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A Study on the Effects of Industry and Time on Profitability in Listed South African Companies

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ABSTRACT

The determinants of the antecedents of the profitable performance of companies are a field of interest which should be at the forefront of the mind of the executives of any profit making institution. Industry structure and its effects on profitability have long been a focus of study in the management literature. This study focuses on the effects industry and time have on profitability in the South African business milieu.

A quantitative research method was followed whereby three different profitability ratios were calculated across two hundred and eighty nine listed South African entities over a ten year period to determine if there is a statistically significant link between industry effect and profitability as well as time and profitability. The study was undertaken in the form of hypotheses tests to determine if such links did exist.

In the empirical evidence resulting form the hypothesis tests, three out of the three tests for industry effect on profitability were found to be statistically significant and two of the three tests for the effect of time on profitability were found to be statistically significant. These results show that in South African listed companies, industry has a statistically significant effect on profitability. While the effect of time on profitability does appear to be statistically significant however this is dependent on the types of profitability measures used.

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DECLARATION

I declare that this research project is my own, unaided work. It is submitted in partial fulfilment of the requirements of the degree of Master of Business Administration for the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other university.

………………………………………. Date: 14 November 2007
Simon Morgan

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1 INTRODUCTION TO THE RESEARCH PROBLEM

1.1 DESCRIPTION OF THE PROBLEM AND BACKGROUND

Industry structure analysis is a fundamental tool of corporate strategic planning, and provides insight into the myriad factors that exert influence on the corporate milieu under which an industry and the firms within that industry operate.

Porter's book "Competitive Strategy" written in 1980 is seen as one of the more important works on industrial organisation theory in the corporate strategy lexicon. Mintzberg, Ahlstrand, Lampell (1998) state that industrial organisation has opened up many research avenues and has provided an important set of concepts.

McGahan and Porter (1997) show that industry specific effects have a bearing on corporate profitability and that these industry specific effects are more constant over time than business-specific or corporate-parent effects.

In South Africa there is no evidence that a study of the effects of Industry has been performed previously. It is the purpose of this research study to determine if industry and/or time do have an influence on the performance and ultimately, the profitability of companies.

Rossouw (1997) states that due to South African exchange control legislation and international sanctions, South African Industry is characterised by a large number of conglomerates that developed as a result of South African firms being forced to invest excess capital locally. The election in 1994 and subsequent transfer of power to the African National Congress saw the start of the process of integration of South Africa and the dismantling of these conglomerates. Due to the size and complexities of the conglomerates many are still being unwound today through various methods.

This study is important to the South African context due to the fact that if it can be shown that industry specific factors exert influence on the profitability of firms, then managers will be better equipped to ensure that they maximize their firm's profitability through the alignment of their strategic design and implementation within the industry in which they choose to operate. In addition, if this study shows that there is indeed a link between industry and/or time and profitability, Porter (1980) states it is likely that firms can use this information in their long range planning to determine the magnitude of the underlying cause and use this information to construct a picture of the probable profit potential of the industry and their subsequent share of this profit. Similarly South African managers may decide to enter or exit industries that are shown to offer more profitable returns.

A study of this nature will thus prove useful to senior management in providing a deeper understanding of factors that they need to consider when they are designing their firm's competitive strategy in order to enhance the profitability and performance of their firm with the ultimate aim of maximisation of value for shareholders.

1.2 PURPOSE OF THIS STUDY

To understand the factors which affect the profits that a firm can expect to achieve is seen as a vital insight regarding their industry which is critical information for a CEO or board to obtain. This information will allow the CEO and board to determine what role they will choose for their firm within an industry.

Thus the objective of this study is to provide empirical evidence of the impact industry and/or time has on the profitability of firms listed on the Johannesburg Securities Exchange. It is expected that the outcome of this study will follow the findings of McGahan and Porter (1997) that industry proves to have a powerful and direct influence on the profitability of the industry; the expected results of time are unknown as they fell without the scope of the McGahan and Porter (1997) study.

In a similar vein to the work of McGahan and Porter (1997) it is the purpose of this study to understand the relative significance of industry in explaining profit variation when industries are defined by the Standard Industrial Classification (SIC) system.

2 LITERATURE REVIEW

2.1 INDUSTRIAL ORGANISATION OR INDUSTRY STRUCTURE AND PROFITABILITY

Porter (1980) propounds that industry structure analysis allows for a reduction in the need for debate on where to draw industry boundaries. The boundaries are essentially defined by Porter (1980, p.32) as the "established competitors and substitute products, between existing firms and potential entrants and between existing firms and suppliers and buyers. Drawing these lines is inherently a matter of degree that has little to do with the choice of strategy." Porter (1980) does qualify this statement by stating that definition of the strategy is not related to the definition of where it is that the firm wishes to compete. He also introduces the caveat that simply because the definition of the industry may be broad, does not mean that the firm should see its ability to compete in broad terms. The firm needs to make a deliberate choice to either perform the same activities as competitors but do them differently or perform a different set of activities altogether; this is essentially how Porter sees a firm building a sustainable corporate strategy that will withstand competition.

Dess, Ireland and Hitt (1990) assert that industry effect is a significant predictor of the performance of firms within the industry. "Beard and Dess (1979, 1981) found that industry profitability was a statistically significant predictor of firm profitability and that it explained consistently more variance than any of the three business level strategy variables (relative market share, relative debt/equity ratio, and relative firm capital intensity). Earlier Lieberson and O'Conner (1972) sampled 167 Fortune 500 firms and found industry profitability to be a more significant predictor of firm profitability than general economic factors or changes in leadership" (Dess et.al., 1990, p. 8).

One of the aspects of industry effects that is raised in the literature is how over time, there is an expectation for the firms within an industry to position themselves more closely and over time show similarities in response to industry conditions and the imitation of successful strategies (Montgomery and Wernerfelt, 1991;Mauri and Michaels, 1998). The expected outcome of this strategy agglomeration would be that market share competition would be so fierce as to reduce net long-term returns to zero (Montgomery and Wernerfelt, 1991). The perceived link between market share and profitability will be addressed later in this review.

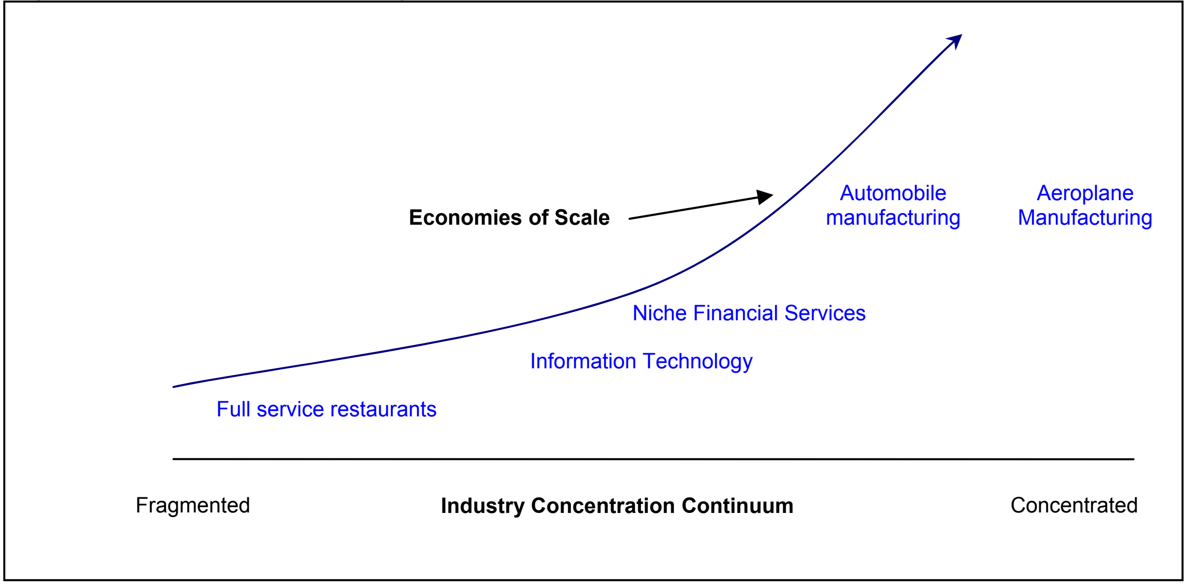
Eng (2005) observes that industrial organisation provides insights into strategy development by analysing the structure of the industry and utilising the differences in the structure as a source of competitive advantage. Eng (2005) states that the industrial organisation perspective largely focuses on the influence of market structure on firm strategy and performance or the structure-conduct-performance paradigm. Eng (2005) proceeds to outline the essential tenets of the structure-conduct-performance (SCP) paradigm; essentially Eng (2005) sees the SCP paradigm as continuously adapting to uncontrollable external conditions within the business environment. Eng (2005) states that Porters Five Forces Model can be used to analyse whether a firm's profitability will exceed or fall below the industry's average and explain or predict the relationship between market share and profitability.

Eng (2005) also believes that industrial organisation is a difficult basis on which to analyse strategy due to the fact that "strategic choice cannot always be based on clearly defined industry defined boundaries. Specifically, network characteristics of blurring company and industry boundaries, interdependence and co-evolution imply co-operative as well as competitive actions." (Eng, 2005, p.221)

Cheah, Kang and Chew (2007) hold the position that industrial organisation theories are based on the fact that corporate performance arises from the market positioning of the firm within the industry. Perrott (2007) suggests that effective strategic planning in organisations should begin with an analysis of the external environment so as to formulate the strategy of the firm by taking into account the environment and industry in which the firm operates.

According to Fernhaber, McDougall and Oviatt (2007) industry structure is a very important contributor in influencing the formation rate of new ventures. Fernhaber et.al. (2007) also show that the level of firm concentration within an industry is significant in that it often determines the types of actions or strategies for the conditions that a firm or firms will undertake in their search for profit. Figure 1 below illustrates the description by Fernhaber et.al. (2007) of the concentration within industries as a continuum with fragmented industries on one end and concentrated industries on the other. In between these two extremes are industries with large and medium firms as well as small niche firms that utilise alternate strategies and often have significant demand for their products. Fernhaber et.al. (2007) posit that industries move along the continuum based on the extent to which the industries depend on economies of scale, thus the more the firms within the industry depend on economies of scale the more concentrated the industry.

Figure 1: Continuum of Industry Concentration



After Fernhaber, McDougall and Oviatt (2007)

Bryce and Dyer (2007) find that over the ten year period of their study from 1990 to 2000, the more profitable industries have attracted more than five times as many entrants as the average industry. This despite the fact that it is very often difficult for companies to break into industries with existing players who have established barriers to entry that have been erected by the incumbent market leaders. Thus it is apparent that profitability is a major attractor of competitors. The strategies that need to be developed both as an incumbent to defend your position as well as a challenger to enter into an industry therefore need to be considered and well constructed. Bryce and Dyer (2007) found that the common theme companies used to defeat barriers to entry was that of the indirect assault. Within this method of attack, three basic strategies have been utilised by entrants namely leveraging existing assets, reconfiguring value chains and establishing niches. These strategies have often been combined which has resulted in enhanced efficacy. Bryce and Dyer (2007) find that the most powerful combination has been that of reconfiguring the value chain and creating a niche.

Vance (1970) sees the design of corporate strategy as a complicated task which usually involves questioning current processes, undertaking deep and possibly painful evaluation of the strengths and weaknesses of the firm as well as perhaps taking risks with the retained earnings of the firm.

Cohen and Cyert (1973, p. 1) state nine steps that constitute the strategic planning process as follows: “(1) formulation of goals; (2) analysis of the environment; (3) assigning quantitative values to the goals; (4) the micro-process of strategy formulation; (5) the gap analysis; (6) strategic search; selecting the portfolio of strategic alternatives; (8) implementation of the strategic program; (9) measurement, feedback, and control.”

It is at this point that the work of Michael Porter should be examined to gain an understanding of the method and the application of analysing industrial structure. The work of Porter (1980) would fit into the observations of both

Bryce and Dyer (2007) as well as, Cohen and Cyert (1973) at the point of environmental analysis and would help the firm to determine how it will interact with competitors within its industry and suppliers and buyers of its inputs and outputs.

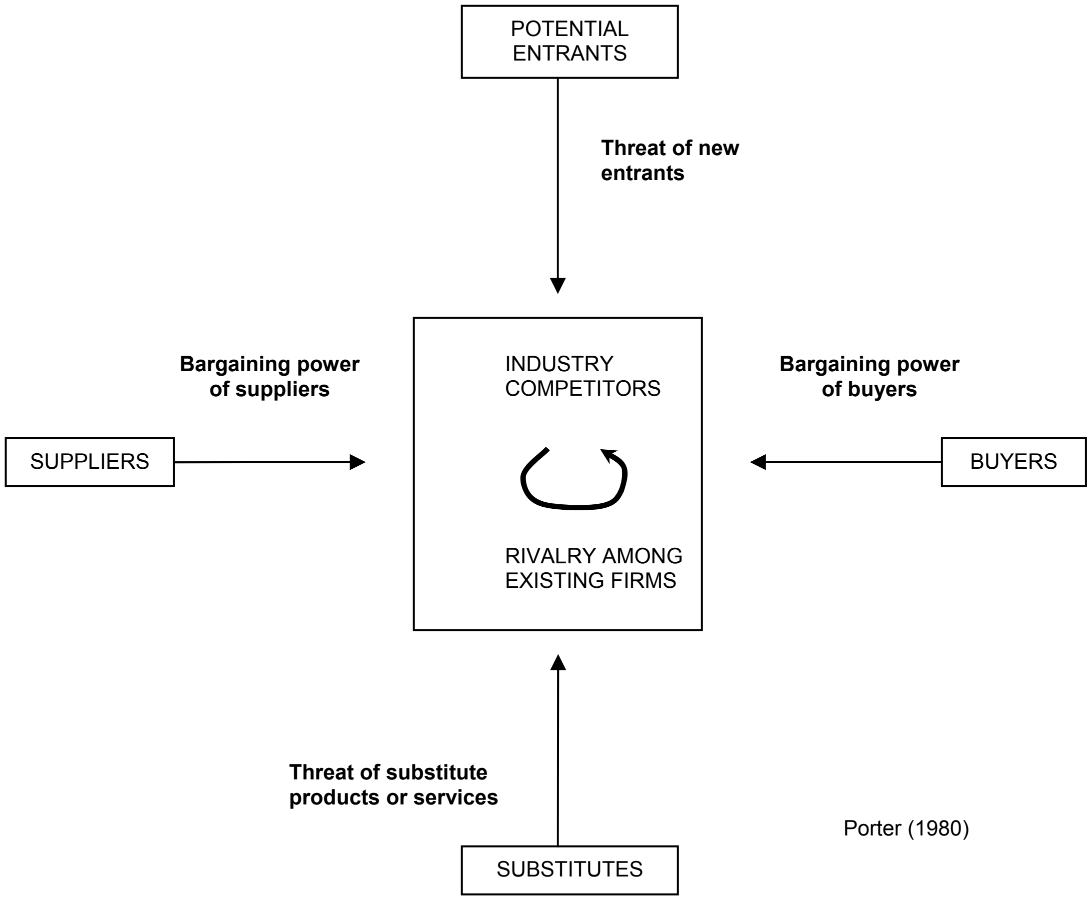
2.2 PORTER'S FIVE FORCES MODEL

No study of industry structure could be complete without a discussion of Porter's (1980) Five Forces Model see Figure 2. Porter (1980, 1981, 1991) presents a framework for diagnosing industry structure built around five competitive forces which can be applied to the industry level, strategic group level or the individual firm itself.

Porter (1980) elucidates that that the competitive rules of the industry and the strategies available to firms are strongly influenced by industry structure. External forces usually affect all firms within an industry and thus are only relatively significant (Porter, 1980).

Porter (1980) asserts that the collective strength of the five forces in Figure 2 determine the ultimate profit potential of the industry where profit is measured in terms of long run return on invested capital. Porter (1980) also provides examples of industries in which the strength of the forces varies, namely relatively mild industries such as oil-field equipment, cosmetics and toiletries to intense forces effects such as manufacturing industries for example paper, steel and tires.

Figure 2: Porter's Five Forces Model



It is important to note that changes in economic conditions as well as other short-run factors will have an influence on the short-run profitability of nearly all the firms in many industries (Porter, 1980). Having said this it is important to focus on the analysis of the industry structure and identify the basic characteristics of the industry which can largely be found in its economics and technology and these factors then shape the arena in which the strategy must be set (Porter, 1980). Table 1 shows a detailed analysis of Porter's (1980) Five Forces Model, and describes the effects on strategic outcomes for each of the factors contained within the Five Forces.

Table 1: Explanation of Porters Five Forces and the Effects on Profitability

Force	Detail	Description
Threat of Entry - Characterised by Barriers to Entry:	**I.** Economies of scale	The higher the economies of scale necessary to enter the industry the more effective the barrier to entry
	II. Product Differentiation	The greater the customers affiliation to the incumbents products the more effective the barrier to entry
	III. Capital Requirements	The greater the amount of capital that needs to be invested in order to compete in the industry the more effective the barrier to entry
	IV. Switching costs	The higher the cost to a customer to switch from the incumbents products to a new entrants product the more effective the barrier to entry
	V. Access to Distribution Channels	If incumbents hold the majority of the distribution channels the more effective the barrier to entry
	VI. Cost disadvantages independent of scale	The most important examples are: the strength of proprietary technology or patents; favourable access to raw materials; favourable locations; Government subsidies; learning and/or experience curve. Incumbent Strengths in these areas increase the barriers to entry
	VII. Government Policy	The higher the Government controls over an industry through such methods as licensing requirements, limits of access to raw materials and duties and taxes the higher the barriers to entry
Intensity of Rivalry Among Existing Competitors Arising from:	**I.** Numerous or equally balanced competitors	When the industry is highly concentrated the industry leaders can impose constraints on the industry by methods such as price leadership
	II. Slow industry growth	Slow growth industries tend to create a market share dynamic whereby firms can only guarantee their profitable growth by gaining market share from competitors
	III. High fixed or storage costs	High fixed cost industries tend to create sharp price cuts when there is excess capacity present thus firms tend to have relatively low profitability as a result
	IV. Lack of differentiation or switching costs	Where products are commoditised buyer choice tends to be based on price and service thus resulting in intensely volatile rivalry on these factors resulting in reduced profitability due to lower price or higher costs of providing superior levels of service
	V. Capacity augmented in large increments	thus pressures are exerted on these factors and tend to lead to overcapacity and reduced profitability due to price cuts caused by overcapacity
	VI. Diverse competitors	The more diverse the group of competitors, the more likely they are to clash through misinterpretation of intentions and strategic goals. Small firms in particular may be willing to operate sub-optimally for reasons such as desire to remain independent and hence create lower profit opportunities for larger firms that may be listed for example and thus not able to operate sub-optimally. Similarly firms that view an industry as an opportunity to dump excess capacity may reduce profitability for firms in the industry without excess capacity and hence reduce their profitability and that of the industry
	VII. High strategic stakes	Firms looking to enter industries due to strategic reasons such as diversification strategies may be willing to operate at lower profitability levels in order to achieve entry, this will in turn often reduce the profitability of the industry as a whole
	VIII. High exit barriers	High exit barriers will tend to cause companies to remain in and industry even if they are operating at low levels of profitability, examples include: specialised assets which are difficult to sell or modify to allow the firm to enter other industries; fixed costs of exit such as labour agreements or spare parts maintenance agreements; if strategic interrelationships are high in an industry this may cause the firm to remain in the industry beyond levels at which it is no longer operating optimally. All of these factors will cause these firms to remain in an industry and operate at low profitability levels and thus reduce the profitability of the other firms in the industry

	IX. Shifting rivalry	Often shifts in industry conditions such as industry maturity will result in intensified rivalry for market share and thus reduce profitability due to firms entering into price wars for example
Pressure From Substitute Products	**I.** Substitutes which are subject to trends which improve their price/performance trade-off with the industry's product	Substitutes limit the potential returns of an industry by placing a ceiling on the prices firms can profitably charge
	II. Those produced by industries earning high profits	The higher the price of a product the more likely it is that a suitable substitute will be found
Bargaining Power of Buyers	**I.** Buyer is concentrated or purchases large volumes relative to supplier sales	Buyers essentially force down prices and thus compete with the industry and reduce profitability
	II. The products buyer purchases from the industry represents a significant fraction of the buyer's costs or purchases	Buyers will tend to shop around for the best price the competition in the industry will cause prices to be lower and thus profitability is affected
	III. The products the buyer purchases from the industry are standard or undifferentiated	Buyers will play off competing suppliers to drive down price and thus lowering profitability
	IV. Buyer faces few switching costs	Buyer is able to leave the supplier easily due to the low switching costs
	V. Buyer earns low profits	Lower profits will incentivise the buyer to seek the lowest prices and thus lower profitability
	VI. Buyers pose a credible threat to backward integration	The buyer may produce or threaten to produce its own supply of the product in question thus threatening to reduce the profitability within the supplier industry
	VII. The industry's product is unimportant to the quality of the buyers products or services	This will cause buyers to be more price sensitive to this product and as a result the supplier industry profitability may be negatively affected
	VIII. The buyer has full information	This will usually allow the buyer greater leverage in purchasing power and potentially reduce profitability for supplier firms due to the reduction in prices they can justifiably charge in terms of their cost of sales
Bargaining Power of Suppliers	**I.** Industry is dominated by a few companies and is more concentrated than the industry it sells to	Supplier industry can therefore demand higher prices for their product thus profitability in the supplier industry is relatively higher
	II. Industry is not obliged to contend with other substitute products for sale to the industry	Due to the lack of substitutes suppliers will be able to seek higher prices and thus affect profitability
	III. The industry is not an important customer to the supplier group	Suppliers will be more powerful in this situation due to their lack of dependence on the buyers
	IV. The suppliers product is an important input to the buyer's business	Supplier power is increased and thus its potential for higher profitability
	V. The supplier group's products are differentiated or it has built up switching costs	The switching costs will benefit the supplier in that the buyers will find it difficult to switch to a substitute and thus the suppliers profitability is either enhanced or at least stable
	VI. The supplier group poses a credible threat of forward integration	Porter (1980) provides the example of labour as a supplier and that labour may exert pricing power in times of skills shortages or strong union support this has the effect of labour being able to reduce profitability.

(After Porter, 1980)

Porter (1991) states that the ultimate purpose of the industry structure framework is to explain the sustainability of profits against bargaining and against direct and indirect competition, it should be noted that profit differences in relation to direct rivals depend on positioning. Porter (1991) explains that industry structure is partly external and partly influenced by firm actions, as a result industry structure and firm position ultimately interrelate and it is therefore possible to separate them for analytical purposes (Porter, 1991).

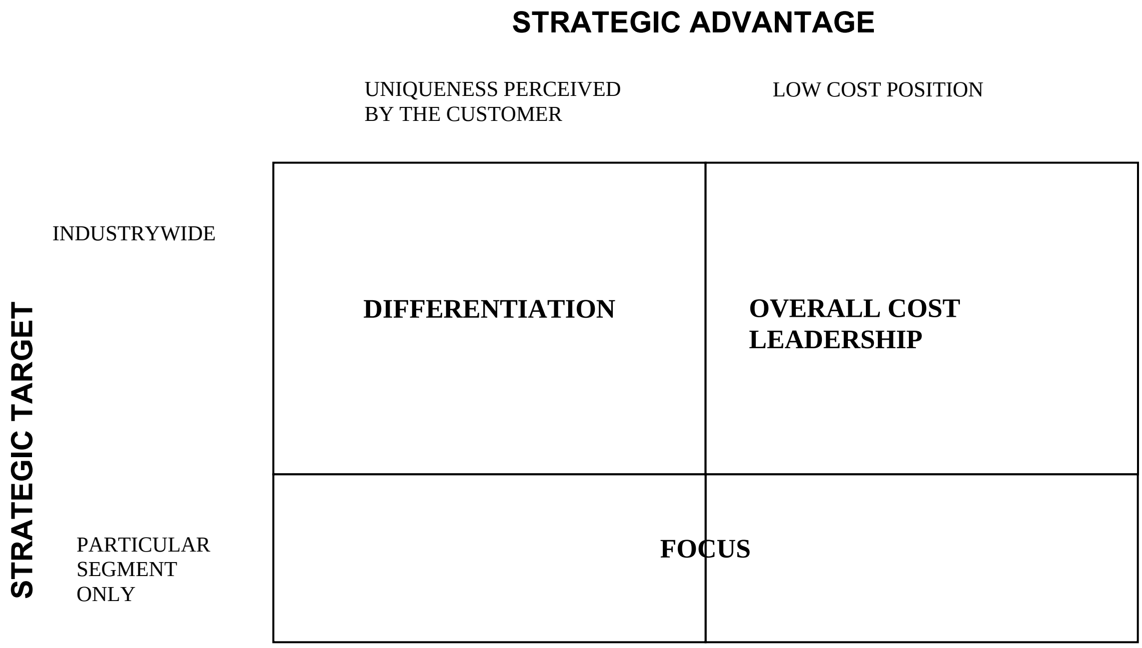
2.3 CORPORATE STRATEGY

Vance (1970) sees corporate strategy as the deployment of resources to achieve an objective. It refers to actions which can be exercised on any aspect of a business. Vance (1970) also goes on to state that a corporate strategy may be formal or informal in other words either formally documented and championed or intuitively held and acted upon by the senior manager. Vance (1970) also sees strategy as vital to a firm as it establishes the major course the company takes as well as the momentum with which it moves and should also be dynamically evolving to meet the rapidly changing environment within which firms operate.

