry that create shareholder value is identified. Lastly, the important link between shareholder value creation and economic growth is exposed.

Keywords Shareholder value creation, Industries, Economic growth, Economic value added, Market value added, Return on assets

Paper type Research paper

1. Introduction

On November 1, 2019, Moody's rating agency was the last of the big rating agencies to downgrade South Africa to subinvestment grade. The decision by Fitch to grade South Africa's credit rating at junk status much earlier than Moody's and downgrade its outlook further did probably put more pressure on the latter to follow suit and downgrade South Africa to subinvestment grade. One of the reasons for Fitch's more bearish outlook is low

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economic growth. For 2019, the SA Reserve Bank expects the economy to grow by 0.6%, less than half of the government's official forecast of 1.5%. On October 29, 2019, it was announced that the South African unemployment rate reached 29.1% – the highest in a decade. The South African minister of Finance, Mr Mboweni, released on August 27, 2019, an economic strategy blueprint for South Africa to boost growth and create jobs. The report, "Economic Transformation, Inclusive Growth and Competitiveness: Towards an Economic Strategy for South Africa" states that a combination of low growth and rising unemployment means that South Africa's economic trajectory is unsustainable (South African Treasury, 2019).

Therefore, it seems for now that the South African economy remains in a downward spiral of low economic growth and an ever-increasing unemployment rate. What sources of growth can there be to stop or reduce this trend? The answer does not lie in government spending, but in private sector fixed investment. Tanaka *et al.* (2020) found that factors such as investment, employment as well as sales growth are positively associated with a firm's gross domestic product (GDP) forecasts. However, it seems that the private sector is for a number of reasons unwilling to commit to investment to stimulate economic growth. During the past five years, insufficient demand, the political climate and policy uncertainty were unfortunately and undoubtedly the highest factors deterring the private sector from investment (Cokayne, 2019). The private sector's lack of appetite for capital investments is also evident from the fact that cash and cash equivalents are growing assets on their financial statements. Information from the integrated real-time equity system (IRESS) database shows that for Johannesburg Stock Exchange (JSE)-listed firms, excluding financial and mining companies (in essence the sample that will be analyzed in the present paper), cash and cash equivalents grew from R335bn in 2014 to R709bn in 2018, a yearly compounded growth rate of 21%. In relative terms, cash as percentage of total assets grow from 12.8% in 2014 to 14.6% in 2018. In addition, if all companies in SA – listed and unlisted – were treated as one company, then this company did not make a profit in 2018 (Heystek, 2019). In the absence of investment in plant and machinery, capacity and people, the economy of today will not be bigger than the economy of tomorrow. Manufacturing value has been proven to have a positive effect on economic growth in African and European countries (Saliminezhad and Bahramain, 2020; Karami *et al.*, 2019; Moyo and Jeke, 2019; Umezurike and Mthimkhulu, 2019).

An obvious driver of economic growth is fixed investment, and investors always incorporate risk when seeking the best possible return for their investment. The question therefore arises as how to measure and maximize the returns that investors or shareholders expect from their investments? If the most efficient shareholder value creation measurements and value drivers can be identified, could one not pursue or entice investors to invest in capital production capacity? In addition, if one could further refine the analysis and determine the best performance measurements and value drivers thereof for a specific industry, a recipe for value creation, capital formation and the reduction in unemployment could surely be on the table? In summary, the research question is therefore: How can various industries' value creation measurements be identified and optimized to enhance economic growth? The objective of this paper is therefore to identify the best shareholder performance measurements as well as its related value drivers for a specific industry. In addition, the relationship between shareholder value creation and economic growth needs to be investigated.

There is a wealth of literature on shareholder value creation measures, which is one of the most researched topics in corporate finance. For many years, the traditional accounting-based shareholder value creation measures – return on equity (ROE), return on assets

(ROA), earnings per share (EPS) and dividends per share (DPS), to name but a few – sufficed as measures to explain or express shareholder value creation. However, over time, researchers, management consultants and practitioners began to identify the limitations of these measures and a new breed of economic-based measures to express shareholder value creation emerged, namely, economic value added (EVA®), refined economic value added (REVA), market value added (MVA), cash value added (CVA), return on capital employed (ROCE) and residual income (RI), among others. Studies by Stewart (1991), Stern (1993), O'Byrne (1996), Lee and Kim (2009), Gupta and Sikarwar (2016) and Hall (2018) indicate that the economic-based measures work best to express shareholder value creation, whereas studies by Chen and Dodd (1997), Bao and Bao (1998), De Villiers and Auret (1998), Arabsalehi and Mahmoodi (2012) and Hall (2016) show that accounting-based measures are the best measures to express shareholder value creation. Reasons for the differences in the results of these past studies could arise from differences in the samples used, the shareholder value creation measures used, the statistical techniques applied and which country the data originate from.

As a first step to answer the research question as to how to measure or express shareholder value creation, the present study investigates the various value creation measurements that are currently being applied. To quantify and measure value creation, the first objective of this paper is to determine which specific shareholder value measurement best explains shareholder value creation for that particular industry. This objective can be achieved by making a number of refinements to and expanding on previous studies. For a start, the present study avoids using a homogeneous group of firms and instead classifies the chosen firms into different industries, as it is believed that different industries or types of firms will have different variables that explain the shareholder value creation measures of a specific type of firm best. Furthermore, based on the results of past studies, the number of shareholder value creation measures is limited and refined, and so are the value drivers that explain or express these measurements.

The present study further attempts to establish whether accounting-based or economic-based internal value drivers are dominant in explaining shareholder value creation for that particular industry and whether these value drivers change if the shareholder value creation measurement is changed. The next objective of the study is to establish, for each of nine different categories of firms examined, a set of value drivers that are unique and significant in expressing shareholder value for that particular category of firms. The final objective of the present study is to determine whether corporate shareholder value creation contributes to economic growth.

The contribution of the present study is its determination of a unique shareholder value creation measurement for particular industries. In addition, a specific set of variables per industry that create shareholder value is identified. As far as can be ascertained, this has been attempted only in a limited number of studies (Lee and Kim, 2009; Hall, 2013, 2016). The contribution of an analysis of this nature is *first* that it could serve as a blueprint for private sector firms to lure them into fixed investment projects with measurable and manageable performance measurements, which will result in shareholder value creation, capital formation, an increase in employment and ultimately an increase in economic growth. *Second*, management and shareholders alike will recognize that each industry has its own shareholder value creation measurement, with a specific set of value drivers. *Third*, being equipped with a tailor-made shareholder value creation measurement for a particular industry can help in the evolvement of a managerial compensation yardstick tied to increases in shareholder value. *Lastly*, portfolio managers will be made aware of the fact that there are specific differences in variables that create shareholder value for the different

industries in which they plan to invest, and for which they want to perform share valuations, apply valuation methods or make investment recommendations to their clients.

The literature overview of this paper will first address the link between value creation and economic growth. Thereafter, the attention turns to shareholder value creation performance measurements and the results of past studies. After a discussion of the research methods of the present study, an analysis of the empirical results follows. In the conclusion to the study, recommendations base on the findings will be made.

2. Literature review

In the literature section of this paper, as introduction, the link between economic growth, productivity and value creation will pave the way for a discussion on the evolvement of shareholder value creation measurements. An analysis of past studies on this topic will identify a gap and contribution that the present study will make and will lead to the hypotheses that will be tested in the present study.

2.1 Economic growth, productivity and value creation

South Africa is in an unsustainable downward spiral of low economic growth and rising unemployment. There are a number of factors that drive economic growth, such as land (natural resources available), the accumulation of capital stock (physical capital), increases in labor inputs (human capital) and technological advances (Chien, 2015). The positive relationship between employment and economic growth, as measured by the GDP, was confirmed by the results of a study on South African data by Meyer (2017), who recommended that the manufacturing sector needs to be the focus of development with the promotion of manufactured value-added products for export to form the core of economic growth.

As discussed in the Introduction section, cash and cash equivalents of South African companies increase at the extraordinary rate of 21% per year. It therefore seems that one of the reasons that the private sector does not want to engage in investment activities is due to the fact that they will not achieve the required rate of return – the projects are not financially viable. Therefore, the question arises as to what extent (if at all) corporate shareholder value creation directly, and indirectly, contributes to economic growth, as measured by the change in GDP over time?

If one follows the line of reasoning that increases in productivity will lead to increases in economic growth which in turn will reduce unemployment, the question arises: How can private sector firms in South Africa most efficiently increase productivity? Increases in productivity normally has as result the creation of shareholder value. Once shareholder value is created, output will be maximized and capital will be formed. Therefore, if the private sector in South Africa can most efficiently create shareholder value, economic growth could be stimulated and unemployment should decline.

It is the objective of the present paper to investigate the shareholder value creation measurements as well as it underlying value drives for a number of industries. The results of such an analysis will be of benefit to individual shareholders, investors and the suppliers of capital, but most importantly, it will speak directly to the macroeconomic factors of economic growth and unemployment.

