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**RISK AND INDUSTRIAL CLASSIFICATION IN THE NAIROBI STOCK EXCHANGE
2000-2005.** //

PRESENTED BY

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D/61/P/7128/03**

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DECLARATION

I confirm that this is my original work and has not been submitted for presentation at the University of Nairobi or any other Institution of Higher learning.

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DEDICATION

I dedicate this project to my children David Leparsuguta Lokini and Grace Njambi Lokini who have been an encouragement to me. David is a special child with cerebral palsy and has always been an icon in pointing out that all struggles will be over one day. Grace came as an encouragement after such an encounter with cerebral palsy and brought all the joy.

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All my lecturers for their positive criticism, unwavering support and encouragement.

ACRONYMS

ADRS	American Depository Receipts
AIMS	Alternative Investment Market Segment
ANNA	Association of National Numbering Agencies
ATS	Automated Trading System
CBK	Central Bank of Kenya
CDS	Central Depository System
CDSC	Central Depository and Settlement Corporation
CIS	Collective Investment Schemes
CMA	Capital Markets Authority
COV	Coefficient of Variation
DF	Degrees of Freedom
FISMS	Fixed Income Securities Market Segment
IAS	International Accounting Standards
IFC	International Finance Corporation
IPO	Initial Public Offers
ISIN	International Securities Identifying Number
ISO	International Organization for Standardization
LTD	Limited
MACD	Moving Average Convergence Divergence
MIMS	Main Investment Market Segment
MIT	Millennium Information Technologies
NNA	National Numbering Agency
NSE	Nairobi Stock Exchange
PE	Price Earning
PLC	Public Limited Company
PTA	Preferential Trade Area
SIC	Standard Industrial Classification
SPSS	Statistical Package for Social Sciences
US	United States

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ABSTRACT

The objective of the research paper was to determine the association between the risk and the theory of market segmentation in the NSE specifically the Industrial Classification of MIMS. Risk considerations are critical in all investor's decisions at both individual and corporate levels.

In order to achieve the above objective, the study set out to investigate whether the returns from the industrial classes of MIMS were significantly different from the market returns given the prevailing conditions during the period of study.

The results from the study indicated that industrial classification at the NSE may have not taken risk into consideration while subdividing the market given the fact that all the industrial classes were not significantly different from the market.

The research noted that the conclusions drawn from the study were subject to limitations such as unique factors affecting risk, change in management, strikes, expansions and the sample size which were not empirically tested.

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CHAPTER 1: INTRODUCTION

1.1 Background

Risk considerations are hinged in the heart of all investment decisions for both the individual and corporate decision making. Prudent investors aim at maximizing returns and minimizing risk in all their dealings. Therefore the concept of risk is important both from a decision theory point of view and from managerial perspectives March and Shapira (1987). Risk need to be taken seriously in order for investors to be able to realize their dreams of higher returns.

Ideally, to an ordinary person, the term risk connotes some expected danger, peril, hazard or even general loss. This in effect gives the simplest understanding of the term risk. It is however, a complicated outfit that needs a closer look in order that the decisions undertaken cannot be regretted later on in life.

Industrial classification on the other hand is a restricted form of market segmentation where various industries are grouped together Campbell (1988). According to investopia.com, industries are companies performing distinct activities such as agriculture, forestry, mining, construction, manufacturing, finance, communication among many others. In America a Standard Industrial Classification (SIC) was adopted in 1934 according to census website and was intended to harmonize the data collected and analyzed by various agencies.

Apart from the stringent eligibility requirements for industrial classification and segmentation, risk also need to be considered. It is not clear whether risk considerations were incorporated into the decision of classifying the various segments of NSE especially MIMS. Prudent investors aim at maximizing returns and minimizing risks because investment entails sacrifice of the current shilling held against an expected shilling in future. The particular segment to be invested in must then promise better returns at a minimal risk. Investors therefore are very keen on the risk and its effect on the expected returns.

In every day life, there is presumption that investors tend to be risk averse. This means they tend to avoid risk where they can. Further risk aversion means that investors prefer investments

with a lower level of risk. On the other hand they prefer an investment giving the highest returns. This gives the risk-return trade off to determine the investments the investors would go for. There are other investors who are risk seekers. In this case they go for higher returns and higher risks. Not many a prudent investors would go for such given the fact that they can actually reduce risk element elsewhere. It is important to give a brief history of the NSE.

1.1.1 Overview of the Nairobi Stock Exchange (NSE)

The Nairobi Stock Exchange (NSE) in Kenya is small and somewhat speculative. It was established in 1954. The Exchange is Sub-Saharan Africa's fourth- largest bourse. Twenty brokers (1995) are licensed to operate, and there are about 53 companies listed , with an approximate capitalization of \$1.9 billion

Like many emerging markets, NSE, suffers from the lack of liquidity in the market (averaging 4% in the 1996). Foreign investment in the NSE and foreign ownership of the companies is by application. Foreign investment in the local subsidiaries of foreign controlled companies is banned so as to encourage input into Kenyan Companies.

The Government has made several reforms aimed at attracting foreign investors through the NSE. The exchange was opened to foreign investors for the first time in January 1995, but with a maximum limit of 20% shareholding for institutions and 2.5% for individuals. The ceiling on foreign investment has recently been increased to 40% for the institutions and 5% for individuals, but fewer than 20 of the 58 listed companies are available to foreigners. Since 1995 the Kenyan Government has opened trade in the NSE and gilts to foreign portfolio investors; removed exchange controls; and introduced a favorable tax regime with non residents paying a 10% withholding tax on dividends (local 5%) but no capital gains, stamp duty or value added tax and the introduction of depository system is expected to speed up clearing and settlement. Trading takes place on Mondays through Fridays between 10.00 am and 12.00 noon. The 20 member brokerages commissions have dropped from a fixed 2.5% to a sliding scale between 1.1% and 2%.

1.1.2 The history of Nairobi Stock Exchange (NSE)

In Kenya, dealing in shares and stocks started in the 1920s when the country was still a British colony. There was however, no formal market, nor rules or regulations to govern stock broking activities. Trading took place on gentleman's agreement, in which standard commissions were charged with clients being obligated to honor their contractual commitments of making good delivery and settling relevant costs. At that time, stockbroking was a sideline business conducted by accountants, auctioneers, estate agents and lawyers, who met to exchange prices over a cup of coffee. Since these firms were engaged in other areas of specialization, the need for association did not arise.

The NSE was constituted in 1954 as a voluntary association of stockbrokers registered under the societies Act. This was made possible after clearance was obtained from the London Stock Exchange which recognized the NSE as an Overseas Stock Exchange. This was important because an exchange not recognized by the leading stock exchange was of little value and credibility. The business of dealing in shares was then confined to the resident European community, since Africans and Asians were not permitted to trade in securities until after the attainment of independence in 1963. This partly explains why it was difficult to convince the local people, who had hitherto been barred from holding quoted shares purely on racial grounds, that this institution was vital vehicle for handing over economic power from foreign dominance to local control.

At the dawn of independence, stock market activity slumped due to uncertainty about the future of independent Kenya. However, after three years of calm economic growth, confidence in the market was rekindled and the exchange handled a number of highly over-subscribed public issues. The growth was, however, halted when the oil crisis of 1972 introduced inflationary pressures on the economy which depressed share prices. A 35% capital gains tax introduced in 1975 (suspended since 1985) inflicted further losses to the exchange. At the same time it lost its regional character following the nationalizations, exchange controls and other inter-territorial restrictions introduced in neighbouring Tanzania and Uganda. For instance, in 1976 Uganda compulsorily acquired a number of companies which were either quoted, or were subsidiaries of companies quoted on the NSE.

In the 1980s the Kenyan Government realized the need to design and implement policy reforms to foster sustainable economic development with an efficient and stable financial system. In particular, it set out to enhance the role of the private sector in the economy, reduce the demands of public enterprises on the exchequer, rationalize the operations of the public enterprise sector to broaden the base of ownership and enhance the capital market development. In 1984 an IFC/CBK study, Development of Money and Capital Markets in Kenya, became a blue print for structural reforms in the financial markets, culminating in the formation of a regulatory body "The Capital Markets Authority (CMA) in 1989, to assist in the creation of an environment conducive to the growth and development of the country's markets.

In 1991, the NSE was registered under the Companies Act and phased out the 'call over' trading system in favour of the floor- based 'open outcry system'. Subsequently the stock exchange embarked on an extensive modernization exercise, including a move to more spacious premises at the Nation Centre in July 1994. The facilities include a modern information centre. Computerization has also been enhanced, and with increasing trading volumes electronic trading has become feasible. In 1995, the Kenyan Government also relaxed control for locally controlled companies subject to an aggregate limit of 20% and an individual limit of 2.5%. These were doubled to 40% and 5% respectively in June 1995 budget to help encourage foreign portfolio investments. A series of incentives are in place to encourage investments in the NSE. A favourable tax regime exempts listed securities from stamp duty, capital gains tax and value added tax. Withholding tax in dividends is low at 5% for residents and 10% for non residents. The entire Exchange Control Act was repealed in December 1995.

The number of stock brokers has grown steadily to 20 from the original six (one of whom still survives) at its inception in 1954. Commission's rates, which were once among the highest, have also come down considerably, from 2.5% to between 2% and 1% on a sliding scale for equities and 0.05% for all fixed interest securities for every shilling. The NSE is poised to play an increasing important role in the Kenyan economy, especially in the privatization of state-owned enterprise. In the last 10 years, 9 public enterprises have been successfully privatized through the NSE where government has raised about Ksh 17 billion. The privatization process started in 1988 when the government floated 7.5 million shares (20% equity) of the Kenya

Commercial Bank. The issue was oversubscribed 2.3 times. Subsequent issues have also proved highly popular, with subscription rates as high as 400%. In the privatization of Kenya Airways, for example, the stock exchange enabled more than 110,000 shareholders to acquire a stake in the airline. The NSE has enabled Kenya to receive more than US\$ 50 million in a year and half (1995/6), in the form of foreign portfolio investments.

In 1998 the Government expands the scope of foreign investment by introducing incentives for capital markets growth including the setting up of tax free venture capital funds, removal of capital gains tax on insurance companies' investments, allowance of beneficial ownership by foreigners in local stockbrokers and fund managers and envisaged licensing of dealing firms to improve market liquidity.

In 1999, Kenya adopts the International Accounting Standards (IAS) as the local Accounting Standard with effect from 1st January, 1999.

In 2000 the Central Depository System (CDS) Act and the amended CMA Act (which covers Collective Investment Schemes (CIS)) are passed by Parliament and receive presidential assent, paving the way for the full implementation of the CDS and for the introduction of collective investment schemes in the Kenyan market. The NSE was appointed as the National Numbering Agency (NNA) for Kenya. The NNA is responsible for issuing the ISIN for financial securities issued under Kenyan jurisdiction in accordance with the ISO 6166 guidelines issued by ANNA. In December 2000, CFC Bank became the first licensed Securities Dealer on the Nairobi Stock Exchange and was also licensed as an investment advisor.

In March 2001, African Lakes Corporation plc went to the market to raise up to £8.4 million (net of expenses). Qualifying shareholders were invited to subscribe for up to 34,903,956 new ordinary shares (29 pence per share) or 4 new ordinary shares for every 11 existing ordinary shares. In the same month, East African Breweries Ltd became the first company on the Nairobi Stock Exchange to cross list on the Uganda Securities Exchange (USE). In June 2001 Safaricom Ltd., Kenya's first cellular phone operator, offers medium term floating rate secured notes with a 5 year maturity and worth Kshs.4.0 billion. In July 2001, the East African

Development Bank listed a Kshs. 2.0 billion, floating rate, medium term note. The paper has a maturity of 5 years and a coupon rate linked to Government of Kenya 91-day Treasury bill rate plus a 0.75% premium. In November 2001, following its privatization through a sale of government shares to the public, Mumias Sugar Company lists on the Nairobi Stock Exchange's official list. In December 2001, 8 million additional shares of ICDC Investment Company are admitted to the official list of the NSE. ICDC Investment Company is Kenya's only listed Investment Company.

In March 2002, Kenya Airways became the second company listed on the Nairobi Stock Exchange to cross list its shares on the Uganda Securities Exchange (USE). The CMA also announced the approval of the new NSE trading and settlement rules where the amount for block trades was revised upwards from Kshs. 3.0 million to between Kshs. 50.0 – 200.0 million. The block trade rules now apply to trade values of above Kshs. 50.0 million but less than Kshs. 200.0 million. Lastly, the brokerage commissions' regime was liberalized. As part of measures aimed at mobilizing domestic savings through investment in financial assets, the CMA gave approval to African Alliance Ltd. and Old Mutual Ltd. to promote collective investment schemes (CIS) in the form of unit trusts. In July 2002, the foreign investor regulations were amended, providing for a 25% minimum reserve of the issued share capital for Kenyan citizens, while the balance of the 75% becomes a free float for all classes of investors. Within this 75% share holding available to all classes of investor, there is no restriction on the amount to be held by a single foreign investor. Additionally, the following categories of investor have been defined: Foreign institutional, foreign individual, East African institutional, East African individual, Local institutional, Local individual (where East African is defined as a body corporate registered in either Uganda or Tanzania or a citizen of Uganda or Tanzania). The signing of the shareholders' agreement for the Central Depository and Settlement Corporation (CDSC) took place in August 2002. The shareholders consisted of the Nairobi Stock Exchange (20%), the Association of Kenya Stockbrokers (18%), the CMA Investor Compensation Fund (7%), and 9 institutional investors through the Capital Markets Challenge Fund (50%); who collectively have invested in the Central Depository and Settlement Corporation (CDSC). The CDSC being the legal entity that owns and runs the clearing, settlement, depository and registry system for securities traded in Kenya's capital markets. The

NSE became the sole NNA in Kenya, responsible for allocating the unique code for quoted and unquoted securities domiciled in Kenya.

In February 2003, African Lakes Corporation plc and East African Packaging Ltd were delisted from NSE as provided in both the CMA Public Offers and Listing Requirements and in the NSE Listing Manual. In March 2003, the Central Depository and Settlement Corporation in collaboration with the NSE commenced the CDS Education Campaign in preparation for the market automation. The first CDS Education Workshop, with the theme “The CDS Legal & Regulatory Framework” kicked off.

For the year ending 31stDecember, 2003, the exchange recorded an equity turnover exceeding Kshs. 15.25 billion, more than the combined equity turnover recorded in the previous 5 years; the number of shares traded was 381.2 million. The bond market recorded a turnover of Kshs 42 billion, a 24.85 % increase over the previous year’s turnover of Kshs. 33.629 billion.

In 2004, Kenya Commercial Bank rights issue began to trading on the Nairobi Stock Exchange having been oversubscribed by 12.25%. The Government of Kenya renounced its rights, diluting its ownership from 35% to 25%. Notably, KENOL and East African Breweries shareholders approved the recommendation of their Directors to split the ordinary shares in the proportion of Ten (10) shares for every one held and five (5) shares for every one held respectively. In the same year, Kenya Airways became the first company to cross list in all the three East African stock Exchanges. While celebrating its silver jubilee, the NSE’s magazine dubbed ‘The exchange’ and The Central Depository and Settlement Corporation (CDSC) which manages the Central Depository System were both launched.