2.3.1 PORTER'S TYPES OF CORPORATE STRATEGY

Porter (1980) suggests there are three generic strategies which can be successful in outperforming other firms in an industry these are overall cost leadership, differentiation and focus. The differences among the three generic strategies are illustrated in Figure 3.

Figure 3: Market Share and Profitability Viewpoints of the Relationship



(Porter, 1980)

2.3.1.1 OVERALL COST LEADERSHIP

A cost leadership strategy involves aggressively seeking to build (Porter, 1980) scale efficiencies, strongly pursuing cost reductions through learning curve experience, tight cost and overhead control as well as cost minimisation in areas such as R&D, services and sales force costs in addition to reducing advertising costs. Porter (1980) shows that by adopting a low cost strategy firms defend them against all five competitive forces because “bargaining can only continue to erode profits until those of the next most efficient competitor are eliminated, and because the less efficient competitors will suffer first in the face of competitive pressures (Porter, 1980, p. 36).

2.3.1.2 DIFFERENTIATION

Differentiation essentially entails offering a product or service that is perceived as unique within the industry (Porter, 1980). Porter (1980) also provides suggestions of differentiation namely, design or brand image, technology and customer service. Porter (1980) also states that differentiation is a viable strategy for achieving above average returns in an industry due to the fact that it creates a defensible position similar to that of overall cost leadership. However, differentiation provides defence against competitors in the following ways; brand loyalty and margins tend to usually be high and buyer loyalty is by definition high finally the higher margins generated allow the firm to deal with supplier power.

2.3.1.3 FOCUS

Focus entails concentrating on a particular buyer group, segment of a product line or geographic market (Porter, 1980). Essentially the emphasis of the focus strategy is to service a particular target extremely well, the firm is thus able to provide a higher level of service to its target market more efficiently or effectively than competitors who may service a less focused target market (Porter, 1980). Profitability is found in the following ways; the focused firm has either a low cost position, high differentiation, or both (Porter, 1980). Thus the firm will achieve profitability through; for example, higher switching costs and efficiencies found in the focused company’s economies of scale and its understanding and gains achieved through the learning or experience curve.

2.3.2 THE IMPORTANCE OF PORTER'S WORK IN SELECTED LITERATURE

Many critiques have been written on Porter's Five Forces Model and his views on strategy at an industry level. However, his work is still seen as extremely important to the strategy literature and. It is important to note that Porter (1990, 1994) himself acknowledges that his thinking has changed over time however, he has by and large held onto his industrial organisation background.

Importantly Foss (1996) takes the view that Porter's main contribution has been to enhance the interaction between strategy subjects and thus has helped to provide some norms for the discussion between strategy scholars.

Foss (1996) states that there is one theoretical legacy that is continuously present in Porter's thinking and it is that of industrial organisation. Foss (1996) also states that Porter's 1980 work is firmly grounded in industrial organisation and significantly focuses on the environment which management has to scan so that they may then best position the firm to exploit the environmental capabilities that the management have decided to exploit.

Cheah (2007) reiterates the point that industrial organisation is based on the principle that sound corporate performance emerges from the market positioning of a firm within the industry.

Cheah (2007) also makes the following point about the format of Porter's competitive strategies. The cost leadership and differentiation strategies are seen by Cheah (2007) as the mode of competition which is how the firm decides on how to develop its strategy. Cheah (2007) relates the focus strategy to the scope of competition and this scope can vary in three "dimensions: market/product, geography and function" (Cheah 2007, p. 30). Market /product refers to projects, or products to sell and market segments available to the firm to choose from in which it would want to sell its product, the dimension of geography refers to the choice of what region the firm chooses to operate in, be it local, national or international. The dimension of function refers to the vertical integration of different functions within a particular value system (Cheah, 2007).

Kaul (2003) describes what comprises an industry environment as "the pattern of all external conditions and influences that affect its life and development" (Kaul, 2003, p.16). This definition clearly points out that one of the key elements of strategy is the interaction that the industry has with its environment.

Selling and Stickney (1989) draw on profitability ratios such as return on assets (ROA) to demonstrate the effect an industry environment has on a firms ROA. Selling and Stickney (1989) suggest that ROA is affected both by operating leverage as well as the product life cycle. Essentially Selling and Stickney (1989) show that there is a lag effect between the ROA of a firm and the standard product life cycle graph. The major difference is that there is only a positive ROA seen in the growth phase of a product or firm and there are negative returns realised in the introduction, early growth and late decline phases.

McGahan (2004) asserts that industries evolve along four trajectories namely radical, progressive, creative and intermediating. McGahan (2004) goes on to explain that a firm's strategy, its plan for achieving a return on invested capital, cannot succeed unless it is aligned with the industry's change trajectory. The four trajectories should be seen as the bounds within which a business can expect to generate profits.

2.4 PROFITABILITY MEASURES

There are many profitability measures that are utilised in the fields of finance and business management. The measures that seem to be most widely used in determining the profitability of a company are the following; return on assets (ROA); return on equity (ROE) and return on invested capital (ROIC) also known as return on investment (ROI) or return on capital (ROC).

While these measures are widely accepted as strong measures of profitability there are certain objections Furrer, Pandin and Thomas, (2007) have to their use in strategic decision making due to the fact these measures are generally based on accounting information and thus accounts for neither time value of money nor the investment risks faced by shareholders.

2.4.1 RETURN ON ASSETS (ROA)

Selling and Stickney (1989) see a firm's environment, and its strategies designed to operate within that environment, as factors which affect the firm's ability to increase ROA. Selling and Stickney (1989) see ROA as a measure of a firm’s success in using assets to generate earnings independent of the financing of those assets

Selling and Stickney (1989) state that ROA is affected by operating leverage and product life-cycle phenomena; this links to the concentration continuum mentioned in the work of Fernhaber, McDougall and Oviatt (2007) above. This link can be attributed to the fact that the different mix of fixed and variable costs a firm employs in their cost structures will be related to their type of business. Thus firms with high fixed and operating costs such as capital intensive industries tend to have more volatile operating incomes. In the case of increased sales, the fixed costs are spread over a greater number of units sold and thus a decrease in average unit cost. Similarly if the sales decline sharply there is a sharp decline in operating income. Selling and Stickney (1989) refer to this practice of operating with a high proportion of fixed costs as operating leverage and state that firms with high levels of operating leverage usually experience greater variability in their ROA’s than firms with lower levels of leverage.

Interestingly Selling and Stickney (1989) found that firms with the highest ROA in their industry clearly followed a product differentiation or a cost leadership strategy and firms with low ROA could not be classified easily into either category.

Rothschild (2006) shows the ROA equation as follows:

$$ROA = Margin \times Velocity$$

where $Margin = \frac{Profit}{Sales}$ and $Velocity = \frac{\text{Sales Revenue}}{\text{Assets}}$

Selling and Stickney (1989) use the following equation:

$$ROA = \text{Profit Margin} \times \text{Asset Turnover}$$

where $\text{Profit Margin} = \frac{\text{Net Income} + (1 - \text{Corporate Tax Rate})(\text{Interest Expense})}{\text{Revenues}}$

and $\text{Asset Turnover} = \frac{\text{Revenues}}{\text{Average Total Assets}}$

2.4.2 RETURN ON EQUITY (ROE)

Stead (1995) states that ROE can be seen as the ultimate performance ratio for ordinary shareholders. Rappaport (1986) sees ROE as one of the most widely used measures of corporate financial performance. de Wet and du Toit (2006) calculate ROE as the profit after tax and preference dividends divided by the book value of the ordinary shares or equity, and point out that equity consists of issued ordinary share capital, plus share and premium reserves. de Wet and du Toit (2006) show that the ROE calculation is comprised of the following components:

$$ROE = \frac{Earnings}{Sales} \times \frac{Sales}{Assets} \times \frac{Assets}{Equity}$$

de Wet and du Toit (2006) point out that these three components are described in sequence as profitability, asset turnover and financial leverage.

Rothschild (2006) explains that the higher the ROE the faster total shareholder equity and share price will grow as each years profits accumulate to retained earnings and thus ultimately shareholder wealth.

de Wet and du Toit (2006) point out some of the shortcomings of ROE as an indicator of financial performance, Table 2 below summarises these concerns.

Table 2: de Wet and du Toit Shortcomings of ROE

Shortcoming	Explanation of Shortcomings of ROE as a Measure
i.	Earnings can be manipulated legally within the Generally Accepted Accounting Practice (GAAP). Thus the ROE may not be a truly accurate reflection of the performance
ii.	ROE is calculated after the cost of debt but before taking into account the cost of own capital
iii.	Asset turnover may be affected by inflation. Thus even if assets are not being utilised more effectively asset turnover may appear to be higher than it is
iv.	ROE does not consider the timing of cash flows and thus may overstate returns that may only have occurred in the short term and thus may not be sustainable in the long run
v.	ROE is seen as a short term performance measure and companies that focus to heavily on this measure may find that they overlook longer term opportunities that might increase shareholder value.

(de Wet and du Toit 2006)

Komar (1997) shows the following equation for calculating ROE and states that the difficulty in ensuring that the calculation of ROE, at any level below the industry level, is correct is in choosing the correct constituents of the numerator and denominator.

$$ROE = \frac{\text{Net Income}}{\text{Equity}}$$

2.4.3 RETURN ON INVESTMENT (ROI), RETURN ON INVESTED CAPITAL (ROIC) OR RETURN ON CAPITAL (ROC)

Porter (1980) uses long run return on invested capital to determine the profitability of an industry. Return on Invested Capital (ROIC) is defined by Rudzki (2005) as the profits of a business divided by the total capital invested in the business. Rudzki (2005) and Kim (2004) explain that when ROIC exceeds the firms weighted average cost of capital (WACC) economic value is being created and when ROIC is less than the cost of capital; the company's value is deteriorating.

Stead (1995) sees ROIC as a fundamental measure of performance. Lowell (2007) raises a concern that ROIC and other financial accounting measures do not take into account the real drivers of wealth creation in the modern business. Lowell (2007) feels that wealth is increasingly being created through intangible assets such as knowledge and networks and as a result Lowell (2007) does not feel that the ROIC correctly accounts for industries that may be less capital intensive and yet still generate highly profitable returns.

de Wet and du Toit (2006) show the equation for ROIC as follows:

$$ROIC = \frac{\text{Earnings Before Interest and Tax x (1 - Corporate Tax Rate)}}{Assets}$$

While McGivern and Tvorik (1998) show the equation as:

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$$ROIC = \frac{\text{Net Operating Profit after Interest and Tax - Dividends}}{\text{Total Capital}}$$

2.5 INDUSTRY EFFECT

Schmalensee (1985) used regression to show that industry effects were significant and corporate effects non-existent while market share effects were significant but not substantial.

Rumelt (1991) found that rates of return were heavily influenced by business-unit effects while industry effects had a small and stable contribution to rate of return.

McGahan and Porter (1997) set the objective of their study as understanding the relative significance of industry, corporate-parent, and segment-specific differences in explaining profit variation when industries are defined by the SIC system. In this study McGahan and Porter (1997) find that the significance of the effects differ across economic sectors, In addition, McGahan and Porter (1997) find in their study that industry is relevant due to three outcomes. First industry accounted directly for 19 percent of aggregate business-specific profits and 36 percent of explained variation. Second, industry effect influences the effect of the corporate parent on business-specific profitability. Third, the absolute and relative influence of industry, corporate parent and business-specific effects differ substantially across broad economic sectors in ways that suggest characteristic differences in their industry structural context.

The definition of industry is an elusive one with Nightingale (1978) stating that microeconomic theory is only clear on the definition of industry at the level of perfect monopoly and perfect competition outside of these two areas there is no true theoretical concept to which the term industry can be usefully applied (Nightingale, 1978).

For the purposes of this study the Standard Industrial Classification (SIC) codes method will be used. The Companies and Intellectual Property Registration Office (CIPRO) (2007) states that the SIC allows for the classification of companies according to the kind of economic activity they are involved in. Appendix A is the full CIPRO SIC code listing.

According to the SIC code methodology, the following are the explanations of the divisions of the SIC codes.

First Digit = Major Division

Second Digit = Division

Third Digit = Major Group

Fourth Digit = Group

Fifth Digit = Sub-Group

Ramanujam and Varadarajan (1989) state that structural features of industries tend to change little or if change does occur, it will tend to occur slowly. Thus the use of an industry classification system such as the SIC code method will often allow for research to be re-analysed over a relatively long period of time to determine if the findings of previous research can reasonably be expected to reflect a significant influence.

2.6 PROFITABILITY MEASURES SELECTED FOR THE PURPOSE OF THIS STUDY

Based on the profitability measures reviewed above, Table 3 below shows the primary profitability measures that have been selected for analysis purposes of this study.

Table 3: Profitability Measures Selected for the Purpose of this Study

Profitability Measure	Equation Selected	Researcher/s
ROIC	$ROIC = \frac{NOPAT - Dividends}{\text{Total Capital}}$	McGivern and Tvorik (1998)
ROE	$ROE = \frac{\text{Net Income}}{\text{Equity}}$	Komar (1997)
ROA	$ROA = Margin \times Velocity$ where $Margin = \frac{Profit}{Sales}$ and $Velocity = \frac{\text{Sales Revenue}}{\text{Assets}}$	Rothschild (2006)

2.7 THE EFFECT OF MARKET SHARE ON PROFITABILITY

Smith (2006) highlights that managers over the last decade have largely focused on top line growth usually through the pursuit of market share as a means to sustain profit growth.

The study of market share and profitability has been largely based on an initial project undertaken by the Harvard Business School's Buzzel and Sultan and the University of Massachusetts' Gale (Buzzel, Gale and Sultan, 1975) on behalf of the Marketing Science Institute on the Profit Impact of Market Strategies (PIMS). This study was implemented with the aim of “identifying and measuring the major determinants of return on investment (ROI) in individual businesses” (Buzzel et.al. 1975). Buzzel et.al. (1975) found that there was a strong relation between market share and ROI. Newton (1983) summarises the findings of Buzzel et.al. as having a clear link between market share of business and average ROI, Table 4 demonstrates these findings.

Table 4: Summary of Buzzel et. al. Findings

Market Share of Business (%)	Average ROI (%)
10-20	9
20-30	13
30-40	18
40-50	23
>50	30

(Newton, 1983)

Buzzel et.al. (1975) determined that on average a 10 percent increase in market share is followed by roughly 5 percent increase in pre-tax ROI.

Buzzel et.al. (1975) go on to explain that there are at least three possible explanations for the link between profitability and market share, they are firstly economies of scale and linked to this the experience curve, secondly market power and finally the quality of management. Newton (1983) points out that the results of the findings of Buzzel et.al. are difficult to replicate due to the following: firstly markets are not clearly defined, secondly ROI can be distorted by “irrelevant financial activity”, thirdly it is hard to gather detailed market share information from businesses as they report results on a group basis, finally it is difficult to determine if growth in market share is as a result a of specific market share building policy or as a result of maximising profitability that results in an organic growth in market share.

Porter (1980) in his work on competitiveness posits that profitability is determined by the effect of the five forces of substitutes, suppliers, potential entrants, customers and the rivalry between the existing firms in an industry. Porter (1980) suggests that the circumstances of the industry and the relative effect of one or more of the five forces have on the various aspects of the industry will have a greater or lesser effect on the relative market shares of rivals in that industry.

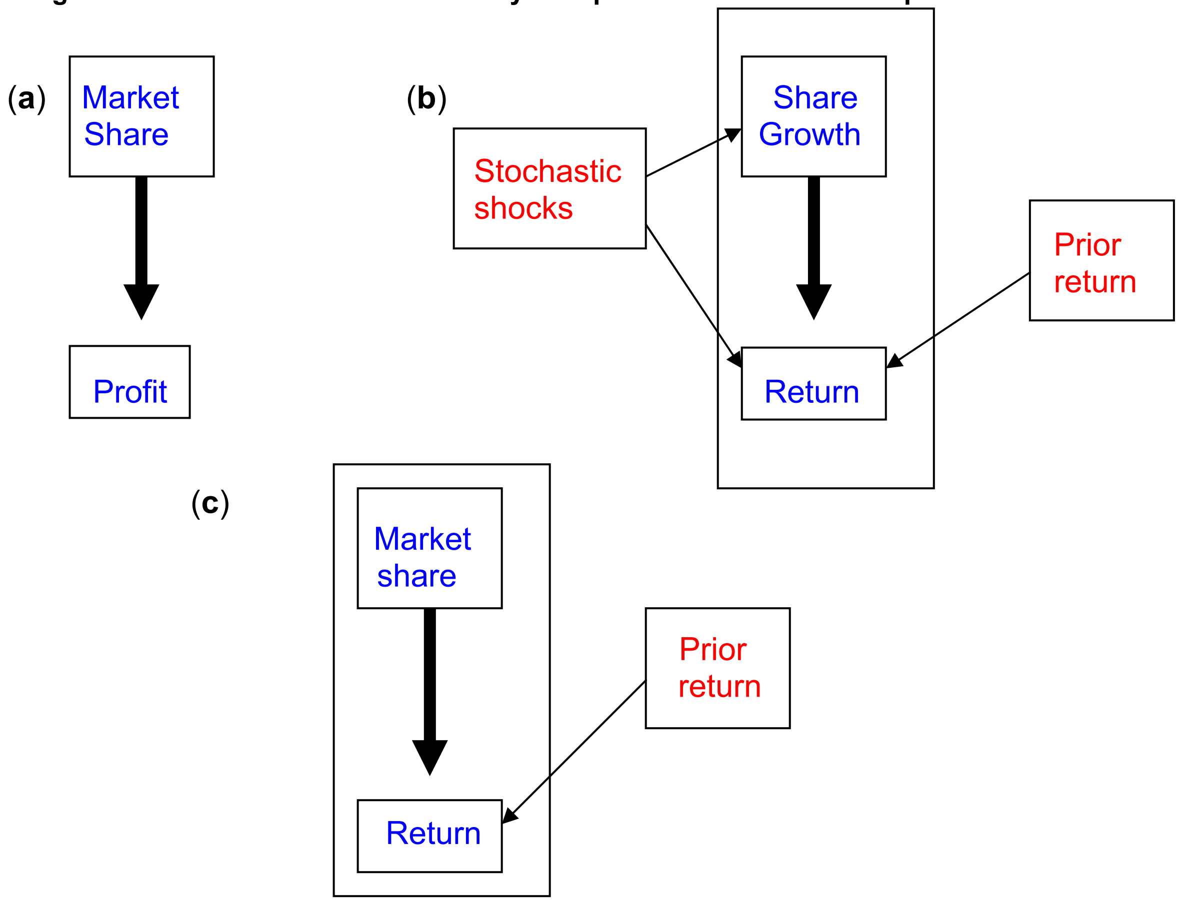
Rumelt and Wensley (1981) see market share as a result and not a cause of profitability they do however see market share as a good predictor of ROI if used in predictive models. Woo (1984) finds that businesses do not necessarily show a direct link between market share and profitability. Woo (1984), largely in agreement with Porter, finds that growth in market share needs to be evaluated with regard to the nature of the business environment. Bourantes and Mandes (1987) suggest that market share is a factor of the business offering in a particular market this offering includes the quality, characteristics of the product and of course price of the respective businesses products in a particular market. Jacobsen (1988) agrees that market share is gained through a variety of factors for example by offering a product that customers perceive to offer them more value. Jacobsen (1988) also suggests that better management and luck play a part in the profitability of a firm. Jacobsen (1988) proposes that to suggest that market share growth and profitability are so closely linked as to exclude other factors such as luck and strong management and to associate market share with ROI is spurious.

Venkatraman and Prescott (1990) find that there is a link between market share and profitability and in addition to this find that within a certain stage of the business cycle an industry or business will experience a profitability market share relationship that is influenced by the stage of the business cycle that an industry finds itself in with macroeconomic or extraneous variables having a relatively lesser effect on the profitability market share relationship than the actual period of the business cycle at that point in time.

Fraering and Minor (1994) find that overall the association between market share and profitability is too weak to draw any causal correlation to, in fact this study found that overall there was a weak negative relationship between the two factors. Fraering and Minor (1994) go on to explain that only under extremely limited circumstances did their findings conclude that a causal relationship between market share and profitability may be found. This study found that certain industries namely home-building, shoe manufacturing, drug store and machine tools seem to show a link between market share and profitability. However, Fraering and Minor (1994) speculate that the firms in these industries are potentially able to enhance profitability rather due to factors such as economies of scale and the ability to pressure suppliers to provide input materials at lower costs, thus like Jacobsen (1988) they are not willing to conclude that a direct link exists between market share and profitability, but rather that other factors are able to influence the apparent causality between market share and profitability.

Laverty (2001) explains that the studies by Buzzel et.al. (1975) showed that a 1 percent increase in market share yielded a 0.5 percent increase in profitability. Jacobsen (1988) reported on a market share to profitability ratio of 1:0.03. Laverty (2001) also goes on to define the two viewpoints of direct effects, Figure 4(a) as proposed by Buzzel et.al. (1975) and the spurious effects Figure 4(b) viewpoint posited by Rumelt and Wensley (1981) and later confirmed by Jacobson (1988) Figure 4(c). Laverty (2001) points out than none of these researchers has tried to directly replicate the work of the others and thus determines that it is unclear which viewpoint provides the "best explanation of the observed market share-profitability association" (Laverty, 2001).

Figure 4: Market Share and Profitability Viewpoints of the Relationship

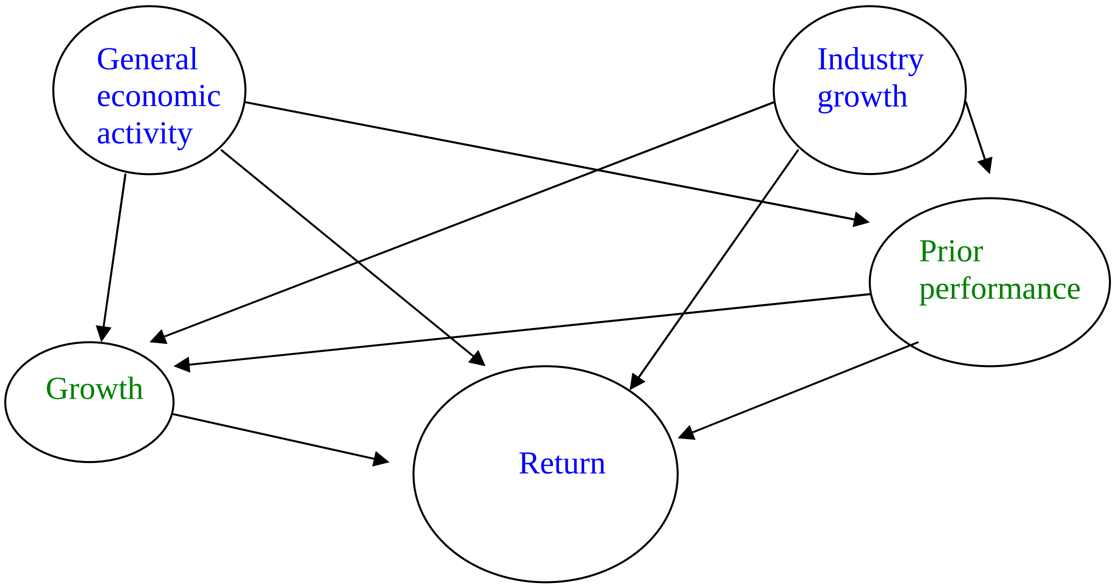


(Laverty, 2001)

O'Regan (2002) states that profitability stems from pursuing opportunities in growing markets rather than competing in mature markets and thus firms should seek to align their product offering with the market type and profitability will thus be enhanced.

Laverty (2001) Figure 5 finds that return is influenced by two independent factors, general economic activity and industry growth, which affect return; these two factors also influence two other factors namely prior firm performance and short-term firm growth; prior firm performance also influences short-term firm growth.

Figure 5: Context of the Share-return Relationship



(Laverty, 2001)

While market share is seen as an important area of study with regard to the effects on profitability, the lack of relevant data as well as the findings of the more recent studies in the literature discussed above, that there is a lack of a clear link between market share and profitability; has lead to the decision to exclude the market share variable from this study. However, certain aspects of the market share literature specifically related to the commentary regarding profitability will be discussed in the relation to the findings of this study.

3 HYPOTHESES

Balnaves and Caputi (2001) describe correlational hypotheses as hypotheses that test two or more variables to determine if they are related. Thus in this case, the dependent variable used is the relevant profitability measure and the independent variable either industry or time.

Although McGahan and Porter (1997) did not specifically utilise hypotheses in their study, for the sake of expedience and scientific rigour in assisting with possible later replication of this study the hypothesis method has been chosen.

This research examined the following measures of profitability: ROIC, ROE and ROA to determine if there is a significant influence on profitability from industry and/or time.

Hypothesis 1: The mean ROIC is uniform across industry and time.

Hypothesis 2: The mean ROE is uniform across industry and time

Hypothesis 3: The mean ROA is uniform across industry and time

These hypotheses were tested using the various methodologies discussed in Chapter 4 below.