2.2 Shareholder value creation measurements

Shareholder value creation measurements is and probably will remain one of the most researched corporate finance topics. Among the reasons for this might be the fact that management of firms are increasingly coming under pressure to deliver value creation

returns in return for the executive compensation that they receive. On a macroeconomic level, economic growth and employment could be enhanced if private sector value creation can take place; the whole concept of corporate stakeholder value creation also plays a role as well as the sustainability of an enterprise, the latter which can only be achieved if value creation takes place over a continuous period.

Over the past decades, a large number of shareholder value creation measurements has been used, evolved or created. Originally, traditional accounting-based measurements such as ROA, ROE and EPS suffice for management and shareholders alike.

The principle of economic profit was expressed by Alfred Marshall in 1890, developed further by Fruhan (1979) and popularized by Stewart (1991) as EVA. Since then, EVA has given birth to shareholder value performance measures such as EVA momentum, discounted EVA, REVA and CVA. In addition, Myers (1997) listed measures such as Holt's cash flow return on investment, Boston Consulting Group's total business return, McKinsey's economic profit and LEK/ALcar's shareholder value added as economic-based measures of shareholder value creation.

This large array of shareholder value creation measurements inadvertently resulted in a search for the best measurement for value creation or value destruction. Studies have been conducted on data from various countries to determine which internal performance measure (whether accounting-based or economic-based) correlates best with shareholder value creation measures (such as stock returns, market-adjusted stock returns or MVA). Table 1 summarizes the salient features of a selection of 42 such studies covering the period from 1991 to 2019 (while one recognizes that there are many other studies of similar nature, it seemed that they all have a large overlap or similarity in the variables that they use to analyze and achieve their study's objectives; analyzing more studies to find additional variables for the present study will most probably add no or very marginal additional information; the law of diminishing marginal returns probably applies if one adds more studies than those in Table 1 to identify shareholder value creation measurements).

It is recognized that these studies listed in Table 1 differ regarding their sample sizes, types of firms and research methodology applied. However, in analyzing the results of the studies, one can see that there are vast differences overall in the number (27) of independent (value driver) variables used. There are also differences in the number (four) of different dependent variables (shareholder value creation measures) used as proxies for shareholder value creation. It falls beyond the scope of the present study to analyze these studies in greater detail, but based on the differences in the results of these studies, the following question arises: Which performance measure is actually the best to explain shareholder value creation? In addition, do different shareholder measures best explain shareholder value creation for different samples of data (industries)?

McGahan and Porter (1997) found that industry effects accounts for a smaller profit variance in the manufacturing sector but larger variance in the entertainment sector, retail sector and transportation sector. Baca *et al.* (2000) as well as Phylaktis and Xia (2006) illustrate that industry sector effects have surpassed country effects in explaining variations in stock market returns. Hence, if one can find a corporate performance measure that best explains shareholder value creation for a particular industry, that performance measurement should be used as tool for management to manage and improve shareholder value creation, and for shareholders even as a possible performance yardstick for compensating the management of that industry.

An analysis of the studies in Table 1 shows that, with only a few exceptions, each individual study used a homogenous group of firms. The present study aims to improve on this by first using several categories or samples (industries) of firms to perform the

Table 1.
Results of studies on shareholder value performance measurements, 1991–2019

Authors	Internal independent variable(s)	External dependent variable(s)	Result	Country
Stewart (1991)	EVA, EPS, ROE and others	MVA	EVA	USA
Stern (1993)	EVA, ROE, cash flow growth, EPS growth, asset growth	MVA	EVA	USA
Lehn and Makhija (1996)	EVA, MVA, ROA, ROE	Stock return	EVA, MVA	USA
Milunovich and Tsuei (1996)	EVA, EVA growth, ROE, FCF	MVA	EVA	USA
O'Byrne (1996)	EVA, NOPAT, FCF	Market value÷ IC	EVA	USA
Bacidore, Boquist, Millbourn, and Thakor (1997)	REVA, EVA	Stock returns	REVA	USA
Biddle, Bowen, and Wallace (1997)	EVA, EBEI, RI, OCF	Market-adjusted stock returns	EBEI	USA
Chen and Dodd (1997)	EVA, change in EVA, ROC, SPREAD, capital GROWTH, EPS, ROA, ROE	Stock return	ROA, EVA	USA
Kramer and Pushner (1997)	NOPAT, EVA	MVA	NOPAT	USA
Bao and Bao (1998)	NI, EVA, value added	Equity value; share price	Value added (accounting)	USA
De Villiers and Auret (1998)	EPS, EVA per share	Share price	EPS	South Africa
Hall (1999)	EVA, discounted EVA, ROA, ROE, ROCE, EPS, DPS and others	MVA	EVA (same result as discounted EVA)	South Africa
Turvey, Lake, Van Duren, and Sparling (2000)	ROA, ROE, EVA, CAPM	Stock return	No significant relation	Canada
Fernandez (2001)	EVA, NOPAT, WACC	MVA	NOPAT	USA
Worthington and West (2004)	EVA, RI, NCF, EBEI	Stock returns	EVA	Australia
De Wet (2005)	EVA, CFO ÷ IC, ROA	MVA	CFO ÷ IC	South Africa
Ismail (2006)	EVA, RI, NI, NOPAT, OCF	Stock returns	NI, NOPAT	UK
Kyriazis and Anastassis (2007)	EVA, NI, OI	Stock returns; MVA	NI, OI	Greece
Chmelikova (2008)	EVA, ROA, ROE	Market value of equity ÷ equity	EVA	Czech Republic

(*continued*)

Table 1.

Authors	Internal independent variable(s)	External dependent variable(s)	Result	Country
Visaltanachoti, Luo, and Yi (2008)	CFO, EBIT, RI, EVA	Market-adjusted returns	EBIT	USA
Erasmus (2008)	CVA, EVA, RI, EBEI, CFO	Market-adjusted returns	RI	South Africa
Dumitru and Dumitru (2009)	CFO, EPS, DPS, EVA, ROA	MVA	CFO	Romania
Lee and Kim (2009)	EVA, REVA, MVA, CFO, ROA, ROE	Market-adjusted returns	REVA, MVA	USA
Maditinos, Sevic, and Theriou (2009)	EVA, EPS, ROI, ROE, SVA	Stock returns	EVA with EPS	Greece
Kumar and Sharma (2011)	EVA, NOPAT, OCF, ROE, ROCE	MVA	NOPAT, OCF	India
Abdoli *et al.* (2012)	EVA, RI	Created shareholders value	RI	Iran
Arabsalehi and Mahmoodi (2012)	EVA, REVA, MVA, SVA, EPS, ROE, ROA, Cash from operations, return on sales	Stock returns	ROA, ROE	Iran
Khan *et al.* (2012)	EVA, NI, OCF	Stock returns	OCF	Pakistan
Othman *et al.* (2012)	EVA	Stock returns	No or low relation	Malaysia
Bhasin (2013)	ROCE, ROE, EPS, EVA	MVA	ROCE, ROE	India
Nakhaei and Hamid (2013)	NI, OI, EVA	Share market value	NI, OI	Iran
Parvaei and Farhadi (2013)	EVA, FCF, RI, NI	Stock returns	EVA	Iran
Shubita (2013)	NI, RI, EVA	Stock returns	NI	Jordan
Aloy Niresh and Alfred (2014)	EVA	MVA	No significant relation	Sri Lanka
Panigrahi *et al.* (2014)	EVA, EPS, ROE, ROA, ROCE	Created shareholder value	EVA	Malaysia
Saji (2014)	EVA, cost of capital	Stock returns	EVA	India
Altaf (2016)	EVA, OI, FCF, EPS, ROA, ROCE and others	MVA	OI	India
Gupta and Sikarwar (2016)	EPS, ROA, ROE, EVA	Stock returns	EVA	India
Hall (2016)	EPS, ROA, NOPAT, EVA, ROCE	MVA	EPS, ROA, NOPAT	South Africa

(*continued*)

Table 1.

Authors	Internal independent variable(s)	External dependent variable(s)	Result	Country
Iroshani and Rajapakse (2016)	EPS, ROE, ROA	MVA	No relation	Sri Lanka
Al-Awawdeh and Al-Sakini (2018)	EVA, MVA, ROA, ROE, EPS	Shareholder value	ROA, EVA	Jordania
Obaidat (2019)	EVA, NOPAT, NCF	MVA	NCF	Jordania
Siburian and Yohanes (2019)	EVA, CFO, ROA, ROCE, ROE, Spread	MVA	CFO, EVA, ROA	Indonesia

Notes: CAPM: capital asset pricing model; CFO: cash flow from operations; CVA: cash value added; DPS: dividend per share; EBEI: earnings before extraordinary items; EPS: earnings per share; EVA: economic value added; FCF: free cash flow; IC: invested capital; MVA: market value added; NCF: net cash flow; NI: net income attributable to ordinary shareholders; NOPAT: net operating profit after tax; OCF: operating cash flow; OI: operating income; REVA: refined economic value added; RI: residual income; ROA: return on assets; ROC: return on capital; ROE: return on equity; SPREAD: ROCE minus weighted average cost of capital, WACC; SVA: shareholder value added; value added: an accounting profit measure

Source: Own compilation

statistical analysis. Various types of firms should have different variables that best explain shareholder value creation measures: a capital-intensive firm's operations and capital structure is markedly different to that of a retail, which in turn differs vastly at the hand of these aspects to a technology firm. Second, based on previous studies, for the present study, the number of dependent and independent variables are reduced.