For the year ending 31stDecember, 2004, the exchange recorded an equity turnover exceeding Kshs. 22.32 billion; an increase of 46.37% over the corresponding period for 2003. The number of shares traded was 625.3 million. The bond market recorded a turnover of Kshs 34.1 billion, a 18.75 % decrease compared to the previous year’s turnover. This was caused by a sharp rise in short term interest rates in the third quarter of 2003 causing huge capital losses in the bond portfolios of institutional investors.

In 2005, East African Breweries Ltd, with a primary listing on the Nairobi Stock Exchange and a secondary listing on the Uganda Securities Exchange, became the second company to be cross listed on all the three East African securities exchanges after listing on the Dar-es-Salaam Stock Exchange. Further The Eastern and Southern African Trade and Development (PTA) Bank and Athi River Mining Company offered and listed medium term floating rate notes worth Kshs. 800.0 million each. Celtel Ltd., Kenya's second cell phone operator, listed a Kshs. 4.5 billion, 4- year, floating rate, medium term note to fund investment in the Celtel network.

For the year ending 31st December, 2005, the exchange recorded an equity turnover exceeding Kshs. 36.52 billion (a 63.61% increase over the previous year's performance of Kshs. 22.32 billion), the number of shares traded was 874.199 million (a 39.80% increase over the previous year's performance of 625.33 million shares. Bond market performance was disappointing; recording a decline of 60.16% in the value of transactions from Kshs. 34.11 billion recorded in 2004 to Kshs. 13.59 billion recorded for 2005.

There were several IPOs which were generally oversubscribed and they include; Kenya Electricity Generating Company (Kengen), Scan Group, Eveready East Africa and the introduction of Equity Bank Shares in 2006. During the same year, Automated Trading System (ATS) was implemented in the NSE. The ATS is sourced from Millennium Information Technologies (MIT) of Colombo, Sri Lanka, who are also the suppliers of the Central Depository System (CDS). MIT have also supplied similar solutions to the Colombo Stock Exchange and the Stock Exchange of Mauritius.

To ensure that there were no significant departures from the overall trading principles in our market the NSE ATS solution was customized to uphold the spirit of the Open Outcry Trading Rules in an automated environment. Trading hours also increased from two (10:00 am – 12:00 pm) to three hours (10:00 am – 1:00 pm). Other innovations included the removal of the block trades board and introduction of the functionality for the trading of rights in the same manner as equities. Besides trading equities, the ATS is also fully capable of trading immobilized corporate bonds and treasury bonds. The anticipated benefits of the new system include greater

transparency in the placement of bids and offers. The system will also improve market surveillance and transmit almost in real time, trading information relating to index movements and price and volume movements of traded securities. More current information will become readily available to a wider constituency of NSE's stakeholders, facilitating the decision making process and lowering the risk of participating in the markets. As such the Exchange views a situation where it will soon have an opportunity to enhance its revenue streams through information vending to its stakeholders.

In 2007, the Kenya Re shares were listed in the NSE in the MIMS after the government continued to reduce its stake in the parastatal. In the pipeline is the listing of the Safaricom shares which has been delayed by controversies ranging from ownership issues to court injunctions.

NSE handbook 2005 identifies the key segments as MIMS, AIMS and FISMS. The MIMS is further classified into various sectors according to the nature of industry such as Agricultural, Commercial and Services, Finance and Investment and lastly but not the least, Industrial and Allied.

MIMS is the major segment with 40 quoted firms (Appendix II). For purposes of listing requirements, they include but not limited to the fact the company must have a minimum authorized, issued and fully paid up share capital of Kshs 50 million and net assets of Kshs 100 million before the public offering of shares.

AIMS is a smaller segment compared to MIMS with only 9 quoted companies (Appendix II). The minimum eligibility conditions and listing requirements for this segment include but not limited to the fact that the company must have a minimum authorized, issued and fully paid up share capital of Kshs 10 millions and net assets of Kshs 20 million before the public offering of shares (NSE 2005).

FISMS is still underdeveloped at NSE with only the 4% and 7% Power and Lighting preference shares. It is a debt Capital market where companies intending to list their commercial papers

or corporate bonds must satisfy eligibility requirements and conditions similar to those of MIMS.

1.1.3 Market segmentation theory

Campbell (1988) defines a group of securities to be segmented if it has impenetrable barriers. Impenetrable barriers include legal barriers, information barriers and human behaviour Karolyi and Foerster (1999). Qi Li (2004) further defines market as segmented if different groups have access to different sets of assets. As a global village, the current world market is segmented since almost all individual investors and institutions can only invest in a portion of the world securities.

Snellman (2000) sees market segmentation as having its roots in microeconomics and has been influenced by other disciplines such as motivational research and buyer behavior. In this paper market segmentation is divided into four eras namely, the era of foundations, development and blossoming, stillness and stagnation and the era of re-emergence. Market segmentation theory emerged in the mid 1950s and flourished during the period between mid 1950s and late 1970s. During the 1980s the theory lost interest in the scientific community and no significant contributions made. However, towards the dawn of the new millennium, the market segmentation theory regains new attention.

Sharpe et al (2004) puts it clearly that this theory assumes that there is market segmentation and it explains the term structure of interest rates. They postulate that in a segment, various investors and borrowers are thought to be restricted by law, preference or custom to certain maturities. This creates a situation where there is a market for short term securities, intermediate term securities and one for long term securities. Further given the theory, spot rates are determined by supply and demand conditions in each market. In their argument especially on the most restrictive form of the theory, investors and borrowers will not leave their market and enter different one even when the current rates suggests to them that there is substantially higher expected returns available by making such a move.

Flavin and Huley (2001) used a gravity approach to explain patterns. In this, geography matters for the markets. They pointed out that geographical variables have enjoyed much empirical

success in explaining market linkages. These variables have been applied in diverse areas such as trade flows, price differentials, migration flows and foreign direct investment flows. They found out that investors may be more comfortable with portfolios that are concentrated in their region thereby amplifying the effects of an adverse shock in that area.

The market segmentation theory postulates that there is market segmentation. In the NSE, the key interest would be to look at the risk exposure levels. There is need to look at both market risk levels and market risk premiums an approach adopted by Allen and Jagtiani (1996).

1.2 Statement of the problem

Encyclopedia.thefreedictionary.com (2007), defines market segmentation as the process in marketing of dividing a market into distinct subsets (segments) that behave in the way or have similar needs. Because each segment is fairly distinct in their needs and attitudes, they are likely to respond similarly to a given marketing strategy. Further, markets can be divided according to a number of general criteria, such as by industry or public versus private sector.

Finance literature has focused on the issue of market segmentation and how it can affect various other variables. It is also interesting to note the key role played by risk in the many investors' decisions. This brings to mind the issue of mean variance criterion, standard deviation of the returns and the issue of risk differentials. Thus there is great interest in examining the risk element as well as the popular market segmentation theory.

Karolyi and Foerster (1999), studied the stock price performance and changes in risk exposure associated with the cross- listing of non –US stocks in the US markets. Their sample comprised first- time US listings by 153 firms from Canada, Europe and the Asia Pacific Basin region from 1976 to 1992 and found evidence generally consistent with the market segmentation hypothesis that stock prices for firms that cross – list from segmented markets are expected to rise and their subsequent expected returns should fall as an additional built – in risk premium compensating for investment barriers. These barriers include regulatory barriers, taxes and information constraints.

Empirical evidence relating to market segmentation theory is mixed. Some studies have found the support for the existence of a market segmentation Pesando (1978), Van Horne(1980), Allen (1996), Gebhardt (2000), Nayak (1999) and Zaichkowsky (2004). Many other studies

have contradicted market segmentation theory Modigliani and Sutch (1966), Dobson, Sutch and Vanderford (1976), Elliot and Echols (1976).

Snellman (2000) sees market segmentation as having its roots in microeconomics and has been influenced by other disciplines such as motivational research and buyer behavior. In this paper market segmentation is divided into four eras namely, the era of foundations, development and blossoming, stillness and stagnation and the era of re-emergence. Market segmentation theory emerged in the mid 1950s and flourished during the period between mid 1950s and late 1970s.

Sharpe et al (2004) puts it clearly that market segmentation theory assumes that there is market segmentation. They postulate that in a segment, various investors and borrowers are thought to be restricted by law, preference or custom to certain maturities. This creates a situation where there is a market for short term securities, intermediate term securities and one for long term securities. Further given the theory, spot rates are determined by supply and demand conditions in each market. In their argument especially on the most restrictive form of the theory, investors and borrowers will not leave their market and enter different one even when the current rates suggests to them that there is substantially higher expected returns available by making such a move.

In the NSE, the key interest would be to look at the risk exposure levels. The betas of the various sectors will give a clear indication of the relationship between risk and the market segmentation in the said segment. There is need to look at both market risk levels and market risk premiums an approach adopted by Allen and Jagtiani (1996).

In February 2001, the Kenyan government found out the need to design and implement policy reforms to foster economic development with an efficient and stable financial system. Nairobi Stock Exchange (NSE) has its own segments and various sectors within the same segments. The key segments of interest include main investment market segment (MIMS), Alternative Investment Market Segment (AIMS) and Fixed Income Securities Market Segment (FISMS). The MIMS has sectors such as Agricultural Sector, Commercial and Services Sector, Financial Sector Industrial and Allied Sector which form the focus of this study.

This study will focus on these sectors by looking both into the risk differentials and the variability/volatility of the returns. The key questions to be addressed include: To what extent is the NSE's MIMS segmented? Which is the riskier sector to invest in and why are investors still investing there. These questions will give a clear picture of the market segmentation theory and its applicability at the NSE's MIMS. The government segmented the market into four independent segments; - MIMS, AIMS, FISMS and at a later stage a futures and options market segment (FOMS). The MIMS was to retain the industrial sub segments which are; Agricultural, Commercial and Services, Finance and Investment, Industrial and Allied sectors. AIMS segment comprises of securities initially forming the various sectors of MIMS up to 2001. This then puts into question the criteria used to form the segment. However, there are clear regulations for the segmentation thereon. To test the risk and market segmentation, the MIMS gives a good area for study. The study shall focus on the riskiness of the sectors of this main segment and see whether there are any major differences in risk measures. Attached in appendices III and IV are prices and dividends respectively from the NSE for the period January 2000 to December 2005 used for computing risk.

1.3 Objectives of the study

The objective of the study is to determine the association between the risk and the theory of market segmentation in the Nairobi Stock Exchange specifically the Industrial Classification of MIMS. Risk and return give a critical guidance for the investors in making their investment decisions.

1.4 Importance of the study

Risk and return play a crucial role in the investment decisions by the investors. So the study will be important in the following ways:

- i. Investors: The study will provide them with information on which segment of the market to invest in given the risk differentials and the expected returns.
- ii. Financial Analyst/Advisors: They will use the information from the study in order to clearly advise their clients correctly on the segments to invest in.

- iii. Financial Scholars and Academicians: The study opens an avenue for further research in the area of risk and market segmentation.

2.1 Introduction

Every stock market trade consists of one person selling shares to a buyer at another point, with each of them thinking they're making a wise move (Ray, Tuckman, 2015). Tuckman, a financial journalist writing on hedge funds' limited success rates, proposes some principles investors should always consider. He says that deciding which stocks to buy can be done in a variety of ways, from listening to a well-known's hot tip, to performing fundamental analysis on hundreds of companies. There's no one correct way to invest in equities, but there are some basic principles an investor should consider.

Investors must go through evaluation about companies whose stocks they want to buy. Carefully traded long-term investment strategies ranging from thousands to billions of shares through mutual funds, specialty financial institutions and more options.

The two primary types of analysis are fundamental and technical.

2.1.1 Fundamental analysis

Fundamental analysis looks at factors like sales figures, earnings, assets, market and management performance. It also measures how a company's debt compares with that of its peers, and the effect of external influences such as interest rates on the company's value.

The price-to-earnings figure is evaluating a stock's price to earnings ratio — also called its coverage multiple or multiple. It's the ratio of the price per share to the earnings per share over the past 12 months. For example, a stock priced at \$20 a share with earnings of \$2 a share yields a P/E ratio of 10.

When a company with a P/E ratio below 10 is sold, it can be fairly valued, those with higher P/E ratios will be deemed too expensive.

"Measurement of earnings is the most of earnings is important," says "Wall Street Journal" analyst with Reuters Stock Exchange. The different ways of measuring will have different multiples, one different indicator will have different multiples.

Thus an investor should consider price-to-earnings ratios of manufacturing companies in the same industry.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Every stock market trade consists of one person selling shares in a company to another person, with each of them thinking they're making a wise move (Ray Turchansky, 2007). Turchansky, a financial journalist, writing in Vancouver Journal advises readers proposes some principles investors should always consider. He states that deciding which stocks to buy can be done in a variety of ways, from listening to a cab driver's hot tip, to performing technical analysis on hundreds of companies. There's no one correct way to invest in equities, but there are some basic principles an investor should consider.

Investors must go through information about companies whose stocks they want to buy. Publicly traded companies must disclose information ranging from finances to changes in board members through annual reports, quarterly financial statements and news releases.

The two primary types of analysis are fundamental and technical.

2.1.1 Fundamental analysis

Fundamental analysis looks at factors like sales figures, earnings, assets, markets and management performance. It also considers how a company's data compares with that of its peers, and the effect of economic indicators such as interest rates on the company's sector.

The most-quoted figure in evaluating a stock is its price-to-earnings ratio -- also called an earnings multiple or multiple. It's the ratio of the price per share to the earnings per share over the past 12 months. For instance, a stock priced a \$50 a share with earnings of \$5 a share in the last year, has a P/E ratio of 10.

While companies with multiples below about 20 are often said to be fairly valued, those with higher P/E ratios are often deemed too expensive.

"Momentum of earnings or the trend of earnings is important," says Watt a financial analyst with Toronto Stock Exchange. "But different sizes of corporations will have different multiples, and different industries will have different multiples."

Thus an investor should compare price-to-earning ratios of similar-sized companies within the same industry.

John Bart's Canadian Share Owner investment club says great stocks are those with steadily rising parallel lines of revenue and earnings per share.

"Debt is also very important," says Watt. "You can have earnings growth but if you have a lot of debt, that can create a problem; or you can have very little debt and it leaves you lots of room for acquisitions.

Watt also advises investors to "keep an eye on cash flow" because it shows the inner strength of any corporation. Oil and gas companies historically don't have a lot of earnings, but they have a lot of cash flow. Investors should also look at companies' production, production growth and reserve life."

2.1.2 Technical analysis

Unlike fundamental analysis, technical analysis forecasts future share prices based on past share prices, using charts such as the MACD (Ray Turchansky, 2007).

"The moving analysis is definitely a tool," says Watt. "There's an old expression 'the trend is your friend.' A pure technician doesn't care about fundamental analysis, but Watt advises investors to be prudent and to have as many sources of information as possible."

Since figures such as earnings can be manipulated by accounting methods and taxation, making tax rates for a company important, it's important to look beyond statistics.