4 RESEARCH METHODOLOGY

4.1 RESEARCH DESIGN

The work of McGahan and Porter (1997) which takes into account the prior research of Schmalensee (1985) and Rumelt (1991), although does not replicate these works in their entirety, was chosen as a starting point for reproduction in this research. The reason for this choice was that the McGahan and Porter (1997) study is the most comprehensive of the three studies. The Schmalensee (1985) study only encompassed a single year of data and focused solely on the manufacturing sector. The Rumelt (1991) study, while covering a broader time period of four years, also only focused on the manufacturing sector. McGahan and Porter (1997) studied all sectors of the economy except the financial sector. It was decided to retain the financial sector in this study due to the large influence this sector has on the South African economy. The McGahan and Porter (1997) study covered a period of 14 years and studied the effects of business-specific and corporate-parent on profitability.

This study has excluded business-specific and corporate parent influences on profitability due to the lack of available data and a need to focus the scope of the research. This research did however cover a long time period namely 10 years of data.

The analysis relied on the following model which drew on McGahan and Porter (1997) who in turn drew on the prior works of Schmalensee (1985) and Rumelt (1991). $r_{i,t} = \mu + \gamma_t + \alpha_i + \varepsilon_{i,t}$

In this equation, ($r_{i,t}$) is the accounting profit in year ($_t$) in industry ($_i$). Profit is measured utilising the ROIC, ROE and ROA as discussed above. The term (μ) is the average profit over the entire period for all businesses. The following term (γ_t) represents the difference between (μ) and the average profit of all businesses in year ($_t$). The term (α_i) is the increment to profit associated with participation in industry ($_i$). Finally ($\varepsilon_{i,t}$) is the residual.

As with McGahan and Porter (1997), any of the increments to profit may positive or negative.

4.2 UNIT OF ANALYSIS

Balnaves and Caputi (2001) note that the unit of analysis chosen is important to the overall work as a well defined unit of analysis lends itself to the likelihood that the research findings may be generalised.

McGahan and Porter (1997) utilised measures of profitability by SIC code obtained from Compustat Reports.

In the research conducted, the units of analysis were various profitability measures of organisations listed on the Main Board of the Johannesburg Securities Exchange during the ten year period 1995 to 2005. The organisations selected were obtained from the McGregor's Bureau of Financial Analysis (BFANet) database. The profitability measures, ROIC, ROE and ROA, were calculated using the raw secondary data from the McGregor's BFANet database according to the ratios selected in Table 3 above.

4.3 POPULATION OF RELEVANCE

Zikmund (2003) defines population as any complete group that share some set of characteristics. The population of relevance that has been applied to the research is all listed companies on the Main Board of the Johannesburg Securities Exchange. Appendix B shows all of the listed companies across all sectors of the Johannesburg Securities Exchange from the McGregor's BFANet database that were utilised for the purposes of this study which represents the complete population of relevance for this research.

4.4 SAMPLE SIZE AND SAMPLING METHOD

The nature of the available data restricted the sampling method that could be utilised. Thus the sampling method selected was a non-probability convenience sample. Buglear (2005) describes convenience samples as those selected on the basis of accessibility. Zikmund (2003) explains that in non-probability sampling the probability of a particular member of the population being chosen is unknown, due to the fact that researchers often rely on personal judgment when selecting the sample

The sample size is comprised of 289 listed companies which is the total number of listed companies on the McGregor's BFANet database; across 33 Industries which were grouped into the various Industry categories according to the relevant 2 digit SIC code for the individually listed company's respective industry. See Appendix A for a full listing of the SIC Codes as per the CIPRO guidelines. Within this sample, annual profitability ratios per year for the period 1995 to 2005 were extracted. There are approximately 2,215 observations across all companies and the years of available financial data for the selected profitability ratios. Thus the total data analysed in this research comprises 4,332 observations across all SIC codes for each profitability measure or a total of 12,854 observations across the ten year period.

4.5 DETAILS OF DATA COLLECTION

Three methods were utilised in the collection of the data used in this research. The first method comprised the collection of data to determine the companies to be researched. The second method comprised the collection of data with regard to the allocation to the respective industry. The final method encompassed the collection of profitability data

The data collected is, in all cases, secondary data obtained from the McGregor's BFANet database. This database is constructed using the audited annual financial statements of the listed companies.

4.5.1 DATA TO DETERMINE THE COMPANIES TO BE RESEARCHED

Companies were selected for this research by utilising the McGregor BFANet database. The All Share Index of the Johannesburg Securities Exchange Main Board was selected and a working portfolio constructed that included all of the listed companies in the McGregor's BFANet database. The financial statements for each listed company for the period 1995 to 2005 were downloaded into a Windows Excel format to facilitate analysis of the data.

4.5.2 DATA TO DETERMINE THE INDUSTRY

The McGregor's BFANet database holds data termed the Nature of Business that gives a breakdown of the activities of the companies in the database. As there is no database available in South Africa that holds SIC code classification by organisation, this Nature of Business information was utilised to manually determine the relevant industry SIC code into which the individual companies could be categorised into. The SIC code method was selected for this research as it is less likely to be open to interpretation than, for example, the listings of firms by industry in the markets section of the daily newspapers Schmalensee (1985), Rumelt (1991), McGahan and Porter (1997) all made use of the SIC code method in allocating firms to industries. The SIC code selected for this research was the two-digit SIC code. The use of the two-digit SIC code allows for firms to be grouped into industries within which they broadly compete. Where further detail was required to refine a company's main business the following additional sources were used:

- The company in questions website.
- The McGregor's annually published "Who Own's Whom Securities Exchange Digest"

4.5.3 DATA TO DETERMINE PROFITABILITY MEASURES

The financial data utilised was selected from companies listed on the Johannesburg Securities Exchange and listed on the McGregor's BFANet database for the period 1995 to 2005. Within the selected working portfolio of companies the balance sheet, income statement and cash flow statements of each of the companies was downloaded and converted to Excel format so that the respective profitability ratios could be calculated.

The following methods were used to determine the respective profitability ratios.

4.5.3.1 RETURN ON INVESTED CAPITAL (ROIC)

The Return on Invested Capital (ROIC) ratios were calculated in Excel using the data downloaded from the McGregor's BFANet database and by utilising the following formula:

$$\text{ROIC} = \frac{NOPAT - Dividends}{TotalCapital}$$

4.5.3.2 RETURN ON EQUITY (ROE)

The Return on Equity (ROE) ratios were calculated in Excel using the data downloaded from the McGregor's BFANet database and by utilising the following formula:

ROE = $\frac{NetIncome}{Equity}$

4.5.3.3 RETURN ON ASSETS (ROA)

The Return on Assets (ROA) ratios were calculated in Excel using the data downloaded from the McGregor's BFANet database and by utilising the following formula:

ROA = Margin x Velocity

Where Margin = $\frac{Profit}{Sales}$ and Velocity = $\frac{Sales\,Revenue}{Assets}$

4.6 EXCLUDED DATA

Certain data had to be excluded before the final analysis could be undertaken. This data was largely outlier data which would affect the accuracy of the results. The original count of company observations that were downloaded from McGregor BFANet for the ten year period was 2,652, it should be noted at this point that certain companies had certain years in which there was no financial data reported, and this was due to the fact that the company was not operating at the time or had not submitted audited financials. After the spurious data were removed the final count available for analysis was 2,386 observations. Thus 266 observations were excluded from the analysis. The majority of the data were excluded due mainly to extraordinary profits or losses in a particular year.

These extraordinary profits or losses were deemed abnormal if they were exceptionally larger than the prior or past year's performance for the particular company in question. In addition to data excluded for abnormal profits or losses, certain other company's data were excluded entirely due to the fact that they had refocused their operations during the 10 year period and thus could not effectively be placed into the correct industry classification. Similarly, if a company was not actively involved in the industry into which it had been categorised it was excluded, an example of this was mining companies that are no longer mining but are merely running mothball operations or for example may just be pumping water from neighbouring mines.

The mean ROA data for the Banking sector has been disregarded due to the fact that the results will not be relevant to the banking sector based on fact that the constituents of the margin and velocity ratios do not sufficiently cater for any potential leverage that would be expected to be found on the balance sheets of the various banks.

4.7 PROCESS OF DATA ANALYSIS

The process of analysis that was utilised was to utilise both descriptive and inferential statistics to perform the analysis on the data and the various outputs. Zikmund (2003) defines descriptive statistics are used to describe or summarise information about a population or sample. Zikmund (2003) also states that inferential statistics are used to make inferences or judgments about a population on the basis of a sample.

4.7.1 DESCRIPTIVE STATISTICS

Descriptive statistics for each of the profitability measures by SIC and by year were calculated and presented in a tabular format which consisted of the following elements: number (n), mean, median, minimum, maximum, standard deviation, skewness and kurtosis. The various definitions of each of these elements are explained in Table 5 below.

Table 5: Elements of Descriptive Statistics

Statistical Element	Description
Number of observations (n)	The number of observations within the sample
Mean	The arithmetic average
Median	The midpoint of the distribution
Minimum	The smallest value in a set of numbers
Maximum	The greatest value in a set of numbers
Standard Deviation	The square root of the variance which provides an indication of the spread of the data
Skewness	Measure of the asymmetry of the probability distribution around the mean
Kurtosis	Measure of the height of the probability distribution around the mean

(Zikmund 2003)

4.7.2 INFERENTIAL STATISTICS

The inferential statistics selected to make inferences on the population based on the sample were by means of hypothesis testing.

4.7.2.1 HYPOTHESIS TESTING

In order to prove or disprove the hypotheses for each of the profitability measures the sample means of the profitability measures were compared to the industry SIC and year to determine if they deviated from the hypothesised distribution.

A significance level of 0.05 was selected as the probability level above which the null hypothesis will fail to be rejected

The statistical method selected to determine if there was a significant difference between the means was the parametric statistic, analysis of variance or ANOVA with general linear models (GLM).

The process followed in the hypothesis test as outlined by Zikmund (2003) is as follows:

I. The null hypothesis (H_0) was stated.

II. The alternative hypothesis (H_a) was stated.

III. The significance level (α) was chosen.

IV. The sample size (n) was determined.

V. The ***ρ***-value (***ρ***) is calculated using the statistical software called Number Cruncher Statistical System (NCSS).

VI. The ***ρ*** -value is compared to the significance level

a. If $\rho \geq \alpha$ the H_0 fails to be rejected

b. If $\rho < \alpha$ the H_0 was rejected

Albright, Winston and Zappe (2006) explain that the Central Limit Theorem states that for any population distribution the sampling distribution of the sampling mean is approximately normal and the approximation improves as the number of observations increases. Albright et. al. (2006) also proceed to state that a sample size greater than 30 is the accepted norm to analyse the means as a normal distribution.

4.8 LIMITATIONS OF THIS RESEARCH

The main limitation of this research is that of the listed company data being only for companies shown as listed on the McGregor BFANet database in 2007. Thus any companies that have entered and/or left within this period will not form part of this study. As for any longitudinal study, this is a major limitation due to the fact that these company's, by virtue of the fact that they have exited a particular industry may have exited due to the fact that the company in question had below optimal profits and thus, had the company remained in the population these negative results may have affected the overall profitability figures for the particular industry and subsequently had an affect on the outcome of this research.

Zikmund (2003) and Buglear (2005) highlight the following restrictions of secondary data, in research the data may be outdated or may not meet the specific requirements of the researcher as the data were invariably collected for a different purpose than that of the researchers intended purpose. The source of the data needs to be reliable and the data gathered without bias. The methodology used by the source to gather the data may not follow a rigorous process which is repeatable and hence subsequent year's data may not be acceptable.

The excluded data was subjectively selected based on the researcher's analysis of the data from other years. Thus no method of scientific rigour was applied to the exclusion of the data.

The SIC code system selected at the second digit of the SIC code may be excessively broad and as a result the estimates of industry influence may be relatively imprecise. As McGahan and Porter (1997) state if data of a finer grain were utilised it may be found that industry influence may have a more profound influence on the results.

The study is limited by shortcomings in accounting measures of profit. Accounting conventions exclude intangible assets from the balance sheet and as a result certain asset lines may be understated in certain businesses or industries. In order to counter possible accounting effects more than one measure of profitability has been measured in this study, namely ROIC, ROE and ROA.

As for the McGahan and Porter (1997) study, this study will not model the effects of transient industry effects, transient year effects, transient corporate-parent effects and transient business-specific effects.

5 RESULTS

The results of the descriptive and inferential statistics have been displayed in separate sections to facilitate the accurate reflection of the results in a manner commensurate with the scientific method. The first section deals with the classification of companies by SIC code. The second section deals with the results of the profitability analysis. The third section deals with the results of the descriptive statistics. The fourth and final section deals with the results of the inferential statistics.

5.1 CLASSIFICATION OF COMPANIES BY SIC CODE

Appendix A shows the complete SIC code list as defined by CIPRO. Appendix C shows the alphabetic results of the allocation of the various companies in the study into the relevant SIC category based on the industry allocation methodology discussed above. As discussed above the two-digit SIC code has been used to allocate the companies to these industries. This differs from the McGahan and Porter (1997) study in that the SIC code to the fourth digit was utilised in that study.

5.2 RESULTS OF PROFITABILITY ANALYSIS

Table 6 below shows an extract from the full profitability ratio listing of the companies by year for each company and is listed by company name, SIC, year, ROIC, ROE , ROA and the constituents of the ROA equation margin and velocity.

The full listing has not been included in the Appendices due to the fact that it is 2,216 rows long, it is also felt that Table 6 give a good indication of the data that is contained in the complete list and therefore negates the necessity to include the full listing. The full list of data was used to formulate both the descriptive and inferential statistics listed below.

Table 6: Extract from Results of Profitability Calculations for each Company, by Year

Company	SIC	Year	ROIC	ROE	ROA	Margin	Velocity
ANGLO	24	1995	2%	4%	9%	79%	11%
ANGLO	24	1996	6%	7%	18%	156%	11%
ANGLO	24	1997	9%	11%	20%	208%	10%
ANGLO	24	1998	11%	15%	12%	27%	43%
ANGLO	24	1999	6%	9%	7%	16%	46%
ANGLO	24	2000	10%	14%	9%	17%	53%
ANGLO	24	2001	18%	23%	15%	24%	63%
ANGLO	24	2002	3%	7%	4%	9%	48%
ANGLO	24	2003	1%	5%	3%	6%	45%
ANGLO	24	2004	4%	7%	4%	9%	50%
ANGLO	24	2005	8%	12%	7%	11%	60%
ANGLOPLA	24	1995	8%	19%	15%	13%	116%
ANGLOPLA	24	1996	6%	16%	13%	11%	113%
ANGLOPLA	24	1997	3%	9%	7%	7%	104%
ANGLOPLA	24	1998	10%	23%	14%	19%	74%
ANGLOPLA	24	1999	17%	41%	24%	29%	82%
ANGLOPLA	24	2000	54%	84%	39%	42%	92%
ANGLOPLA	24	2001	18%	81%	38%	42%	91%
ANGLOPLA	24	2002	2%	48%	27%	27%	97%
ANGLOPLA	24	2003	-6%	17%	7%	12%	59%
ANGLOPLA	24	2004	6%	14%	8%	13%	60%
ANGLOPLA	24	2005	12%	20%	12%	19%	65%

5.2.1 RESULTS FOR MEAN ROIC, MEAN ROE AND MEAN ROA AND CONSTITUENTS OF ROA

Table 7 below shows the results of the mean profitability for each of the profitability measures as a percentage, including the constituents of the ROA ratio, margin and velocity by SIC code. These profitability measures utilised were as discussed above.

Table 7: Results of Mean Profitability by SIC for each Profitability Measure

SIC	Mean of ROIC	Mean of ROE	Mean of ROA	Mean of Margin	Mean of Velocity
11	10.9%	16.1%	9.0%	7.0%	198.8%
21	10.8%	10.8%	9.5%	2.6%	368.9%
22	14.1%	21.1%	10.9%	12.6%	111.3%
23	-0.7%	3.2%	3.5%	-70.0%	48.1%
24	5.5%	13.7%	8.0%	-76.6%	74.4%
25	12.1%	17.7%	11.9%	16.2%	75.7%
30	13.1%	19.5%	7.8%	2.9%	132.6%
32	11.2%	14.4%	9.0%	7.7%	125.6%
33	13.3%	19.8%	9.6%	6.8%	158.1%
35	2.8%	17.9%	9.2%	7.8%	104.4%
37	11.5%	16.2%	8.9%	6.3%	171.4%
38	8.3%	13.1%	5.6%	5.8%	148.6%
39	15.8%	17.4%	7.7%	7.4%	111.6%
41	9.8%	9.8%	4.8%	4.5%	117.9%
50	9.4%	15.3%	4.7%	2.5%	192.8%
61	10.6%	16.2%	9.6%	8.2%	151.0%
62	11.6%	17.1%	8.5%	6.2%	200.7%
63	10.9%	13.6%	5.0%	1.9%	267.3%
64	9.7%	16.0%	11.7%	11.8%	158.2%
71	13.1%	15.3%	6.7%	24.7%	118.0%
72	14.4%	18.1%	6.7%	7.0%	96.2%
75	15.4%	19.9%	12.0%	10.2%	119.3%
81	8.5%	12.6%	-0.3%	-9.4%	7.9%
82	8.3%	17.3%	5.6%	11.8%	53.7%
83	9.6%	14.9%	10.0%	-37.8%	43.7%
84	12.1%	18.4%	6.2%	5.0%	20.5%
86	16.2%	18.5%	9.8%	4.2%	200.1%
88	11.3%	14.4%	8.8%	7.1%	156.0%
89	14.8%	15.5%	9.9%	14.8%	88.0%
92	11.3%	14.2%	9.4%	3.0%	390.7%
93	15.3%	16.4%	10.6%	10.4%	98.2%
95	3.0%	3.0%	3.7%	2.6%	142.7%
96	13.6%	18.6%	13.6%	11.7%	186.6%

To facilitate easier interpretation of the results the results have also been displayed in a graphical format in Figure 6 below. Figure 6 displays the mean profitability ratios as a percentage by each of the three selected profitability measures mean ROIC, mean ROE and mean ROA by SIC. The constituents of the ROA ratio have been excluded due to the percentage results of the velocity ratio being comparatively large and thus distorting the results displayed of the other measures. The means by SIC for velocity and margin graphical results are displayed separately in Figure 9 below.

Figure 6: Profitability Means by SIC for ROIC, ROE and ROA

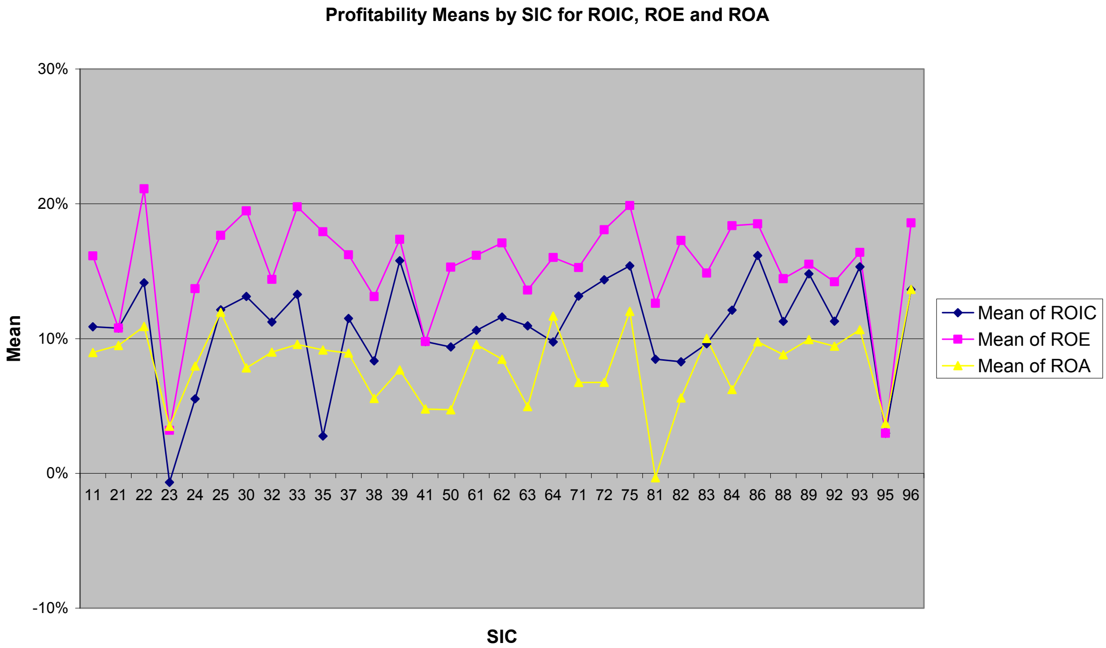


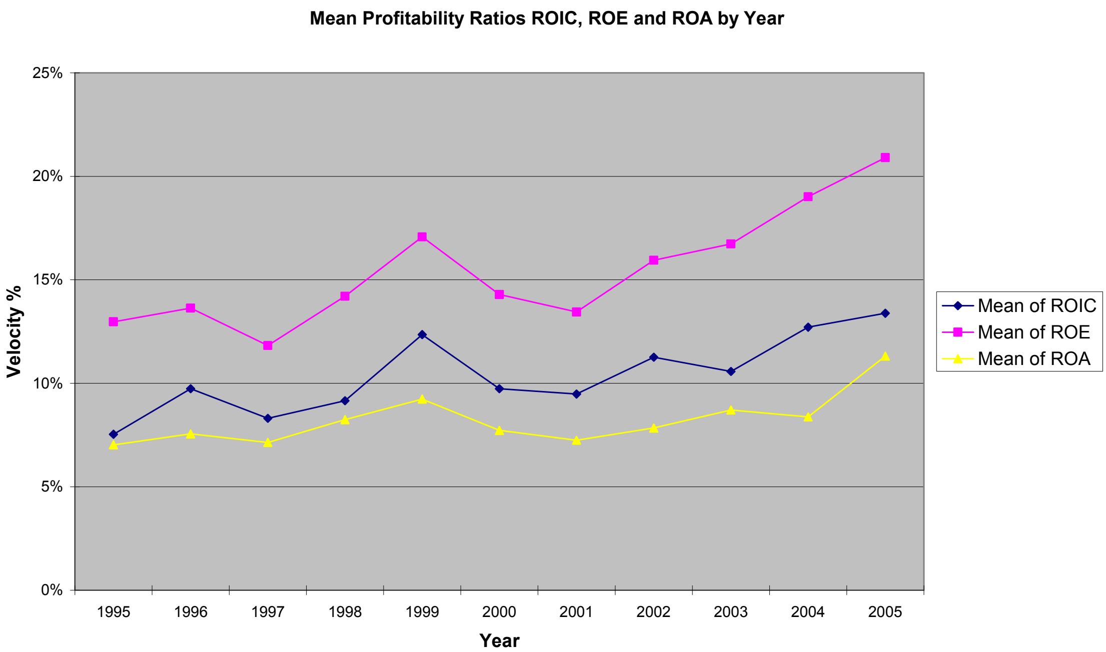
Table 8 below shows the mean results by profitability measure for each year of the study for all of the companies by year. The margin and velocity ratios by year have again been excluded due to the fact that they will distort the results and have thus been displayed separately in Figure 8 below.

Table 8: Results of Profitability Means by Year for each Profitability Measure

Year	Mean ROIC	Mean ROE	Mean ROA
1995	8%	13%	7%
1996	10%	14%	8%
1997	8%	12%	7%
1998	9%	14%	8%
1999	12%	17%	9%
2000	10%	14%	8%
2001	9%	13%	7%
2002	11%	16%	8%
2003	11%	17%	9%
2004	13%	19%	8%
2005	13%	21%	11%

Figure 7 below graphically displays the data contained in Table 8 above. The purpose for displaying these results by year graphically is to clearly represent the results as well as to clearly illustrate the combined profitability performance of all of the companies over the time period reviewed.