The shareholder value creation measures (dependent) and value drivers used to explain shareholder value creation (independent) variables that are used in the present study were identified from the results of the 42 studies in Table 1 above, as well as the results of studies by Hall (2013, 2016 and 2018). The final preferred measures were determined by means of the statistical analyses in the present study. The dependent variables (shareholder value creation measures) for the present study therefore are:

- MVA (market value minus economic capital used);
- the market to book ratio (MTB, the ratio of market value of equity at year-end to the book value of equity);
- Tobin's Q ratio (Qratio, the market value of equity plus the book value of interest-bearing debt to the replacement cost of fixed assets); and
- the return on capital employed ÷ cost of equity (ROEKE).

The independent variables (value drivers) regressed against the dependent variables in the present study are:

- EVA (return on economic capital minus the weighted average cost of capital [WACC], multiplied by capital);
- ROA (return on average inflation-adjusted assets);
- ROCE (return on economic capital employed); and
- the SPREAD (the difference between the ROCE and the WACC).

The independent variables thus consist of three economic-based measurements, namely, EVA, ROCE and the SPREAD, while ROA is used as the sole accounting-based measure.

Based on the objectives of the study, the following hypotheses are therefore tested:

H1. Each industry has a specific significant shareholder value creation measurement that explains shareholder value creation best for that particular industry.

H2. Economic-based value indicators have a higher significance in explaining shareholder value creation than accounting-based value indicators.

H3. Different shareholder value creation measurements have different explanatory internal value indicators (drivers) that are significant in explaining shareholder value creation.

H4. Each industry has a unique set of variables (value drivers) determining shareholder value creation.

H5. Corporate shareholder value creation directly, and indirectly, contributes to economic growth.

In the next section, the research methods to test these hypotheses will be addressed.

3. Research method

The research method followed in this study is set out below, discussing the various industries selected for analysis, the dependent and independent variables, as well as the

statistical techniques that were applied. The data used for this study were obtained from IRESS, a South African supplier of quality financial data.

The analysis examines data for a sample of 229 JSE-listed firms from 2001 to 2018. The data set represents a broad cross section of firms, with the exception of firms in the banking, basic resources (mining), financial, insurance, investment and real estate sectors, which were excluded due to difficulties in calculating their dependent and independent variables. Nine unique samples were compiled, as shown in Table 2. The samples focusing on industry type include samples focusing on the EVA values of firms, as well as the capital-intensity and labor-intensity of the various firms in the population.

Four measures of shareholder value creation were considered as dependent variables, namely, MVA, MTB, Qratio and ROEKE. A fifth dependent variable, namely, a market-adjusted stock return (MAR), was used by Hall (2016), but he found that MAR was not the preferred measure of shareholder value creation for any of the nine abovementioned samples and is therefore excluded from analyzes in the present study. Regarding the independent variables, the study by Hall (2016) used 11 different value drivers (based on the results of prior studies), but the four most frequently occurring independent variables in that analysis, namely, EVA, ROCE, the SPREAD and ROA, were selected as independent regressors for the present study, thereby reducing the danger of overspecifying of the models and having to revert to a backward stepwise regression analysis to reduce the variables. Therefore, the variables for the present study are based on the results of past studies as indicated.

The present study used a panel data approach (a fixed effects modeling approach) for its regressions. This approach takes both the time-series and cross-sectional aspect of data into account and gives a larger number of data points, thereby increasing the degrees of freedom and reducing collinearity among the independent variables.

Financial and economic data are often found to be highly correlated. Identifying individually significant regressors may therefore be difficult due to the likely presence of multicollinearity. The working assumption is that multicollinearity is present within the regressions; although the degree of multicollinearity has not been established. According to Wooldridge (2012), the problem of multicollinearity is not particularly well-defined, nor is it immediately clear from the measures of multicollinearity when the issue should be considered a "problem" because there is no absolute value to conclude when multicollinearity might be a problem. By pooling the data – and verifying the poolability of the data using the likelihood ratio – the analysis attempts to address whether, as a group, the variables are able to explain the dependent variable. Multicollinearity typically also becomes less of a concern as the sample size grows. The sample of 192 companies in the

Sample	Description	*n*
S1	All firms	229
S2	Firms with positive EVA values	137
S3	Capital-intensive firms	35
S4	Labor-intensive firms	35
S5	Sector: Construction and materials	26
S6	Sector: Food and beverages	27
S7	Sector: Industrial goods (manufacturing)	63
S8	Sector: Retail	28
S9	Sector: Technology	21

Source: Own calculations

Table 2.
Sample descriptions

present study is deemed large enough to minimize the margin of error related to multicollinearity. Lastly, multicollinearity may be a necessary evil in cases where a variable, or variables, is deemed theoretically important. The assumption here is that each of the value drivers in the present study capture a unique aspect of a company and that it is only the combination of these which will fully explain each individual company's value creation offering or ability.

Time-specific fixed effects were not included, as these fall beyond the scope of this analysis; the focus of the present study was to determine whether there are cross-sectional differences between firms operating in different industries. Outliers that fell outside three standard deviations from the mean were discarded.

To establish the validity of the data, a number of statistical tests were performed, including tests for serial correlation, heteroskedasticity and stationarity. Corrections for serial correlation were made, using Prais–Winston adjustments. Autoregressive terms were added where this was deemed necessary. As a test, clustering of standard errors was performed on the data, but the results of the models did not change materially. It was confirmed that the structure of the data conformed to the assumptions of the fixed effects model. Furthermore, the validity of all the fixed effects models was established and confirmed by the likelihood ratio test.

Three sets of multiple regression models were considered in the analysis. The first set considered a base case for each of the four dependent variables and is specified by the following equation:

$$y_{it} = \beta_0 + \beta_1 EVA_{it} + \beta_2 ROCE_{it} + \beta_3 Spread_{it} + \beta_4 ROA_{it} + \varepsilon_{it} \quad (1)$$

where y_{it} refers to the four dependent variables (MVA, MTB, Qratio and ROEKE) for each cross-section (firm) i at time-period t for each of the nine samples. The stochastic error term for firm i at time t is represented by ε_{it}.

The second model set [as given by Equation (2)] expands on Equation (1) by successively adding a one-period lag of one of the independent variables to the base case:

$$y_{it} = \beta_0 + \beta_1 EVA_{it} + \beta_2 ROCE_{it} + \beta_3 Spread_{it} + \beta_4 ROA_{it} + \beta_5 x_{it-1} + \varepsilon_{it} \quad (2)$$

where x_{it-1} represents a single lagged independent variable for firm i at time t.

The final model considered four separate estimations, each replacing one of the independent regressors with its one-period lag:

$$y_{it} = \beta_0 + \beta_1 EVA_{it-1} + \beta_2 ROCE_{it} + \beta_3 Spread_{it} + \beta_4 ROA_{it} + \varepsilon_{it}$$

$$y_{it} = \beta_0 + \beta_1 EVA_{it} + \beta_2 ROCE_{it} + \beta_3 Spread_{it} + \beta_4 ROA_{it-1} + \varepsilon_{it} \quad (3)$$

Following the estimations, the second and third modeling scenarios were compared to the base case to determine whether there was an improvement in the predictive ability of the models, as shown by the adjusted R^2 value for each specification.

In the next section, the results from the empirical analysis are presented and discussed.

If one turn to *H5* which addresses the relationship between shareholder value creation and economic growth, the latter is measured by the change in GDP over time. At its most aggregated, GDP is defined as:

$$Y_t = C_t + G_t + I_t + (X_t - M_t) \quad (4)$$

where Y_t represents the dependent variable GDP at time t; C_t and G_t represent private and government consumption expenditure, respectively; I_t represents investment; and $(X_t - M_t)$ represents net exports.

There are several paths through which shareholder value creation could drive economic growth. Two important pathways include (a) the direct effect on investment through changes to I_t and (b) indirectly through shareholder income from firm holdings which translate into consumption expenditure and some investment (mainly C_t but also G_t and I_t).

To evaluate the empirical link between shareholder value creation and economic growth, nominal GDP (as published by the national statistical authority, Stats SA) is regressed against each of the four measures of shareholder value creation (MVA, MTB, Qratio and ROEKE). This establishes a direct causal relationship between economic growth and the measures of shareholder value creation. The regressions are specified according to the following general equation:

$$y_{it} = \beta_0 + \beta_1 INDEP_{it} + \varepsilon_{it} \quad (5)$$

where y_{it} represents dependent variable GDP and $INDEP_{it}$ represents a single independent (value creation measure) variable for firm i at time t.