"You have to look at management experience," says Watt. "The market loves good CEOs. In the oil and gas industry, if you've got a person who got a company, built it up, sold it, then bought another company, built it up and sold it, an investor may feel comfortable with such people.

2.2 Risk

There has been great controversy in trying to give a clear definition of risk. Many a finance literature has tried to advance the definition of risk. Many have likened it to uncertainty Brigham (2001), Brockington (1994), Reilly (1997). But majority others have looked it as the variation of actual from what is actually expected Sharpe (2004), Robicheck (1969). In every day life, there elements of risk prevalent. For example, the fear of losing one's investment, the danger of being knocked by a car, the fear of war outbreak among others.

According to investorwords.com risk is defined as the quantifiable likelihood of loss or less-than – expected returns. Reilly and Brown (1997) define risk as the uncertainty that an investment will earn its expected rate of return. In the event of evaluating an investment alternative, he expects a certain rate of return. The investor might expect 10% and this is his point estimate of the returns. It may even range between -20% and 15% hence the element of risk. An investor determines how certain the expected rate of return on an investment by analyzing estimates of expected returns by assigning probability values 0 to 1. Where zero value represents no occurrence and 1 represents certainty. Examples include currency risk, inflation risk, principal risk, country risk, economic risk, mortgage risk, liquidity risk, market risk, opportunity risk, interest rate risk, prepayment risk, credit risk, unsystematic risk, call risk, business risk, counterparty risk, purchasing- power risk, event risk. Etc.

The investopedia dictionary definition says “risk is the chance that an investment’s actual return will be different than the expected.” This includes the possibility of losing some or all of the original investment.

Brigham and Gapenski (2001), defines risk as the chance that some unfavorable event will occur. They gave an example of one engaging in skydiving or bet on horses, both have the same thing in common risky. Accordingly no investment will be undertaken unless the expected rate of return is high enough to compensate the investor for the perceived risk of the investment. In a nutshell the total risk can be decomposed into its systematic and unsystematic risk components.

Two schools of thought can be discerned from the contemporary literature: The variability school and the volatility school. In variability school, March and Shapira (1987) perceive risk as the variation in the distribution of possible outcomes, their distribution and subjective values. This compares very well with Robichecks (1969) perception of risk being possibility that actual returns may vary from the expected returns. Therefore, risk as measured as the variability of returns has widespread acknowledgement in decision making theory Thierauf and Klekamp (1984), Galager and Watson (1980). When viewed as variability of returns, risk is quantified in

terms of variability measures including ranges, standard deviations, variances, semi variances and coefficient of variation.

The volatility school of thought perceives risk in terms of the volatility of returns in relation to the market returns. A stock whose returns are highly correlated with the market returns is said to be having low volatility whereas a stock whose returns have little correlation with the market returns is said to be highly volatile. A measure of risk based on the volatility concept quantifies only that portion of the total variation which is associated with the market variation (systematic risk) and ignores any unsystematic risk Bower and Wippem (1969), Gapenski (2001)

2.2.1 Types of Risk

When most people think of "risk" they translate it as loss of principal. However, there are many kinds of risk. Let's take a look at some of them:

- Capital Risk: Losing your invested monies.
- Inflationary Risk: Investment's rate of return doesn't keep pace with inflation rate.
- Interest Rate Risk: A drop in an investment's interest rate.
- Market Risk: Selling an investment at an unfavorable price.
- Liquidity Risk: Limitations on the availability of funds for a specific period of time.
- Legislative Risk: Changes in tax laws may make certain investments less advantageous.
- Default Risk: The failure of the institution where an investment is made.

2.2.2 How Do Different Assets Perform?

It may seem that there are countless types of investment products to choose from but, basically, there are three types of core investments: cash (or cash equivalents), bonds, and stocks.

Cash

Investments such as bank savings and checking accounts, Certificates of Deposit (CDs), and Treasury Bills. The prices generally don't fluctuate very much. To investors concerned with loss of capital risk, cash would appear to be the most secure choice, as principal is guaranteed and/or insured. Savings and checking accounts are highly liquid, as they can be readily converted into cash. With CDs, you may face liquidity risk, as they must be held for a predetermined period of time or may be subject to penalties for premature withdrawal. Although risk to principal may be

minimal, loss of purchasing power, or inflationary risk, must be taken into consideration. When inflation and taxation are taken into account, returns can be considerably lower. Hypothetically, let's say in 1981 you earned 14% in an investment. It sounds astronomical; however, if the inflation rate at that year soared to 15%, the returns would in effect be negative in real terms. That's a net loss of value of at least 1% — and that's before taxes take another bite.

Bonds

Commonly called "fixed income investments," they are basically loans. Interest is earned on the money you lend. The prices of bonds do move up and down, but normally not as much as stocks. Many people think of bonds as conservative investments, but the returns can have a high degree of volatility. The fluctuation of interest rates is called interest rate risk, and a downturn in the bond prices could significantly decrease the overall return of any particular bond.

Stocks

Represent equity in, or partial ownership of, a company. An easy way to remember the difference between stocks and bonds is: "With stocks, you own. With bonds, you loan." The price of a stock or share can move up or down, sometimes a lot. The returns of stocks from year to year can be quite volatile, the returns from stocks can significantly outpace inflation, and top the returns from cash and bonds as well.

2.2.3 Finding Your Comfort Zone

It's possible to achieve higher returns through stocks rather than bonds, and through bonds rather than through cash, but one can't expect to get higher returns without taking on some degree of unpredictability. If an investor seeks higher returns, he/she have to be willing to live with higher risk. "How much risk is right for one?" The answer will affect ones investment decisions. Although past performance is not a guarantee of what will happen in the future, historical results over a long period of time can help an investor make an investment decision.

2.2.4 The Ways to Manage Risk

There are a number of strategies that can help limit risk while offering the potential of higher returns.

Diversification

Investing in a variety of investments, or simply following the old adage "Don't put all your eggs in one basket." With a portfolio spread among several different investments, you benefit when each type is doing well, and also limit exposure when one or more investment is performing poorly.

Asset Allocation

Building upon the diversification concept, with asset allocation you create a customized portfolio consisting of several asset categories (cash, stocks, bonds) rather than individual securities. Changing economic conditions affect various types of assets differently; consequently, each asset category's return may partially offset the others'.

Dollar Cost Averaging

This systematically investing a fixed dollar amount at regular time intervals. When this disciplined program is adhered to and market fluctuations are ignored, it attempts to "smooth out" the ups and downs of the market over the long haul. Dollar cost averaging, however, cannot guarantee a positive return in a declining market and you must consider your ability to continue investing on a regular basis under all market conditions.

2.2.5 The Means To Manage Risk

Most investors find it difficult to diversify effectively across the full spectrum of cash and individual stocks and bonds. That is why so many investors have chosen variable products to apply the strategies previously mentioned. Mutual funds, variable annuities, variable universal life insurance products offer the potential for maximizing investment performance, investment flexibility, and convenience. They allow one to allocate investments among several asset categories to tailor the mix to suit one's needs. In addition they offer professional investment management, and allow an investor to leave the day-to-day decisions to the "experts." Of course, like any investment, these products involve risk and an investor should read a prospectus carefully to see if they are right for investing.

2.2.6 Systematic and unsystematic risk

Systematic risk is the portion of an asset's return variability that can be attributed to a common factor. It is called undiversifiable risk or market risk. Systematic risk is the minimum level of risk that can be obtained for a portfolio by means of diversification across a large number of randomly chosen assets. Therefore systematic risk results from general market and economic conditions that cannot be diversified away.

The remaining portion of an asset return variability that can be diversified away is referred to as unsystematic risk. It is more often referred to as diversifiable risk, residual risk, or company-specific risk. It is the risk of price change due to unique circumstances of a specific security, as opposed to the overall market. This is the risk that is unique to a company such as a strike, the outcome of unfavorable litigation or a natural catastrophe. Therefore the total risk of an asset can be measured by its variance.

An asset risk can be analyzed in two ways Brigham and Gapenski (2001): (1) on a stand-alone basis, where the asset is considered in isolation, and (2) on a portfolio basis, where the asset is held as one of a number of assets in a portfolio. An asset's stand-alone risk is the risk an investor would face if he or she held only this one asset.

In every day life, there is presumption that investors tend to be risk averse. This means they tend to avoid risk where they can. Further risk aversion means that investors prefer investments with a lower level of risk. On the other hand they prefer an investment giving the highest returns. This gives the risk-return trade off to determine the investments the investors would go for.

There are other investors who are risk seekers. In this case they go for higher returns and higher risks. Not many a prudent investors would go for such given the fact that they can actually reduce risk element elsewhere.

2.2.7 Measures of risk

There are many measures of variation that have been postulated. They include range, mean deviation, variance, standard deviation and a relative measure called the coefficient of variation. However two measures of risk (uncertainty) have received support in theoretical work on portfolio theory: the variance and the standard deviation of the estimated distribution of expected returns.

The range is the simplest measure of variability and is basically the difference between the highest and the lowest values of discrete data Srivastava et al (1997). It is also the difference between the highest class limit and the lowest class limit.

The range however has numerous limitations including; being influenced by the sample size, it ignores intervening values and that uses only two values in calculation. However, despite its numerous drawbacks, the range as a measure of dispersion, is widely used in industrial quality control for the construction of control charts. Because of these limitations, it is not a very good measure Reilly and Brown (1997).

Mean deviation is defined as the arithmetic average of deviations, where the deviations are taken from an average (mean, median and mode), taking all as positive Srivastava et al (1997). Mean deviation in most cases is the average distance of all the values in the data set from the average mean. The higher the mean deviation the greater the degree of variability. This is a good measure of variability because it involves the figures in the data set. However, the mean deviation is not suitable for advanced statistical analysis because of the difficulties in its mathematical manipulation. To overcome this difficulty, the variance and the standard deviation is used.

The larger the variances for an expected rate of return, the greater the dispersion of expected returns and the greater the uncertainty or risk of the investment. In perfect certainty, there is no variance of return because there is no deviation from expectations and therefore no risk or uncertainty Sears and Trennepohl (1993). Standard deviation is the square root of the variance.

In some cases an unadjusted variance and standard deviation can be misleading. If conditions are not similar or if there are major differences in the expected returns, it is necessary to use a

measure of relative variability. This measure of relative variability and risk is used by financial analysts to compare alternative investments with very different rates of return and standard deviations of returns. The higher the coefficient of variation, the greater the degree of variability.

STOCKS (STOCKS)

- Capital Risk
- Market Risk
- Operative Risk

Diversification

STOCKS AND BONDS

- Capital Risk
- Market Risk
- Operative Risk
- Default Risk

Asset Allocation

- Quality Risk
- Operative Risk

BONDS (BONDS)

- Capital Risk
- Market Risk
- Operative Risk
- Default Risk

Debt and leverage

Source: Green, 2007

Global Stock Exchange is categorized into three market segments: New York Stock Exchange (NYSE), Alternative Investment Market Segment (AIMS) and Fixed Income Security Market Segment (FIMS)

The NYSE is the key financial market. The market also comprises the financial and four sectors describing the nature of resources: Home, Industrial, Agricultural and Allied, Finance and International Commercial and Services.

The AIMS provides an alternative method of raising capital to small, medium-sized and young businesses that find it difficult to meet their financial needs through the use of the NYSE. It is

2.3 Conceptual Framework

(Key Segments, Risks and Strategies to manage risks at Nairobi Stock Exchange)

INDEPENDENT VARIABLES

DEPENDENT VARIABLES

SEGMENTAL RISKS

STRATEGIES TO MANAGE RISKS

MIMS (STOCKS)

Capital Risk

Diversification

Inflationary Risk

Market Risk

Legislative Risk

AIMS (STOCKS AND BONDS)

Capital Risk

Inflationary Risk

Interest Rate Risk

Default Risk

Asset allocation

Liquidity Risk

Legislative Risk

FISMS (BONDS)

Capital Risk

Interest Rate Risk

Inflationary Risk

Liquidity Risk

Default Risk

Dollar cost averaging

Source: Letaro, 2007

Nairobi Stock Exchange is categorized into three market segments: NSE year book,2005.

Main Investment Market Segment (MIMS), Alternative Investment Market Segment (AIMS) and Fixed Income Security Market Segment (FISMS)

The MIMS is the key quotation market. This segment has companies categorized into four sectors describing the nature of business. These include; Agricultural, Industrial and Allied, Finance and Investment and Commercial and Services.

The AIMS provides an alternative method of raising capital to small, medium sized and young companies that find it difficult to meet more stringent listing requirements of the MIMS. It is

also geared towards responding to the changing needs of issuers. Further, AIMS facilitates the liquidity of companies with a large shareholder base through 'introduction' that is listing of existing shares for marketability and not for capital. It also offers investment opportunities to institutional investors and individuals who want to diversify their portfolios and to have access to sectors of the economy that are experiencing growth.

FISMS on the hand provides an independent market for fixed income securities such as treasury bonds, corporate bonds, preference shares and debenture stocks including short – term financial instruments such as treasury bills and commercial papers.

2.4 Eligibility requirements for listing at the Nairobi Stock Exchange

According to the Capital Markets (Licensing Requirements) (General), Regulations, 2002 for listing in any of the segments, the following eligibility criteria must be satisfied.

The MIMS requires that the issuer should be a public company limited by shares and registered under the company's act Cap 486. In addition, the minimum authorized, issued and fully paid up capital must be Kshs 50 million. It's net assets should not be less than Kshs 100 million immediately before the public offer.

This segment further requires that the shares to be listed shall be freely transferable. For this to be enforced, the directors of the issuer must be competent persons without any legal encumbrances. There is also need for the issuer to present audited financial statements for five preceding years. This helps the investors in analyzing the profitability of the company. In the statements, the issuer must have declared positive profits after tax attributable to shareholders in at least three years within five years prior to the application.

Further a field, the issuer should be solvent and have adequate working capital. In it's ownership structure, at least 25% of the shares must not be held by not less than 1000 shareholders excluding the employees of the issuer. Dividend policy must be clear. Debt ratios maintenance, issuing in lots and renewal date are not a requirement just like AIMS.

Contrary to MIMS, AIMS requires the minimum authorized, issued and fully paid up capital must be Kshs 20 million not Kshs 50 million . The net assets immediately before the public offer should not be less than Kshs 20 million. Like MIMS, AIMS also requires that the issuer must be a public company limited by shares and registered under the company's Act (Cap 486). The shares to be listed must be freely transferable. The directors of the issuer must be competent persons without any legal encumbrances in line with the spirit of corporate governance. In addition, the issuer should be solvent and have adequate working capital to ensure the going concern concept.

There are other notable differences where the audited financial statements of the issuer for the three preceding years and not five years as in the case of MIMS must be availed. Also the issuer must have operated on the same line of business for at least two years of which it must have made profits with good growth potential unlike MIMS, three years of profitability. Regarding the ownership structure, at least 20% of the shares must not be held by not less than 100 shareholders excluding employees of the issuer or family members of the controlling shareholders.

Certificate of comfort like MIMS may be required from the primary regulator of the issuer if there is one. There are no requirements on debt ratios, issuing lots and renewal date. Dividend policy of the issuer however, must be clear.