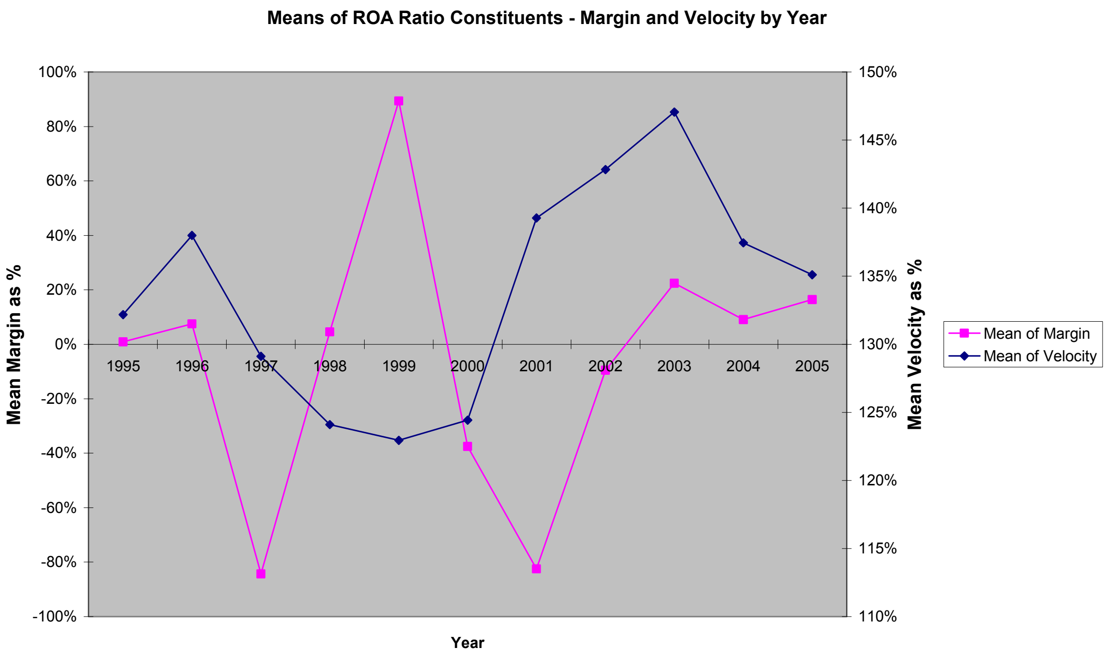
Figure 7: Mean Profitability Ratios ROIC, ROE and ROA by Year



5.2.1.1 RESULTS FOR THE CONSTITUENTS OF ROA – MARGIN AND VELOCITY

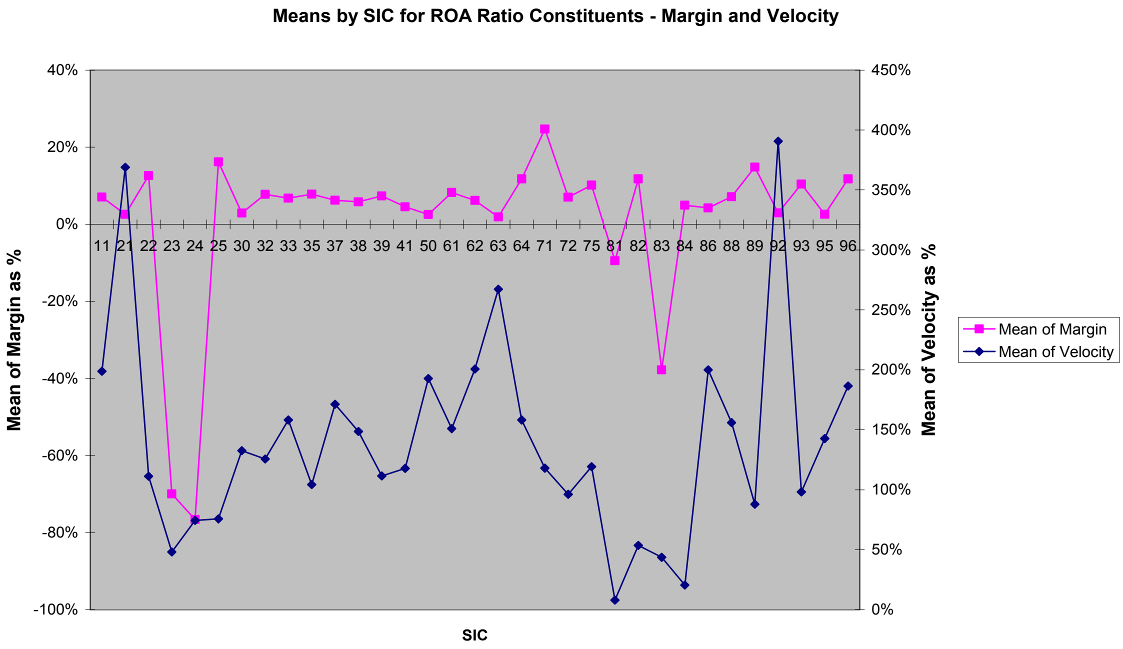
Figure 8 below graphically displays the results of the means of the constituent ratios of the ROA ratio, margin and velocity, by year. Each of the ratios has been displayed on its own y-axis to aid in interpretation.

Figure 8: Means of ROA Constituent Ratios- Margin and Velocity by Year



As in Figure 8 above, Figure 9 below shows the constituent ratios of the ROA ratio, margin and velocity. However, this graph displays the results of the mean margin and velocity ratio by SIC code, again these figures have been displayed on separate y-axes to aid in interpretation.

Figure 9: Means by SIC for ROA Constituent – Margin and Velocity



5.3 DESCRIPTIVE STATISTICS RESULTS

The results of the descriptive statistics method as discussed above, and calculated using Microsoft Office Excel, have been split into 5 separate tables that each deal with the descriptive results for each of the profitability ratios ROIC, ROE and ROA as well as the ROA constituent ratios margin and velocity.

5.3.1 RESULTS FOR ROIC, ROE, ROA AND ROA CONSTITUENT RATIOS – MARGIN AND VELOCITY ALL BY YEAR AND SIC

Table 9 below summarises the results of the previously selected descriptive statistics measures for ROIC. The difference in the number of observations (*n*) between the year and SIC results of 2,216 for the year and 2,123 for the SIC is due to the fact that certain observations were deleted from the data, these deleted observations were those as mentioned in the excluded data section, that had spurious ratios returned due either to the relevant data for the period not being present in the financial statements for the period in question or the information if present returned anomalous ratios. Tables 10, 11, below each display the results of the same descriptive methods, for ROE and ROA respectively, as for Table 9 below. Similarly for Tables 10 and 11 there are more observations for the year than the SIC. The explanation given for the occurrence of these results is the same as given for the data in Table 9 below. Tables 12 and 13 below show the results of the same descriptive statistics methodology as above. However, they are the results for the ROA ratio constituent ratios, margin and velocity. The same explanation as given for the number of observations for Tables 9, 10 and 11 apply in the case of Tables 12 and 13.

Table 9: Results of Descriptive Statistics by Year and by SIC for ROIC

Statistical Element	Result for ROIC by Year	Result for ROIC by SIC
Number of observations (*n*)	2,216	2,123
Mean	10.4%	10.8%
Median	9.7%	11.3%
Minimum	7.5%	-0.7%
Maximum	13.4%	16.2%
Standard Deviation	1.9%	3.8%
Skewness	0.24	-1.21
Kurtosis	-0.91	1.76

Table 10: Results of Descriptive Statistics by Year and by SIC for ROE

Statistical Element	Result for ROE by Year	Result for ROE by SIC
Number of observations (*n*)	2,216	2,123
Mean	15.5%	15.3%
Median	14.3%	16.1%
Minimum	11.8%	3.0%
Maximum	20.9%	21.1%
Standard Deviation	2.8%	4.1%
Skewness	0.76	-1.67
Kurtosis	-0.11	3.50

Table 11: Results of Descriptive Statistics by Year and by SIC for ROA

Statistical Element	Result for ROA by Year	Result for ROA by SIC
Number of observations (*n*)	1,995	1,929
Mean	8.2%	8.1%
Median	7.8%	8.9%
Minimum	7.0%	-0.3%
Maximum	11.3%	13.6%
Standard Deviation	1.2%	2.9%
Skewness	1.72	-0.71
Kurtosis	3.53	0.84

Table 12: Results of Descriptive Statistics by Year and by SIC for ROA constituent - Margin

Statistical Element	Result for Margin by Year	Result for Margin by SIC
Number of observations (*n*)	2,003	1,910
Mean	-5.8%	1.1%
Median	4.6%	6.8%
Minimum	-84.4%	-76.6%
Maximum	89.4%	24.7%
Standard Deviation	48.9%	21.5%
Skewness	-0.07	-2.89
Kurtosis	0.83	8.17

Table 13: Results of Descriptive Statistics by Year and by SIC for ROA constituent - Velocity

Statistical Element	Result for Margin by Year	Result for Margin by SIC
Number of observations (*n*)	2,022	1,929
Mean	133.9%	140.6%
Median	135.1%	125.6%
Minimum	122.9%	7.9%
Maximum	147.1%	390.7%
Standard Deviation	8.0%	83.9%
Skewness	0.03	1.30
Kurtosis	-1.83	2.57

5.4 INFERENTIAL STATISTICS RESULTS

The results of the inferential statistics performed according to the methodology discussed above were obtained from NCSS.

5.4.1 – RESULTS OF ANOVA WITH GLM TESTS

The results presented below are presented in the following format. First the results of the analysis of variance (ANOVA) with general linear methods (GLM) tests are displayed by SIC for all profitability measures in Table 14 below. Second the ANOVA with GLM tests by year for profitability measures are displayed in Table 15 below. Appendix D is the NCSS output for ROIC, ROE, ROA and the ROA constituent ratios, margin and velocity. Tables 14 and 15 are extracts of the relevant data from the NCSS reports.

Table 14: Results of ANOVA with GLM Test by SIC for all Profitability Measures

Measure	*n*	Degrees of Freedom	Sum of Squares	Total Sum of Squares	F-Ratio	Probability Level	Significance
ROIC	2,215	32	2.389537	62.43024	2.73	0.000001	0.05
ROE	2,215	32	1.908652	78.79261	1.72	0.007332	0.05
ROA	1,994	32	0.8014054	34.13939	1.48	0.041210	0.05
Margin	2,002	32	147.8601	76,132.48	0.12	1.000000	0.05
Velocity	2,021	32	943.0727	2,264.41	44.56	0.000000	0.05

Table 15: Results of ANOVA with GLM Test by Year for all Profitability Measures

Measure	*n*	Degrees of Freedom	Sum of Squares	Total Sum of Squares	F-Ratio	Probability Level	Significance
ROIC	2,215	10	0.565831	62.43024	2.07	0.023691	0.05
ROE	2,215	10	1.526721	78.79261	4.41	0.000004	0.05
ROA	1,994	10	0.2847809	34.13939	1.68	0.079227	0.05
Margin	2,002	10	428.8	76,132.48	1.11	0.348597	0.05
Velocity	2,021	10	15.97822	2,264.41	2.42	0.007443	0.05

5.4.2 RESULTS OF HYPOTHESES TESTS

The results of the six steps described in Chapter 4 above for each of the three hypothesis tests described in Chapter 3 above have been presented in the sections below. In all cases the significance level was set at 0.05 and in all cases the number of observations was common across the test for year and SIC by profitability measure tested although not necessarily common across the profitability measures.

5.4.2.1 HYPOTHESIS 1 - THE MEAN ROIC IS UNIFORM ACROSS INDUSTRY AND TIME

Table 16 below illustrates the results of hypothesis 1. The H_0 is that the mean ROIC is uniform across time and industry in both cases the number of observations was 2,215 and the ρ-value result for time was 0.023691 and for industry 0.000001.

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Table 16: Results of Hypothesis Test 1 by Year and by SIC for ROIC

Step	Description	Results by Year	Results by SIC
1.	H_0	Mean ROIC is uniform across time	Mean ROIC is uniform across industry
2.	H_a	Mean ROIC is not uniform across time	Mean ROIC is not uniform across industry
3.	α	0.05	0.05
4.	n	2,215	2,215
5.	ρ	0.023691	0.000001
6.	Reject/Fail to reject H_0	Reject H_0	Reject H_0

5.4.2.2 HYPOTHESIS 2 - THE MEAN ROE IS UNIFORM ACROSS INDUSTRY AND TIME

Table 17 below illustrates the results of hypothesis 2. The H_0 is that the mean ROE is uniform across time and industry in both cases the number of observations was 2,215 and the ρ-value result for time was 0.0000004 and for industry 0.007332.

Table 17: Results of Hypothesis Test 2 by Year and by SIC for ROE

Step	Description	Results by Year	Results by SIC
1.	H_0	Mean ROE is uniform across time	Mean ROE is uniform across industry
2.	H_a	Mean ROE is not uniform across time	Mean ROE is not uniform across industry
3.	α	0.05	0.05
4.	n	2,215	2,215
5.	ρ	0.0000004	0.007332
6.	Reject/Fail to reject H_0	Reject H_0	Reject H_0

5.4.2.3 HYPOTHESIS 3 - THE MEAN ROA IS UNIFORM ACROSS INDUSTRY AND TIME

Table 18 below illustrates the results of hypothesis 3. The H_0 is that the mean ROA is uniform across time and industry in both cases the number of observations was 1,994 and the ***ρ***-value result for time was 0.079227 and for industry 0.0041210.

Table 18: Results of Hypothesis Test 3 by Year and by SIC for ROA

Step	Description	Results by Year	Results by SIC
1.	H_0	Mean ROA is uniform across time	Mean ROA is uniform across industry
2.	H_a	Mean ROA is not uniform across time	Mean ROA is not uniform across industry
3.	α	0.05	0.05
4.	n	1,994	1,994
5.	ρ	0.079227	0.041210
6.	**Reject/Fail to reject** H_0	Fail to reject H_0	Reject H_0

The overall results show that one of the six sections contained in the three hypotheses above has a ***ρ***-value greater than the significance level (***α***) of 0.05. This is a section of Hypothesis 3 that states that mean ROA is uniform across time. The ***ρ***-value for this section was 0.079227.

6 DISCUSSION OF THE RESULTS

The results laid out in Chapter 5 above are discussed in conjunction with the literature review in Chapter 2. The discussion follows the format of the results in Chapter 5 starting with the profitability measures, secondly looking at the descriptive statistics and finally discussing the results of the inferential statistics. In the inferential statistics section the discussion will also examine the influence of the types of profitability measures and their effect on the results obtained.

6.1 PROFITABILITY MEASURES

6.1.1 GENERAL COMMENTARY ON EXPECTED PROFITABILITY RETURNS IN SOUTH AFRICA

In South Africa with its relatively high cost of capital, it would be expected that returns and therefore profitability results are higher than would be expected in developed economies such as the United States and Germany. Therefore returns over ten percent would be expected and indeed this is the case with the ROE measure and in most cases for ROIC as well. The ROA measure is the only measure with the majority of data points below ten percent.

6.2 DISCUSSION OF THE RESULTS OF THE DESCRIPTIVE STATISTICS OF PROFITABILITY MEASURES

The mean ROIC, mean ROE and mean ROA means by SIC are shown in Table 7 and displayed graphically as Figure 6. These results show that the means of mean ROIC, mean ROE and mean ROA are largely related in the direction of their movement which would appear to reflect that certain industries do show a higher profitability than others across the industries. Appendix E shows a listing of the SIC codes and the industry or industries that fall under the respective SIC code.

In general the ROE measure reflects higher profitability returns than either mean ROIC and mean ROA in that order. This is to be expected as one of the constituents of mean ROE namely net income is likely to show higher returns due to the fact that less of the component accounting entries would have been excluded from this ratio than for example the NOPAT found in ROIC and the component profit in the margin constituent of the ROA ratio. Only the component sales revenue in the velocity constituent of the ROA ratio can generally be expected to be higher due similarly to it being a less refined number than NOPAT or profit..

6.2.1.1 INDUSTRIES WITH RELATIVELY LOW MEAN RETURNS

It can be seen in Figure 6 that SIC 23, which comprises the Gold and Uranium Mining industry is relatively unprofitable across all three measures of profitability. Fourteen of the fifteen miners in this SIC category are gold miners. A possible explanation for the relative underperformance of the mean ROIC at -0.7% for this industry is that gold mining is extremely capital intensive and returns on capital will thus be negatively affected by the large capital injections necessary. Having said that, and as mentioned above, the measures for mean

ROE and mean ROA, 3.2% and 3.5% respectively, also show relatively low profitability ratios; it would appear therefore that gold mining is a relatively unprofitable industry during the period of this study. It is difficult to draw any conclusions regarding the profitability of uranium miners based on the fact that only a single uranium miner was included in this industry. The work of Selling and Stickney (1989) seems to relate well to these findings. The South African gold mining industry can be characterised by an industry in late decline, South Africa is no longer the world’s largest producer of gold as a result Selling and Stickney’s (1989) findings that the ROA results of an industry or firm relate to the growth phase of that industry or firm would appear to be correct. Selling and Stickney (1989) showed that there are negative ROA returns in the introduction, early growth and late decline phases of the life cycle. Thus while gold mining is not yet reflecting negative ROA returns it would appear that they trend is toward these negative returns in the longer term. Bearing in mind that the life cycle of gold mining is relatively long term, based on the fact that gold mining started in Johannesburg in 1886, it is difficult to say when the ROA returns will become fully negative but the trend does show ROA is falling.

In Figure 6 the industry Recreational Services, denoted by SIC code 95, also shows all three profitability ratios at almost the same point with mean ROIC and mean ROE at 3.0% and mean ROA at 3.7%. This to be expected as there is a single entity in this industry.

6.2.1.2 INDUSTRIES WITH RELATIVELY HIGH MEAN RETURNS

The following is a discussion of three of the more profitable industries based on the profitability results in Table 7 and shown in Figure 6; the industries are discussed in SIC code order. The Integrated Oil and Gas industry or SIC code 22 has the highest mean ROE of 21.1% in addition the mean ROIC, 14.1%, and mean ROA, 10.9%, are both relatively high when compared with other results in their respective measures. This is to be expected with the oil and gas industry achieving record returns due to the high global oil prices, see Table19 below for the nominal crude oil price over the period, and relatively long lead times in investment. Thus it is possible that due to the long project lead times on new plant and equipment for this industry as well as the long project breakeven time periods, the companies in this industry category had not invested heavily in their capacity while at the same time received greater returns due to the increasing oil price, see Table 19 below. Thus with costs relatively contained and income growing one would expect to see above average returns in this industry.

Table 19: Crude Oil Price in Nominal and Real Terms for the Period 1995 to 2005

Year	Nominal Oil Price (USD)
1995	16.86
1996	20.29
1997	18.68
1998	12.28
1999	17.47
2000	27.60
2001	23.12
2002	24.36
2003	28.10
2004	36.05
2005	50.64

Source: OPEC

The next industry category discussed is SIC code 75 Fixed Line and Mobile Telecommunications. The mean ROE for this category is 19.9%, mean ROIC 15.4% and mean ROA 12% the telecommunications industry in South Africa and most of the world has shown very robust growth over the period of this study, and even though the capital investments required for the mobile network infrastructure is intensive the profits realised over the period have been very high. Similarly with the Telkom numbers included under the fixed line telecommunications a large portion of the Telkom profits are contributed to by the Telkom shareholding of Vodacom one of the mobile telecommunications operators in South Africa that is however not listed as a result we can only obtain a glimpse of Vodacom's returns via the results of Telkom. According to Engineering News (3 September 2007), Telkom holds fifty percent of Vodacom and as such fifty percent of Telkom's returns can be credited to Vodacom. As a result, it would appear that the mobile telecommunications industry is the greater contributor to the profitability of the category than fixed line telecommunications.

In utilising Porter's (1980) Five Forces model it would appear that both the oil and specialty chemicals as well as the fixed and mobile telecommunications industries utilise the bargaining power of suppliers force as their major source of advantage in driving their profitability. If one examines the six factors within this force it is relatively clear that these factors are characteristic of these industries. Porter (1980) describes the characteristics as follows. The first characteristic is that the industry is dominated by a few companies and is more concentrated than the industry it sells to. Second the industry is not obliged to contend with other substitute products for sale to the industry. Third the industry is not an important customer to the supplier group. Fourth the suppliers' product is an important input to the buyer's business. Fifth the supplier group's products are differentiated or it has built up switching costs. Finally the supplier group poses a credible threat to forward integration. In reviewing these factors for oil and speciality chemicals (oil) and fixed and mobile telecommunications (telecoms) of which mobile telecoms is the major component, from a profitability point of view as shown above. It can be seen that most of these characteristics are relevant to both the oil and telecoms industries. Each industry is dominated by a few companies and is more concentrated than the industries they sell to. Both oil and telecoms are difficult if not impossible to substitute. No one industry is a dominant customer to the supplier industries oil and telecoms the good and services they produce as primary offerings are required by too many customers for the customers to have bargaining power. In both industries, the switching costs to move away from the industries products are prohibitively expensive, for example, to change fleets of trucks to run on battery or alternative fuels would be prohibitively expensive. In terms of these industries posing a credible threat to forward integration, there are already cases in both industries where the suppliers are involved in the industries further down the value chain. Oil has petrol stations and other by product plants such as polymer and explosives production. Telecoms have shops that sell direct to customers as well as business services that offer the services direct to customers. There is also a case for using the force, barriers to entry, in the case of oil and telecoms. Economies of scale, product differentiation, capital requirements, switching costs, access to distribution channels, and cost disadvantages independent of scale are all very similar to the characteristics raised under the bargaining power of suppliers the only characteristic that has not already been explained is that of government policy. In both industries government regulations govern who may be active in the industry and this is regulated through the offering of operating licenses thus effectively protecting the incumbent industries.

The final industry discussed is the Internet and Software industry or SIC code 86. The mean ROE is 18.5%, mean ROIC 16.2% and mean ROA 9.8%. The analysis for this industry category is much the same as that of the Mobile and Fixed Telecommunications industry above. The market for internet and software was in a growth phase over the period of the study; see Table 20 below for the growth statistics in the number of internet users in South Africa for the last five years of the study period. It would thus be expected to see growth in the mean profitability figures over the period of the study.

Table 20: Number of Internet Users in South Africa – 2000 to 2005

Year	Users
2000	2,400,000
2001	2,750,000
2002	3,100,000
2003	3,283,000
2004	3,523,000
2005	3,600,000

Source: Internet World Stats

Porter (1980) also explains profitability as a function of market share in the case of the IT industry it appear that the best fit to Porter's matrix shown in Figure 3 above would be in the differentiation quadrant. The IT industry is characterised by companies that offer niche services either based on the final product such as accounting or legal software or the type of technology they service such as SAP or Microsoft. Porter (1980) states that differentiation is a viable strategy for achieving above average returns due to the fact that it creates a defensible position similar to that of overall cost leadership. The results of this study seem to bear out this theory in that the IT industry appears as one of the more profitable industries among those studied.

It is difficult to draw conclusions based on the work on the concentration of industry by Fernhaber et.al. (2007) as this was not directly studied in the data. However from examining these three most profitable industries, it would appear difficult to conclude that the more or less concentrated the industry is the more profitable it may be. The oil and speciality chemical industry is a very concentrated industry in terms of economies of scale, where the fixed and mobile telecommunications industry is only slightly less concentrated in terms of economies of scale and finally the IT and software industry is relatively fragmented. Thus it is difficult to state with certainty, based on the cursory data at hand for this comparison, that industry concentration has a direct effect on profitability. Similarly Bryce and Dyers (2007) work on more profitable industries attracting five times as many entrants as the average industry is difficult to conclude. By simply examining the three industries above, only the IT and software industry seems to have attracted a large number of new entrants.

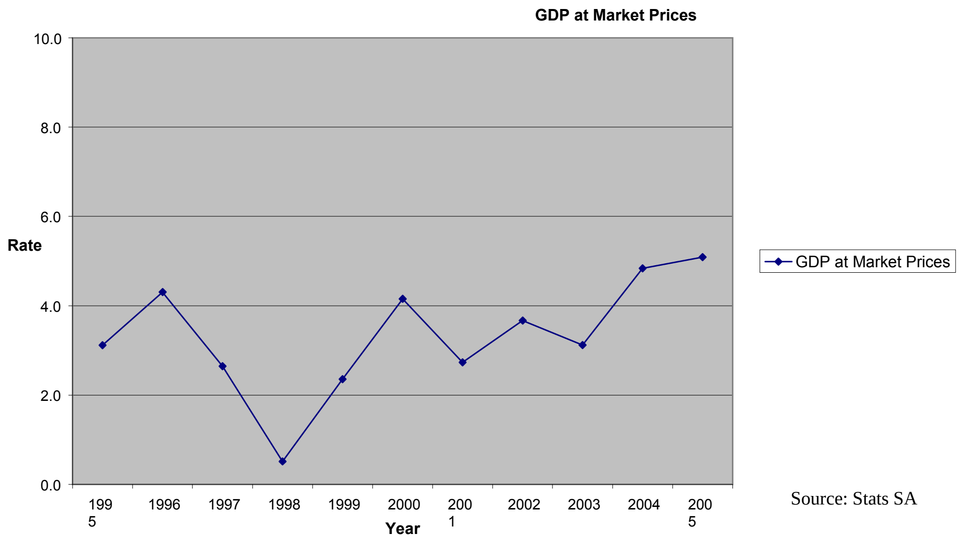
The other two industries are very capital intensive and are both closely regulated by government and these barriers to entry have acted effectively as a hindrance to competitors despite the large profits to be made in this industry.

For the balance of the industries shown in Figure 6 the measures move in the same direction and only the magnitude of the profit is different between the measures. These other industries have not been discussed in depth as the major findings have been extracted from this data with regard to profitability and industry.

6.2.1.3 DISCUSSION OF PROFITABILITY RETURNS BY YEAR

Table 8 and the graphical representation thereof in Figure 7 above show the results of mean ROIC, Mean ROE and mean ROA by year across all industries. Figure 7 clearly shows that the cyclicality of South African economy especially if Figure 10 showing the South African GDP figures for the same period as this study is compared with the data in Figure 7.

Figure 10: South African GDP 1995 to 2005



Source: Stats SA

McGahan and Porter (1997) state that one of the benefits of using a long term dataset is that several phases of the business cycle may be reflected in the results. From the information in Figures 7 and 10 above, it would appear that a single South African business cycle has been studied in these results. It would also appear that the data depicted by Figure 7 relatively closely resembles that of the GDP data depicted by Figure 10. This would indicate that at a particular point in time, profitability is influenced by overall economic performance in the country.

6.2.1.4 DISCUSSION OF MEAN ROA CONSTITUENTS – MEAN MARGIN AND MEAN VELOCITY RATIO RETURNS BY YEAR AND SIC

Although the constituent Ratios of ROA as propounded by Rothschild (2006) are not directly studied in the results it was decided that it would be prudent to have a brief review of the mean results of the margin and velocity ratios that comprise the mean ROA ratio in order to determine if the effects of these constituent ratios may be deconstructed to obtain a better understanding of their effects on mean ROA.

It is prudent at this point to re-examine the composition of the margin and velocity ratios. Margin is comprised of profit divided by sales or turnover and velocity is comprised of sales revenue or turnover divided by assets.