The above specification provides a broad link between economic growth and shareholder value creation. To further evaluate the impact of shareholder value creation, regressions for the two abovementioned pathways (investment and income) are also estimated.

In similar specifications to equation (5), the investment pathway is evaluated by regressing the value measures against gross fixed capital formation (GFCF or investment), while the income pathway is assessed by using the gross operating surplus (GOS) as the dependent variable. GOS is a measure of economic profit earned by the holders and owners of capital in the economy and together with the remuneration of employees provide an alternative method of measuring GDP in the economy. In this case, GDP is calculated as the income earned by the factors of production (capital and labor). The full sample of firms was used in the estimations.

4. Empirical results

The empirical results will be presented by first discussing the descriptive statistics. Next will be the model validity selection (determination of best shareholder value creation measurement fit for a specific sample) at the hand of two rounds of fixed model estimation. This is followed by the regression analyzes to determine the value drivers of a value creation measurement for a particular industry.

4.1 Descriptive statistics

The descriptive statistics of the mean values for the nine samples over the period 2001 through 2018 are presented in Table 3 below.

The different units of measurement should not affect the statistical inference of the regressions but will affect the interpretation of the coefficients. Broadly, the interpretations will be as follows: a one unit increase in an independent variable – keeping all others constant – will lead to an increase (or decrease, depending on the sign of the coefficient) of the dependent variable equal to the coefficient attached to that independent variable. The individual units of each indicator have been retained to improve the ease of interpretation. One could have unitized the Rand-values but the interpretation is not as intuitive.

Sample	EVA (R'000)	MTB	MVA	Qratio	ROA%	ROCE%	ROEKE%	SPREAD%
All firms	226.40	5.10	3.86	3.93	13.42	11.40	1.45	2.75
Firms with positive EVA	662.61	6.74	5.07	5.01	16.70	14.88	2.16	7.97
Capital-intensive firms	729.52	5.45	2.34	2.30	13.97	13.17	1.52	2.85
Labor-intensive firms	720.85	3.69	2.53	2.47	13.47	16.10	1.47	4.76
Construction and materials	(39.29)	3.66	2.68	2.99	9.47	9.12	1.42	0.26
Food and beverages	123.00	2.29	1.90	1.94	10.96	16.23	1.66	(0.39)
Manufacturing	(195.43)	1.55	1.63	1.33	12.48	6.80	1.09	(0.01)
Retail	367.91	7.84	5.29	5.99	15.11	13.42	2.47	11.44
Technology	(43.99)	9.34	3.44	3.10	15.01	17.16	1.30	3.97

Source: Own calculations

Table 3. Sample descriptive statistics

The descriptive statistics in Table 3 highlight the differences in value for the various variables in the different samples. The EVA ranges from −R195,430 for manufacturing firms to R729,520 for capital-intensive firms. This represents the widest range in values when compared with the other regressors. ROCE differs from 6.8% in the industrial goods (manufacturing) sector to 17.2% for firms with a positive EVA. All nine categories of firms have a positive MTB, MVA and Qratio, with narrow bands between the highest and lowest averages for each of the variables. All nine categories of firms report a positive ROA, with the lowest value of 9.5% for the construction and materials sector, and the highest value of 16.7% for firms with a positive EVA.

These descriptive statistics also show that only the retail sector showed consistent positive figures across all the measures. The differences in the values of both the independent and dependent variables between the various categories of firms, as well as differences between the categories of firms, suggested that the empirical results of the statistical analysis would also reflect these differences, with corresponding implications in this regard.

The descriptive statistics of the mean for the economic variables over the period from 2001 to 2018 are given in Table 4.

4.2 Model validity

To assess the validity of the use of fixed effects models, the likelihood ratio test was applied to the four dependent variables: MVA, MTB, Qratio and ROEKE. The likelihood ratio test assesses the pooled models – models with a common cross-sectional intercept – against models with individual cross-sectional intercepts; the fixed effect models. The likelihood ratio results for MVA and Qratio indicate that fixed effects specifications are appropriate for all samples. The results for MTB indicate that fixed effects should not be applied to Sample 8 but are appropriate for all other samples for this dependent variable. The likelihood ratio results for ROEKE indicate that fixed effects specifications are appropriate for most of the

	GOS	GDP	GFCF
Mean (ZAR bn)	1,282.91	3,049.13	532.46

Source: Own calculations

Table 4. Economic variable descriptive statistics

samples – only Samples 6 and 8 should not include fixed effect. Because the cross-sectional differences between firms are of interest, any sample for which fixed effects were found not to be appropriate were dropped. MTB Sample 8 and ROEKE Samples 6 and 8 were therefore not included in any subsequent analyzes.

4.3 Preferred shareholder value creation measurements

The preferred shareholder value creation measure was selected through two rounds of fixed effects estimation. In the first round of estimations, models for shareholder value creation were estimated for all samples and any identified problems with the data were corrected for. Table 5 presents a summary of the different samples (industries) and how the preferred shareholder value creation measurements conform to the statistical conditions after the second round of estimations.

In the first round of fixed effects estimations, all but one of the models displayed joint significance of the independent variables – as indicated by their *F*-values and corresponding probabilities – at the 5% level. The probability of rejection of joint significance in the model for ROEKE in Sample 6 was estimated at 89.7%, an emphatic rejection of the null hypothesis.

The adjusted R^2 values, an indication of the overall explanatory power of the models, for the various models were mixed. The values for MVA ranged from 17.6% in Sample 1 to 95.5% in Sample 8. Five of the nine samples showed overall adjusted R^2 values of below 50%, with Samples 1 and 2 being below 25%. Similarly, both MTB and Qratio also showed five of the nine samples to have adjusted R^2 values below 50%. MTB generally performed poorer than both MVA and Qratio, with a maximum adjusted R^2 value of 58.3% in Sample 6. Qratio showed a maximum adjusted R^2 value of 93.1% in Sample 8. The results for ROEKE were generally poor, with seven of the nine samples showing adjusted R^2 values of 44.3% or lower. Interestingly, Samples 9 displayed much higher adjusted R^2 value – 88.4%. Given the range of adjusted R^2, none of the dependent variables stand out as the preferred measure of shareholder value creation after the first round of estimation. Overall, ROEKE performed the worst.

In the first round of estimation, the Durbin–Watson statistics for all but one of the models indicated the presence of positive serial correlation. The only model not to show positive serial correlation, Sample 7 for ROEKE, was found to have negative serial correlation. Given the presence of serial correlation in all of the models as well as low adjusted R^2 values, *a second round of estimations* was undertaken to attempt to improve the models, particularly in terms of the presence of serial correlation.

The joint significance of the independent variable in each of the models remained significant at the 5% level. The models showed a vast improvement in explanatory power. For MVA, all but one (Sample 9) of the models showed improved adjusted R^2 values. The

	MVA	MTB	Qratio	ROEKE
Adj. $R^2 > 0.5$	4	3	4	2
p-value < 0.01	9	9	9	8
DW: Positive SC	9	8	9	7
DW: No SC	–	–	–	1
DW: Negative SC	–	1	–	1

Source: Own calculations

Table 5. Number of samples conforming to statistical conditions

adjusted R^2 values are all in the region of 60% or higher, with Sample 9 showing an adjusted R^2 value of 48.0%; just under the 50% mark. MTB showed little improvement, with one additional sample, up from three to four, having an adjusted R^2 value above 50%. The upper range of the samples improved to 80.0%, while the below 50% samples showed very little improvement. The explanatory power of MTB models for Samples 1 and 2, in particular, was very low. This suggests, perhaps, that MTB is not the most appropriate measure of shareholder value creation for the general sample or for firms with positive EVA values. This may be because of the broad representation of industries within these two samples.

The Qratio improves drastically, with all the models now having adjusted R^2 values above 50%; most being far above the 50% mark. Sample 8, in particular, performed very well with the explanatory power of the Qratio as a measure of shareholder value creation being at least 15 percentage points higher than for any other sample.

ROEKE improved only marginally, with one additional model exceeding the 50% threshold. Notably, ROEKE performed very poorly for Samples 2 (4.7%) and 5 (0%), indicating almost no explanatory power for these models at all.

With regards to serial correlation, only two models in the second round of estimation displayed no serial correlation, namely, MTB for Sample 5 and the Qratio for Sample 7. The rest of the models still presented with serial correlation while the positive to negative autocorrelation ratio is now 26 to 8. It should be noted, however, that while there was no significant improvement in the number of models presenting serial correlation, the Durbin–Watson statistics for the models were all within a margin to the no serial correlation range for each of the samples.

While serial correlation is still present in the majority of the models, it is typically weak, falling just outside the range of no serial correlation. Serial correlation is typically present in financial-type data, where unobserved shocks in one period could affect behavioral relationships for a number of following periods. It could therefore be argued that the degree of serial correlation should perhaps be the focus rather than the presence thereof. In the presence of serial correlation, the precision of the individual model coefficients may be overassumed; this should be taken into account when making inference with the independent variables.