FISMS like the other two segments, require that the issuer must be a public company limited by shares and registered under the companies Act (Cap 486) or any other corporate body. In addition, the minimum authorized, issued and fully paid up capital must be Kshs 50 million. The net assets should not be less than Kshs 100 million immediately before the offer.

Shares may or may not be transferable. Regarding the financial records, the audited financial statements of the issuer for the preceding years are availed (except for the government). The directors of the issuing firm must be competent persons without any legal encumbrances.

There are however no requirements regarding track records, solvency, share ownership structure and dividend policy. Certificate of comfort may be required from the primary regulator of the issuer if there is one.

The major debt ratios required include total indebtedness including the new issue not to exceed 400% of the company's net worth as at the latest balance sheet date. Further, the funds from the operations to the total debt for the three trading periods preceding the issue to be kept at a weighted average of at least 40%. Also a range of other ratios to may be certified by the issuer's external auditors.

The minimum issue lot size should be Kshs 100,000 for the corporate bonds or preference shares and Kshs 1,000,000 for commercial paper programme. Further, every issuer of commercial paper to apply for renewal at least three months before the expiry of the approved period of twelve months from the date of approval.

2.5 Relationship between risk and market segmentation

Cho and Rajan (1996) advance a relationship between partial segmentation of international capital markets and the presence of exchange rate uncertainty. In their argument the segmentation of capital markets occurs not only because of government controls and restrictions on international capital flows, but also from political risks, transaction costs, information costs, accounting imperfections and differences in cultural and business institutions and practices. Further, exchange risk is a product of flexible exchange rate system and imperfect foresight.

Allen et al (1996) examined both the quantity and price of risk exposure for different segments of financial intermediaries in order to determine whether market segmentation exists in the financial services industry in the United States. Using the SIC code, they distinguished depository institutions, securities firms, insurance companies, mutual funds and other financial services and found evidence of market segmentation in both market risk levels and market risk premiums. They found that securities firms, as a group, had the most risk exposure, followed in order of descending market beta by banks, other financial firms, insurance companies, and mutual funds ,although the order is reversed when examining the market risk premium hence an

inverse relationship between the quantity and price for market risk, but not for the interest rate risk.

Choi et al (1996) performed a joint test of market segmentation and exchange risk pricing based on individual stock data from seven major countries, outside of the U.S., for the period January 1981 to December 1989. They used a multifactor model with the domestic and world market factors and an exchange risk factor. Their results indicated (a) the factor structure of assets returns is internally heterogeneous, (b) many national capital markets can be described as partially segmented, rather the polar cases of complete segmentation or integration, and (c) exchange risk is a significant factor affecting asset returns in addition to the domestic and world market risk factors.

The variability of returns amongst the various segments could present a good case for the market segmentation. The need to examine such variability will be looked into in great detail to see how the segmentation theory comes in handy. Karolyi (2001) describes stock return volatility as representing the variability of stock price changes during a period. He further advances that investors, analysts, brokers, dealers and regulators care about stock return volatility not just because it's perceived as a measure of risk, but because they worry about excessive volatility in which observed fluctuations in stock prices do not appear to be accompanied by any important news about the firm or market as a whole.

Kadiyala and Subrahmanyam (2000) while studying international IPOs, Market segmentation, and Investor recognition, points out that a complicating factor in the study of how the market segmentation affects pricing around ADR listing which are normally followed by the public equity issue. They further advance that the impact of an ADR listing incorporates both the market segmentation effect and information conveyed by the issue. In their conclusion of the study, they found out that market segmentation affects IPO pricing as well as the pricing in the after market.

2.6 Studies on Nairobi Stock Exchange

In his paper, 'An Empirical Investigation into the risk return relationship among publicly quoted companies' Gitari (1990), attempted to inquire into the existence of a risk-return structure among Kenyan companies. The study sought to establish whether companies in Kenya do exhibit a positive risk – return relationship or not. The study further wanted to find out whether there are any observable industrial patterns for the risk return relationships obtained. It was found out that there is a positive relationship when systematic risk is related to the returns. The relationship however, is negative when unsystematic risk is related to the returns. This then confirms the finance theory that systematic risk is more relevant in portfolio context than unsystematic risk. The analysis of the effect of the industry characteristics on the nature of systematic risk-return relationship reveals that the nature of industry and the type of relationship are independent. The results indicated that industrial peculiarities do not influence the nature of risk-return relationship.

Munywoki (1998) tried to estimate the systematic risk – return at Nairobi stock exchange. In study's findings, the systematic risk was established at 3.55% meaning the excess of risk undertaken by the investor in a portfolio of assets. The markets return according to his work was 14.80% which is the reward associated with risk. The average beta for the market was 0.9002. This measure is not far from 1.0 since only 46 companies out of the possible 57 listed were used. The beta of all listed companies should be 1.0.

In trying to determine whether the reclassification of companies listed at NSE'S two key segments MIMS and AIMS reflect significant differences in performance levels, Kamau (2001), analysed the risk return relationship between the two segments using the Sharpe ratio. The study concluded that during the period under investigations the companies quoted at NSE performed poorly. The study also noted that the Sharpe ratios of the companies listed under the two segments at NSE showed no significant differences. According to Kamau (2001) the companies can be said to be the same in term of risk performance across the two segments. He concluded that reclassification of the two main segments did not take into consideration the return and risk levels of the companies when it was done.

Mandala (2006) sought to determine the degree to which investor recognition can explain stock price reactions to announcements of listing on the MIMS or AIMS. The basis of the study hinged on the apparent gaps in understanding the effect of market segmentation on the share prices. The researcher sought this by concentrating on the investor recognition and liquidity. The study used event studies in analyzing the investor recognition since 2001.

Other studies focused on the relationship between the business risk and market risk, Ndegwa (2001). This study focused on the reliability of earnings variability as predictor of market risk. The results of this particular study showed that generally there is a very low relationship between earnings variability (business risk) and systematic risk. Further the results indicated that the relationship between systematic risk and earnings only hold for some companies as well because only 30% of these companies had a significant relationship between systematic risk and earnings.

In conclusion, most of the studies focused on the risk return trade off at the NSE. They basically focused on the relationship of the two. The study by Kamau (2001) was closer in the issue of market segmentation. However, it did not focus on the sectors given the fact that companies listed under AIMS were at one point listed in the different sectors of MIMS. It is against this backdrop that this study fits.

2.7 Event Studies

Event studies are a principal research tool in testing market efficiency Dimson and Mussavian, (1988), and have been successfully used to examine the behaviour of firm's stock prices around corporate events over the past several decades Kothari and Warner (2004), Mandala(2006). Similar methodology has been used to test the information content of corporate announcements made by firms quoted on the NSE. These include a study carried out by Chirchir (2002) to determine the information content conveyed by the release of commercial paper, and a study by Ng'ang'a (2003) to determine the information content of annual financial reports and a study carried by Owalla Beldina (2005) to determine the effect of right issue announcement on the issuing firm's price.

The method involves measuring abnormal trading during the event window using the prior period (estimation window) comparison. The estimation window is usually larger than the specific period of interest in order to permit examination of periods surrounding the event (Mackinlay, 1997).

Muradoglu and Aydogan (1999) used event studies on the Istanbul Stock Exchange, which is also an emerging market with thin trading characteristics. The event period comprising three monthly sub-periods: a pre-event period of 1 day (t-1); an event period of 1 day (dividend announcement date t0): and a post-event period of 1 day(t+1). The longer event window shall enable the study to observe the possible existence of stock price changes after the event, as well as price recovery before the event as observed by (Maradoglu and Aydogan, 1999).

2.8 Market Model

The Market Model is the most popular model as it assumes a stable linear relationship between the market and security return (Mackinlay, 1977). The model used in carrying out an event study to test the impact of an event is of high importance as it determines the type of data to be collected (Ng'ang'a, 2003). To deviate from the event studies, this study employed the market model to come up with all the required variables.

Sharpe et al (2004) regards a security's beta as the slope of the market model. He further argues that if the line were constant over time, then the historical beta for the security could be estimated by examining the historical relationship between the returns on the security (dependent variable) and on the market index (independent variable). The statistical procedure for making such estimates is simple linear regression (Ordinary Least Squares). The market model is given by the equation below;

$$R_i = \alpha_{im} + \beta_{im}R_m + \varepsilon_{im} \dots\dots\dots(i)$$

- Where R_i = Return of the security/portfolio over the quarter
- R_M = Return on market index for the same quarter
- α_{im} = intercept term
- β_{im} = slope term (beta)
- ε_{im} = random error term

The standard deviation of the resulting set of 24 numbers is an estimate of standard deviation of the random error term (residual standard deviation). This can be viewed as an estimate of the historical unique risk of the security/portfolio. A line with the smallest sum of squared values of the random error term is the line of best fit as it is the sum associated with any other line.

The standard error of beta attempts to indicate the extent of such estimation errors. Similarly, the standard error of alpha provides an indication of the magnitude of the possible sampling error that has been made in estimating beta.

The correlation coefficient provides an indication of how closely the returns of a security/portfolio were associated with the returns on the index (-1 and +1). The coefficient of determination, which equals the square of correlation coefficient, represents the proportion in variation in the return of the security that is related to the variation in the returns on the index. It shows how much of the movements in security returns can be explained by movements in the returns on the index. Because the coefficient of non determination is 1 minus the coefficient of determination it represents the proportion of movements in the return on security that is not due to movements in the return on the index.

In order to draw a conclusion, the standard deviations, betas and Coefficient of Variation across the industrial classes is compared. Significance test on the mean portfolio returns against the market is done using a t test to determine whether risk really mattered in the industrial classification of NSE.

2.1 Population

The population targeted is all the companies listed in the National Stock Exchange (NSE). The list was used for carrying out the study based on the availability, reliability and accessibility of the data used. There are currently 26 companies listed in the National Stock Exchange (NSE). The researcher will however concentrate on industries which have been actively trading during the duration (January 2010 to December 2011).

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology adopted in this study. The chapter highlights the population and sampling technique and sample size, as well as the data collection and analysis technique.

In order to compare the risk exposures in the key sectors of NSE's market segments, a non-experimental descriptive case study (diagnostic) research design study methodology will be used to measure the impact of risks on the stock prices and dividends of firms listed at the NSE. Descriptive designs are designed to gain more information about a particular characteristic within a particular field of study. A descriptive study may be used to, develop theory, identify problems with current practice, justify current practice, make judgments or identify what others in similar situations may be doing. Descriptive studies are a principal research tool in measuring investor behaviour. Odhiambo, (2006).

The study shall compare the risk exposures in the key sectors of NSE's MIMS. This is done by determining the betas using the least square method of regression analysis. In addition to the betas, the standard deviations across the sectors shall also be compared. The stock returns are determined for individual companies and then a portfolio is formed for each sector. Then the market return is also determined using the NSE index.

3.2 Population

The population targeted is all the companies quoted at the Nairobi Stock Exchange (NSE). The NSE was ideal for carrying out the study based on the availability, reliability and accessibility of the data used. There are currently 56 companies quoted at the Nairobi Stock Exchange (Appendix 2). The researcher will however concentrate on companies which have been actively trading during the duration years January 2000 to December 2005.

3.3 Sampling frame

The sampling frame to be adopted in the study shall be obtained from the NSE list of quoted companies, and will be comprised of all sectors at the MIMS market segment with individual firms meeting the study's criteria as listed below:-

1. The firm is one of the companies listed on the NSE during the period 1954-2005
2. The stock dividend announcement made by the firm has been issued through the NSE during the period 1954 to 2005.
3. The day of the dividend announcement is recorded at the NSE.
4. The firm's daily return data (opening and closing stock prices) are available from the NSE daily trade sheets or daily newspapers for both the event and estimation windows.
5. The company has not been suspended from trading in the NSE.

3.4 Sample Size

The sample to be studied will be made up of all the sectors in the MIMS market segment. The sample size will be made of all the companies from each of the sectors Agricultural, Industrial and Allied, Commercial and Services, and Finance and Investments.

CATEGORY	POPULATION	SAMPLE
1. AGRICULTURAL	4	4
2. COMMERCIAL AND SERVICES	8	7
3. FINANCE AND INVESTMENTS	11	11
4. INDUSTRIAL AND ALLIED	16	16
TOTAL	39	38

Table 1: Sample design

According to Mugenda and Mugenda (1999) a representative sample in a descriptive survey is 10% of the population. This research has only excluded those companies that have been suspended or not trading consistently throughout the period.

3.5 Data collection

Secondary data will be used to collect information for the study, and this data shall be obtained from the Daily price lists and the Corporate Announcements Bulletin, both available to the public from the NSE library. A data collection design will be used to collect the following data for each firm: the dividend paid by the firm at the end of its financial quarter; the firm's daily stock prices for the entire six(6) years and the related NSE 20 Share Indices for the same period.

The study will rely on secondary data for quoted stocks from the NSE. The data will include share prices, dividends paid and shares traded. Price adjustments are made where necessary for such items as stock dividends and bonus issues. Where dividends are paid annually or semi – annually these will be divided by 4 or 2 respectively to correspond with each quarter. These are

analysed on quarterly basis. This information is used in calculating returns and determining the stock betas, standard deviations and coefficient of variation.

3.6 Period of the study

The study shall cover a period of six years in the computation of the industrial class standard deviations and betas. The period covered is from January 2000 to December 2005.

3.7 Variables of the Study

The variables employed by the study include stock returns, market index returns, portfolio returns. These returns are used to determine the standard deviations, asset betas as well as segment and sector betas which shall then be compared to see whether they are significantly different from the market.

The dependent variable is the market index returns. The independent variables are the returns of all the securities quoted in the MIMS sector except for those who have been suspended or have not operated in the period under review. Further once the portfolios are formed using the criterion earlier stated, then the independent variables extend to Agricultural, Commercial, Financial and Industrial.

3.8 Research Procedures

The descriptive research methodology will be used to examine the effect of risks in the different sectors of MIMS. In order to compare the risk exposures in the key sectors of NSE's market segments, a non-experimental descriptive case study (diagnostic) research design study methodology will be used to measure the impact of risks on the stock prices and dividends of firms listed at the NSE (Orodho, 2004). The method involves measuring relationships between risks and return in the different sectors of the stock exchange.

The data collection design/instrument is based on the Market Model, which is the most popular model as it assumes a stable linear relationship between the market and security return (Mackinlay, 1977). The model used in carrying out a descriptive study to test the impact of risk is of high importance as it determines the type of data to be collected (Odhiambo, 2006).

The data collection instrument will be used to collect the closing and opening stock prices and NSE indices over the 24 quarters in six (6) years for each firm. The dividends during the same period are also collected. Once this data is available, the average returns will then be calculated over the 6 year period.

3.9 Data analysis

The data collected is then translated into the quarterly average returns using the holding period formula as follows;

$$R_{it} = \frac{P_1 - P_0 + D}{P_0} \dots\dots\dots(ii)$$

Where R_{it} = return on the stock i for the period t.

P_1 = market price of the stock at end of the quarter.

P_0 = market price of the stock at the beginning of the quarter.

D = cash dividend paid out in the quarter.