In Figure 8 which shows the mean margin and mean velocity by year it can be seen that margin and velocity move largely in sympathy with each other during the period of this study apart from the years 1998 to 2001where the two ratios move against each other. It is possible that during this period sales revenue was reduced and hence the relatively strong growth in the margin ratio and decline in velocity. Looking at the GDP growth in Figure 10 above shows a sharp up tick in the GDP growth in South Africa for the period 1999 and 2000 from a very low GDP rate in 1998, this growth is similarly reversed in 2001. These results would suggest that the sales revenue is in line with GDP growth which is to be expected.

In examining Figure 9 which shows the means for margin and velocity by SIC it can be seen that they very closely resemble the results of the means for ROIC, ROE and ROA displayed in Figure 6.Thus it is expected that the same effects that were relevant for the profitability returns discussed in 6.2.1.1 above also held for the ROA constituents in relation to time or year.

6.2.1.5 DISCUSSION OF THE RESULTS OF DESCRIPTIVE STATISTICS FOR MEAN ROIC, MEAN ROE AND MEAN ROA RATIO RETURNS BY YEAR AND SIC

As can be seen in Tables 9, 10 and 11 above, the mean profitability across the three measures of profitability namely mean ROIC, mean ROE and mean ROA are relatively uniform on a percentage basis for year and SIC for each separate measure. Thus the mean of ROIC for year and SIC are 10.4% and 10.8% respectively, for ROE the figure for year is 15.5% and for SIC 15.3%, finally for ROA the figure for year is 8.2% and 8.3% for SIC, this despite the fact that the margin and velocity figures in Tables 12 and 13 for year and SIC are -5.8% for margin year and 1.1% for margin SIC and 133.9% for velocity year and 140.6% for velocity SIC. These differences reflect the arithmetic averages calculated on the means of differently grouped data

For each of the profitability measures in Tables 9, 10, 11 12 and 13 the standard deviation, skewness and kurtosis have been calculated and displayed. In examining the results of standard deviation, skewness and kurtosis, it is only relevant to discuss the primary profitability measures of ROIC; ROE and ROA due to the fact that the ROA constituent's margin and velocity are incorporated into the ROA results. The various measures are dealt with separately in respect to time and SIC.

The standard deviations from the mean by year for each of the primary profitability measures are as follows: ROIC 1.9%, ROE 2.8% and ROA 1.2%. Therefore for ROIC and ROA one standard deviation lie 1.9% and 1.2%

respectively from the mean and for ROE one standard deviation lies 2.8% from the mean. The standard deviations by SIC for each of the primary measures are as follows: ROIC 3.8%, ROE 4.1%, and ROA 2.9%. Thus one standard deviation from the mean is 3.8% and 4.1% for ROIC and ROE respectively and 2.9% from the mean for ROA.

The skewness results by year are as follows: ROIC 0.24, ROE 0.76 and ROA 1.72. Thus all of the returns by year are positively skewed. The results by SIC are: ROIC -1.21, ROE -1.67 and ROA -0.71. Thus all of the results are negatively skewed for SIC.

The kurtosis results by year are: ROIC -0.91, ROE -0.11 and ROA 3.53. Thus it was expected that the curves for ROIC and ROE by year will have relatively small tails; ROA on the other hand can be expected to be a relatively flat curve with larger tails. The kurtosis results by SIC are as follows: ROIC 1.76, ROE 3.5 and ROA 0.84. Thus it was expected that the curves for ROIC and ROA are relatively steeper than for ROE. Having said that, the SIC curves should be seen as relatively flat and one should be mindful of this in the interpretation of the results that these relatively flat curves are likely to have relatively large amounts of the data in the tails of the curve.

The standard deviation, skewness and kurtosis data all seem to agree with each other that the year curves will be expected to be steeper with less standard deviation and will be positively skewed. The SIC data on the other hand appears to have relatively flat curves with a greater standard deviation from the mean and all are negatively skewed.

Based on the findings of the mean profitability ratios in 6.2.1.1, 6.2.1.2 and 6.2.1.5 above the results by SIC or industry appear to have an influence on the profitability measures ROIC, ROE and ROA. It was therefore expected that the inferential statistics would corroborate the preliminary findings of the descriptive statistics above that industry has an effect on profitability.

Based on the findings of the mean profitability ratios in 6.2.1.4 above it appeared that time, or in this case year, has an effect on profitability in that the profitability results displayed in Figure 7 move closely in sympathy with each other across the three profitability measures and also appear to follow the GDP rate of the South African economy over the same time period shown in Figure 10. Thus it was expected that the inferential statistics would similarly corroborate the preliminary findings of the descriptive statistics above that time has an effect on profitability.

6.3 DISCUSSION OF THE RESULTS OF THE INFERENTIAL STATISTICS OF PROFITABILITY MEASURES

The results of the inferential statistics obtained by performing analysis of variance (ANOVA) with general linear models (GLM) tests run on NCSS. Tables 14 and 15 above contain summaries of the data obtained from the

NCSS ANOVA with GLM tests, the complete reports for each of the profitability measures from the NCSS system are attached in Appendix D.

The hypothesis tests posed in Chapter 3 above are performed using the data in Tables 14 and 15. The results of the hypothesis tests will be discussed in the order in which they appear in Chapter 3 above.

6.3.1.1 HYPOTHESIS 1 – THE MEAN ROIC IS UNIFORM ACROSS INDUSTRY AND TIME

Table 16 above illustrates the results of hypothesis 1. The null hypothesis (H_0) is as follows: The mean ROIC is uniform across time and industry. As shown in Table 16 above, the ***ρ***-value for time or year is 0.023691 and for SIC or industry as 0.000001. Thus in both cases, with a significance level of 0.05, the null hypothesis has been rejected. In other words: $\rho < \alpha$ and the H_0 is rejected for both time and industry.

6.3.1.2 HYPOTHESIS 2 – THE MEAN ROE IS UNIFORM ACROSS INDUSTRY AND TIME

The results for hypothesis 2 are illustrated in Table 17 the null hypothesis (H_0) is as follows: The mean ROE is uniform across time and industry. Table 17 shows, the ***ρ***-value for year as 0.0000004 and for industry as 0.007332. Thus with a significance level of 0.05, in both cases, the null hypothesis has been rejected for time and for industry. In other words: $\rho < \alpha$ and the H_0 is rejected for both time and industry.

6.3.1.3 HYPOTHESIS 3 – THE MEAN ROA IS UNIFORM ACROSS INDUSTRY AND TIME

The results for hypothesis 3 are illustrated in Table 18 the null hypothesis (***H_0***) is stated as follows: The mean ROA is uniform across time and industry. Table 18 shows, the ***ρ***-value for year as 0.079227 and for industry as 0.041210. Thus with a significance level of 0.05, in both cases, the null hypothesis has failed to be rejected for time and is rejected for industry. In other words: $\rho > \alpha$ in the case of time and the ***H_0*** fails to be rejected for time. In the case of industry $\rho < \alpha$ and the ***H_0*** is rejected for industry.

6.3.1.4 DISCUSSION OF THE DEGREES OF FREEDOM RESULTS FROM THE HYPOTHESIS TESTS

The degrees of freedom results shown in Table 14 show that in the case of each of the profitability measures by industry, the degrees of freedom are 32 and Table 15 shows the results for each of the profitability measures by year and the degrees of freedom are 10. These degrees of freedom should be read in conjunction with the number of observations or ***n***-value of each profitability measure also shown in Tables 14 and 15. The ***n***-values for industry and year are, 2,215 for ROIC and ROE, 1,994 for ROA, 2,002 for margin and 2,021 for velocity. The ***n***-values show how many observations were suitable to be utilised by NCSS in performing the overall ANOVA with GLM tests for each of the profitability measures. The degrees of freedom show how many of the ***n***-values were relevant to the ANOVA with GLM test in determining that, with a significance level of 0.05, there is a statistically significance to the data used to run the ANOVA with GLM tests. However, the low numbers of the degrees of freedom read in conjunction with the relatively high ***n***-values demonstrate that the statistical significance is relatively low. These degrees of freedom results show that there are likely to be other categories which also have an effect on profitability.

6.3.1.5 SYNTHESIS OF DISCUSSION REGARDING THE RESULTS FROM THE HYPOTHESIS TESTS

In all six sections of the hypothesis cases but one, the null hypotheses have been rejected. The section that failed to be rejected is that of the case of time for the mean ROA. Thus in the results of hypotheses 1 and 2 time and industry for the profitability measures ROIC and ROE can be said to be statistically significant in their effects on profitability; while industry in the case of ROA can be said to be statistically significant in its effect on profitability.

Taking into consideration that these results were obtained from a large number of observations, 2,215 for both ROIC and ROE and 1,994 for ROA, these results would appear to be significant based on the central limit theorem and are therefore able to be generalised with relative confidence. Based on the degrees of freedom results, other categories of effect on profitability should also be considered for further study to determine if many other categories have statistical effects similar to industry and year or if other categories have much greater statistical effects than others; having said that there is still statistical evidence to show that industry and time do have statistically significant effects on profitability in listed South African companies for the period under study.

7 CONCLUSION AND RECOMMENDATIONS

Using the three profitability measures ROIC, ROE and ROA it has been found that for the period 1995 to 2005 there are statistically significant effects on profitability from industry and time in South African listed companies.

Accounting measure errors would usually be expected to show a significant impact on the profitability results in the short-term; the length of this study allows for these errors to largely be excluded and as a result the profitability findings can be accepted with relatively high levels of confidence.

The fact that the ROA results are less significant than both ROIC and ROE may be due to the fact that industry affects profitability, but not necessarily the yield on assets. Another reason ROA is relatively low is that in terms of the significance of time and taking into account the GDP growth over the period, the new investment in capital would drive the ROIC results higher while new investment may have dampened the effects on the ROA results. This fact aside, across all three profitability measures, industry is seen to have a statistically significant effect on profitability no matter which measure of profitability is utilised. Thus while certain profitability measures may show better returns than others it is possible to conclude that profitability is affected by industry.

Porter (1991) explains that industry structure is affected partly by external and partly internal influences and actions. This would appear in part to be borne out by the findings above with the year factors being largely external or affected by for example the GDP growth in the country. The internal factors are difficult to comment on in this work as they were not specifically studied and it would be useful as an area of further study to examine the market share effect and other internal factors to determine the magnitude of this effect.

The fact that five of the six tests returned statistically significant results for the effects of industry and time is important in reinforcing the findings of McGahan and Porter (1997) that industry does indeed have an effect on profitability. The reinforcement of these findings is important in the South African context in that methods and practices related to the management of profitability effects and selection of industries in which to compete that are in use internationally can with relative confidence be applied to South African companies with relative conviction that these methods if successful in other countries will also be likely to succeed in South Africa.

In reviewing the equation postulated in Chapter 4 as follows: $r_{i,t} = \mu + \gamma_t + \alpha_i + \varepsilon_{i,t}$ it has been proven that there is a significant effect on accounting profit in the year ($r_{i,t}$) profitability from industry effect ($_i$) as measured by the various profitability measures and a relatively significant effect for time ($_t$).

The statistical results shown and discussed in Chapters 5 and 6 above demonstrate clearly that profitability is affected by industry and time and while these may not be the only factors affecting profitability in organisations in South

Africa, industry and time are significant enough in their effects on profitability for management to ensure that they should take into account the effects or potential effects of industry and time when deciding on the strategic reasons for entry and exit from certain industries and the timing of these moves in the South African context.

7.1 RECOMMENDATIONS FOR FURTHER STUDY

The findings of the research above have indicated that the effects of the category industry, and to a certain extent the category time, on profitability in listed companies are both significant. Certain recommendations are made to gain a deeper understanding of other categories that may also affect profitability in companies

The first recommendation is to determine if any of the other categories studied by McGahan and Porter (1997) namely the business-specific and corporate-parent categories have influences on profitability in South African organisations. Secondly more abstract categories such as for example, the effect management has on profitability may be examined. Of course other categories such as market share may also be studied. Difficulties with these last two categories are that data are extremely difficult to obtain in South Africa. In the case of market share there is no database such as the profit impact of marketing strategy (PIMS) in the United States. Similarly the data needed to ascertain the effect of management on profitability, is an extremely difficult category to study as the unit of analysis for determining the effect of management is based on abstract values at best.

It is recommended that there is a dire need in South Africa for the development of databases to hold wide ranging organisational information to assist academics and ultimately managers in the study of the myriad factors that may affect or be seen to affect companies' profitability and operations.

Finally for the category time it should be determined if a longer period of study for example twenty years, has a greater, lesser or similar effect on profitability. This extended study would help to determine if particular industries are more profitable over longer periods of time, this may show different results for industries such as the oil industry which, due to the cyclicality of the commodities markets, may actually prove to be less profitable over the long term due to fluctuating oil prices and the high cost of capital equipment, long project lead times and high prospecting costs and.

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APPENDICES

APPENDIX A: SIC Code Listing

THE DETAILED CLASSIFICATION

The italic headings indicate a logical grouping normally on a level between that of the Division and the Major group and which does not have a code but corresponds to "Division" in the ISIC. In cases where these groupings correspond with major groups, the major group heading is also in italics.

MAJOR DIVISION 1: AGRICULTURE, HUNTING FORESTRY AND FISHING

Division	Major Group	Group	Sub-group	Title of Category
11				AGRICULTURE, HUNTING AND RELATED SERVICES
				AGRICULTURE, HUNTING AND RELATED SERVICES (111, 112, 113, 114 AND 115)
	111			GROWING OF CROPS; MARKET GARDENING; HORTICULTURE
		1111	11110	Growing of cereals and other crops n.e.c.
		1112	11120	Growing of vegetables, horticultural specialities and nursery products
		1113	11130	Growing of fruit, nuts, beverages and spice crops
	112			FARMING OF ANIMALS
		1121	11210	Farming of cattle, sheep, goats, horses, asses, mules and hinnies; dairy farming
		1122	11220	Other animal farming; production of animal products n.e.c.
	113	1130	11300	GROWING OF CROPS COMBINED WITH FARMING OF ANIMALS (MIXED FARMING)
	114	1140	11400	AGRICULTURAL AND ANIMAL HUSBANDRY SERVICES, EXCEPT VETERINARY ACTIVITIES
	115			HUNTING, TRAPPING AND GAME PROPAGA-TION, INCLUDING RELATED SERVICES
		1151	11510	Game propagation
		1152	11520	Hunting and trapping, including related services
	116	1160	11600	PRODUCTION OF ORGANIC FERTILIZER
12				FORESTRY, LOGGING AND RELATED SERVICES
				FORESTRY, LOGGING AND RELATED SERVICES (121 AND 122)
	121	1210	12100	FORESTRY AND RELATED SERVICES
	122	1220	12200	LOGGING AND RELATED SERVICES
13				FISHING, OPERATION OF FISH HATCHERIES AND FISH FARMS
				FISHING, OPERATION OF FISH HATCHERIES AND FISH FARMS (131 AN D132)

	131	1310	13100	OCEAN AND COASTAL FISHING
	132	1320	13200	FISH HATCHERIES AND FISH FARMS

MAJOR DIVISION 2: MINING AND QUARRYING

Division	Major Group	Group	Sub-group	Title of Category
21	210	2100	21000	MINING OF COAL AND LIGNITE
22	221			***EXTRACTION OF CURE PETROLEUM AND NATURAL GAS; SERVICE ACTIVITIES INCIDENTAL TO OIL AND GAS EXTRACTION, EXCLUDING SURVEYING***
		2210	22100	Extraction of crude petroleum and natural gas
		2211	22110	Service activites incidental to oil and gas extraction, excluding surveying
23	230	2300	23000	***MINING OF GOLD AND URANIUM ORE***
24				MINING OF METAL ORES, EXCEPT GOLD AND URANIUM
				MINING OF METAL ORES (241 AND 242)
	241	2410	24100	MINING OF IRON ORE
	242			MINING OF NON-FERROUS METAL ORES, EXCEPT GOLD AND URANIUM
		2421	24210	Chrome
		2422	24220	Copper
		2423	24230	Manganese
		2424	24240	Platinum group metals
		2429	24290	Other metal ore mining, except gold and uranium
25				OTHER MINING AND QUARRYING
				OTHER MINING AND QUARRYING (251, 252 AND 253)
	251			STONE QUARRYING, CLAY AND SAND-PITS
		2511	25110	Dimension stone (granite, slate and wonderstone)
		2512	25120	Limestone and limeworks
		2519	25190	Other stone quarrying, including stone crushing and clay and sandpits
	252	2520	25200	MINING OF DIAMONDS (INCLUDING ALLUVIAL DIAMONDS)
	253			MINING AND QUARRYING N.E.C.
		2531		Mining of chemical and fertilizer minerals
			25311	Phosphates
			25319	Other chemical and fertilizer mineral mining
		2532	25320	Extraction and evaporation of salt
		2539		Other mining and quarrying n.e.c.
			25391	Mining of precious and semi-precious stones, except diamonds
			25392	Asbestos
			25399	Other minerals and materials n.e.c.
29	290	2900	29000	SERVICE ACTIVITIES INCIDENTAL TO MINING OF MINERALS

MAJOR DIVISION 3: MANUFACTURING

Division	Major Group	Group	Sub-group	Title of Category
30				MANUFACTURE OF FOOD PRODUCTS, BEVERAGES AND TOBACCO PRODUCTS
				MANUFACTURE OF FOOD PRODUCTS, BEVERA-GES AND TOBACCO (301, 302, 303, 304 AND 305)
	301			PRODUCTION, PROCESSING AND PRESERVA-TION OF HEAT, FISH, FRUIT, VEGETABLES, OILS AND FATS
		3011		Production, processing and preserving of meat and meat products
			30111	Slaughtering, dressing and packing of livestock, including poultry and small game for meat.
			30112	Manufacture of prepared and preserved meat, including sausage; by-products (hides, bones, etc)
			30113	Production of land and other edible fats
		3012		Processing and preserving of fish and fish products
			30120	Manufacture of canned, preserved and processed fish, crustacea and similar foods (except soups)
		3013		Processing and preserving of fruit and vegetables
			30130	Manufacture of canned, preserved, processed and dehydrated fruit and vegetables (except soups), including fruit juices, juice extracts and potato flour meal
		3014		Manufacture of vegetables and animal oils and fats
			30141	Manufacture of crude oil and oilseed cake and meal
			30142	Manufacture of compound cooking fats, margarine and edible oils
	302	3020		MANUFACTURE OF DAIRY PRODUCTS
			30201	Processing of fresh milk (pasteurising, homogenising, sterilising and vitaminising)
			30202	Manufacture of butter and cheese
			30203	Manufacture of ice cream and other edible ice, whether or not containing cream or chocolate
			30204	Manufacture of milk powder, condensed milk and other edible milk products, e.g. ghee, casein or lactose
	303			MANUFACTURE OF GRAIN MILL PRODUCTS,

				STARCHES AND STARCH PRODUCTS AND PREPARED ANIMAL FEEDS
		3031		Manufacture of grain mill products
			30311	Manufacture of flour and grain mill products, including rice and vegetable milling; grain mill residues
			30312	Manufacture of breakfast foods
		3020	30320	Manufacture of starches and starch products
		3033	30330	Manufacture of prepared animal feeds
	304			MANUFACTURE OF OTHER FOOD PRODUCTS
		3041	30410	Manufacture of bakery products
		3042	30420	Manufacture of sugar, including golden syrup and castor sugar
		3043	30430	Manufacture of cocoa, chocolate and sugar confectionery
		3044	30440	Manufacture of macaroni, noodles, couscous and similar farinaceous products
		3049		Manufacture of other food products n.e.c.
			30491	Manufacture of coffee, coffee substitutes and tea
			30492	Manufacture of nut foods
			30499	Manufacture of spices, condiments, vinegar, yeast, egg products, soups and other food products n.e.c.
	305			MANUFACTURE OF BEVERAGES
		3051	30510	Distilling, rectifying and blending of spirits; ethyl alcohol production from fermented materials; manufacture of wine
		3052		Manufacture of been and oter malt liquors and malt
			30521	Breweries, except sorghum beer breweries
			30522	Sorghum beer breweries
			30523	Manufacture of malt
		3053	30530	Manufacture of solft drinks; production of mineral water
	306	3060	30600	***MANUFACTURE OF TOBACCO PRODUCTS***
31				MANUFACTURE OF TEXTILES, CLOTHING AND LEATHER GOODS
				MANUFACTURE OF TEXTILES (311 AND 312)

	311			SPINNING, WEAVING AND FINISHING OF TEXTILES
		3111		Preparation and spinning of textile fibres; weaving of textiles
			31111	Preparatory activities in respect of animal fibres, including washing, combing and carding of wool
			31112	Preparatory activities in respect of vegetable fibres
			31113	Spinning, weaving and finishing of yarns and fabrics predominantly of wool and other animal fibres
			31114	Spinning, weaving and finishing of yarns and fabrics predominantly of vegetable fibres
		3112		Finishing of textiles
			31120	Finishing of purchased yarns and fabrics
	312			MANUFACTURE OF OTHER TEXTILES
		3121		Manufacture of made-up textile articles, except apparel
			31211	Manufacture of blankets, made-up furnishing articles and stuffed articles
			31212	Manufacture of tents, tarpaulins, sails and other canvas goods
			31213	Manufacture of automotive textile goods (including safety belts, seat covers and upholstery)
			31219	Manufacture of other textile articles (except apparel)
		3122	31220	Manufacture of carpets, rugs and mats
		3123	31230	Manufacture of cordage, rope, twine and netting
		3129	31290	Manufacture of other textiles n. e. c.
				MANUFACTURE OF WEARING APPAREL; DRESSING AND DYEING OF FUR (313, 314 AND 315)
	313	3130		MANUFACTURE OF KNITTED AND CROCHETED FABRICS AND ARTICLES
			31301	Garment and hosiery knitting mills
			31309	Other knitting mills
	314	3140		MANUFACTURE OF WEARING APPAREL EXCEPT FUR APPAREL
			31401	Manufacture of men's and boys' clothing
			31402	Manufacture of women's, girls' and infants' clothing
			31403	Bespoke tailoring
			31404	Manufacture of hats, caps and ties
	315	3150		DRESSING AND DYEING OF FUR;

				MANUFACTURE OF ARTICLES OF FUR
			31500	Dressing and dyeing of fur, manufacture of artificial fur, fur apparel and other articles of fur
				MANUFACTURE OF LEATHER, LEATHER PRODUCTS AND FOOTWEAR (316 AND 317)
	316			TANNING AND DRESSING OF LEATHER; MANUFACTURE OF LUGGAGE, HANDBAG, SADDLERY AND HARNESS
		3161	31610	Tanning and dressing of leather
		3162		Manufacture of luggage, handbags and the like, saddlery and harness
			31621	Manufacture of travel goods and ladies' handbags
			31629	Manufacture of other general and small goods of leather and leather substitutes, including harness and saddlery
	317	3170	31700	MANUFACTURE OF FOOTWEAR
32				MANUFACTURE OF WOOD AND OF PRODUCTS OF WOOD AND CORK, EXCEPT FURNITURE; MANUFACTURE OF ARTICLES OF STRAW AND PLAITING MATERIALS; MANUFACTURE OF PAPER AND PAPER PRODUCTS; PUBLISHING, PRINTING AND REPRODUCTION OF RECORDED MEDIA
				MANUFACTURE OF WOOD AND PRODUCTS OF WOOD, EXCEPT FURNITURE; MANUFAC-TURE OF PAPER AND PAPER PRODUCTS; MANUFACTURE OF ARTICLES OF STRAW AND PLAITING MATERIALS (321 AND 322)
	321	3210		SAW MILLING AND PLANING OF WOOD
			32101	Saw milling and preserving of timber
			32109	Other mill products, including wattle bark grinding and compressing
	322			MANUFACTURE OF PRODUCTS OF WOOD, CORK, STRAW AND PLAITING MATERIALS
		3221	32210	Manufacture of veneer sheets; manufacture of plywood, laminboard, particle board and other panels and boards
		3222	32220	Manufacture of builders' carpentry and joinery
		3223	32230	Manufacture of wooden containers
		3229		Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials
			32291	Coffins (excluding the manufacture of coffins by funeral undertakers)
			32292	Picture frames and framing
			32299	Other articles of wood, cork, straw and plaiting materials, including woodcarving and woodturninq
	323			***MANUFACTURE OF PAPER AND PAPER***