Table 6 presents the preferred model for each of the nine samples following the second round of estimation. All of the models remained jointly significant at the 5% level. Given the persistence of serial correlation was present in most of the models, the preferred model selection was based on the highest adjusted R^2 value for the four measures of shareholder value creation for each of the samples.

The differences in shareholder value creation measures for each of the different industries attest to the differences between firms in the various industries and suggest that different measures are best suited to explain the variations in shareholder value creation for each industry. MVA features most frequently being deemed the most appropriate measure in five of the nine samples. All firms were included in Sample 1, and the results from the sample suggest that, for the performance analysis of firms with no particular common characteristic, MVA appears to be the best shareholder value creation measure. Interestingly, MVA is also deemed most appropriate for firms with positive EVA values – also a broad category of firms – and labor-intensive firms. Shareholder value creation in the construction and materials and retail sectors, both of which can be considered to be relatively labor-intensive when compared to the other sectors, is also best explained by MVA. Overall, based on this study, MVA therefore seems to perform best for sectors and firms that are generally labor-intensive. Although not entirely comparable to the present

Table 6. Preferred shareholder value creation measurement for each sample

Sample	Dependent variable	Adj. R^2	F-value	p-value	Durbin–Watson LDW	DW	UDW	SC
All firms	MVA	0.582	14.799	0.000	1.9003	1.295	2.0682	Positive SC
Firms with positive EVA	MVA	0.844	57.168	0.000	1.8734	1.474	2.0791	Positive SC
Capital-intensive firms	Qratio	0.753	31.573	0.000	1.8072	1.680	2.0971	Positive SC
Labor-intensive firms	MVA	0.840	60.937	0.000	1.8072	1.613	2.0971	Positive SC
Construction and materials	MVA	0.680	15.980	0.000	1.8072	1.568	2.0971	Positive SC
Food and beverages	MTB	0.796	29.467	0.000	1.8072	2.197	2.0971	Negative SC
Manufacturing	Qratio	0.577	14.005	0.000	1.8072	2.040	2.0971	No SC
Retail	MVA	0.964	267.336	0.000	1.8072	1.132	2.0971	Positive SC
Technology	ROEKE	0.894	63.406	0.000	1.8072	1.673	2.0971	Positive SC

Source: Own calculations

study, similar results have been found by Aloy Niresh and Alfred (2014), Altaf (2016), Hall (2016), Iroshani and Rajapakse (2016) and Siburian and Yohanes (2019).

Qratio features as the preferred shareholder value creation measure for two firms (capital-intensive firms and the manufacturing sector), while both MTB and ROEKE are the preferred measure in one industry each: food and beverages, and technology, respectively. Of all the sectors considered, the technology sector stands out in that it is not particularly labor-intensive or specifically manufacturing-focused. It therefore seems appropriate that it's preferred measure of shareholder value creation, ROEKE, does not feature as the preferred measure for any other sector or firm type. Most of the shareholder value creation measures performed well in terms of overall fit, with adjusted R^2 values that all exceed 57%, while most also exceed 65%.

Based on these results, one can therefore conclude that *H1* is true: each industry does have a specific shareholder value creation measurement that explains shareholder value creation best for that particular industry. Therefore, industries can optimize their shareholder value creation management and goals by using the specific measurement for their industry, as indicated in these results.

Regarding the model validity of the economic variables, the adjusted R^2 values, an indication of the overall explanatory power of the regressions, are all above 97% for the three groups of specifications indicating higher overall explanatory power. The high correlation between the value measures and economic variables may, however, result in upward bias in the R^2 values.

When considering the joint significance of the variables in each of the regressions, the near-zero p-value related to the F-statistic for all of the regressions indicates that the regressions are significant at the 1% level. It should, however, be noted that the presence of a single regressor will result in high F-values and could skew the results in terms of significance. This could be improved by adding additional regressors, which may, along with measures of shareholder value creation, drive economic growth. These additional explanatory variables fall beyond the scope of this analysis.

Durbin–Watson statistics for the regressions all fall below 1.9003, this after the correction for serial correlation. This indicates that positive serial correlation remains present in all of the regressions. The serial correlation is, however, weak in most cases. Serial correlation is typically present in financial-type data, where unobserved shocks in one period could affect behavioral relationships for a number of following periods. It could therefore be argued that the degree of serial correlation should perhaps be the focus rather than the presence thereof. In the presence of serial correlation, the precision of the individual model coefficients may be overassumed; this should be taken into account when making inference with the independent variables.

4.4 Regression results

Table 7 presents the regression coefficients for the preferred models of the shareholder value creation measurements as well as their levels of significance. While the F-statistics for all the preferred models indicated joint significance of the independent variables, it is also important to consider the significance of the individual regressors in each of the models. A number of the coefficients were not considered significant at the 10% level and have values which are close to zero.

Broadly, the negative coefficients indicate that certain economic value drivers may decrease the overall shareholder value creation. This seems to contradict conventional wisdom but may perhaps be reflective of pervasive structural problems in the South African economy. A persistently high unemployment rate, income inequalities and (perhaps consequently) low

Table 7. Regression statistics for the significant industries

Independent variable	Coefficient All firms MVA	Firms with a positive EVA MVA	Capital-intensive firms Qratio	Labor-intensive firms MVA	Construction and materials MVA	Food and beverages MTB	Manufacturing Qratio	Retail MVA	Technology ROEKE
EVA	−0.099	−0.094**	−0.086***	−0.060**	0.350**	0.060	0.010	−0.079	−2.700**
ROCE	−0.157***	−0.078***	0.010	0.015**	0.018*	0.006	0.000	−0.092***	−0.008
SPREAD	0.004	−0.001	0.001**	0.004	−0.006*	−0.001	0.000	−0.024***	−0.017*
ROA	0.134***	0.194***	0.029*	0.034**	0.013*	−0.023	−0.004	0.245***	0.205***
Regression statistics									
Adj. R^2	0.582	0.844	0.753	0.840	0.680	0.796	0.577	0.964	0.894
p-value	0.000	–	0.000	0.000	0.000	0.000	0.000	0.000	0.000
DW	1.295	1.474	1.680	1.613	1.568	2.197	2.040	1.132	1.673

Notes: *, ** and ***Significant, respectively, at the 10, 5 and 1% levels
Source: Own calculations

savings rate in South Africa means that economic growth in South Africa is typically consumption-driven rather than investment-driven. There is therefore a greater preference for cash at the expense of savings. This is further exacerbated by an environment of low investor confidence in South Africa. Moreover, pension funds and other retirement savings vehicles form a large portion of shareholding in South Africa, meaning that an increase in shareholder value creation increases long-run savings and to an extent firms' ability to grow but does not translate into higher disposable income for the majority of households or increase consumer consumption expenditure.

Shareholder value creation and economic growth are, therefore, somewhat at odds, reflecting the desire for immediate purchasing power which would drive economic growth in the short-term and the desire for long-term and precautionary savings which do not necessarily translate to growth in an economy with a volatile investment environment such as South Africa. Although my reasoning here focusses on South Africa (as the present study uses South African data), these principles can be applied to other emerging economy countries, as well as when a specific country's data are used in the analyses.

There is little evidence that a particular independent variable should be included in all the models or that a particular regressor should be excluded. Certain patterns are, however, evident in the regression statistics. ROCE is only significant when included in an MVA-based model. For all other value creation measures, ROCE is not significant – in most cases overwhelmingly so.

ROA is significant in seven of the nine samples. In the case of the manufacturing sector, ROA is a fringe case and is only narrowly found not to be significant. While the signs associated with most of the independent variables vary significantly for the different firms and value measures, ROA is in most cases, barring the retail and manufacturing sectors, is positively related to shareholder value creation. This result is confirmed by studies by Chen and Dodd (1997), Arabsalehi and Mahmoodi (2012), Hall (2016), Siburian and Yohanes (2019) and Banerjee and Majumdar (2020). It seems therefore that the management of assets (both long term and short term) will eventually enhance shareholder value creation. In this regard, firms may also apply a number of asset turnover ratios (e.g. the total current-, stock-, debtors-, and long-term asset turnover ratios) to assist in the optimal use and application of assets.

The regression results for the construction and materials sector are the most robust, with all regressors being individually and jointly significant. The general firms sample (Sample 1) as well as firms with positive EVA values and capital-intensive firms also have generally well-performing models. Therefore, firms in these industries can benefit greatly by applying the value creation measurement (as indicated in Table 7) in their particular industry, for example, firms in the construction and materials industry can uses all four (EVA, ROCE, SPREAD and ROA) value creation measurements. Firms in the retail industry will benefit by using the ROCE, SPREAD and ROA.

The preferred models for the food and beverages and manufacturing sectors perform particularly poorly, with none of the independent variables being significant; in most cases to a high degree.