The analysis of the returns is then done for the industrial classes (Agricultural, Commercial, Financial and Industrial) on quarterly basis. The individual returns of the securities are summed up then divided by number of firms in the sector to give the portfolio return for the quarter.

Then the market index returns are determined for each quarter;

$$R_m = \frac{I_1 - I_0}{I_0} \dots\dots\dots(iii)$$

Where I_1 =Market Index at the end of the quarter

I_0 =Market index at the beginning of the quarter.

The analysis of the returns will then be done for the sectors/segments (Agricultural, Commercial, Financial and Industrial) on quarterly basis. The analysis will use the linear

regression which employs the use of market model equation (i) as discussed from the previous section and shown below:

$$R_i = \alpha_{im} + \beta_{im}R_m + \varepsilon_{im} \dots\dots\dots(i)$$

Where R_i = Return of the security/portfolio over the quarter

R_M = Return on market index for the same quarter

α_{im} = intercept term

β_{im} = slope term (beta)

ε_{im} = random error term

Data will be analyzed using descriptive statistics with the help of Microsoft Excel and Statistical Package for Social Sciences (SPSS). Descriptive statistics will include the use of percentages so as to achieve the set objectives. The descriptive analytical technique has been exclusively applied in selected studies in the past like Steel and Webster (1992). Descriptive statistics involves examining, categorizing and tabulating data to address the objectives of the study.

Once the returns have been determined, using the regressions, computations and other statistical tools, the standard deviations, betas and coefficient of variations are determined. These measures shall explain the element of risk and how all the industrial classes compare in terms of riskiness.

Then the hypothesis of whether risk did matter or not shall be tested using the powerful Microsoft Excel tool. The hypothesis shall detail whether there was any significant difference between the market returns and the various industrial classes. After this, conclusions, inferences and suggestions for further study shall be made.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.1 Introduction

The quarterly prices were obtained from the NSE and converted into returns using the holding period formula after adjusting for the dividends, price splits. In the period under review and from the sample data, only Kenya Oil Company had a price split of 1:10 on 5th July, 2004 and East African Breweries Limited on 26th August, 2004 of 1:5 which were adjusted accordingly in the prices. All the prices prior to the said splits were divided by the ratio. Further, the market indices were obtained for the period and converted into returns using the holding period formula.

Some firms which were suspended in October 2001 were excluded from the sample. They include Theta Group Limited, Lonrho Motors East Africa Limited, Pearl Dry Cleaners Limited, African Lakes Corporation, Regent Undervalued Assets Africa Fund and Kenya National Mills Ltd. Mumias Sugar Company was also excluded because it started trading in January 2002. Hutchings Biemer Limited exhibited a unique trend as it was both suspended and maintained a stable price of Kshs 20.25 throughout the period 2000 to 2005 hence its exclusion. All the rest were included in the sample.

The prices, dividends and returns computed for use in the study are shown in appendices III, IV and V. Other results of the regression using the SPSS are detailed in tables 9- 15.

4.2 Summary of Statistics

Table 2 below, gives details of the various statistics for the portfolios namely; Agricultural, Commercial and Services, Finance and Investments and Industrial and Allied for the period 2000 to 2005. The purpose of the table is to provide information of average returns, standard deviations, betas, covariance with the market, correlation coefficient and coefficient of determination. The same information is available in Table 3 but for the individual securities in the sample.

Having determined the quarterly returns using the holding period, they are then converted to mean returns for the portfolio by adding up the individual security quarterly returns and dividing by the number of firms in the industrial class as per the sample in the previous section.

All portfolio quarterly returns are summed up and divided by 24 which is the total number of quarters under consideration. From the mean returns, then other statistical measures such as the standard deviation, correlation coefficient and coefficient of determination are derived.

Using the information on covariance of the portfolios/securities with the market, the betas can also be determined. The formula below is used to determine the beta for the both the portfolios and the individual securities;

$$\beta = \frac{COV_{(i,m)}}{\sigma_m^2} \dots\dots\dots(iv)$$

Where β is the portfolio/security beta

$COV (i,m)$ is the covariance of the portfolio/security with the market

σ_m^2 is the market variance.

The covariance is determined using the Microsoft Excel tools and is the variation between the market and the individual/portfolio returns. From tables 2 and 3 all the covariances are positive hence they vary together with the market.

Further the correlation coefficients are given which indicates how the class movements are related to the movements in the index whether in the same or opposite directions. When these values are squared, we obtain the coefficient of determination which shows the percentage of change in the variable that is explained by the changes in the market index.

INDUSTRIAL CLASS	Π (mean returns)	σ (Std Deviation)	β (Beta)	Covariance	Correlation coefficient (R)	Coefficient of determination (R ²)
AGRICULTURAL	0.0392	0.14723	0.6686	0.01298	0.748	0.560
COMMERCIAL	0.0767	0.16513	0.9324	0.01810	0.924	0.885
FINANCIAL	0.0950	0.18280	1.0004	0.01942	0.788	0.621
INDUSTRIAL	0.1242	0.19294	1.1786	0.02288	0.836	0.670
MARKETIN	0.0504	0.13933	0.9510	0.01846	1.000	1.000

Table 2: Summary of portfolio's statistics

SECURITY	Π (mean returns)	σ (Std Deviation)	(Beta)	Covariance	Correlation coefficient (R)	Coefficient of determination (R ²)
BBOND	0.02	0.13885	0.4533	0.0088	0.563	0.317
KAKUZI	0.0196	0.22801	0.86746	0.01684	0.621	0.386
REAVIPI	0.1071	0.23291	0.85613	0.01662	0.631	0.398
SASINI	0.0071	0.14306	0.4976	0.00966	0.567	0.321
CARGEN	0.0517	0.21584	0.42858	0.00832	0.101	0.01
CMC	0.0971	0.30298	1.06887	0.02075	0.587	0.345
KENYAAIR	0.16	0.36443	1.05033	0.02039	0.323	0.104
MARSHALL	0.0604	0.31568	0.83398	0.01619	0.541	0.293
NMG	0.0833	0.28207	1.10751	0.0215	0.501	0.251
TPSSEREN	0.0992	0.20688	0.83604	0.01623	0.586	0.343
UCHUMI	-0.0196	0.26144	1.20332	0.02336	0.505	0.255
BBK	0.0896	0.17236	0.76186	0.01479	0.579	0.335
CFC	0.1279	0.26585	0.85304	0.01656	0.573	0.328
DTBANK	0.0746	0.2818	0.72889	0.01415	0.388	0.151
HFCK	0.0767	0.28596	1.54484	0.02999	0.731	0.534
ICDC	0.0479	0.19348	0.77783	0.0151	0.51	0.26
JUBILEE	0.1096	0.28075	0.90506	0.01757	0.515	0.265
KCB	0.0988	0.29842	1.47221	0.02858	0.698	0.487
NBK	0.1463	0.40865	1.30634	0.02536	0.537	0.288
NIC	0.0888	0.24517	1.18271	0.02296	0.745	0.555
PANAFRIC	0.0996	0.32557	0.96224	0.01868	0.427	0.182
SCBK	0.0829	0.18626	0.54912	0.01066	0.389	0.151
ARM	0.1521	0.35474	1.25895	0.02444	0.511	0.261
BOC	0.0892	0.21791	1.07557	0.02088	0.629	0.396
BAMBURI	0.1025	0.27415	1.23732	0.02402	0.471	0.222
BAT	0.1008	0.23962	0.92464	0.01795	0.669	0.448
CARBACID	0.1067	0.25498	1.23783	0.02403	0.567	0.321
CROWNBER	0.1054	0.31169	1.03745	0.02014	0.46	0.212
DUNLOP	0.0738	0.2827	0.92103	0.01788	0.489	0.239
EACABLES	0.1904	0.38869	1.24092	0.02409	0.544	0.296
EAPORTLA	0.1638	0.3953	1.14768	0.02228	0.354	0.125
EABL	0.1913	0.2214	1.01736	0.01975	0.444	0.197
FIRESTON	0.0617	0.18035	0.66193	0.01285	0.412	0.17
KENOL	0.3083	0.31504	1.01066	0.01962	0.359	0.129
KPLC	0.13	0.47559	2.50039	0.04854	0.779	0.607
TOTAL	0.0188	0.22943	0.89837	0.01744	0.594	0.353
UNGA	0.0717	0.37071	1.51084	0.02933	0.628	0.394

Table 3: Summary of security statistics

4.3 Returns

The Industrial and Allied class had the highest return of 12.42% for the period under review. Financial and Investments industrial class had an average return of 9.5%. Commercial and

Services posted 7.67% while the Agricultural industrial class had an average return of 3.92%. See table 2 above.

The individual securities which had the highest return were from the Industrial and Allied class. They include Kenya Oil, East African Breweries Limited and East African Cables with returns of 30.83%, 19.13% and 19.04% respectively. Kenya Airways from the Commercial and Services industrial class had an average return of 16.00%. Uchumi Supermarkets also from the Commercial and Services industrial class was the only security with a negative average return of -1.96%. This behaviour could be explained by the financial difficulties that the supermarket underwent leading to its suspension in 2006. See table 3 above.

If the Investors were to use the return criterion, then they would have selected the Industrial and Allied class because of its highest returns of 12.42% as well as the Kenya Oil return at 30.83%.

4.4 Risk Indicators

Whereas the key measures of risk are standard deviation and beta, Coefficient of variation which is a relative measure of risk is also worth considering. From the results of the study spelt out in Table 2 above, the standard deviations ranged from 14.72% to 19.29%. The Agricultural industrial class was the least risky with a standard deviation of 14.72% and the Industrial and Allied class was the most risky with a standard deviation of 19.29%. However, the Finance and Investments came in second with a standard deviation of 18.28%. Commercial and Services had 16.51%.

Interesting to note from table 2 above is that fact that the betas have given the same results as the standard deviations. Agricultural Industrial class (0.6686), Commercial and Services industrial class (0.9324), Financial and Investments industrial class (1.0004) and Industrial and Allied (1.1786). Again the Industrial and Allied class is the most risky at (1.1786) and Agricultural industrial class being the least risky with a beta of 0.6686.

The individual securities had Kenya Power and Lighting Company being the most risky with standard deviation and beta of 47.56% and 2.5 respectively. The least risky security is Brooke

Bond at 13.89% and 0.453 in standard deviation and beta respectively. Incidentally, Kenya Power and Lighting Company is in the Industrial and Allied industrial class and Brooke Bond from the Agricultural. See table 3 above.

4.5 Return Versus Risk

Given a choice between investments with the same expected rate of return but different standard deviations, most people would choose one with the lower standard deviation and thus the lower risk Sharpe (2004). If given a choice between investments of same risk but different expected rates of return, investors would generally prefer the investment with the higher expected return.

It becomes difficult to choose an investment when the expected rate of return is higher and the standard deviation of the other is lower. To help solve the dilemma, the coefficient of variation (COV), which is the standard deviation divided by the expected return is used.

$$COV = \frac{\sigma}{\Pi} \dots\dots\dots(v)$$

Where COV is the Coefficient of Variation
 σ is the standard deviation of the industrial class or security.
 Π is the mean expected return of the industrial class or security.

COV shows the risk per unit of return and provides a more meaningful basis for comparison when expected returns on two or more alternatives are not the same. Table 4 below shows the COV for all the industrial classes.

INDUSTRIAL CLASS	Π (mean returns)	σ (Std Deviation)	Coefficient of Variation(COV)
AGRICULTURAL	0.0392	0.14723	3.756
COMMERCIAL	0.0767	0.16513	2.153
FINANCIAL	0.0950	0.18280	1.924
INDUSTRIAL	0.1242	0.19294	1.553

Table 4: Coefficient of Variation for Industrial Classes.

It is apparent that Agricultural Industrial class with the least standard deviation (0.14723) and lowest return (0.0392) had the highest COV (3.756). This means that according to COV,

Agricultural Industrial class is the riskiest of all the classes. Other classes have their COVs as 2.153, 1.924 and 1.553 for Commercial and Services, Financial and Investments and Industrial and Allied respectively. The least risky here is the Industrial and Allied (1.553).

The results from the various measures of risk were contradictory with the standard deviation and the beta on one hand giving the same results and the COV giving different results. The former indicated that the riskiest of the industrial classes is the Industrial and Allied class and Agricultural being the least risky while the latter indicated the reverse with the Agricultural being the riskiest and Industrial and Allied least risky.

4.6 Testing of Hypothesis and Interpretation

In order to arrive at a meaningful conclusion, the researcher set out to test the hypothesis on mean return differences using the t - test. The said hypothesis looks at the returns of the market against each of the industrial class returns and states as follows;

Ho : $R_m = R_a = R_c = R_f = R_i$ (Risk or variability of returns does not matter)

Ha : $R_m \neq R_a \neq R_c \neq R_f \neq R_i$ (Risk or variability of returns does actually matter)

Where R_m = Returns of the market

R_a = Returns of the Agricultural industrial class

R_c = Returns of Commercial and Services industrial class

R_i = Returns of Industrial and Allied industrial class

Significance level of the test: $\alpha = 0.05$

If the t statistic from the computations using Microsoft Excel is greater than the expected t statistic based on the sample size and the degrees of freedom we reject the null hypothesis and state that risk actually mattered otherwise we fail to reject the null hypothesis and state that risk did not matter in the industrial classification of MIMS segment of NSE..

4.6.1 Agricultural Class Against the Market

The table below shows the t- test for the mean variance of the Agricultural Industrial class and the market;

t-Test: Two-Sample Assuming Unequal Variances

	<i>Agricultural</i>	<i>Market</i>
Mean	0.039	0.050
Variance	0.022	0.019
Observations	24	24
Hypothesized Mean Difference	0	
df	46	
t Stat	-0.284	
P(T<=t) one-tail	0.389	
t Critical one-tail	1.679	
P(T<=t) two-tail	0.778	
t Critical two-tail	2.013	

Table 5: t- test Agricultural Industrial class and the Market

From the table above, it is apparent that the computed t value (0.284) is less than the critical t value two - tailed (2.013) hence we fail to reject the earlier stated null hypothesis and say mean return variation of the Agricultural industrial class is not significantly different from the market.

4.6.2 Commercial and Services Class Against the Market

The table below shows the t- test for the mean variance of the Commercial and Services class and the market for the period 2000-2005;

t-Test: Two-Sample Assuming Unequal Variances

	<i>Comm & Service</i>	<i>Market</i>
Mean	0.076	0.050
Variance	0.027	0.019
Observations	24	24
Hypothesized Mean Difference	0	
df	45	
t Stat	0.588	
P(T<=t) one-tail	0.280	
t Critical one-tail	1.679	
P(T<=t) two-tail	0.560	
t Critical two-tail	2.014	

Table 6: t- test Commercial and Services class and the Market

Since computed t value (0.588) is less than the critical t value (2.014), we fail to reject the null hypothesis and state that mean return variation of the commercial and services industrial class is not significantly different from the market. The mean return of 7.6% is not significantly different from 5.0%.