				PRODUCTS
		3231	32310	Manufacture of pulp, paper and paperboard
		3232		Manufacture of corrugated paper and paperboard and of containers of paper and paperboard
			32321	Manufacture of corrugated paper and paperboard
			32322	Manufacture of containers of paper and paperboard
		3239		Manufacture of other articles of paper and paperboard
			32391	Stationery
			32399	Other paper products
				PUBLISHING, PRINTING AND REPRODUCTION OF RECORDED MEDIA (324, 325 AND 326)
	324			PUBLISHING
		3241	32410	Publishing of books, brochures, musical books and other publications
		3242	32420	Publishing of newspapers, journals and periodicals
		3243	32430	Publishing of recorded media
		3249	32490	Other publishing
	325			PRINTING AND SERVICE ACTIVITIES RELATED TO PRINTING
		3251	32510	Printing
		3252	32520	Service activities related to printing
	326	3260	32600	REPRODUCTION OF RECORDED MEDIA
33				MANUFACTURE OF COKE, REFINED PETROLEUM PRODUCTS AND NUCLEAR FUEL; MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS; MANUFACTURE OF RUBBER AND PLASTIC PRODUCTS
				MANUFACTURE OF COKE, REFINED PETROLEUM PRODUCTS AND NUCLEAR FUEL (331, 332 AND 333)
	331	3310	33100	MANUFACTURE OF COKE OVEN PRODUCTS
	332			PETROLEUM REFINERIES/SYNTHESISERS
		3321	33210	Petrol, fuel oils, lubricating oils and greases, primarily from crude oil
		3322	33220	Petrol, fuel oils, lubricating oils and greases, primarily from coal
		3323	33230	Petrol, fuel oils, lubricating oils and greases, primarily from natural gas
		3324	33240	Lubricating oils and greases, primarily from other organic products
		3325	33250	Compounded and blended lubricating oils and

				greases from purchased materials other than crude petroleum
		3329	33290	Other petroleum/synthesised products n.e.c.
	333	3330	33300	PROCESSING OF NUCLEAR FUEL
				MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS (334, 335 AND 336)
	334			MANUFACTURE OF BASIC CHEMICALS
		3341	33410	Manufacture of basic chemicals, except fertilizers and nitrogen compounds
		3342	33420	Manufacture of fertilizers and nitrogen compounds
		3343	33430	Manufacture of plastics in primary form and of synthetic rubber
	335			MANUFACTURE OF OTHER CHEMICAL PRODUCTS
		3351	33510	Manufacture of pesticides and toher agro-chemical products
		3352	33520	Manufacture of paints, varnishes and similar coatings, printing ink and mastics
		3353	33530	Manufacture of pharmaceuticals, medicinal chemicals and botanical products
		3354		Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations
			33541	Manufacture of soap and other cleaning compounds
			33542	Manufacture of perfumes, cosmetics and other toilet preparations
			33549	Manufacture of other preparations such as polishes, waxes and dressings
		3359		Manufacture of other products n.e.c.
			33591	Manufacture of edible salt
			33592	Manufacture of explosives and pyrotechnic products
			33593	Manufacture of adhesives, glues, sizes and cements
			33599	Manufacture of other chemical products n.e.c.
	336	3360	33600	MANUFACTURE OF MAN-MADE FIBRES
				MANUFACTURE OF RUBBER AND PLASTIC PRODUCTS (337 AND 338)
	337			MANUFACTURE OF RUBBER PRODUCTS
		3371		Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres
			33711	Manufacture of tyres and tubes
			33712	Rebuilding and retreading of tyres
		3379	33790	Manufacture of other rubber products

	338	3380	33800	MANUFACTURE OF PLASTIC PRODUCTS
34				***MANUFACTURE OF OTHER NON-METALLIC MINERAL PRODUCTS***
	341	3411		MANUFACTURE OF GLASS AND GLASS PRODUCTS
			34111	Manufacture or sheet and plate glass, glass blocks, tubes and rods; glass fibres and glass wool
			34112	Manufacture of glass containers; glass kitchenware and tableware; scientific and laboratory glassware, clock and watch glasses and other glass products n.e.c.
	342			MANUFACTURE OF NON-METALLIC MINERAL PRODUCTS N.E.C.
		3421	34210	Manufacture of non-structural non-refractory ceramicware
		3422	34220	Manufacture of refractory ceramic products
		3423	34230	Manufacture of structural non-refractory clay and ceramic products
		3424	34240	Manufacture of cement, lime and plaster
		3425	34250	Manufacture of articles of concrete, cement and plaster
		3426	34260	Cutting, shaping and finishing of stone
		3429		Manufacture of other non-metallic mineral products n.e.c.
			34291	Abrasives
			34299	Other non-metallic mineral products n.e.c.
35				MANUFACTURE OF BASIC METALS, FABRICATED METAL PRODUCTS, MACHINERY AND EQUIPMENT AND OF OFFICE, ACCOUNTING AND COMPUTING MACHINERY
				MANUFACTURE OF BASIC METALS (351, 352 AND 353)
	351	3510		MANUFACTURE OF BASIC IRON AND STEEL
			35101	Basic iron and steel industries, except steel pipe and tube mills
			35102	Steel pipe and tube mills
	352	3520		MANUFACTURE OF BASIC PRECIOUS AND NON-FERROUS METALS
			5201	Refining of precious metals, e.g. gold, silver, platinum
			5202	Manufacture of primary non-ferrous metal products, excluding precious metals
	353			CASTING OF METALS
		3531	35310	Casting of iron and steel
		3532	35320	Casting of non-ferrous metals

				MANUFACTURE OF FABRICATED METAL PRODUCTS (354 AND 355)
	354			MANUFACTURE OF STRUCTURAL METAL PRODUCTS, TANKS, RESERVOIRS AND STEAM GENERATORS
		3541		Manufacture of structural metal products
			35411	Manufacture of metal structures or parts thereof
			35419	Other structural metal products, e.g. metal doors, windows and gates
		3542	35420	Manufacture of tanks, reservoirs and similar containers of metal
		3543	35430	Manufacture of steam generators, except central heating hot water boilers
	355			MANUFACTURE OF OTHER FABRICATED METAL PRODUCTS; METALWORK SERVICE ACTIVITIES
		3551	35510	Forging, pressing, stamping and roll-forming of metal; powder metallurgy
		3552		Treatment and coating of metals; general mechanical engineering on a fee or contract basis
			35521	Treating and coating of metals
			35522	General mechanical engineering on a fee or contract basis
		3553	35530	Manufacture of cutlery, hand tools and general hardware
		3559		Manufacture of other fabricated metal products n.e.c.
			35591	Manufacture of metal containers, e.g. cans and tins
			35592	Manufacture of cables and wire products
			33593	Manufacture of springs (all types)
			35594	Manufacture of metal fasteners
			35599	Manufacture of other metal products n.e.c.
				MANUFACTURE OF MACHINERY AND EQUIPMENT N.E.C. (356, 357 AND 358)
	356			MANUFACTURE OF GENERAL PURPOSE MACHINERY
		3561	35610	Manufacture of engines and turbines, except aircraft, vehicle and motor cycle engines
		3562	35620	Manufacture of pumps, compressors, taps and valves
		3563	35630	Manufacture of bearings, gears, gearing and driving elements
		3564	35640	Manufacture of ovens, furnaces and furnace burners
		3565	35650	Manufacture of lifting and handling equipment

		3569	35690	Manufacture of other general purpose machinery
	357			MANUFACTURE OF SPECIAL PURPOSE MACHINERY
		3571	35710	Manufacture of agricultural and forestry machinery
		3572	35720	Manufacture of machine tools
		3573	35730	Manufacture of machinery for metallurgy
		3574	35740	Manufacture of machinery for mining, quarrying and construction
		3575	35750	Manufacture of machinery for food, beverage and tobacco processing
		3576	35760	Manufacture of machinery for textile, apparel and leather production
		3577	35770	Manufacture of weapons and ammunition
		3579	35790	Manufacture of other special purpose machinery
	358	3580	35800	MANUFACTURE OF HOUSEHOLD APPLIANCES N.E.C.
	359	3590	35900	***MANUFACTURE OF OFFICE, ACCOUNTING AND COMPUTING MACHINERY***
36				MANUFACTURE OF ELECTRICAL MACHINERY AND APPARATUS N.E.C.
				MANUFACTURE OF ELECTRICAL MACHINERY AND APPARATUS N. E.C. (361, 362, 363, 364 AND 365)
	361	3610	36100	MANUFACTURE OF ELECTRIC MOTORS, GENERATORS AND TRANSFORMERS
	362	3620	36200	MANUFACTURE OF ELECTRICITY DISTRIBU-TION AND CONTROL APPARATUS
	363	3630	36300	MANUFACTURE OF INSULATED WIRE AND CABLE
	364	3640	36400	MANUFACTURE OF ACCUMULATORS, PRIMARY CELLS AND PRIMARY BATTERIES
	365	3650		MANUFACTURE OF ELECTRIC LAMPS AND LIGHTING EQUIPMENT
			36501	Manufacture of electric bulbs and fluorescent tubes
			36502	Manufacture of illuminated signs and advertising displays
			36503	Manufacture of lamps and lampshades
	366	3660	36600	MANUFACTURE OF OTHER ELECTRICAL EQUIPMENT N.E.C
37				MANUFACTURE OF RADIO, TELEVISION AND COMMUNICATION EQUIPMENT AND APPARATUS AND OF MEDICAL, PRECISION AND OPTICAL INSTRUMENTS, WATCHES AND CLOCKS
				MANUFACTURE OF RADIO, TELEVISION AND COMMUNICATION EQUIPMENT AND

				APPARATUS (371, 372 AND 373)
	371	3710	37100	MANUFACTURE OF ELECTRONIC VALVES AND TUBES AND OTHER ELECTRONIC COMPONENTS
	372	3720	37200	MANUFACTURE OF TELEVISION AND RADIO TRANSMITTERS AND APPARATUS FOR LINE TELEPHONY AND LINE TELEGRAPHY
	373	3730	37300	MANUFACTURE OF TELEVISION AND RADIO RECEIVERS, SOUND OR VIDEO RECORDING OR REPRODUCING APPARATUS AND ASSOCIATED GOODS
				MANUFACTURE OF MEDICAL, PRECISION AND OPTICAL INSTRUMENTS, WATCHES AND CLOCKS (374, 375 AND 376)
	374			MANUFACTURE OF MEDICAL APPLIANCES AND INSTRUMENTS AND APPLIANCES FOR MEASURING, CHECKING, TESTING, NAVIGATING AND FOR OTHER PURPOSES, EXCEPT OPTICAL INSTRUMENTS
		3741		Manufacture of medical and surgical equipment and orthopaedic appliances
			37411	Orthopaedic appliances
			37412	Surgical, medical and dental supplies
		3742	37420	Manufacture of instruments and appliances for measuring, checking, testing, navigating and for other purposes, except industrial process control equipment
		3743	37430	Manufacture of industrial process control equipment
	375	3750	37500	MANUFACTURE OF OPTICAL INSTRUMENTS AND PHOTOGRAPHIC EQUIPMENT
	376	3760	37600	MANUFACTURE OF WATCHES AND CLOCKS
38				MANUFACTURE OF TRANSPORT EQUIPMENT
				MANUFACTURE OF MOTOR VEHICLES, TRAILERS AND SEMI-TRAILERS (381, 382 AND 383)
	381	3810	38100	MANUFACTURE OF MOTOR VEHICLES
	382	3820	38200	MANUFACTURE OF BODIES (COACHWORK) FOR MOTOR VEHICLES; MANUFACTURE OF TRAILERS AND SEMI-TRAILERS
	383	3830		MANUFACTURE OF PARTS AND ACCESSORIES FOR MOTOR VEHICLES AND THEIR ENGINES
			38301	Manufacture of radiators
			38302	Activities of specialised automotive engineering workshops working primarily for the motor trade
			38309	Manufacture of other motor vehicle parts and accessories
				MANUFACTURE OF OTHER TRANSPORT EQUIPMENT (384, 385, AND 386)
	384			BUILDING AND REPAIRING OF SHIPS AND

				BOATS
		3841	38410	Building and repairing of ships
		3842	3842	Building and repairing of pleasure and sporting boats
	385	3850	38500	MANUFACTURE OF RAILWAY AND TRAMWAY LOCOMOTIVES AND ROLLING STOCK
	386	3860	38600	MANUFACTURE OF AIRCRAFT AND SPACECRAFT
	387			MANUFACTURE OF TRANSPORT EQUIPMENT N.E.C.
		3871	38710	Manufacture of motor cycles
		3872	38720	Manufacture of bicycle and invalid carriages
		3879	38790	Manufacture of other transport equipment n.e.c.
39				MANUFACTURE OF FURNITURE; MANUFACTURING N.E.C.; RECYCLING
				MANUFACTURE OF FURNITURE; MANUFACTURING N.E.C. (391 AND 392)
	391	3910		MANUFACTURE OF FURNITURE
			39101	Manufacture of furniture made predominantly of metal
			39102	Manufacture of furniture made predominantly of plastic materials
			39103	Manufacture of furniture made predominantly of materials other than metal, plastic or concrete
	392			MANUFACTURING N. E. C.
		3921		Manufacture of jewellery and related articles
			39211	Jewellery and related articles composed of precious metals, precious and semi-precious stones and pearls
			39212	Diamond cutting and polishing
			39219	Other precious and semi-precious stone cutting and polishing
		3922	39220	Manufacture of musical instruments
		3923	39230	Manufacture of sports goods
		3924	39240	Manufacture of games and toys
		3929		Other manufacturing n. e. c.
			39291	Brushes and brooms
			39292	Crayons, chalk, pens and pencils
			39293	Buttons, buckles, slide fasteners, etc.
			39294	Number plates, signs and advertising displays, that are not electrical
			39295	Pattern-making other than paper patterns
				Engraving

			39299	Other industries not elsewhere classified, including rubber stamps, taxidermists, ostrich feathers, costume jewellery and novelties, umbrellas and canes
	395			RECYCLING N.E.C.
		3951	39510	Recycling of metal waste and scrap n.e.c.
		3952	39520	Recycling of non-metal waste and scrap n.e.c.

MAJOR DIVISION 4: ELECTRICITY, GAS AND WATER SUPPLY

Division	Major Group	Group	Sub-Sub group	Title of Category
41				ELECTRICITY, GAS, STEAM AND HOT WATER SUPPLY
				ELECTRICITY, GAS, STEAM AND HOT WATER SUPPLY (411, 412 AND 413)
	411	4111		Production, collection and distribution of electricity
			4111	Generation
			4112	Distribution of purchased electric energy only
			4113	Generation and/or distribution for own use
	412	4120	41200	Manufacture of gas; distribution of gaseous fuels through mains
	413	4130	41300	Steam and hot water supply
42	420	4200	42000	*COLLECTION, PURIFICATION AND DISTRIBUTION OF WATER*

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MAJOR DIVISION 5: CONSTRUCTION

Division	Major Group	Group	Sub-Sub group	Title of Category
50				CONSTRUCTION
				CONSTRUCTION (501, 502, 503, 504 AND 505)
	501	5010	50100	SITE PREPARATION
	502			BUILDING OF COMPLETE CONSTRUCTIONS OR PARTS THEREOF; CIVIL ENGINEERING
		5021		Construction of buildings
			50211	Construction of homes
			50219	Construction of other buildings
		5022	50220	Construction of civil engineering structures
		5023	50230	Construction of other structures
		5024	50240	Construction by specialist trade contractors
	503			BUILDING INSTALLATION
		5031	50310	Plumbing
		5032	50320	Electrical contracting
		5033	50330	Shopfitting
		5039	50390	Other building installation n.e.c.
	504			BUILDING COMPLETION
		5041	50410	Painting and decorating
		5049	50490	Other building completion n.e.c.
	505	5050	50500	RENTING OF CONSTRUCTION OR DEMOLITION EQUIPMENT WITH OPERATORS

MAJOR DIVISION 6: WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES, MOTOR CYCLES AND PERSONAL AND HOUSEHOLD GOODS; HOTELS AND RESTAURANTS

Division	Major Group	Group	Sub-Sub group	Title of Category
61				WHOLESALE AND COMMISSION TRADE, EXCEPT OF MOTOR VEHICLES AND MOTOR CYCLES
				WHOLESALE AND COMMISSION TRADE EXCEPT OF MOTOR VEHICLES AND MOTOR CYCLES (611, 612, 613, 614, 615 AND 616)
	611	6110		WHOLESALE TRADE ON A FEE OR CONTRACT BASIS
			61101	Sales by commission agents
			61102	Sales by commodity brokers
			61103	Sales by auctioneers
			61109	Other wholesale trade on a fee or contract basis
	612			WHOLESALE TRADE IN AGRICULTURAL RAW MATERIALS, LIVESTOCK, FOOD, BEVERAGES AND TOBACCO
		6121	61210	Wholesale trade in agricultural raw materials and livestock
		6122		Wholesale trade in food, beverages and tobacco
			61221	Wholesale trade in foodstuffs
			61222	Wholesale trade in beverages
			61223	Wholesale trade in tobacco products
	613			WHOLESALE TRADE IN HOUSEHOLD GOODS
		6131	61310	Wholesale trade in textiles, clothing and footwear
		6139		Wholesale trade in other household goods
			61391	Wholesale trade in household furniture, requisites and appliances
			61392	Wholesale trade in books and stationery
			61393	Wholesale trade in precious tones, jewellery and silverware
			61394	Wholesale trade in pharmaceuticals and toiletries
			61399	Wholesale trade in other household goods n.e.c.
	614			WHOLESALE TRADE IN NON-AGRICULTU-RAL INTERMEDIATE PRODUCTS, WASTE AND SCRAP
		6141	61410	Wholesale trade in solid, liquid and gaseous fuels and related products
		6142	61420	Wholesale trade in metals and metal ores
		6143	61430	Wholesale trade in construction materials, hardware, plumbing and heating equipment and

Division	Major Group	Group	Sub-Sub group	Title of Category
				supplies
		6149	61490	Wholesale trade in other intermediate products, waste and scrap
	615	6150		WHOLESALE TRADE IN MACHINERY, EQUIPMENT AND SUPPLIES
			61501	Office machinery and equipment including computers
			61509	Other machinery
	619	6190		OTHER WHOLESALE TRADE
			61901	General wholesale trade
			61909	Other wholesale trade n.e.c.
62				RETAIL TRADE, EXCEPT OF MOTOR VEHICLES AND MOTOR CYCLES; REPAIR OF PERSONAL AND HOUSEHOLD GOODS
				RETAIL TRADE, EXCEPT OF MOTOR VEHICLES AND MTOOR CYCLES; REPAIR OF PERSONAL AND HOUSEHOLD GOODS (621, 622, 623, 624, 625 AND 626)
	621			NON-SPECIALISED RETAIL TRADE IN STORES
		6211	62110	Retail trade in non-specialised stores with food, beverages and tobacco predominating
		6219	62190	Other retail trade in non-specialised stores
	622	6220		RETAIL TRADE IN FOOD, BEVERAGES AND TOBACCO IN SPECIALISED STORES
			62201	Retail trade in fresh fruit and vegetables
			62202	Retail trade in meat and meat products
			62203	Retail trade in bakery products
			62204	Retail trade in beverages (bottle stores)
			62209	Other retail trade in food, beverages and tobacco n.e.c.
	623			OTHER RETAIL TRADE IN NEW GOODS IN SPESIALISED STORES
		6231	62310	Retail trade in pharmaceutical and medical goods, cosmetic and toilet articles
		6232		Retail trade in textiles, clothing, footwear and leather goods
			62321	Retail trade in men's and boys' clothing
			62322	Retail trade in ladies' and girls' clothing
			62323	Retail trade by general outfitters and by dealers in piece goods, textiles, leather and travel accessories

Division	Major Group	Group	Sub-Sub group	Title of Category
			62324	Retail trade in shoes
		6233	62330	Retail trade in household furniture, appliances, articles and equipment
		6234	62340	Retail trade in hardware, paints and glass
		6239		Other retail trade in specialised stores
			62391	Retail trade in reading matter and stationery
			62392	Retail trade in jewellery, watches and clocks
			62393	Retail trade in sports goods and entertainment requisites
			62399	Retail trade by other specialised stores
	624	6240	62400	RETAIL TRADE IN SECOND-HAND GOODS IN STORES
	625			RETAIL TRADE NOT IN STORES
		6251		Retail trade via mail-order houses
			62511	Retail trade in books via mail-order houses
			62519	Other retail trade via mail-order houses
		6252	62520	Retail trade via stalls and markets
		6259	62590	Other retail trade not in stores
	626	6260		REPAIR OF PERSONAL AND HOUSEHOLD GOODS
			62601	Repair of footwear and leather goods
			62602	Repair, servicing and installation of household and personal appliances
			62609	Other repair services for the general public, n.e.c.
63				SALE MAINTENANCE AND REPAIR OF MOTOR VEHICLES AND MOTOR R CYCLES; RETAIL TRADE IN AUTOMOTIVE FUEL
				SALE, MAINTENANCE AND REPAIR OF MTOOR VEHICLES AND MOTOR CYCLES; RETAIL TRADE IN AUTOMOTIVE FUEL (631, 632, 633, 634 AND 635)
	631			SALE OF MOTOR VEHICLES
		6311	63110	Wholesale sale of motor vehicles
		6312		Retail sale of motor vehicles
			63121	Retail sale of new motor vehicles
			63122	Retail sale of used motor vehicles
	632	6320		MAINTENANCE AND REPAIR OF MOTOR VEHICLES

Division	Major Group	Group	Sub-Sub group	Title of Category
			63201	General repairs
			63202	Electrical repairs
			63203	Radiator repairs
			63204	Body repairs
			63209	Other maintenance and repairs n.e.c.
	633			SALE OF MOTOR VEHICLE PARTS AND ACCESSORIES
		6331		Sale of new parts and accessories
			63311	Sale of tyres
			63319	Sale of other new parts and accessories
		6332	63320	Sale of used parts and accessories
	634	6340	63400	SALE, MAINTENANCE AND REPAIR OF MOTOR CYCLES AND RELATED PARTS AND ACCESSORIES
	635	6350	63500	RETAIL SALE OF AUTOMOTIVE FUEL
64				HOTELS AND RESTAURANTS
				HOTELS AND RESTAURANTS (641 AND 642)
	641	6410		HOTELS, CAMPING SITES AND OTHER PROVISION OF SHORT-STAY ACCOMMODATION
			64101	Hotels, motels, botels and inns registered with the SA Tourism Board
			64102	Caravan parks and camping sites
			64103	Guest-houses and guest-farm
			64109	Other accommodation n.e.c.
	642	6420		RESTAURANTS, BARS AND CANTEENS
			64201	Restaurants or tearooms with liquor licence
			64202	Restaurants or tearooms without liquor licence
			64203	Take-away counters
			64204	Caterers
				Other catering services n.e.c.