Based on the above results, one can conclude that *H2 is true*: economic-based indicators have a higher impact than accounting-based indicators. Previous studies that found similar results include those of Biddle *et al.* (1997), Bao and Bao (1998), De Villiers and Auret (1998), Ismail (2006), Bhashin (2013), Shubita (2013), Hall (2016) and Banerjee and Majumdar (2020). The implications for business are that firms can place an emphasis on the economic-based value indicators in contrast to accounting-based value indicators. In addition, it is evident that as the shareholder performance measurements change, so does their set of independent

variables (value drivers). This mean that *H3* is also true. Therefore, firms must be aware that if they change from one shareholder value creation measurement to another, a different set of variables (value drivers) will apply.

Given the mixed performance of the preferred models following the second round of estimations, all but the model for the construction and materials sector requires further attention. In an attempt to improve the preferred models, two sets of estimations were undertaken: (1) a set of estimations where the lag of one of the independent variables was added to the specification and (2) a set off estimations where a single independent was replaced with its one-period lag.

4.5 Additional regression results

Four models were estimated for each of the preferred equations in each of the samples, with each model adding a single one-period lagged variable to the specification while keeping all other regressors the same. The joint significance of the independent variables in all of the estimated models was found to be significant. The construction and materials sector was excluded from the additional specifications.

The models generally showed an improvement in their adjusted R^2 value, therefore improving the overall fit of the model. The improvements were, however, marginal – the largest being 4.6 percentage points and the smallest just over zero percentage points. Eight of the models saw a decline in overall fit. These figures ranged from a 0.01 to a 12.03 percentage point decline, although the majority were in the range of −0.7 and −0.01 percentage points. The preferred lagged independent was selected based on the largest improvement in the adjusted R^2 value.

Serial correlation remains present in most of the models, with only labor-intensive firms displaying no serial correlation. Where the manufacturing sector previously had no serial correlation, negative autocorrelation is now present. The remaining firms have seen no change in the overall direction of their serial correlation.

The updated regression results for additional lagged variables were calculated. The results show little improvement in the individual significance of a number of the independent variables. Most notably, the majority of the additional lags are found not to be significant. Samples 6 and 7 improved marginally in that each model had one significant independent as opposed to none with the baseline estimation.

A final attempt to improve the overall preferred models looked at sequentially replacing each of the independent regressors with their one-period lag. While the regressors remained jointly significant in all of the models, serial correlation still persists. The direction of serial correlation has remained the same for all models.

While the fit of a number of models improved marginally – the largest improvement being 4.4 percentage points. A large portion of the models showed a marked decline in their explanatory power with decreases as high as 48.4 percentage points. The preferred lag was again selected based on the largest improvement in the adjusted R^2 value for the preferred regressions. The implication of this finding for businesses is that time differences (last year or the year before last year) do not significantly influence the results of shareholder value creation measurement calculations if compared to the current year's calculations of said measurements. Therefore, decision-making and management of shareholder value creation is not affected by time differences of inputs in the measurements.

Table 8 provides the regression results for the updated preferred models. The results do not represent significant improvements when compared with the baseline. The retail sector model, however, does improve with the independent variables being jointly and individually significant.

Table 8.
Updated regression statistics for the significant industries with replaced independent lags included

	Coefficient								
	S1	S2	S3	S4	S5	S6	S7	S8	S9
Independent variable	MVA	MVA	Qratio	MVA	MVA	MTB	Qratio	MVA	ROEKE
Dependent	EVA	EVA	ROA	ROCE	EVA	EVA	EVA	EVA	EVA
EVA(−1) ('000,000)	0.017	0.066*	X	X	X	0.174**	−0.003	0.702**	−3.130
EVA ('000,000)	X	X	−0.098***	−0.054*		X	X	X	X
ROCE(−1)	X	X	X	0.015***		X	X	X	X
ROCE	0.000	0.000***	−0.001	X		0.000	0.000*	0.000***	0.000
SPREAD(−1)	X	X	X	X		X	X	X	X
SPREAD	−0.138**	−0.066***	0.008	0.006**		0.013	−0.009	−0.081***	−0.005
ROA(−1)	X	X	0.002**	X		X	X	X	X
ROA	0.004***	−0.001	X	0.006		−0.003	0.002	−0.019***	−0.026***
Regression statistics									
Adj. R^2	0.626	0.846	0.756	0.855	X	0.803	0.601	0.970	0.905
p-value	0.000	–	0.000	0.000		0.000	0.000	0.000	0.000
DW	1.344	1.864	1.690	1.770		2.176	2.260	1.506	1.786

Notes: *, **, ***Significant, respectively, at the 10, 5 and 1% levels
Source: Own calculations

Therefore, based on the results in Table 8, one can conclude (disappointingly) that we could not improve significantly on the base case (Table 6). It can be pointed out that an analysis with a shorter time period improved some of the models. However, in the present study's case where a longer time period with relative fewer variables were used, the expected improvement in the models seemed to be eliminated by the two mentioned factors. This might be an important finding and, in addition, might be a catalyst for further study in this regard.

With the inclusion of the additional time-periods, the analysis present may also have captured a fundamental change in the structure and drivers for each of the industries. This may occur for a number of reasons, first, the natural (and perhaps inevitable) change in the structure of any industry and, second, industry responses to the 2008/2009 global recession, which was only fully evident around 2011 and would therefore not have featured strongly in data sets which do not include the years beyond 2011. This may point to a need to perhaps repeat the previous research done by Hall (2016, 2018) to identify (possible) new sets of drivers for each industry.

To address *H4* (that every different industry or sector should have a different set of value drivers), Table 9 was compiled. Table 9 summarizes the significant value drivers for each industry in declining order of appearance.

Table 9 shows that ROA was a significant variable in seven of the nine industries, while EVA and ROCE were significant in five of the industries. The SPREAD was significant in four of the industries. Disappointingly, based on the results of the present study, no significant value drivers were found for the food and beverages industry and also not for the manufacturing industry. This is difficult to explain and possibly warrants further investigation and research. However, based on the significant results, businesses must concentrate on ROA (asset management), EVA and ROCE (emphasizing capital and the financing of assets) in their shareholder value creation management.

Turning to *H5* (the relationship between shareholder value creation measurements and economic growth), the regression results are presented in Table 10.

When regressed against GDP or GOS, three of the four value measures (MVA, MTB and Qratio) show significant coefficients at the 5% level. The coefficients related to these value measures are negative, indicating an inverse relationship between the measures of shareholder value creation and economic growth. However, when regressed against investment (GFCF), the coefficients related to the value creation measures are not significant. This perhaps speaks to the mechanism by which these three measures affect economic growth: by stimulating the income pathway, rather than being directly related to investment in the economy. A study by Aggarwal and Padhan (2017) found, contrary to the present study, a significant relationship between firm value (note, not necessarily shareholder value) and the GDP of India.

Interestingly, the GDP and GOS specifications for ROEKE indicate that when considering GDP or GOS as dependents, the coefficients related to the independent variable (ROEKE) are not significant. When considering GFCF, the coefficient related to ROEKE is negative and significant at the 10% level. This suggests that ROEKE is important to economic growth specifically through the investment pathway.

From these results, one can conclude that shareholder value creation does impact economic growth, albeit through different pathways depending on the economic or accounting nature of the value measurement. *H5* is therefore accepted.

Overall, the results of the present study achieved the research objectives and answered the research questions and hypotheses. In the next section, recommendation based on the results will be made.

Table 9.
Significant shareholder value measurements and value drivers per industry

All firms	Firms with a positive EVA	Capital-intensive firms	Labor-intensive firms	Construction and materials	Food and beverages	Manufacturing	Retail	Technology
MVA	MVA	Qratio	MVA	MVA	MTB	Qratio	MVA	ROEKE
ROA	ROA	ROA	ROA	ROA			ROA	ROA
	EVA	EVA	EVA	EVA				EVA
ROCE	ROCE		ROCE	ROCE			ROCE	
		SPREAD		SPREAD			SPREAD	SPREAD

Source: Own compilation

Pool	Depend.	R^2	F-stat	F-prob	DW	Const.	Coefficients INDEPEND.	TIME
GDP	MVA	0.9990	13,169	0.0000	1.8432	−2,688	−0.0684 (0.01) **	1.0439 (0.04) **
	MTB	0.9990	13,157	0.0000	1.8427	−2,689	−0.0361 (0.07) *	1.0439 (0.04) **
	Qratio	0.9990	13,167	0.0000	1.8428	−2,689	−0.0472 (0.02) **	1.0439 (0.04) **
	ROEKE	0.9990	13,330	0.0000	1.8594	−2,991	−0.1052 (0.17)	1.0416 (0.03) **
GOS	MVA	0.9969	4,367	0.0000	1.8739	−4,868	−0.0479 (0.00) ***	1.0156 (0.00) ***
	MTB	0.9969	4,364	0.0000	1.8745	−4,873	−0.0296 (0.02) **	1.0156 (0.00) ***
	Qratio	0.9969	4,366	0.0000	1.8734	−4,869	−0.0328 (0.01) ***	1.0156 (0.00) ***
	Roeke	0.9970	4,163	0.0000	1.8469	−5,046	0.0154 (0.73)	1.0151 (0.00) ***
GFCF	MVA	0.9738	516	0.0000	1.6111	2,642	−0.0317 (0.24)	–
	MTB	0.9738	516	0.0000	1.6099	2,641	−0.0256 (0.39)	–
	Qratio	0.9738	516	0.0000	1.6107	2,642	−0.0180 (0.36)	–
	ROEKE	0.9739	477	0.0000	1.6251	2,095	−0.0916 (0.06) *	–

Notes: *, ** and ***Significant, respectively, at the 10, 5 and 1% levels
Source: Own calculations

Table 10.
Regression statistics for the economic growth regressions

5. Conclusion

The purposes of the present paper is to sought private sector involvement in investment projects by determining the best way to determine and express shareholder value creation as well as to identify industry specific value drivers of shareholder value creation. It is believed that private sector value creation could foster capital formation, generate economic growth and reduce unemployment.