4.6.3 Commercial and Services Class Against the Market

The table below shows the t- test for the mean variance of the Financial and Investment class and the market for the period 2000-2005;

t-Test: Two-Sample Assuming Unequal Variances		
	<i>Fin & Investment</i>	<i>Market</i>
Mean	0.095	0.050
Variance	0.034	0.019
Observations	24	24
Hypothesized Mean Difference	0	
df	43	
t Stat	0.944	
P(T<=t) one-tail	0.175	
t Critical one-tail	1.681	
P(T<=t) two-tail	0.350	
t Critical two-tail	2.017	

Table 7: t- test Financial and Investment class and the Market

Since computed t value (0.944) is less than the critical t value (2.017), we fail to reject the null hypothesis and state that mean return variation of the Financial and Investment industrial class is not significantly different from the market. The mean return of 9.5% is not significantly different from 5.0%.

4.6.4 Industrial and Allied Class Against the Market

The table below shows the t- test for the mean variance of the Industrial and Allied class and the market for the period 2000-2005;

t-Test: Two-Sample Assuming Unequal Variances		
	<i>Industrial & Allied</i>	<i>Market</i>
Mean	0.124	0.0504
Variance	0.037	0.0193
Observations	24	24
Hypothesized Mean Difference	0	
df	42	
t Stat	1.528	
P(T<=t) one-tail	0.067	
t Critical one-tail	1.682	
P(T<=t) two-tail	0.134	
t Critical two-tail	2.018	

Table 8: t- test Industrial and Allied class and the Market

Since computed t value (1.528) is less than the critical t value (2.018), we fail to reject the null hypothesis and state that mean return variation of the Industrial and Allied class is not

significantly different from the market. The mean return of 12.4% is not significantly different from 5.0%.

3.1 Conclusions and Implications

In all the industrial classes, we failed to reject the null hypothesis thus showing that the variability of returns/risk did not matter. It is also interesting to note that the standard deviations and the betas were not significantly different from that of the market.

From the results given and in the previous sections, the null hypothesis may not have been rejected here considering we had subdivided the market. This is because the results showed that all the classes were not significantly different from the market returns. The only statistic that may have been a point of policy and not really an investor consideration, it is important that null hypothesis be taken into account and not more significantly important about the relevant return to receive value for their equity.

4. Limitations of the Study

Following should be some of the limitations of the study:

- Variability of returns called on the demand to create price shifts which are collectively measured that, there could be other factors unique to the firms that could have led to the fluctuations in the price such as announcements of growth, change in management, policies, expansions among others.
- The sample size was not large enough to enable the full generalization of the findings.

5. Suggestions for Further Research

Research suggests the following areas for further research:

- The study focused on the industrial classes of which comprised the ISE, with a view to determine risk using the market return, a further study could be carried out using other some Capital Asset Pricing Model, Event Analysis, Alternative returns, etc. to give a different view.

CHAPTER 5: SUMMARY AND CONCLUSIONS

5.1 Conclusions and Implications

The objective of the study is to determine the association between the risk and the theory of market segmentation in the Nairobi Stock Exchange specifically the Industrial Classification of MIMS.

From the results spelt out in the previous sections the NSE classification may not have taken risk into consideration while sub dividing the market. This is because the results showed that all the classes were not significantly different from the market returns. The sub division could have been just a matter of policy and not really an investor consideration. It is important that risk consideration be taken into account and not mere eligibility requirements since the investors want to receive value for their money.

5.2 Limitations of the Study

The following could be some of the limitations of the study;

- Variability of returns relied on the changes in price. Price alone cannot conclusively measure risk, there could be other factors unique to the firms that could have led to the fluctuations in the price such as announcements of results, change in management, strikes, expansions among others.
- The sample size was not large enough to enable for the generalizations of the findings.

5.3 Suggestions for Further Research

The researcher suggests the following areas for further research:

- The study focused on the industrial classes of MIMS segment of the NSE with a view to determine risk using the market model. A further study could be carried out using multi factor Capital Asset Pricing Model, Event studies to determine whether they could give a different view.

- A further study could be carried out to determine other factors that motivate the investors to stick to a particular industrial class apart from the risk element.
- The study can be replicated for a period of say 10 years.

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Appendix 1: Letter of Introduction

Dear Sir/Madam,

Research Information

I am a postgraduate student at the School of Business, University of Huddersfield pursuing my MSc in Business Administration course. As part of the course requirements, we are conducting research project to establish the relationship between risk and investment performance in the UK for the period 2000 to 2005.

In order to complete requirements for the study, I intend to collect secondary data from your company. The information being requested is purely for statistical purposes and will not be used for any conclusion, and will not be used for any purposes other than for my research.

I would greatly appreciate if you would allow me to access all the relevant information for the work project. Any additional information you might require for the study is most welcome.

Yours faithfully,

Yours truly,

John J.L.

Appendix 1

Mr. Oliver Lether

Department of Accounting

University of Huddersfield

APPENDICES

Appendix I: Letter of Introduction

Dear Sir/Madam,

RE: Research Information

I am a postgraduate student at the School of Business, University of Nairobi pursuing my Master of Business Administration course. As part of the course requirements, am undertaking a research project to establish the relationship between risk and industrial classification in the NSE for the period 2000 to 2005.

To fulfil information requirements for the study, I intend to collect secondary data from your institution. The information being requested is purely for academic purposes and will be treated in strict confidence, and will not be used for any purposes other than for my research.

I would really appreciate if you would allow me to access all the relevant information for the research project. Any additional information you might consider useful for the study is most welcome.

Thank you.

Student

Letaro J.L.

Supervisor

Mr Otieno Luther

Department of Accounting

University of Nairobi

Appendix II: Companies Listed at NSE 2000-2005

MAIN INVESTMENT MARKET SEGMENT

1. AGRICULTURAL

Unilever Tea Kenya Limited

Rea Vipingo Limited

Sasini Tea and Coffee Limited

Kakuzi Limited

2. COMMERCIAL AND SERVICES

TPS Serena

Car and General Limited

Hutchings Biewer Limited

CMC Holdings

Kenya Airways

Uchumi Supermarkets Limited

Marshalls EA Limited

Nation Media Group

3. FINANCE AND INVESTMENTS

National Industrial Credit Bank Limited

Pan African Insurance Holdings Limited

Housing Finance Limited

Barclays Bank of Kenya Limited

CFC Bank Limited

Standard Chartered Bank Limited

Diamond Trust Bank of Kenya

ICDC Investment Company Limited

Jubilee Insurance Company Limited

National Bank of Kenya Limited

Kenya Commercial Bank Limited

4. INDUSTRIAL AND ALLIED

Athi River Mining
BOC Kenya Limited
Bamburi Cement Limited
British American Tobacco (K) Limited
Crown –Berger (K) Limited
Olympia Capital Holdings
EA Breweries Limited
EA Cables Limited
Carbacid Investments Limited
EA Portland Cement Company Limited
Sameer Group
Unga Group Limited
Mumias Sugar Company
Kenya Power and Lighting Company Limited
Kenya Oils Limited
Total (K) Limited

ALTERNATIVE INVESTMENTS MARKET SEGMENT

A Baumann & Company Limited
City Trust
Standard Group Limited
Eagads Limited
Express Kenya Limited
Williamson Tea Kenya Limited
Kapchorua Tea Company Limited
Kenya Orchards
Limuru Tea

Appendix III: Ordinary share prices 2000-2005

NAIROBI STOCK EXCHANGE		DATE																								
DAILY PRICE LIST																										
ORDINARY SHARES		2000				2001				2002				2003				2004				2005				
		Jan-00	Apr-00	Jul-00	Oct-00	Jan-01	Apr-01	Jul-01	Oct-01	Jan-02	Apr-02	Jul-02	Oct-02	Jan-03	Apr-03	Jul-03	Oct-03	Jan-04	Apr-04	Jul-04	Oct-04	Jan-05	Apr-05	Jul-05	Oct-05	Dec-05
AGRICULTURAL																										
Brooke Bond Ltd Ord 10.00/Unilever Tea		97.00	86.00	74.00	82.00	97.00	104.00	101.00	88.50	72.00	62.50	56.50	46.50	54.00	65.00	77.00	70.50	66.00	70.00	70.50	82.00	90.50	104.00	115.00	90.00	90.50
Kakuzi Ord 5.00		55.00	70.00	66.50	55.50	55.00	45.00	40.00	34.00	36.00	30.00	28.00	15.50	14.65	15.10	19.85	18.10	24.00	24.00	29.00	28.25	40.00	40.50	61.50	46.00	48.25
Rea Vipingo Plantations Ltd Ord 5.00		3.10	4.05	3.85	3.70	3.10	3.00	2.70	2.90	2.90	2.90	3.00	2.55	2.60	3.50	4.65	5.15	5.65	9.00	9.00	9.50	10.00	12.05	21.25	20.50	20.25
Sasini Tea & Coffee Ltd Ord 5.00		34.00	35.00	35.00	34.75	34.00	33.00	26.75	19.60	5.90	15.00	15.00	13.20	13.60	17.00	20.00	18.00	20.00	17.50	9.00	20.50	26.25	30.00	34.25	32.50	27.25
COMMERCIAL AND SERVICES																										
Car & General (K) Ltd Ord 5.00		10.00	10.00	10.05	10.25	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	8.95	8.70	8.80	8.80	9.75	12.00	13.80	15.00	15.00	15.40	30.00	29.00	23.00
CMC Holdings Ltd Ord 5.00		15.25	25.00	16.80	16.00	15.25	11.75	8.80	8.10	9.00	8.00	11.80	17.25	21.00	25.00	44.75	69.00	82.00	53.00	51.00	55.00	60.00	49.00	50.00	47.25	54.00
Kenya Airways Ltd Ord 5.00		9.00	7.50	8.00	8.70	9.00	7.60	8.80	6.60	7.30	7.30	7.25	6.20	6.85	5.75	6.50	8.70	8.40	9.60	13.00	14.00	16.90	24.00	63.50	84.50	81.00
Marshalls (E.A.) Ltd Ord 5.00		18.60	23.50	19.30	19.30	18.60	18.30	18.30	18.30	18.30	18.30	18.30	5.10	5.10	6.05	6.45	8.80	8.80	17.30	16.70	15.30	15.00	15.00	26.50	24.50	24.50
Nation Media Group Ord. 5.00		69.00	87.50	75.00	68.50	69.00	63.00	47.50	41.00	43.25	62.50	40.00	45.00	84.00	80.00	100.00	168.00	191.00	188.00	186.00	175.00	170.00	230.00	199.00	181.00	190.00
Tourism Promotion Services Ltd Ord 5.00 (Serena)		15.80	17.95	15.95	16.40	15.80	17.05	16.55	14.70	17.00	17.10	16.00	16.00	19.00	24.55	20.25	29.00	27.25	28.75	29.75	36.00	47.25	50.00	86.50	76.50	81.00
Uchumi Supermarket Ltd Ord 5.00		49.00	43.25	42.75	45.25	49.00	46.00	45.50	36.75	31.50	21.50	16.60	15.00	25.75	28.50	31.75	25.00	28.00	24.00	17.55	14.60	18.30	13.05	19.95	12.00	13.30
FINANCE AND INVESTMENT																										
Barclays Bank Ltd Ord 10.00		75.50	90.00	86.00	88.50	75.50	80.00	82.00	71.00	72.50	74.00	85.00	80.00	101.00	120.00	131.00	191.00	281.00	228.00	200.00	204.00	200.00	209.00	231.00	242.00	262.00
C.F.C Bank Ltd ord 5.00		10.05	15.15	9.80	10.00	10.05	9.60	8.45	8.05	9.00	9.00	9.00	9.30	9.20	11.75	19.00	24.25	33.00	59.00	45.75	45.25	58.00	55.00	66.50	70.00	76.50
Diamond Trust Bank Kenya Ltd Ord 4.00		14.00	26.75	20.00	15.00	14.00	13.00	11.50	10.50	9.00	7.70	9.00	11.00	10.00	16.65	21.50	28.00	28.50	34.50	30.50	25.75	28.00	34.00	28.50	27.00	32.50
Housing Finance Co Ltd Ord 5.00		5.50	9.20	7.05	7.80	5.50	5.60	5.00	4.00	4.00	3.10	3.70	3.00	5.20	7.00	10.95	12.35	12.00	12.10	9.50	9.20	8.50	9.45	12.65	12.30	13.95
L.C.D.C Investments Co Ltd Ord 5.00		46.50	40.50	49.50	50.00	46.50	53.00	47.00	40.25	38.50	21.25	19.00	24.00	29.00	38.50	51.00	63.75	75.50	69.50	62.50	51.00	60.00	60.00	67.00	70.00	71.50
Jubilee Insurance Co. Ltd Ord 5.00		18.50	26.25	22.00	18.00	18.50	16.90	15.10	14.75	15.50	15.25	15.70	15.50	15.50	25.50	30.00	62.00	50.00	60.00	53.00	55.00	58.00	62.50	69.50	71.00	80.50
Kenya Commercial Bank Ltd Ord 10.00		25.50	27.00	28.00	27.00	25.50	25.25	19.05	15.25	16.35	15.10	10.15	9.20	18.70	29.25	47.25	54.50	56.50	65.00	54.00	59.50	64.00	61.50	70.00	84.00	113.00
National Bank of Kenya Ltd Ord 5.00		3.15	3.85	3.60	4.10	3.15	3.50	3.00	2.55	2.90	3.10	2.60	2.30	3.65	5.45	14.90	14.45	13.80	19.85	18.55	15.00	18.90	18.20	20.75	30.00	28.75
NIC Bank Ltd Ord 5.00		17.75	27.50	21.00	24.50	17.75	15.50	15.25	11.25	15.00	15.05	13.10	13.40	19.70	23.25	26.00	44.75	45.50	45.00	47.50	45.25	50.00	50.00	54.50	48.75	51.00