MAJOR DIVISION 7: TRANSPORT, STORAGE AND COMMUNICATION

Division	Major Group	Group	Sub-Sub group	Title of Category
71				LAND TRANSPORT; TRANSPORT VIA PIPELINES
				LAND TRANSPORT; TRANSPORT VIA PIPELINES (711, 712 AND 713)
	711	7111		RAILWAY TRANSPORT
			71111	Inter-urban railway transport
			71112	Railway commuter services
	712			OTHER LAND TRANSPORT
		7121		Other scheduled passenger land transport
			71211	Urban, suburban and inter-urban bus and coach passenger lines
			71212	School buses
		7122		Other non-scheduled passenger land transport
			71221	Taxis
			71222	Safaris and sightseeing bus tours
			71229	Other passenger transport, including the renting of motor cars with drivers
		7123		Freight transport by road
			71231	Transport of furniture
			71239	Other freight transport by road
	713	7130	71300	TRANSPORT VIA PIPELINES
72				WATER TRANSPORT
				WATER TRANSPORT (721 AND 722)
	721	7211		SEA AND COASTAL WATER TRANSPORT
			72111	Coastal shipping
			72112	Ocean shipping
	722	7220	72200	INLAND WATER TRANSPORT
73				AIR TRANSPORT
	730	7300	73000	***AIR TRANSPORT***
74	741			SUPPORTING AND AUXILIARY TRANSPORT ACTIVITIES; ACTIVITIES OF TRAVEL AGENCIES
		7411	74110	Cargo handling
		7412	74120	Storage and warehousing
		7413		Other supporting transport activities
			74131	Parking garages and parking lots
			74132	Salvaging of distressed vessels and cargoes

Division	Major Group	Group	Sub-Sub group	Title of Category
			74133	Maintenance and operation of harbour works, lighthouses, etc., pilotage
			74134	Operation of airports, flying fields and air navigation facilities
			74135	Operation of roads and toll roads
			74139	Other supporting transport activities n.e.c.
		7414	74140	Travel agency and related activities
		7419	74190	Activities of other transport agencies
75				POST AND TELECOMMUNICATION
				POST AND TELECOMMUNICATION (751 AND 752)
	751			POSTAL AND RELATED COURIER ACTIVITIES
		7511	75110	National postal activities
		7512	75120	Courier activities other than national postal activities
	752	7520	75200	TELECOMMUNICATION

MAJOR DIVISION 8: FINANCIAL INTERMEDIATION INSURANCE, REAL ESTATE AND BUSINESS SERVICES

Division	Major Group	Group	Sub-Sub group	Title of Category
81				FINANCIAL INTERMEDIATION, EXCEPT INSURANCE AND PENSION FUNDING
				FINANCIAL INTERMEDIATION, EXCEPT INSURANCE AND PENSION FUNDING (811 AND 819)
	811	8111		MONETARY INTERMEDIATION
			81110	Central banking
		8112		Other monetary intermediation
			81121	Discount houses and commercial and other banking
			81122	Building society activities
	819			OTHER FINANCIAL INTERMEDIATION N.E.C.
		8191	81910	Lease financing
		8192	81920	Other credit granting
		8199	81990	Other financial intermediation n.e.c.
82				INSURANCE AND PENSION FUNDING, EXCEPT COMPULSORY SOCIAL SECURITY
	821			***INSURANCE AND PENSION FUNDING, EXCEPT COMPULSORY SOCIAL SECURITY***
		8211	82110	Life insurance
		8212	82120	Pension funding
		8213	82130	Medical aid funding
		8219	82190	Other insurance n.e.c.
83				ACTIVITIES AUXILIARY TO FINANCIAL INTERMEDIATICN
				ACTIVITIES AUXILIARY TO FINANCIAL INTERMEDIATION (831 AND 832)
	831			ACTIVITIES AUXILIARY TO FINANCIAL INTERMEDIATION, EXCEPT INSURANCE AND PENSION FUNDING
		8311	83110	Administration of financial markets
		8312	83120	Security dealing activities
		8319	83190	Activities auxiliary to financial intermediation n.e.c.
	832			ACTIVITIES AUXILIARY TO INSURANCE AND PENSION FUNDING
		8320	83200	Activities auxiliary to insurance and pension funding
84				REAL ESTATE ACTIVITIES
				REAL ESTATE ACTIVITIES (841 AND 842)

	841			REAL ESTATE ACTIVITIES WITH OWN OR LEASED PROPERTY
		8411	84110	Property owning and letting
		8412	84120	Developing real estate, subdividing real estate into lots and residential development on own account
		8413	84130	Owning and/or sale of own fixed property
	842			REAL ESTATE ACTIVITIES ON A FEE OR CONTRACT BASIS
		8421	84210	Activities of estate agencies, rent collectors, appraisers and valuers
		8422	84220	Subletting of fixed property
85				RENTING OF MACHINERY AND EQUIPMENT, WITHOUT OPERATOR AND OF PERSONAL AND HOUSEHOLD GOODS
				RENTING OF MACHINERY AND EQUIPMENT, WITHOUT OPERATOR AND OF PERSONAL AND HOUSEHOLD GOODS (851, 852 AND 853)
	851			RENTING OF TRANSPORT EQUIPMENT
		8511	85110	Renting of land transport equipment
		8512	85120	Renting of water transport equipment
		8513	85130	Renting of air transport equipment
	852			RENTING OF OTHER MACHINERY AND EQUIPMENT
		8521	85210	Renting of agricultural machinery and equipment
		8522	85220	Renting of construction and civil engineering machinery and equipment
		8523	85230	Renting of office machinery and equipment (including computers)
		8529	85290	Renting of other machinery and equipment n.e.c.
	853			RENTING OF PERSONAL AND HOUSEHOLD GOODS N.E.C.
		8530	85300	Renting of personal and household goods n.e.c.
86				COMPUTER AND RELATED ACTIVITIES
				COMPUTER AND RELATED ACTIVITIES (861, 862, 863, 864, 865 AND 866)
	861	8610	86100	HARDWARE CONSULTANCY
	862	8620	86200	SOFTWARE CONSULTANCY AND SUPPLY
	863	8630	86300	DATA PROCESSING
	864	8640	86400	DATA BASE PROCESSING
	865	8650	86500	MAINTENANCE AND REPAIR OF OFFICE, ACCOUNTING AND COMPUTING MACHINERY
	869	8690	86900	OTHER COMPUTER RELATED ACTIVITIES
87				RESEARCH AND DEVELOPMENT

				RESEARCH AND DEVELOPMENT (871 AND 872)
	871			RESEARCH AND EXPERIMENTAL DEVELOPMENT ON NATURAL SCIENCES AND ENGINEERING
		8711	87110	General research, e.g. CSIR
		8712	87120	Agricultural and livestock research
		8713	87130	Medical and veterinary research, e.g SA Medical Research Council
		8714	87140	Industrial research, e.g. fuel research
		8719	87190	Other research n.e.c.
	872	8720	87200	RESEARCH AND EXPERIMENTAL DEVELOPMENT ON SOCIAL SCIENCES AND HUMANITIES
88				OTHER BUSINESS ACTIVITIES
				OTHER BUSINESS ACTIVITIES (881, 882, 883 AND 884)
	881			LEGAL, ACCOUNTING, BOOKKEEPING AND AUDITING ACTIVITIES; TAX CONSULTANCY; MARKET RESEARCH AND PUBLIC OPINION RESEARCH; BUSINESS AND MANAGEMENT CONSULTANCY
		8811		Legal activities
			88111	Activities of attorneys, notaries and conveyancers
			88112	Activities of advocates
		8812		Accounting, bookkeeping and auditing activities; tax consultancy
			88121	Activities of accountants and auditors registered in terms of the Public Accountants and Auditors Act
			88216	Activities of non-registered architects, eg. Tracers and draughtsmen of plans for dwellings
		8822		Technical testing and analysis
			88220	Other activities - engineering and other commercial research, developing and testing - eg SABS
	883	8831		ADVERTISING
			88311	Activities of advertising agents
			88312	Sign writing and industrial and commercial artistry
			88319	Other activities - window-dressing, etc.
	889			BUSINESS ACTIVITIES N.E.C.
		8891		Labour recruitment and provision of staff
			88911	Activities of employment agencies and recruiting organisations
			88912	Hiring out of workers (labour broking activities)

		8892	88920	Investigation and security activities
		8893	88930	Building and industrial plant cleaning activities
		8894	88940	Photographic activities
		8895	88950	Packaging activities
		8899		Other business activities n.e.c.
			88991	Credit rating agency activities
			88992	Debt collecting agency activities
			88993	Stenographic, duplicating, addressing, mailing list and similar activities
			88999	Other business activities n.e.c.

MAJOR DIVISION 9: COMMUNITY, SOCIAL AND PERSONAL SERVICES

Division	Major Group	Group	Sub-Sub group	Title of Category
91	910			PUBLIC ADMINISTRATION AND DEFENCE ACTIVITIES
	911			CENTRAL GOVERNMENT ACTIVITIES
				Government departments
				Self-governing territories and their lower authorities
				Other Central Government
	912			REGIONAL SERVICES COUNCIL ACTIVITIES
	913			LOCAL AUTHORITY ACTIVITIES
	914			PROVINCIAL ADMINISTRATIONS
	915			SA NATIONAL DEFENCE FORCE
	916			SA POLICE SERVICE
	917			CORRECTIONAL SERVICES
92				EDUCATION
	920	9200		***EDUCATIONAL SERVICES***
			92001	Pre-primary education and activities of after-school centres
			92002	Primary and secondary education
			92003	Special education and training of mentally retarded children
			92004	Education by technical colleges and technical institutions
			92005	Education by technikons
			92006	Education by teachers' training colleges and colleges of education for further training
			92007	Education by universities
			82008	Education by correspondence and private vocational colleges
			92009	Other educational services - own account teachers, motor vehicle driving schools/tutors and music, dancing and other art schools, etc.
93				HEALTH AND SOCIAL WORK
				HEALTH AND SOCIAL WORK (931, 932 AND 933)
	931			HUMAN HEALTH ACTIVITIES
		9311		Hospital activities
			93111	General hospitals
			93112	Maternity homes
			93113	Tuberculosis hospitals

Division	Major Group	Group	Sub-Sub group	Title of Category
			93114	Psychiatric hospitals
			93115	Detached operation theatres
			93119	Other hospitals, n.e.c.
		9312		Medical and dental practice activities
			93121	Medical practitioner and specialist activities
			93122	Dentist and specialist dentist activities
		9319		Other human health activities
			93191	Supplementary health services or paramedical staff (practitioners)
			93192	Clinics and related health care services
			93193	Nursing services
			93194	Chiropractors and other associated health care services
			93199	Other health services
	932	9320	93200	VETERINARY ACTIVITIES
	933	9330	93300	SOCIAL WORK ACTIVITIES
94				***OTHER COMMUNITY, SOCIAL AND PERSONAL SERVICES ACTIVITIES***
	940	9400	94000	SEWAGE AND REFUSE DISPOSAL, SANITATION AND SIMILAR ACTIVITIES
95				ACTIVITIES OF MEMBERSHIP ORGANISATIONS N.E.C.
				ACTIVITIES OF ORGANISATIONS N.E.C. (951, 952 AND 959)
	951			ACTIVITIES OF BUSINESS, EMPLOYERS AND PROFESSIONAL ORGANISATIONS
		9511	95110	Activities of business and employers' organisations
		9512	95120	Activities of professional organisations
	952	9520	95200	ACTIVITIES OF TRADE UNIONS
	959			ACTIVITIES OF OTHER MEMBERSHIP ORGANISATIONS
		9591	95910	Activities of religious organisations
		9592	95920	Activities of political organisations
		9599	95990	Activities of other membership organisations n.e.c.
96				RECREATIONAL, CULTURAL AND SPORTING ACTIVITIES
				RECREATIONAL, CULTURAL AND SPORTING ACTIVITIES (961, 962, 963 AND 964)
	961			MOTION PICTURE, RADIO, TELEVISION AND OTHER ENTERTAINMENT ACTIVITIES

Division	Major Group	Group	Sub-Sub group	Title of Category
		9611		Motion picture and video production and distribution
			96111	Motion picture and video production and distribution
			96112	Related activities - film and tape renting to other industries, booking, delivery and storage
		9612		Motion picture projection
			96121	Motion picture projection by cinemas
			96122	Motion picture projection by drive-in cinemas
		9613	96130	Radio and television activities
		9614	96140	Dramatic arts, music and other arts activities
		9619	96190	Other entertainment activities n.e.c.
	962	9620	96200	NEWS AGENCY ACTIVITIES
	963			LIBRARY, ARCHIVES, MUSEUMS AND OTHER CULTURAL ACTIVITIES
		9631	96310	Library and archives activities
		9632	96320	Museum activities and preservation of historical sites and buildings
		9633	96330	Botanical and zoological gardens and nature reserve activities
	964			SPORTING AND OTHER RECREATIONAL ACTIVITIES
		9641	96410	Sporting activities
		9649	96490	Other recreational activities
99				***OTHER SERVICE ACTIVITIES***
	990			OTHER SERVICE ACTIVITIES
		9901	99010	Washing and (dry-) cleaning of textiles and fur products
		9902		Hairdressing and other beauty treatment
			99021	Men's hairdressing
			99022	Ladies' hairdressing
			99023	Men's and ladies' hairdressing
			99024	Beauty treatment
		9903	99030	Funeral and related activities
		9909	99090	Other service activities n.e.c.

MAJOR DIVISION 0: PRIVATE HOUSEHOLDS, EXTERRITORIAL ORGANISATIONS, REPRESENTATIVES OF FOREIGN GOVERNMENTS AND OTHER ACTIVITIES NOT ADEQUATELY DEFINED

Division	**Major Group**	**Group**	**Sub-Sub group**	**Title of Category**
01	010	0100	01000	***PRIVATE HOUSEHOLDS WITH EMPLOYED PERSONS***
02	020	0200	02000	***EXTERRITORIAL ORGANISATIONS***
03	030	0300	03000	***REPRESENTATIVES OF FOREIGN GOVERNMENTS***
09	090	0900	09000	***OTHER ACTIVITIES NOT ADEQUATELY DEFINED***

Source: CIPRO

APPENDIX B: Listed Entities on the Main Board of the Johannesburg Securities Exchange as Listed on the McGregor's BFANet Database – Listed by Company Short name

Company Short Name
ABIL
ABSA
ABSOLUTE
ACUCAP
ADC CORP
ADCORP
ADVTECH
AECI
AF&OVR
AFDAWN
AFGEM
AFGOLD
AFGRI
AFROX
AGI
AGLOPLA
ALLJOY
ALTECH
ALTRON
AMAPS
AMBIT
AME
ANBEECO
ANGGOLD
ANGLO
APEXHI-A
AQAURIUS
ARGENT
ARM
ASPEN
ASSORE
ASTRAL
ASTRAPAK
ATLAS
AVENG
AVI
AWETHU
BARWORLD
BASREAD
BCX
BEGET
BEIGE
BELL
BHPBILL
BICAF
BIDVEST

BJM
BONATLA
BOWCALF
BRAIT
BRANDCO
BRIMSTONE
BTG
BUILDMAX
BUSBY
CADIZ
CAPEMP
CAPITAL
CAPITEC
CERAMIC
CARGO
CASHBUILD
CAXTON
CENMAG
CONVERGE
CITYLDG
CLEINTL
CMH
COLLIERS
COMMAND
COMPCLEAR
CONAFEX
CONDUIT
CONTROL
CORONAT
CORVUS
CORWILL
CROOKES
CULINAN
CYBERHOST
DATAPRO
DATATEC
DAWN
DCENTRIX
DECILLION
DELTA
DIAMCOR
DIDATA
DIGICORE
DISCOVERY
DISTELL
DON
DORBYL
DRDGOLD
DYNAMIC
ELAND
ELBGROUP

ELERINE
EMERGENT
EMIRA
ENALENI
ENSERVE
EOH
ERM
ESOR
EUREKA
EXCELL
EXXARO
FAIRVEST
FAMBRANDS
FARITEC
FIRSTRAND
FONEWORX
FOSCHINI
GFIELDS
GIJIMA AST
GLENMIB
GLOVIL
GOLDREEF
GOODHOPE
GRINDROD
GROUP-5
GROWPNT
HALOGEN
HARMONY
HCI
HIVELD
HOSPA
HOWDEN
HUDACO
HWANGE
HYPROP
ICC
IFA
IFCATECH
IFOUR
ILIAD
ILLOVO
IMPERIAL
IMPLATS
INDEQTY
INDFIN
INFOWAVE
INTEGREAR
INTRADING
INVICTA
INVLTD
IPSA

ISA
ITLTILE
JASCO
JCI
JDGROUP
JOHNCOM
JOHNDAN
JOHNNIC
KAIROS
KAP
KELGRAN
KGMEDIA
KINGCO
KUMBA
KWV
LABAT
LEWIS
LIBERTY
LIB-HOLD
LIB-INT
LONAFRIC
LONFIN
LONMIN
M-&-F
M&R-HLD
MADISON
MAKALANI
MARSHALLS
MASNITE
MASSMART
MATODZI
MCUBED
MEDCLIN
MERAFE
MERCANTIL
MET LTD
METAIR
METOREX
METROFILE
MICROMEGA
MILKWORX
MIRANDA
MITTAL
MOBILE
MONEYWEB
MONTE
MONYETLA
MR PRICE
MTN GROUP
MUSTEK
MVELA GRP

MVELA RES
NAIL
NAMPAK
NASPERS
NEDBANK
NEI AFR
NETCARE
NEWCPA
NICTUS
NORTHAM
NUCLICKS
NUWORLD
OANDO
OASIS
OCEANA
OCTODEC
OLD MUTUAL
OMNIA
ONELOGIX
ORION
PALAMIN
PALS
PANPROP
PARACON
PERGRIN
PETMIN
PHUMELELA
PICKNPAY
PIKWIK
PINNACLE
PPC
PREMIUM
PRIMESERV
PROPFIN
PSG
PURPLE
PUTPROP
PZGOLD
RA-HOLD
RAINBOW
RANGOLD
REDEFINE
REMGRO
RESILIENT
REUNERT
REX-TRUE
RICHEMONT
RMBH
S&JLAND
SA CORP
SAAMBOU

SAB
SABLE
SABVEST
SALLIES
SAMRAND
SAMROC
SANLAM
SANTAM
SANTOVA
SAPPI
SASFIN
SASOL
SCHAMIN
SEARDEL
SECDATA
SEKUNJALO
SELCO
SETHOLD
SHOPRIT
SHOPS
SILVERB
SIMEKA
SIMMERS
SIYAPROP
SOVFOOD
SPANJAARD
SPAR
SPESCOM
SPURCORP
SQONE
STANBANK
STEINHOFF
STELLA
STILFTN
STRATCORP
SUNNINT
SUPRGRP
SYCOM
TAWANA
TEAL
TELKOM
THABEX
TIGBRANDS
TIWHEEL
TONGAAT
TOURVEST
TRADEH
TREMATON
TRENCOR
TRNPACO
TRNSHEX

TRUWTHS
UCS
URONE
VALUE
VENTEL
VERIMARK
VILLAGE
VUKILE
WBHO
WEARNE
WELLCO
WESCOAL
WESCOB
WESIZWE
WINHOLD
WITS GOLD
WOOLIES
WOOLTRU
WORKFORCE

Source: McGregor BFANet

APPENDIX C: Alphabetic Classification of Companies by Sic Code

Company Short Name	Industry	SIC
ABIL	Consumer Finance	81
ABSA	Banks	81
ABSOLUTE	Building Materials & Fixtures	61
ACUCAP	Real Estate Holding & Development	84
ADC CORP	Software	86
ADCORP	Business Training & Employment Agencies	92
ADVTECH	Specialised Consumer Services	89
AECI	Specialty Chemicals	33
AF&OVR	Apparel Retailers	62
AFDAWN	Specialised Consumer Services	89
AFGEM	Diamonds & Gemstones	25
AFGOLD	Gold Mining	23
AFGRI	Farming & Fishing	11
AFROX	Specialty Chemicals	33
AGI	Building Materials & Fixtures	61
AGLOPLA	Platinum group metals Mining	24
ALLJOY	Food Products	30
ALTECH	Mobile Telecommunications	75
ALTRON	Electrical Components & Equipment	37
AMAPS	Consumer Electronics	62
AMBIT	Real Estate Holding & Development	84
AME	Broadcasting & Entertainment	96
ANBEECO	Consumer Finance	81
ANGGOLD	Gold Mining	23
ANGLO	General Mining	24
APEXHI-A	Real Estate Holding & Development	84
AQAURIUS	Platinum group metals Mining	24
ARGENT	Diversified Industrials	88
ARM	General Mining	24
ASPEN	Pharmaceuticals	33
ASSORE	General Mining	24
ASTRAL	Farming & Fishing	11
ASTRAPAK	Containers & Packaging	32
ATLAS	Real Estate Holding & Development	84
AVENG	Heavy Construction	50
AVI	Food Products	30
AWETHU	Brewers	30
BARWORLD	Diversified Industrials	88
BASREAD	Heavy Construction	50
BCX	Computer Services	86
BEGET	Internet	86
BEIGE	Personal Products	33
BELL	Commercial Vehicles & Trucks	63
BHPBILL	General Mining	24
BICAF	Electrical Components & Equipment	37
BIDVEST	Business Support Services	88
BJM	Investment Services	83

BONATLA	Real Estate Holding & Development	84
BOWCALF	Containers & Packaging	32
BRAIT	Investment Services	83
BRANDCO	Broad line Retailers	62
BRIMSTONE	Equity Investment Instruments	83
BTG	Computer Services	86
BUILDMAX	Building Materials & Fixtures	61
BUSBY	Clothing & Accessories	62
CADIZ	Investment Services	83
CAPEMP	Equity Investment Instruments	83
CAPITAL	Real Estate Holding & Development	84
CAPITEC	Banks	81
CERAMIC	Building Materials & Fixtures	61
CARGO	Trucking	71
CASHBUILD	Home Improvement Retailer	62
CAXTON	Publishing	32
CENMAG	Industrial Machinery	37
CONVERGE	Computer Services	86
CITYLDG	Hotels	64
CLEINTL	Life Insurance	82
CMH	Specialty Retailers	63
COLLIERS	Real Estate Holding & Development	84
COMMAND	Business Support Services	88
COMPCLEAR	Computer Services	86
CONAFEX	Farming & Fishing	11
CONDUIT	Specialty Finance	83
CONTROL	Electronic Equipment	37
CORONAT	Asset Managers	83
CORVUS	Specialty Finance	83
CORWILL	Equity Investment Instruments	83
CROOKES	Farming & Fishing	11
CULINAN	Travel & Tourism	64
CYBERHOST	Internet	86
DATAPRO	Computer Services	86
DATATEC	Computer Services	86
DAWN	Building Materials & Fixtures	61
DCENTRIX	Computer Services	86
DECILLION	Investment Services	83
DELTA	Electrical Components & Equipment	37
DIAMCOR	Diamonds & Gemstones	25
DIDATA	Computer Services	86
DIGICORE	Electronic Equipment	37
DISCOVERY	Life Insurance	82
DISTELL	Distillers & Vintners	30
DON	Hotels	64
DORBYL	Auto Parts	38
DRDGOLD	Gold Mining	23
DYNAMIC	Telecommunications Equipment	37
ELAND	Platinum group metals Mining	24
ELBGROUP	Heavy Construction	50
ELERINE	Home Improvement Retailers	62

EMERGENT	Clothing & Accessories	62
EMIRA	Real Estate Investment Trusts	84
ENALENI	Pharmaceuticals	33
ENSERVE	Waste & Disposal Services	39
EOH	Computer Services	86
ERM	Specialty Finance	83
ESOR	Heavy Construction	50
EUREKA	Equity Investment Instruments	83
EXCELL	Business Support Services	88
EXXARO	General Mining	24
FAIRVEST	Real Estate Holding & Development	84
FAMBRANDS	Restaurants & Bars	64
FARITEC	Computer Services	86
FIRSTRAND	Banks	81
FONEWORX	Telecommunications Equipment	37
FOSCHINI	Apparel Retailers	62
GFIELDS	Gold Mining	23
GIJIMA AST	Computer Services	86
GLENMIB	Insurance Brokers	83
GLOVIL	Recreational Services	95
GOLDREEF	Gold Mining	23
GOODHOPE	Diamonds & Gemstones	25
GRINDROD	Marine Transportation	72
GROUP-5	Heavy Construction	50
GROWPNT	Real Estate Holding & Development	84
HALOGEN	Gold Mining	23
HARMONY	Gold Mining	23
HCI	Equity Investment Instruments	83
HIVELD	Steel	35
HOSPA	Real Estate Holding & Development	84
HOWDEN	Industrial Machinery	37
HUDACO	Industrial Machinery	37
HWANGE	Coal	21
HYPROP	Real Estate Holding & Development	84
ICC	Consumer Finance	81
IFA	Hotels	64
IFCATECH	Software	86
IFOUR	Real Estate Holding & Development	84
ILIAD	Industrial Suppliers	88
ILLOVO	Food Products	30
IMPERIAL	Transportation Services	71
IMPLATS	Platinum group metals Mining	24
INDEQTY	Property& Casualty Insurance	82
INDFIN	Specialty Finance	83
INFOWAVE	Computer Services	86
INTEGREAR	Business Support Services	88
INTRADING	Farming & Fishing	11
INVICTA	Industrial Machinery	37
INVLTD	Banks	81
IPSA	Electricity	41
ISA	Computer Services	86

ITLTILE	Home Improvement Retailers	62
JASCO	Electrical Components & Equipment	37
JCI	Gold Mining	23
JDGROUP	Home Improvement Retailers	62
JOHNCOM	Publishing	32
JOHNDAN	Commercial Vehicles & Trucks	63
JOHNNIC	Real Estate Holding & Development	84
KAIROS	Industrial Machinery	37
KAP	Diversified Industrials	88
KELGRAN	General Mining	24
KGMEDIA	Broadcasting & Entertainment	96
KINGCO	Restaurants & Bars	64
KUMBA	General Mining	24
KWV	Distillers & Vintners	30
LABAT	Business Support Services	88
LEWIS	Home Improvement Retailers	62
LIBERTY	Life Insurance	82
LIB-HOLD	Life Insurance	82
LIB-INT	Real Estate Investment Trusts	84
LONAFRIC	Hotels	64
LONFIN	Asset Managers	83
LONMIN	Platinum group metals Mining	24
M-&-F	Property& Casualty Insurance	82
M&R-HLD	Heavy Construction	50
MADISON	Real Estate Holding & Development	84
MAKALANI	Equity Investment Instruments	83
MARSHALLS	Real Estate Holding & Development	84
MASNITE	Building Materials & Fixtures	61
MASSMART	Broad line Retailers	62
MATODZI	General Mining	24
MCUBED	Asset Managers	83
MEDCLIN	Health Care Providers	93
MERAFE	General Mining	24
MERCANTIL	Banks	81
MET LTD	Auto Parts	38
METAIR	Nonferrous Metals Mining	24
METOREX	General Mining	24
METROFILE	Business Support Services	88
MICROMEGA	Business Support Services	88
MILKWORX	Food Products	30
MIRANDA	General Mining	24
MITTAL	Steel	35
MOBILE	Transportation Services	71
MONEYWEB	Publishing	32
MONTE	Industrial Suppliers	88
MONYETLA	Real Estate Investment Trusts	84
MR PRICE	Apparel Retailers	62
MTN GROUP	Mobile Telecommunications	75
MUSTEK	Computer Hardware	86
MVELA GRP	Business Support Services	88
MVELA RES	General Mining	24

NAIL	Publishing	32
NAMPAK	Containers & Packaging	32
NASPERS	Broadcasting & Entertainment	96
NEDBANK	Banks	81
NEI AFR	Industrial Machinery	37
NETCARE	Health Care Providers	93
NEWCPA	Investment Services	83
NICTUS	Broad line Retailers	62
NORTHAM	Platinum group metals Mining	24
NUCLICKS	Broad line Retailers	62
NUWORLD	Consumer Electronics	62
OANDO	Integrated Oil & Gas	22
OASIS	Real Estate Investment Trusts	84
OCEANA	Farming & Fishing	11
OCTODEC	Real Estate Holding & Development	84
OLD MUTUAL	Life Insurance	82
OMNIA	Specialty Chemicals	33
ONELOGIX	Business Support Services	88
ORION	Real Estate Holding & Development	84
PALAMIN	Nonferrous Metals Mining	24
PALS	Clothing & Accessories	62
PANPROP	Real Estate Holding & Development	84
PARACON	Computer Services	86
PERGRIN	Investment Services	83
PETMIN	General Mining	24
PHUMELELA	Gambling	96
PICKNPAY	Food Retailers & Wholesalers	62
PIKWIK	Food Retailers & Wholesalers	62
PINNACLE	Computer Hardware	86
PPC	Building Materials & Fixtures	61
PREMIUM	Real Estate Holding & Development	84
PRIMESERV	Business Training & Employment Agencies	92
PROPFIN	Real Estate Holding & Development	84
PSG	Investment Services	83
PURPLE	Equity Investment Instruments	83
PUTPROP	Real Estate Holding & Development	84
PZGOLD	Gold Mining	23
RA-HOLD	Equity Investment Instruments	83
RAINBOW	Farming & Fishing	11
RANGOLD	Gold Mining	23
REDEFINE	Real Estate Holding & Development	84
REMGRO	Diversified Industrials	88
RESILIENT	Real Estate Holding & Development	84
REUNERT	Electrical Components & Equipment	37
REX-TRUE	Apparel Retailers	62
RICHEMONT	Clothing & Accessories	62
RMBH	Banks	81
S&JLAND	Real Estate Holding & Development	84
SA CORP	Real Estate Investment Trusts	84
SAAMBOU	Banks	81
SAB	Brewers	30