The literature overview of shareholder value creation measurements revealed the development and initial popularity of economic-based measurements as opposed to accounting-based measurements. A large number of research studies (41 of which were analyzed in the present study) were undertaken to search for the best measurement to express shareholder value creation and to determine the value drivers of value creation. The results of the present study are significant and fill a gap in literature, as previous studies used mainly homogenous samples, in contrast to the present study which analyzes nine different categories of firms with four different shareholder value creation measurements, namely, *MTB, MVA, Qratio* and *ROEKE*.

The results of this study indicate that each industry does have a specific shareholder value creation measurement that best explains shareholder value creation for that industry; for example, for five of the nine categories (industries) that were analyzed, *MVA* were found to be the best shareholder value creation measurement, but for capital-intensive firms and manufacturing firms, the *Qratio* is the best measure, while for the food and beverage industry, the *MTB* was found to be a better measure of shareholder value creation than other measures tested. In addition, economic-based value drivers were found to be more significant than accounting-based value drivers in explaining shareholder value creation. It was found that each industry does have a unique set of variables determining shareholder value creation. The method of this study provides a refined method for analyzing shareholder value creation measures. It shows that results do indeed vary when different shareholder value creation measures are used and that the same set of results is unlikely if different industries are analyzed. Lastly, the inverse relationship between shareholder value creation and economic growth demonstrates that these two variables are to a great extent mutually exclusive. Therefore, private sector corporate shareholder value creations come at the expense of economic growth and capital formation. As indicated in the Introduction

section of this paper, the rising cash balances of the corporate sector is "idle" money that does not contribute to capital growth.

Based on the results of this study, first it is envisaged that private sector investments can be generated, as investors can now be sure as how to concentrate on and measure shareholder value creation within a specific industry. For example, for capital-intensive firms, the *Qratio* is the preferred shareholder value creation measurement with the *ROA* as the value driver – various underlying components of the *ROA* are therefore important in the generation and creation of value in this industry. In the construction industry, the *MVA* can be used as measurement with the *EVA* as value driver – an analyzes of the various components of *EVA* will play an important role in steering toward value creation. Second, portfolio managers can now use a specific shareholder value creation measurement as one of their portfolio selection criteria. In addition, portfolio managers need to take into account the different value drivers of industries in their analyzes and recommendations. For use in an industry-specific analysis by portfolio managers, it has been established that the accounting-based value driver *ROA* explains shareholder value creation better than economic-based variables such as *EVA, ROCE* and the *Spread*. In addition, based on the results of the present study, it is clear that certain industries (construction, firms with a positive EVA and capital-intensive firms) have well-defined value drivers, while the same cannot be said of the food and beverages and manufacturing sectors. In these last two sectors, further analysis is necessary. Finally, the compensation yardsticks used for managerial compensation can be aligned with a particular industry. For example, the *MVA* of a firm will suffice as compensation yardstick for a number of types of firms while the management of firms in the food and beverages industry could be compensated based on the *MTB* of their firms, the management of technology firms could be compensated using the *ROEKE* and the management of firms in the industrial goods (manufacturing) industry will best be compensated if rewards are based on the *Qratio*.

In conclusion, the results of the present study suggest that the unique characteristics of each industry determine the optimal choice of shareholder value creation measurement and its value drivers. It is further important to note that to stimulate economic growth, corporate shareholder value creation needs to be "sacrificed." Therefore, the South African government is busy preparing guidelines of "prescribed investments" for certain industries and retirement funds. It seems that the view is taken by government that if the private sector does not want to invest in projects that will contribute to economic growth, they need to be prescribed to do so. Further studies can be undertaken to determine the role and influence of cash on value creation – it is expected that cash could regress negatively to shareholder value creation, and therefore investors, shareholders and management can be persuaded to release those cash toward investment. The concept of "sustained value creation" can be pursued – therefore, what are the characteristics of those firms that continuously create value over a long period of time, and how can one learn from them? Furthermore, would there be differences in the results of the present study if different time periods are being analyzed?

Shareholder value creation is believed to be one of the catalysts or instigators for economic growth and a reduction in unemployment. However, the political will and government policy support is probably a prerequisite for the private sector to engage in investment projects.

References

Abdoli, M., Shurvarzi, M. and Farokhad, A.D. (2012), "Economic value added vs. accounting residual income: which one is a better criterion for measurement of created shareholders value?", *World Applied Sciences Journal*, Vol. 17 No. 7, pp. 874-881.

Aggarwal, D. and Padhan, P. (2017), "Impact of capital structure on firm value: evidence from Indian hospitality industry", *Theoretical Economics Letters*, Vol. 7 No. 4, pp. 982-1000.

Al-Awawdeh, H. and Al-Sakini, S.A.K. (2018), "The impact of economic value added, market value added and traditional accounting measures on shareholders' value: evidence from Jordanian commercial banks", *International Journal of Economics and Finance*, Vol. 10 No. 10, p. 40.

Aloy Niresh, J. and Alfred, M. (2014), "The association between economic value added, market value added and leverage", *International Journal of Business and Management*, Vol. 9 No. 10, pp. 126-133.

Altaf, N. (2016), "Economic value added or earnings: what explains market value added in Indian firms?", *Future Business Journal*, Vol. 2 No. 2, pp. 52-166.

Arabsalehi, M. and Mahmoodi, I. (2012), "The quest for superior financial performance measures", *International Journal of Economics and Finance*, Vol. 4 No. 2, pp. 116-126.

Baca, S.P., Garbe, B.L. and Weiss, R.A. (2000), "The rise of sector effects in major equity markets", *Financial Analysts Journal*, Vol. 56 No. 5, pp. 34-40.

Bacidore, J.M., Boquist, J.A., Millbourn, T.T. and Thakor, A.V. (1997), "The search for the best financial performance measure", *Financial Analysts Journal*, Vol. 53 No. 3, pp. 11-20.

Banerjee, R. and Majumdar, S. (2020), "Determinants of shareholder value creation – platform versus traditional business models", *International Journal of Business Performance Management*, Vol. 21 Nos 1/2, pp. 230-244.

Bao, B. and Bao, D. (1998), "Usefulness of value added and abnormal economic earnings: an empirical examination", *Journal of Business Finance and Accounting*, Vol. 25 No. 1, pp. 251-264.

Bhasin, M.L. (2013), "Economic value added and shareholder's wealth creation: evidence from a developing country", *International Journal of Finance and Accounting*, Vol. 2 No. 4, pp. 185-198.

Biddle, G.C., Bowen, R.M. and Wallace, J.S. (1997), "Does EVA® beat earnings? Evidence on associations with stock returns and firm values", *Journal of Accounting and Economics*, Vol. 24 No. 3, pp. 301-336.

Chen, S. and Dodd, J.L. (1997), "Economic value added (EVA™): an empirical examination of a new corporate performance measure", *Journal of Managerial Issues*, Vol. 9 No. 3, pp. 318-333.

Chien, Y. (2015), "What drives long-run economic growth? On the economy", June 2015. www.stlouisfed.org/on-the-economy/2015/june/what-drives-long-run-economic-growth (accessed 9 September 2019).

Chmelikova, G. (2008), "Economic value added versus traditional performance metrics in the Czech food-processing sector", *International Food and Agribusiness Management Review*, Vol. 11 No. 4, pp. 49-65.

Cokayne, R. (2019), "Businesses deterred from investing in SA", available at: www.moneyweb.co.za/news/south-africa/businesses-deterred-from-investing-in-sa/ (accessed 10 September 2019).

De Villiers, J.U. and Auret, C.J. (1998), "A comparison of EPS and EVA as explanatory variables for share price", *Journal for Studies in Economics and Econometrics*, Vol. 22 No. 2, pp. 47-63.

De Wet, J. H. V H. (2005), "EVA versus traditional accounting measures of performance as drivers of shareholder value – a comparative analysis", *Meditari Accountancy Research*, Vol. 13 No. 2, pp. 1-16.