Pan Africa Insurance Ltd Ord 5.00	11.00	21.00	20.00	17.75	11.00	10.75	12.50	13.70	13.10	9.00	7.30	7.50	7.00	13.55	16.00	19.05	23.50	33.50	28.00	19.70	21.00	25.50	32.50	39.75	40.00
Standard Chartered Bank Ltd Ord 5.00	49.50	52.50	48.00	55.00	49.50	45.00	57.00	47.25	47.00	46.25	52.00	55.00	62.00	74.50	93.00	143.00	190.00	183.00	130.00	133.00	122.00	118.00	130.00	136.00	140.00
INDUSTRIAL AND ALLIED																									
Athi River Mining Ord 5.00	4.00	6.30	4.55	4.50	4.00	4.50	4.50	3.40	4.00	3.55	3.70	4.70	4.70	11.00	16.90	24.00	21.50	19.95	18.95	14.50	15.00	16.55	25.75	31.75	39.25
B.O.C Kenya Ltd Ord 5.00	47.25	65.00	47.25	43.00	47.25	42.00	31.00	30.00	30.00	28.50	27.00	26.75	37.00	49.25	75.50	99.50	142.00	145.00	137.00	124.00	115.00	137.00	142.00	145.00	160.00
Bamburi Cement Ltd Ord 5.00	33.75	26.75	29.25	32.25	33.75	28.00	29.00	23.00	16.65	16.00	17.25	22.00	43.75	54.00	80.00	102.00	125.00	99.50	80.00	85.50	95.00	97.00	122.00	136.00	140.00
British American Tobacco Kenya Ltd Ord 10.00	60.50	63.50	57.00	70.00	60.50	58.00	54.50	47.25	49.00	46.25	47.50	50.00	54.00	75.00	98.00	185.00	276.00	229.00	205.00	199.00	200.00	210.00	224.00	210.00	205.00
Carbocid Investments Ltd Ord 5.00	40.00	70.00	50.00	50.00	40.00	40.50	46.00	35.00	34.50	36.50	36.00	35.00	37.25	47.50	62.50	92.50	105.00	125.00	115.00	119.00	110.00	130.00	124.00	132.00	137.00
Crown Berger Ltd Ord 5.00	9.00	10.40	12.50	10.65	9.00	8.35	5.95	5.70	6.00	6.00	5.00	6.20	7.00	9.00	18.45	34.00	35.50	38.75	31.75	25.00	28.00	28.00	29.75	32.25	35.50
Dunlop Kenya Ord 5.00/ Olympia Capital Holdings Ltd	6.40	8.00	7.50	7.50	6.40	5.00	5.00	4.75	5.00	5.25	5.00	5.00	5.00	5.00	5.90	8.30	17.35	19.75	17.00	15.00	15.85	15.50	23.50	23.50	16.00
E.A. Cables Ltd Ord 5.00	9.25	9.50	8.00	9.70	9.25	10.70	10.00	9.80	9.20	7.00	7.15	8.50	9.20	9.05	12.00	12.00	13.65	20.00	32.00	30.25	51.00	55.50	145.00	138.00	137.00
E.A. Portland Cement Ltd Ord 5.00	11.70	10.05	12.40	12.50	11.70	12.20	11.00	7.30	12.70	11.00	12.50	13.30	13.00	30.00	46.25	70.00	58.00	51.00	47.50	45.50	46.00	55.00	105.00	105.00	111.00
East African Breweries Ltd Ord 10.00	74.50	70.00	65.50	79.00	74.50	80.50	79.50	82.50	74.00	78.50	82.50	92.50	128.00	182.00	226.00	339.00	440.00	461.00	445.00	528.00	100.00	110.00	149.00	146.00	135.00
Firestone East Africa Ltd Ord 5.00/Sameer EA Ltd	11.50	12.60	12.95	12.00	11.50	8.00	7.00	6.40	7.00	7.10	8.15	7.10	8.70	10.00	12.95	11.55	11.80	11.00	10.05	11.05	12.50	11.00	18.00	20.00	22.00
Kenya National Mills Ltd. Ord. 5.00	7.00	16.50	10.50	9.30	7.00	6.85	4.50	3.00	6.70	3.10	2.45														
Kenya Oil Co Ltd Ord 5.00	73.00	70.00	82.00	81.00	73.00	93.00	73.50	68.50	74.00	82.00	73.00	81.00	107.00	126.00	200.00	272.00	380.00	350.00	420.00	50.50	63.00	64.50	115.00	126.00	135.00
Kenya Power & Lighting Ltd Ord 20.00	40	86	51.5	44	40	40.75	29.25	24.25	19.05	10.00	8.65	6.75	17.35	27.00	32.00	43.25	59.50	97.50	90.00	88.50	94.50	87.00	110.00	199.00	138.00
Total Kenya Ltd Ord 5.00	55	49.25	51	56.5	55	44.00	27.00	17.30	19.00	14.50	10.35	16.00	22.75	29.00	35.75	39.50	41.50	44.75	40.25	39.00	37.50	40.00	44.75	40.50	40.50
Unga Group Ltd Ord 5.00	13.9	25.25	15.4	14.95	13.9	9.70	7.75	4.40	6.80	3.90	4.10	5.70	5.00	7.20	12.05	18.30	17.40	16.00	14.50	11.75	10.60	11.50	19.35	17.95	18.95
NSE INDEX	1,905.86	2,230.39	2,003.10	2,001.33	1905.86	1830.53	1,651.61	1,403.20	1,356.34	1,179.81	1,089.51	1,032.29	1,384.98	1,618.44	1,929.44	2,387.46	2,739.46	2,721.33	2,634.67	2,670.69	2,955.99	3,139.54	4,039.17	3,831.01	3,973.04

Appendix IV: Dividends 2000-2005

NAIROBI STOCK EXCHANGE	DATE																												
	2000					2001					2002					2003					2004					2005			
ORDINARY SHARES	Oct-99	Jan-00	Apr-00	Jul-00	Oct-00	Jan-01	Apr-01	Jul-01	Oct-01	Jan-02	Apr-02	Jul-02	Oct-02	Jan-03	Apr-03	Jul-03	Oct-03	Jan-04	Apr-04	Jul-04	Oct-04	Jan-05	Apr-05	Jul-05	Oct-05	Dec-05			
Brooke Bond Ltd Ord 10.00/Unilever Tea		4.00					6.00				2.00				2.50				6.00	2.00			6.00						
Kakuzi Ord 5.00			1.00		0.40																			1.00					
Rea Vipingo Plantations Ltd Ord 5.00																0.25			0.40					0.80					
Sasini Tea & Coffee Ltd Ord 5.00		0.50	0.75			1.25	0.75			0.25												1.50							
Car & General (K) Ltd Ord 5.00																							0.67						
CMC Holdings Ltd Ord 5.00							0.75							1.00															
Kenya Airways Ltd Ord 5.00				0.75		0.50		0.75					0.60			0.50	0.50			0.75	0.75				1.25				
Marshalls (E.A.) Ltd Ord 5.00																													
Nation Media Group Ord 5.00			1.20		0.55			1.2	0.75		1.6		0.75		1.75		1		9.00	1.00			5.00	1.00					
Tourism Promotion Services Ltd Ord 5.00 (Serenas)				1.00				1.10			1.10					1.10				1.10			1.10						
Uchumi Supermarket Ltd Ord 5.00			0.70		2.30				1.00					0.50															
Barclays Bank Ltd Ord 10.00			7.50		2.50		7.50		2.75		11.25		3.00		6.00		3.00	11.00		3.00					3.00				
C.F.C Bank Ltd ord 5.00		0.67					0.67				0.67				0.67				0.84				0.84						
Diamond Trust Bank Kenya Ltd Ord 4.00				0.40				0.60				0.40			0.60				0.70				0.70						
Housing Finance Co Ltd Ord 5.00		0.25						0.38																					
I.C.D.C Investments Co Ltd Ord 5.00		1.00			2.00			2.00					2.00					2.20				3.00				3.00			
Jubilee Insurance Co. Ltd Ord 5.00				1.00	1.50			1.25	0.50		1.25		0.50		1.25	0.50			1.75	0.75			1.75		0.75				
Kenya Commercial Bank Ltd Ord 10.00																			1.00					2.00					
National Bank of Kenya Ltd Ord 5.00																													
NIC Bank Ltd Ord 5.00			1.05		0.75		1.05		0.60		1.00		0.60		1.40		0.60		1.65		0.70		1.70		0.70				
Pan Africa Insurance Ltd Ord 5.00																							1.00	1.00					
Standard Chartered Bank Ltd Ord 5.00			5.00		2.20		6.60	2.00			4.25	2.20			3.85	2.20	2.20		4.10	2.20			2.10	2.25					
Athi River Mining Ord 5.00							0.20				0.30				0.50				0.50										
B.O.C Kenya Ltd Ord 5.00				1.00		2.55		1.00		2.55		1.00		3.35		1.00		3.35		1.00		3.50		1.75					
Bamburi Cement Ltd Ord 5.00			0.50		0.25		0.50				0.75	1.00		2.00	0.50		1.00		1.80	1.13	5.00				3.50				

British American Tobacco Kenya Ltd Ord 10.00	8.00	3.75	3.75	2.50	1.65		3.50		2.30		4.00			3.50	3.50	4.50		4.50	4.00			1.00	3.50		
Carbacid Investments Ltd Ord 5.00		1.10		1.65		1.10					22.00	1.75						1.75	2.25		2.25		2.75		
Crown Berger Ltd Ord 5.00			1.00				0.50				0.50			1.50											
Dunlop Kenya Ord 5.00/Olympia Capital Holdings Ltd				0.40				0.40																	
E.A. Cables Ltd Ord 5.00	4.50				1.10							0.50						0.75					1.50		
E.A. Portland Cement Ltd Ord 5.00							1.00	1.00	0.50				1.75				1.75			2.50					
East African Breweries Ltd Ord 10.00		2.00		5.50		2.25	6.75	2.50	9.00	3.00		12.00											3.00		
Firestone East Africa Ltd Ord 5.00/Sameer EA Ltd		0.50	0.50			0.50	0.50	0.50	0.50			0.75					0.50								
Kenya Oil Co Ltd Ord 5.00	7.50			6.00		6.00		7.50	2.50		9.50	5.00			5.50				2.00						
Kenya Power & Lighting Ltd Ord 20.00																							1.50		
Total Kenya Ltd Ord 5.00		3.40										1.70								2.50					
Unga Group Ltd Ord 5.00																									
NSE INDEX	22.42	28.45	9.40	28.50	7.05	34.25	14.40	13.75	12.60	30.67	9.60	38.95	16.35	24.72	17.05	26.50	20.60	33.24	17.68	20.20	7.00	27.41	16.25	15.20	4.50

Appendix V: Quarterly Returns 2000-2005

NAIROBI STOCK EXCHANGE	DATE																													
QUARTERLY RETURNS																														
ORDINARY SHARES	2000					2001					2002					2003					2004					2005				
	Oct-99	Jan-00	Apr-00	Jul-00	Oct-00	Jan-01	Apr-01	Jul-01	Oct-01	Jan-02	Apr-02	Jul-02	Oct-02	Jan-03	Apr-03	Jul-03	Oct-03	Jan-04	Apr-04	Jul-04	Oct-04	Jan-05	Apr-05	Jul-05	Oct-05	Dec-05				
Brooke Bond Ltd Ord 10.00/Unilever Tea			-0.07	-0.14	0.11	0.18	0.07	0.03	-0.12	-0.19	-0.13	-0.06	-0.18	0.16	0.20	0.22	-0.08	-0.06	0.06	0.09	0.16	0.13	0.15	0.16	-0.22	0.01				
Kakuzi Ord 5.00			0.27	-0.04	-0.17	0.00	-0.18	-0.11	-0.15	0.06	-0.17	-0.07	-0.45	-0.05	0.03	0.31	-0.09	0.33	0.00	0.21	-0.03	0.42	0.01	0.54	-0.25	0.05				
Rea Vipingo Plantations Ltd Ord 5.00			0.31	-0.05	-0.04	-0.16	-0.03	-0.10	0.07	0.00	0.00	0.03	-0.15	0.02	0.35	0.33	0.16	0.10	0.59	0.04	0.06	0.05	0.21	0.83	-0.04	-0.01				
Sasini Tea & Coffee Ltd Ord 5.00			0.04	0.02	-0.01	-0.02	0.01	-0.17	-0.27	-0.19	-0.04	0.00	-0.12	0.03	0.25	0.18	-0.10	0.11	-0.13	0.09	0.08	0.28	0.20	0.14	-0.05	-0.16				
Car & General (K) Ltd Ord 5.00			0.00	0.01	0.02	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.11	-0.03	0.01	0.00	0.11	0.23	0.15	0.09	0.00	0.03	0.99	-0.03	-0.21				
CMC Holdings Ltd Ord 5.00			0.64	-0.33	-0.05	-0.05	-0.23	-0.19	-0.08	0.11	-0.11	0.48	0.46	0.22	0.24	0.79	0.54	0.19	-0.35	-0.04	0.08	0.09	-0.18	0.02	-0.06	0.14				
Kenya Airways Ltd Ord 5.00			-0.17	0.07	0.18	0.03	-0.10	0.16	-0.16	0.11	0.00	-0.01	-0.14	0.20	-0.16	0.13	0.42	0.02	0.14	0.35	0.13	0.26	0.42	1.65	0.35	-0.04				
Marshalls (E.A.) Ltd Ord 5.00			0.26	-0.18	0.00	-0.04	-0.02	0.00	0.00	0.00	0.00	0.00	-0.72	0.00	0.19	0.07	0.36	0.00	0.99	-0.05	-0.08	-0.02	0.00	0.77	-0.08	0.00				
Nation Media Group Ord 5.00			0.27	-0.13	-0.09	0.02	-0.09	-0.25	-0.11	0.07	0.45	-0.33	0.13	0.88	-0.05	0.27	0.68	0.14	-0.02	0.04	-0.05	-0.03	0.35	-0.11	-0.09	0.05				
Tourism Promotion Services Ltd Ord 5.00 (Serena)			0.14	-0.11	0.09	-0.04	0.08	-0.03	-0.05	0.16	0.01	0.00	0.00	0.19	0.29	-0.18	0.49	-0.06	0.06	0.03	0.25	0.31	0.06	0.75	-0.12	0.06				
Uchumi Supermarket Ltd Ord 5.00			-0.12	0.00	0.06	0.13	-0.06	-0.01	-0.19	-0.12	-0.32	-0.23	-0.10	0.72	0.13	0.11	-0.21	0.12	-0.14	-0.27	-0.17	0.25	-0.29	0.53	-0.40	0.11				
Barclays Bank Ltd Ord 10.00			0.19	0.04	0.03	-0.12	0.06	0.12	-0.13	0.06	0.02	0.30	-0.06	0.30	0.19	0.14	0.46	0.49	-0.15	-0.12	0.04	-0.02	0.05	0.20	-0.04	0.10				
C.F.C Bank Ltd ord 5.00			0.57	-0.35	0.02	0.01	-0.04	-0.05	-0.05	0.12	0.00	0.07	0.03	-0.01	0.28	0.67	0.28	0.36	0.79	-0.21	-0.01	0.28	-0.05	0.22	0.05	0.09				
Diamond Trust Bank Kenya Ltd Ord 4.00			0.91	-0.25	-0.23	-0.07	-0.07	-0.12	-0.03	-0.14	-0.14	0.17	0.27	-0.09	0.67	0.33	0.30	0.02	0.21	-0.10	-0.16	0.09	0.21	-0.14	-0.05	0.20				
Housing Finance Co Ltd Ord 5.00			0.72	-0.23	0.11	-0.29	0.02	-0.04	-0.20	0.00	-0.23	0.19	-0.19	0.73	0.35	0.56	0.13	-0.03	0.01	-0.21	-0.03	-0.08	0.11	0.34	-0.04	0.14				
I.C.D.C Investments Co Ltd Ord 5.00			-0.11	0.22	0.01	-0.03	0.14	-0.11	-0.10	-0.04	-0.45	-0.11	0.26	0.29	0.33	0.32	0.25	0.22	-0.08	-0.10	-0.18	0.24	0.00	0.12	0.04	0.02				
Jubilee Insurance Co. Ltd Ord 5.00			0.42	-0.16	-0.14	0.11	-0.09	-0.11	0.06	0.08	-0.02	0.11	-0.01	0.03	0.65	0.18	1.11	-0.19	0.20	-0.09	0.04	0.07	0.08	0.14	0.02	0.14				