SABLE	Real Estate Holding & Development	84
SABVEST	Equity Investment Instruments	83
SALLIES	General Mining	24
SAMRAND	Real Estate Holding & Development	84
SAMROC	General Mining	24
SANLAM	Life Insurance	82
SANTAM	Property& Casualty Insurance	82
SANTOVA	Marine Transportation	72
SAPPI	Paper	32
SASFIN	Investment Services	83
SASOL	Integrated Oil & Gas	22
SCHAMIN	General Mining	24
SEARDEL	Clothing & Accessories	62
SECDATA	Computer Services	86
SEKUNJALO	Diversified Industrials	88
SELCO	Electricity	41
SETHOLD	Electronic Equipment	37
SHOPRIT	Food Retailers & Wholesalers	62
SHOPS	Real Estate Holding & Development	84
SILVERB	Software	86
SIMEKA	Computer Services	86
SIMMERS	Gold Mining	23
SIYAPROP	Real Estate Holding & Development	84
SOVFOOD	Farming & Fishing	11
SPANJAARD	Specialty Chemicals	33
SPAR	Food Retailers & Wholesalers	62
SPESCOM	Computer Services	86
SPURCORP	Restaurants & Bars	64
SQONE	Computer Services	86
STANBANK	Banks	81
STEINHOFF	Furnishings	39
STELLA	Electrical Components & Equipment	37
STILFTN	Gold Mining	23
STRATCORP	Investment Services	83
SUNNINT	Gambling	96
SUPRGRP	Transportation Services	71
SYCOM	Real Estate Investment Trusts	84
TAWANA	Diamonds & Gemstones	25
TEAL	Nonferrous Metals Mining	24
TELKOM	Fixed Line Telecommunications	75
THABEX	Diamonds & Gemstones	25
TIGBRANDS	Food Products	30
TIWHEEL	Auto Parts	38
TONGAAT	Food Products	30
TOURVEST	Travel & Tourism	64
TRADEH	Broad line Retailers	62
TREMATON	Equity Investment Instruments	83
TRENCOR	Transportation Services	71
TRNPACO	Containers & Packaging	32
TRNSHEX	Diamonds & Gemstones	25
TRUWTHS	Apparel Retailers	62

UCS	Software	86
URONE	Uranium Mining	23
VALUE	Transportation Services	71
VENTEL	Commercial Vehicles & Trucks	63
VERIMARK	Broad line Retailers	62
VILLAGE	Gold Mining	23
VUKILE	Real Estate Holding & Development	84
WBHO	Heavy Construction	50
WEARNE	Building Materials & Fixtures	61
WELLCO	Food Products	30
WESCOAL	Coal	21
WESCOB	Automobiles	38
WESIZWE	Platinum group metals Mining	24
WINHOLD	Industrial Suppliers	88
WITS GOLD	Gold Mining	23
WOOLIES	Broad line Retailers	62
WOOLTRU	Specialty Finance	83
WORKFORCE	Business Training & Employment Agencies	92

Source: CIPRO

APPENDIX D: NCSS Output of Inferential Statistics for ROIC, ROE, ROA AND ROA Constituents - Margin and Velocity

Analysis of Variance Report – ROIC

Expected Mean Squares Section

Source Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: Year	10	Yes	S(AB)	S+bsA
B: SIC	32	Yes	S(AB)	S+asB
S(AB)	2173	No		S

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: Year	10	0.565831	0.0565831	2.07	0.023691*	0.901512
B: SIC	32	2.389537	7.467304E-02	2.73	0.000001*	0.999996
S	2173	59.37697	2.732488E-02			
Total (Adjusted)	2215	62.43024				
Total	2216					

* Term significant at alpha = 0.05

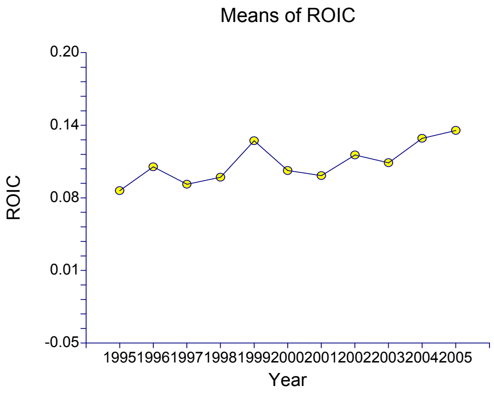
Analysis of Variance Report – ROIC

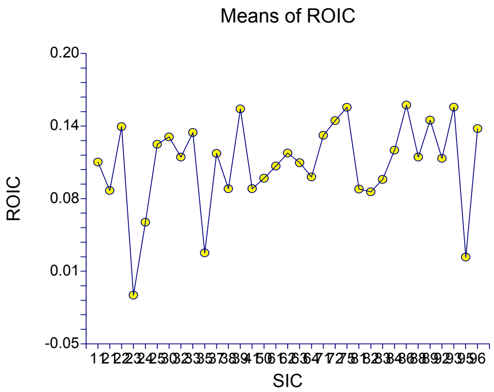
Means and Standard Error Section

Term	Count	Mean	Standard Error
All	2216	0.1049817	
A: Year			
1995	121	8.112539E-02	1.502749E-02
1996	152	0.1016062	0.0134078
1997	165	8.665071E-02	1.286877E-02
1998	188	9.265228E-02	1.205592E-02
1999	206	0.1240771	1.151716E-02
2000	209	9.840441E-02	1.143421E-02
2001	214	9.408447E-02	1.129984E-02
2002	225	0.1118859	1.102016E-02
2003	231	0.105159	0.0108761
2004	253	0.1261572	1.039247E-02
2005	252	0.1329963	1.041307E-02
B: SIC			
11	64	0.1064668	0.0206628
21	1	8.198545E-02	0.1653024
22	13	0.1369854	4.584664E-02
23	62	-8.166091E-03	2.099343E-02
24	187	5.464283E-02	1.208811E-02
25	11	0.1218182	4.984055E-02
30	78	0.1280815	1.871681E-02
32	83	0.1107235	0.0181443
33	60	0.1318996	2.134045E-02
35	22	2.818182E-02	3.524259E-02
37	146	0.1139655	1.368052E-02
38	33	8.341578E-02	2.877546E-02
39	17	0.1521885	4.009172E-02
41	3	0.0835442	9.543739E-02
50	60	9.249045E-02	2.134045E-02
61	57	0.1029559	2.189484E-02
62	242	0.1141684	1.062604E-02
63	31	0.1058523	2.968919E-02
64	67	9.369178E-02	0.0201949
71	51	0.1295355	2.314697E-02
72	15	0.142176	0.0426809
75	31	0.1536377	2.968919E-02
81	89	8.321493E-02	1.752202E-02
82	81	8.079081E-02	1.836693E-02
83	170	0.0915178	1.267812E-02
84	171	0.1166138	1.264099E-02
86	153	0.1555445	1.336391E-02
88	122	0.110787	1.496578E-02
89	12	0.1425129	4.771869E-02
92	19	0.1096488	3.792297E-02
93	20	0.1537079	3.696274E-02
95	4	2.458009E-02	0.0826512
96	41	0.1352372	0.0258159

Analysis of Variance Report – ROIC

Plots Section





Analysis of Variance Report – ROE

Expected Mean Squares Section

Source Term	**DF**	**Term Fixed?**	**Denominator Term**	**Expected Mean Square**
A: Year	10	Yes	S(AB)	S+bsA
B: SIC	32	Yes	S(AB)	S+asB
S(AB)	2173	No		S

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source Term	**DF**	**Sum of Squares**	**Mean Square**	**F-Ratio**	**Prob Level**	**Power (Alpha=0.05)**
A: Year	10	1.526721	0.1526721	4.41	0.000004*	0.999290
B: SIC	32	1.908652	5.964537E-02	1.72	0.007332*	0.997237
S	2173	75.28843	3.464723E-02			
Total (Adjusted)	2215	78.79261				
Total	2216					

* Term significant at alpha = 0.05

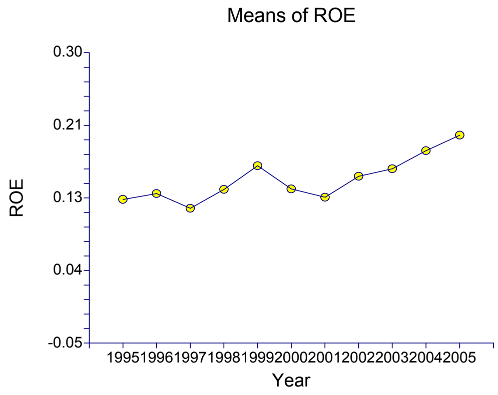
Analysis of Variance Report – ROE

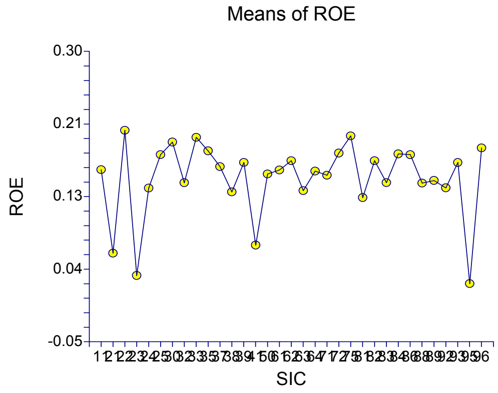
Means and Standard Error Section

Term	Count	Mean	Standard Error
All	2216	0.1472482	
A: Year			
1995	121	0.123151	1.692161E-02
1996	152	0.1301429	1.509776E-02
1997	165	0.1125393	0.0144908
1998	188	0.1351687	1.357548E-02
1999	206	0.1637004	1.296883E-02
2000	209	0.1357933	1.287541E-02
2001	214	0.1257554	1.272411E-02
2002	225	0.1510481	1.240918E-02
2003	231	0.1600014	1.224696E-02
2004	253	0.1819097	1.170237E-02
2005	252	0.2005198	1.172557E-02
B: SIC			
11	64	0.157343	2.326721E-02
21	1	5.672842E-02	0.1861377
22	13	0.2047744	0.0516253
23	62	2.982881E-02	2.363951E-02
24	187	0.1351965	1.361173E-02
25	11	0.1754545	5.612262E-02
30	78	0.1906179	2.107594E-02
32	83	0.1416395	2.043126E-02
33	60	0.1963231	2.403027E-02
35	22	0.18	3.968468E-02
37	146	0.1610671	1.540486E-02
38	33	0.130526	3.240241E-02
39	17	0.1660521	4.514501E-02
41	3	6.643789E-02	0.1074666
50	60	0.1522096	2.403027E-02
61	57	0.1570623	2.465454E-02
62	242	0.1681354	1.196538E-02
63	31	0.1320582	3.343131E-02
64	67	0.1556574	2.274033E-02
71	51	0.1505712	2.606449E-02
72	15	0.1773519	4.806054E-02
75	31	0.1980257	3.343131E-02
81	89	0.123693	1.973055E-02
82	81	0.1682216	2.068196E-02
83	170	0.1417299	1.427611E-02
84	171	0.1763777	0.0142343
86	153	0.1754059	1.504834E-02
88	122	0.1412246	1.685211E-02
89	12	0.1443599	5.373332E-02
92	19	0.1355062	4.270291E-02
93	20	0.1659587	4.162164E-02
95	4	2.006006E-02	9.306883E-02
96	41	0.1835921	2.906982E-02

Analysis of Variance Report – ROE

Plots Section





Analysis of Variance Report – ROA

Expected Mean Squares Section

Source Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: Year	10	Yes	S(AB)	S+bsA
B: SIC	32	Yes	S(AB)	S+asB
S(AB)	1952	No		S

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: Year	10	0.2847809	2.847809E-02	1.68	0.079227	0.814773
B: SIC	32	0.8014054	2.504392E-02	1.48	0.041210*	0.989688
S	1952	33.04128	1.692688E-02			
Total (Adjusted)	1994	34.13939				
Total	1995					

* Term significant at alpha = 0.05

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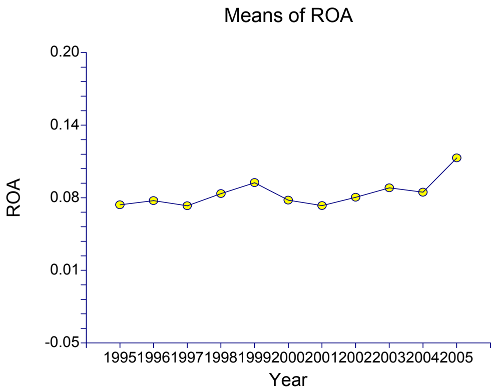
Analysis of Variance Report – ROA

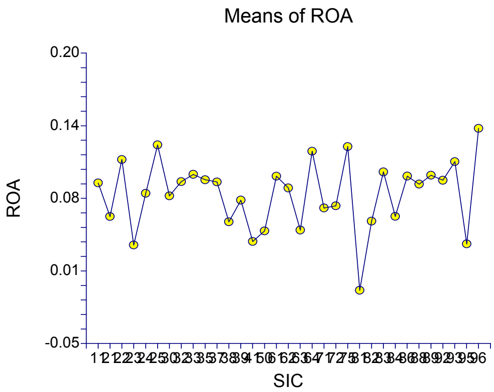
Means and Standard Error Section

Term	**Count**	**Mean**	**Standard Error**
All	1995	0.0785914	
A: Year			
1995	106	6.883443E-02	1.263675E-02
1996	136	0.0724089	1.115627E-02
1997	148	6.805914E-02	1.069443E-02
1998	168	7.854497E-02	1.003769E-02
1999	185	8.791071E-02	9.565389E-03
2000	190	7.287488E-02	9.43869E-03
2001	198	6.817698E-02	9.246043E-03
2002	205	7.530499E-02	9.086813E-03
2003	211	8.345921E-02	8.956685E-03
2004	226	7.969289E-02	8.654347E-03
2005	222	0.1092383	8.731966E-03
B: SIC			
11	64	8.820263E-02	1.626292E-02
21	1	5.935313E-02	0.1301033
22	13	0.108327	3.608418E-02
23	55	3.479922E-02	1.754313E-02
24	178	7.929699E-02	9.751659E-03
25	11	0.1209091	3.922764E-02
30	77	0.0771024	1.482665E-02
32	77	8.928742E-02	1.482665E-02
33	60	9.558224E-02	1.679627E-02
35	22	9.090909E-02	2.773813E-02
37	146	8.906094E-02	1.076743E-02
38	33	5.472605E-02	2.264809E-02
39	17	7.338758E-02	0.0315547
41	3	3.779461E-02	0.0751152
50	60	4.691377E-02	1.679627E-02
61	57	0.093979	1.723261E-02
62	234	8.386219E-02	8.505123E-03
63	31	4.763565E-02	2.336725E-02
64	67	0.1154903	1.589466E-02
71	51	6.665458E-02	1.821811E-02
72	15	6.851543E-02	3.359254E-02
75	31	0.1194858	2.336725E-02
81	3	-4.227628E-03	0.0751152
82	71	5.528459E-02	1.544043E-02
83	97	9.763926E-02	1.320999E-02
84	153	5.946457E-02	1.051823E-02
86	153	9.405259E-02	1.051823E-02
88	119	8.717411E-02	1.192656E-02
89	12	9.483572E-02	0.0375576
92	19	0.090505	2.984776E-02
93	20	0.1065445	0.029092
95	4	3.575841E-02	6.505167E-02
96	41	0.1352098	2.031873E-02

Analysis of Variance Report – ROA

Plots Section





Analysis of Variance Report – Margin

Expected Mean Squares Section

Source Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: Year	10	Yes	S(AB)	S+bsA
B: SIC	32	Yes	S(AB)	S+asB
S(AB)	1960	No		S

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: Year	10	428.8	42.88	1.11	0.348597	0.596119
B: SIC	32	147.8601	4.620628	0.12	1.000000	0.124470
S	1960	75551	38.54643			
Total (Adjusted)	2002	76132.48				
Total	2003					

* Term significant at alpha = 0.05

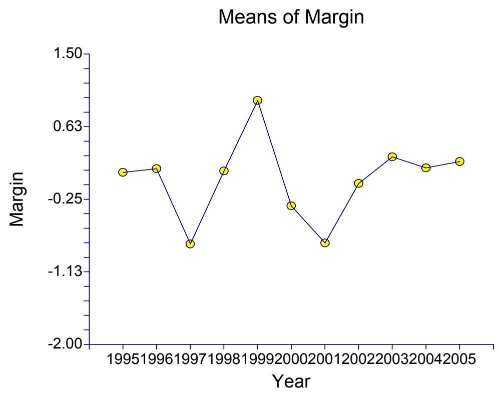
Analysis of Variance Report – Margin

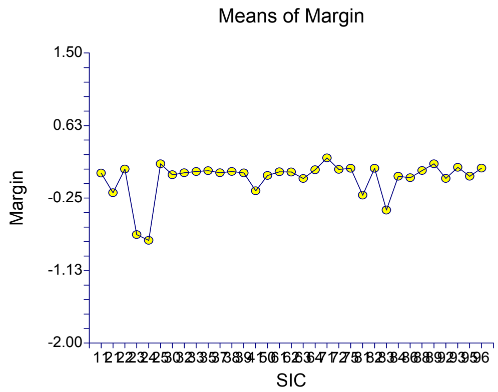
Means and Standard Error Section

Term	**Count**	**Mean**	**Standard Error**
All	2003	-0.0132753	
A: Year			
1995	106	7.363954E-02	0.6030303
1996	136	0.1180225	0.5323811
1997	148	-0.7902671	0.5103419
1998	169	0.0911135	0.4775828
1999	186	0.9398686	0.4552349
2000	191	-0.3297268	0.4492369
2001	199	-0.7779007	0.4401143
2002	206	-6.014951E-02	0.4325721
2003	212	0.2595084	0.4264068
2004	227	0.1266552	0.4120777
2005	223	0.2032081	0.4157571
B: SIC			
11	64	5.056681E-02	0.7760721
21	1	-0.1864834	6.208577
22	13	9.873739E-02	1.721949
23	55	-0.6913177	0.8371643
24	178	-0.7603344	0.4653525
25	11	0.1627273	1.871956
30	77	3.027799E-02	0.707533
32	77	5.431736E-02	0.707533
33	60	6.910835E-02	0.8015239
35	22	0.08	1.323673
37	146	5.509304E-02	0.5138255
38	33	7.040504E-02	1.080775
39	17	5.231961E-02	1.505801
41	3	-0.1630659	3.584524
50	60	2.120758E-02	0.8015239
61	57	6.646606E-02	0.8223461
62	242	6.347349E-02	0.3991024
63	31	-1.514137E-02	1.115093
64	67	9.033743E-02	0.7584984
71	51	0.2335555	0.8693747
72	15	9.525236E-02	1.603048
75	31	0.1083294	1.115093
81	3	-0.21528	3.584524
82	71	0.1076843	0.7368225
83	97	-0.3953881	0.6303855
84	153	1.160275E-02	0.5019337
86	153	-5.127487E-03	0.5019337
88	119	8.112543E-02	0.5691393
89	12	0.1623542	1.792262
92	19	-1.379667E-02	1.424345
93	20	0.1201699	1.38828
95	4	1.265289E-02	3.104289
96	41	0.110086	0.9696168

Analysis of Variance Report – Margin

Plots Section





Analysis of Variance Report – Velocity

Expected Mean Squares Section

Source Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: Year	10	Yes	S(AB)	S+bsA
B: SIC	32	Yes	S(AB)	S+asB
S(AB)	1979	No		S

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: Year	10	15.97822	1.597822	2.42	0.007443*	0.946724
B: SIC	32	943.0727	29.47102	44.56	0.000000*	1.000000
S	1979	1308.945	0.6614172			
Total (Adjusted)	2021	2264.41				
Total	2022					

* Term significant at alpha = 0.05

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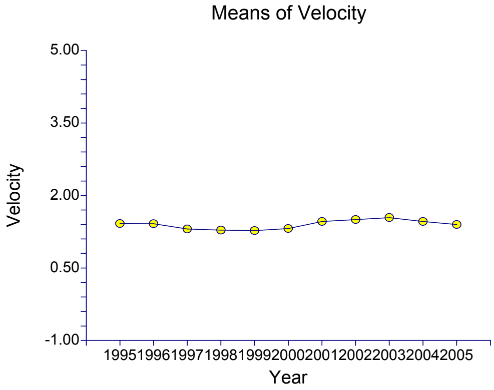
Analysis of Variance Report – Velocity

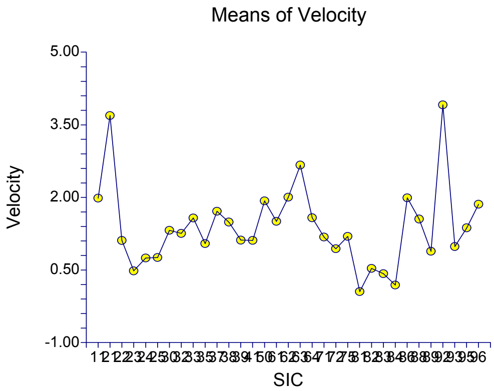
Means and Standard Error Section

Term	**Count**	**Mean**	**Standard Error**
All	2022	1.39742	
A: Year			
1995	108	1.418564	7.825749E-02
1996	138	1.414287	6.923062E-02
1997	149	1.30542	6.662613E-02
1998	170	1.283498	6.237539E-02
1999	187	1.271826	0.0594726
2000	192	1.315947	5.869311E-02
2001	200	1.460302	5.750727E-02
2002	208	1.500807	5.639052E-02
2003	214	1.541515	5.559438E-02
2004	229	1.460636	5.374277E-02
2005	227	1.398815	0.053979
B: SIC			
11	64	1.982105	0.1016595
21	1	3.688605	0.8132756
22	13	1.108876	0.2255621
23	56	0.4808404	0.1086785
24	178	0.7465996	6.095758E-02
25	11	0.7572727	0.2452118
30	78	1.317281	9.208533E-02
32	77	1.25471	9.268136E-02
33	60	1.57455	0.1049934
35	22	1.044091	0.1733909
37	146	1.712308	6.730717E-02
38	33	1.488867	0.1415731
39	17	1.115531	0.1972483
41	3	1.110431	0.4695449
50	60	1.926274	0.1049934
61	57	1.5043	0.107721
62	234	2.002146	5.316549E-02
63	31	2.665931	0.1460686
64	67	1.578244	9.935743E-02
71	51	1.179948	0.1138814
72	15	0.9377613	0.2099869
75	31	1.193807	0.1460686
81	28	0.0534003	0.1536946
82	71	0.532255	9.651806E-02
83	97	0.4220743	8.257563E-02
84	153	0.1886652	6.574944E-02
86	153	1.988841	6.574944E-02
88	119	1.551689	7.455286E-02
89	12	0.8862395	0.2347724
92	19	3.909369	0.1865782
93	20	0.983627	0.181854
95	4	1.370193	0.4066378
96	41	1.858017	0.1270123

Analysis of Variance Report – Velocity

Plots Section





APPENDIX E: Alphabetic Classification of Companies by SIC Code

SIC	Industry
11	Farming & Fishing
21	Coal
22	Integrated Oil & Gas
23	Gold Mining
23	Uranium Mining
24	General Mining
24	Nonferrous Metals Mining
24	Platinum group metals Mining
25	Diamonds & Gemstones
30	Brewers
30	Distillers & Vintners
30	Food Products
32	Containers & Packaging
32	Paper
32	Publishing
33	Personal Products
33	Pharmaceuticals
33	Speciality Chemicals
35	Steel
37	Electrical Components & Equipment
37	Electronic Equipment
37	Industrial Machinery
37	Telecommunications Equipment
38	Auto Parts
38	Automobiles
39	Furnishings
39	Waste & Disposal Services
41	Electricity
50	Heavy Construction
61	Building Materials & Fixtures
62	Broad line Retailers
62	Consumer Electronics
62	Food Retailers & Wholesalers
62	Home Improvement Retailers
63	Commercial Vehicles & Trucks
63	Specialty Retailers
64	Hotels
64	Restaurants & Bars
64	Travel & Tourism
71	Transportation Services
71	Trucking
72	Marine Transportation
75	Fixed Line Telecommunications
75	Mobile Telecommunications
81	Banks
81	Consumer Finance
82	Life Insurance
82	Property& Casualty Insurance

83	Asset Managers
83	Equity Investment Instruments
83	Insurance Brokers
83	Investment Services
83	Specialty Finance
84	Real Estate Holding & Development
84	Real Estate Investment Trusts
86	Computer Hardware
86	Internet
86	Software
88	Business Support Services
88	Diversified Industrials
88	Industrial Suppliers
89	Specialised Consumer Services
92	Business Training & Employment Agencies
93	Health Care Providers
95	Recreational Services
96	Broadcasting & Entertainment
96	Gambling

Source: CIPRO