Dumitru, A.P. and Dumitru, C.E. (2009), "EVA versus traditional accounting measures of performance as drivers of shareholder value – a comparative analysis", Retrieved on August 31, 2017, available at: www.upm.ro/proiecte/EEE/Conferences/papers/S309.pdf

Erasmus, P. (2008), "The relative and incremental information content of the value-based financial performance measure cash valued added (CVA)", *Management Dynamics*, Vol. 17 No. 1, pp. 2-15.

Fernandez, P. (2001), "EVA and cash value added do not measure shareholder value creation", Retrieved on September 1, 2017, available at: https://edisciplinas.usp.br/pluginfile.php/3883400/mod. . ./0/Chapter%2034.pdf

Fruhan, W.E. (1979), "Financial strategy: studies in the creation, transfer, and destruction of shareholder value", Homewood, IL: Irwin.

Gupta, V.K. and Sikarwar, E. (2016), "Value creation of EVA and traditional accounting measures: Indian evidence", *International Journal of Productivity and Performance Management*, Vol. 65 No. 4, pp. 436-459.

Hall, J.H. (1999), "Correlating internal and external performance yardsticks in the evaluation of corporate wealth creation", *Meditari Accountancy Research*, Vol. 7, pp. 123-143.

Hall, J.H. (2016), "Industry-specific determinants of shareholder value creation", *Studies in Economics and Finance*, Vol. 33 No. 2, pp. 190-208.

Hall, J.H. (2013), "Toward improved use of value creation measures in financial decision-making", *Journal of Applied Business Research (Jabr)*, Vol. 29 No. 4, pp. 1175-1188.

Hall, J.H. (2018), "Value creation measures: an industry-based study", *International Journal of Productivity and Performance Management*, Vol. 67 No. 2, pp. 1-20.

Heystek, M. (2019), "Financial catastrophe is upon SA", available at: www.biznews.com/wealth-building/2019/10/16/financial-catastrophe-magnus-heystek (accessed 10 September 2019).

Iroshani, M.B.M. and Rajapakse, R.M.A.D.P. (2016), "Accounting based performance measures and shareholder value creation: evidence from listed companies in Colombo Stock Exchange", *Proceedings of the Undergraduates Research Conference – 2016*, 11th January 2017, Department of Accountancy, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka.

Ismail, A. (2006), "Is economic value added more associated with stock return than accounting earnings? The UK evidence", *International Journal of Managerial Finance*, Vol. 2 No. 4, pp. 343-353.

Karami, M., Elahinia, N. and Karami, S. (2019), "The effect of manufacturing value added on economic growth: empirical evidence from Europe", *Pressacademia*, Vol. 8 No. 2, pp. 133-146.

Khan, M.A., Shah, N.H. and Ur Rehman, A. (2012), "The relationship between stock return and economic value added (EVA): a review of KSE-100 Index (January 26, 2012)", SSRN, available at: https://ssrn.com/abstract=1992209 or doi: 10.2139/ssrn.1992209.

Kramer, J.K. and Pushner, G. (1997), "An empirical analysis of economic value added as proxy for market value added", *Financial Practice and Education*, Vol. 7 No. 1, pp. 41-49.

Kumar, S. and Sharma, A.K. (2011), "Further evidence on relative and incremental information content of EVA and traditional performance measures from select Indian companies", *Journal of Financial Reporting and Accounting*, Vol. 9 No. 2, pp. 104-118.

Kyriazis, D. and Anastassis, C. (2007), "The validity of the economic value added approach: an empirical application", *European Financial Management*, Vol. 13 No. 1, pp. 71-100.

Lee, L. and Kim, W.G. (2009), "EVA, refined EVA, MVA, or traditional performance measures for the hospitality industry?", *International Journal of Hospitality Management*, Vol. 28 No. 3, pp. 439-445.

Lehn, K. and Makhija, A.K. (1996), "EVA and MVA as performance measures and signals for strategic change", *Strategy and Leadership*, Vol. 24 No. 3, pp. 34-38.

McGahan, A.M. and Porter, M.E. (1997), "How much does industry matter, really?", *Strategic Management Journal*, Vol. 18, pp. 15-30.

Maditinos, I.D., Sevic, Z. and Theriou, N.G. (2009), "Modeling traditional accounting and modern value-based performance measures to explain stock market returns in the Athens stock exchange (ATE)". *Journal of Modelling in Management*, Vol. 4 No. 3, pp. 182-201.

Meyer, D.F. (2017), "An analysis of the short and long-run effects of economic growth on employment in South Africa", *International Journal of Economics and Finance Studies*, Vol. 9 No. 1, pp. 177-193.

Milunovich, S. and Tsuei, A. (1996), "EVA in the computer industry", *Journal of Applied Corporate Finance*, Vol. 9 No. 1, pp. 104-115.

Moyo, C. and Jeke, L. (2019), "Manufacturing sector and economic growth: a panel study of selected African countries", *GATR Journal of Business and Economics Review*, Vol. 4 No. 3, pp. 114-130.

Myers, R. (1997), "Measure for measure", *CFO Magazine*, pp. 18-23.

Nakhaei, H. and Hamid, N.I.N.B. (2013), "Analyzing the relationship between economic value added (EVA) and accounting variables with share market value in Tehran stock exchange (TSE)", *Middle-East Journal of Scientific Research*, Vol. 16 No. 11, pp. 1589-1598.

O'Byrne, S.F. (1996), "EVA and market value", *Journal of Applied Corporate Finance*, Vol. 9 No. 1, pp. 116-125.

Obaidat, A.N. (2019), "Is economic value added superior to earnings and cash flows in explaining market value added? An empirical study", *International Journal of Business, Accounting and Finance*, Vol. 13 No. 1, pp. 57-69.

Othman, I.W., Ching, P.W. and Ghazali, A.W. (2012), "The relationship between economic value added and Malaysian stock market performance", Paper presented at the 2012 International Conference on Innovation, Management and Technology Research (ICIMTR2012), Malaca, Malaysia, May 21-22, 2012.

Panigrahi, S.K., Zainuddin, Y. and Azizan, A. (2014), "Comparing traditional and economic performance measures for creating shareholder's value: a perspective from Malaysia", *International Journal of Academic Research in Accounting, Finance and Management Sciences*, Vol. 4 No. 4, pp. 280-289.

Parvaei, A. and Farhadi, S. (2013), "The ability of explaining and predicting of economic value added (EVA) versus net income (NI), residual income (RI) and free cash flow (FCF) in Tehran stock exchange (TSE)", *International Journal of Economics and Finance*, Vol. 5 No. 2, pp. 67-77.

Phylaktis, K. and Xia, L. (2006), "Sources of firms' industry and country effects in emerging markets", *Journal of International Money and Finance*, Vol. 25 No. 3, pp. 459-475.

Saji, T.G. (2014), "EVA and stock returns in emerging markets: the Indian evidence", *IUP Journal of Accounting Research and Audit Practices*, Vol. 13 No. 4, pp. 25-35.

Saliminezhad, A. and Bahramain, P. (2020), "Toda Yamamoto causality test", *International Journal of Business Environment*, Vol. 11 No. 1.

Shubita, M.F. (2013), "The information content of economic value added and residual income – evidence from Jordan", *Journal of Economics and Sustainable Development*, Vol. 4 No. 13, pp. 124-131.

Siburian, E. and Yohanes, A. (2019), "Shareholder value creation measurement analysis in healthcare, materials, and real estate industry in Indonesia", *Advances in Economics, Business and Management Research*, Vol. 89, pp. 380-387.

South African Treasury (2019), available at: www.treasury.gov.za/comm_media/press/2019TowardsanEconomicStrategyforSA.pdf (accessed 22 February 2022).

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

Stewart, G.B. (1991), *The Quest for Value: The EVATM Management Guide*, Harper Business, New York, NY.

Tanaka, M., Bloom, N., David, J.M. and Koga, M. (2020), "Firm performance and macro forecast accuracy", *Journal of Monetary Economics*, Vol. 114, pp. 26-41.

Turvey, C.G., Lake, L., Van Duren, E. and Sparling, D. (2000), "The relationship between economic value added and the stock market performance of agribusiness firms", *Agribusiness*, Vol. 16 No. 4, pp. 399-416.

Umezurike, C.A. and Mthimkhulu, S.F. (2019), "The relationship between the South African manufacturing sector and economic growth", https://2019.essa.org.za/fullpaper/essa3765.pdf (accessed 1 March 2022).

Visaltanachoti, N., Luo, R. and Yi, Y. (2008), "Economic value added (EVA®) and sector returns", *Asian Academy of Management Journal of Accounting and Finance*, Vol. 4 No. 2, pp. 21-41.

Wooldridge, J.M. (2012), *Introductory Econometrics, a Modern Approach*, 5th ed., South-Western, Cengage Learning. Mason, OH.

Worthington, A.C. and West, T. (2004), "Australian evidence concerning the information content of economic value added", *Australian Journal of Management*, Vol. 29 No. 2, pp. 201-223.

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