Kenya Commercial Bank Ltd Ord 10.00			0.06	0.04	-0.04	-0.06	-0.01	-0.25	-0.20	0.07	-0.08	-0.33	-0.09	1.03	0.56	0.62	0.15	0.04	0.15	-0.15	0.10	0.08	-0.04	0.14	0.23	0.35
National Bank of Kenya Ltd Ord 5.00			0.22	-0.06	0.14	-0.23	0.11	-0.14	-0.15	0.14	0.07	-0.16	-0.12	0.59	0.49	1.73	-0.03	-0.04	0.44	-0.07	-0.19	0.26	-0.04	0.14	0.45	-0.04
NIC Bank Ltd Ord 5.00			0.55	-0.20	0.17	-0.24	-0.13	0.05	-0.26	0.39	0.00	-0.06	0.02	0.51	0.18	0.18	0.72	0.03	-0.01	0.09	-0.05	0.12	0.00	0.12	-0.11	0.06
Pan Africa Insurance Ltd Ord 5.00			0.91	-0.05	-0.11	-0.38	-0.02	0.16	0.10	-0.04	-0.31	-0.19	0.03	-0.07	0.94	0.18	0.19	0.23	0.43	-0.16	-0.30	0.07	0.21	0.31	0.25	0.01
Standard Chartered Bank Ltd Ord 5.00			0.06	0.01	0.15	-0.06	-0.09	0.41	-0.14	-0.01	-0.02	0.22	0.10	0.13	0.20	0.30	0.56	0.34	-0.04	-0.27	0.04	-0.08	-0.03	0.12	0.06	0.03
Athi River Mining Ord 5.00			0.58	-0.28	-0.01	-0.11	0.13	0.04	-0.24	0.18	-0.11	0.13	0.27	0.00	1.34	0.58	0.42	-0.10	-0.07	-0.03	-0.23	0.03	0.10	0.56	0.23	0.24
B.O.C Kenya Ltd Ord 5.00			0.38	-0.27	-0.07	0.10	-0.06	-0.26	0.00	0.00	0.04	-0.05	0.03	0.38	0.42	0.53	0.33	0.43	0.04	-0.06	-0.09	-0.07	0.22	0.04	0.03	0.10
Bamburi Cement Ltd Ord 5.00			-0.21	0.11	0.10	0.05	-0.17	0.05	-0.21	-0.28	-0.04	0.13	0.33	0.99	0.28	0.49	0.28	0.24	-0.20	-0.18	0.08	0.17	0.02	0.26	0.14	0.03
British American Tobacco Kenya Ltd Ord 10.00			0.18	-0.04	0.29	-0.10	-0.01	-0.06	-0.07	0.04	-0.01	0.03	0.14	0.08	0.39	0.31	0.92	0.51	-0.15	-0.10	-0.01	0.03	0.05	0.07	-0.06	-0.01
Carbacid Investments Ltd Ord 5.00			0.75	-0.27	0.00	-0.17	0.01	0.16	-0.24	-0.01	0.06	-0.01	-0.03	0.69	0.28	0.35	0.48	0.14	0.19	-0.08	0.05	-0.06	0.18	-0.03	0.06	0.06
Crown Berger Ltd Ord 5.00			0.16	0.20	-0.07	-0.15	-0.07	-0.29	0.04	0.05	0.00	-0.17	0.34	0.13	0.29	1.05	0.92	0.04	0.09	-0.18	-0.21	0.12	0.00	0.06	0.08	0.10
Dunlop Kenya Ord 5.00/ Olympia Capital Holdings Ltd			0.25	-0.06	0.00	-0.09	-0.22	0.00	-0.05	0.14	0.05	-0.05	0.00	0.00	0.00	0.18	0.41	1.09	0.14	-0.14	-0.12	0.06	-0.02	0.52	0.00	-0.32
E.A Cables Ltd Ord 5.00			0.51	-0.16	0.21	-0.05	0.28	-0.07	-0.02	-0.06	-0.24	0.02	0.19	0.08	-0.02	0.38	0.00	0.14	0.47	0.60	-0.03	0.69	0.09	1.61	-0.05	0.00
E.A Portland Cement Ltd Ord 5.00			-0.14	0.23	0.01	-0.06	0.04	-0.10	-0.34	0.88	-0.13	0.23	0.06	0.02	1.31	0.54	0.51	-0.17	-0.09	-0.07	-0.04	0.05	0.20	0.91	0.02	0.06
East African Breweries Ltd Ord 10.00			-0.06	0.08	0.21	0.29	0.08	0.13	0.04	0.31	0.06	0.21	0.12	0.87	0.42	0.32	0.50	0.47	0.05	-0.03	0.19	-0.05	0.10	0.35	-0.02	-0.05
Firestone East Africa Ltd Ord 5.00/Sameer EA Ltd			0.10	0.07	-0.03	-0.04	-0.30	-0.06	-0.01	0.09	0.01	0.22	-0.07	0.23	0.15	0.30	-0.05	0.02	-0.07	-0.09	0.15	0.13	-0.12	0.64	0.11	0.10
Kenya Oil Co Ltd Ord 5.00			0.86	0.08	-0.01	0.49	0.27	0.31	-0.07	0.08	0.92	0.13	0.11	0.32	0.89	0.59	0.56	0.40	-0.08	0.33	-0.04	0.25	0.06	0.78	0.10	0.07
Kenya Power & Lighting Ltd Ord 20.00			1.15	-0.40	-0.15	-0.09	0.02	-0.28	-0.17	-0.21	-0.48	-0.14	-0.22	1.57	0.56	0.19	0.35	0.38	0.64	-0.08	-0.02	0.07	-0.08	0.26	0.26	-0.01
Total Kenya Ltd Ord 5.00			-0.10	0.10	0.11	-0.03	-0.20	-0.39	-0.36	0.10	-0.24	-0.29	0.55	0.42	0.27	0.29	0.10	0.05	0.08	-0.10	-0.03	-0.04	0.07	0.18	-0.09	0.00
Unga Group Ltd Ord 5.00			0.82	-0.39	-0.03	-0.07	-0.30	-0.20	-0.43	0.55	-0.43	0.05	0.39	-0.12	0.44	0.67	0.52	-0.05	-0.08	-0.09	-0.19	-0.10	0.08	0.70	-0.08	0.06
NSE INDEX			0.18	-0.09	0.00	-0.03	-0.04	-0.08	-0.14	-0.02	-0.12	-0.05	-0.04	0.38	0.18	0.21	0.25	0.16	0.00	-0.02	0.02	0.11	0.06	0.30	-0.05	0.04

Model	Variables Entered	Variables Removed	Method
1	INDU, CARGEN, BBOND, CFC, SCBK, KENOL, NMG, JUBILEE, FIRESTON, SASINI, KPLC, KAKUZI, CMC, NBK, NIC, EABL, UCHUMI, HFCK, BAT, PANAFRIC, TOTAL, KCB, UNGA(a)		Enter

Table 9: Variables for the Regression

- a Tolerance = .000 limits reached.
b Dependent Variable: MARKETIN

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1.000(a)	1.000	1.000	.	2.338

Table 10: Model Summary

- a Predictors: (Constant), INDU, CARGEN, BBOND, CFC, SCBK, KENOL, NMG, JUBILEE, FIRESTON, SASINI, KPLC, KAKUZI, CMC, NBK, NIC, EABL, UCHUMI, HFCK, BAT, PANAFRIC, TOTAL, KCB, UNGA
b Dependent Variable: MARKETIN

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.446	23	.019	.	.(a)
	Residual	.000	0	.		
	Total	.446	23			

Table 11: Regression Anova Analysis

- a Predictors: (Constant), INDU, CARGEN, BBOND, CFC, SCBK, KENOL, NMG, JUBILEE, FIRESTON, SASINI, KPLC, KAKUZI, CMC, NBK, NIC, EABL, UCHUMI, HFCK, BAT, PANAFRIC, TOTAL, KCB, UNGA
b Dependent Variable: MARKETIN

	N	Mean	Std. Deviation	Std. Error Mean
BBOND	24	.0200	.13885	.02834
KAKUZI	24	.0196	.22801	.04654
REAVIPI	24	.1071	.23291	.04754
SASINI	24	.0071	.14306	.02920
CARGEN	24	.0517	.21584	.04406
CMC	24	.0971	.30298	.06185
KENYAAIR	24	.1600	.36443	.07439
MARSHALL	24	.0604	.31568	.06444
NMG	24	.0833	.28207	.05758
TPSSEREN	24	.0992	.20688	.04223
UCHUMI	24	-.0196	.26144	.05337
BBK	24	.0896	.17236	.03518
CFC	24	.1279	.26585	.05427
DTBANK	24	.0746	.28180	.05752
HFCK	24	.0767	.28596	.05837
ICDC	24	.0479	.19348	.03949
JUBILEE	24	.1096	.28075	.05731
KCB	24	.0988	.29842	.06091
NBK	24	.1463	.40865	.08342
NIC	24	.0888	.24517	.05004
PANAFRIC	24	.0996	.32557	.06646
SCBK	24	.0829	.18626	.03802
ARM	24	.1521	.35474	.07241
BOC	24	.0892	.21791	.04448
BAMBURI	24	.1025	.27415	.05596
BAT	24	.1008	.23962	.04891
CARBACID	24	.1067	.25498	.05205
CROWNBER	24	.1054	.31169	.06362
DUNLOP	24	.0738	.28270	.05771
EACABLES	24	.1904	.38869	.07934
EAPORTLA	24	.1638	.39530	.08069
EABL	24	.1913	.22140	.04519
FIRESTON	24	.0617	.18035	.03681
KENOL	24	.3083	.31504	.06431
KPLC	24	.1300	.47559	.09708
TOTAL	24	.0188	.22943	.04683
UNGA	24	.0717	.37071	.07567
AGRICULT	24	.0392	.14723	.03005
COMMECSE	24	.0767	.16513	.03371
FININV	24	.0950	.18280	.03731
INDU	24	.1242	.19294	.03938
MARKETIN	24	.0504	.13933	.02844

Table 12: Descriptive Statistics

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
BBOND	.706	23	.487	.0200	-.0386	.0786
KAKUZI	.421	23	.678	.0196	-.0767	.1159
REAVIPI	2.252	23	.034	.1071	.0087	.2054
SASINI	.243	23	.810	.0071	-.0533	.0675
CARGEN	1.173	23	.253	.0517	-.0395	.1428
CMC	1.570	23	.130	.0971	-.0309	.2250
KENYAAIR	2.151	23	.042	.1600	.0061	.3139
MARSHALL	.938	23	.358	.0604	-.0729	.1937
NMG	1.447	23	.161	.0833	-.0358	.2024
TPSSEREN	2.348	23	.028	.0992	.0118	.1865
UCHUMI	-.367	23	.717	-.0196	-.1300	.0908
BBK	2.546	23	.018	.0896	.0168	.1624
CFC	2.357	23	.027	.1279	.0157	.2402
DTBANK	1.297	23	.208	.0746	-.0444	.1936
HFCK	1.313	23	.202	.0767	-.0441	.1974
ICDC	1.213	23	.237	.0479	-.0338	.1296
JUBILEE	1.912	23	.068	.1096	-.0090	.2281
KCB	1.621	23	.119	.0988	-.0273	.2248
NBK	1.753	23	.093	.1463	-.0263	.3188
NIC	1.773	23	.089	.0888	-.0148	.1923
PANAFRIC	1.498	23	.148	.0996	-.0379	.2371
SCBK	2.181	23	.040	.0829	.0043	.1616
ARM	2.100	23	.047	.1521	.0023	.3019
BOC	2.005	23	.057	.0892	-.0029	.1812
BAMBURI	1.832	23	.080	.1025	-.0133	.2183
BAT	2.062	23	.051	.1008	-.0003	.2020
CARBACID	2.049	23	.052	.1067	-.0010	.2143
CROWNBER	1.657	23	.111	.1054	-.0262	.2370
DUNLOP	1.278	23	.214	.0738	-.0456	.1931
EACABLES	2.400	23	.025	.1904	.0263	.3545
EAPORTLA	2.029	23	.054	.1638	-.0032	.3307
EABL	4.232	23	.000	.1913	.0978	.2847
FIRESTON	1.675	23	.107	.0617	-.0145	.1378
KENOL	4.795	23	.000	.3083	.1753	.4414
KPLC	1.339	23	.194	.1300	-.0708	.3308
TOTAL	.400	23	.693	.0188	-.0781	.1156
UNGA	.947	23	.353	.0717	-.0849	.2282
AGRICULT	1.303	23	.205	.0392	-.0230	.1013
COMMECSE	2.275	23	.033	.0767	.0069	.1464
FININV	2.546	23	.018	.0950	.0178	.1722
INDU	3.153	23	.004	.1242	.0427	.2056
MARKETIN	1.773	23	.090	.0504	-.0084	.1093

Table 13: One Sample t-test

	COVARIANCE
BBOND	0.008801
KAKUZI	0.016838
REAVIPI	0.016619
SASINI	0.009662
CARGEN	0.008316
CMC	0.020746
KENYAAIR	0.020389
MARSHALL	0.01619
NMG	0.021503
TPSSEREN	0.016227
UCHUMI	0.023359
BBK	0.014785
CFC	0.016555
DTBANK	0.014153
HFCK	0.029995
ICDC	0.015103
JUBILEE	0.017565
KCB	0.028584
NBK	0.025364
NIC	0.022963
PANAFRIC	0.018684
SCBK	0.010663
ARM	0.024436
BOC	0.020878
BAMBURI	0.024016
BAT	0.017951
CARBACID	0.024029
CROWNBER	0.020138
DUNLOP	0.017876
EACABLES	0.024088
EAPORTLA	0.022283
EABL	0.019745
FIRESTON	0.012849
KENOL	0.019618
KPLC	0.048544
TOTAL	0.017436
UNGA	0.029333
MARKETIN	0.01298
AGRICULT	0.012980
COMMECSE	0.018104
FININV	0.019492
INDU	0.022881

Table 14: Covariance with the Market

	CORRELATION
BBOND	0.473557
KAKUZI	0.556309
REAVIPI	0.53714
SASINI	0.510325
CARGEN	0.289587
CMC	0.515429
KENYAAIR	0.421388
MARSHALL	0.386061
NMG	0.572914
TPSSEREN	0.591569
UCHUMI	0.673888
BBK	0.645737
CFC	0.466867
DTBANK	0.377927
HFCK	0.787115
ICDC	0.586529
JUBILEE	0.472703
KCB	0.720867
NBK	0.465908
NIC	0.70365
PANAFRIC	0.431742
SCBK	0.430564
ARM	0.517802
BOC	0.719045
BAMBURI	0.66068
BAT	0.560957
CARBACID	0.708498
CROWNBER	0.485339
DUNLOP	0.476292
EACABLES	0.4664
EAPORTLA	0.424211
EABL	0.666596
FIRESTON	0.537797
KENOL	0.468054
KPLC	0.76827
TOTAL	0.572458
UNGA	0.595258
MARKETIN	1.000000
AGRICULT	0.663333
COMMECSE	0.828817
FININV	0.797026
INDU	0.895669

Table 15: Correlation with the Market