ASSET GROWTH EFFECT ON STOCK RETURNS AT THE NAIROBI SECURITIES EXCHANGE LIMITED

BY

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8TH NOVEMBER, 2012

Declaration

I the undersigned declare that this project is my original work and to the best of my knowledge has not been presented for the award of a degree in any other university.

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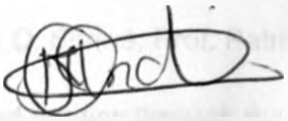

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DEDICATIONS

This work is dedication to my lovely mother Hebisibah Kemunto truly you have defined and affirmed the strength of a woman. To my Wonderful Uncle Geoffrey M.A. and family especially cousin Carolyn, thank you, you cannot be matched and indeed the entire Ondimu's family.

ABSTRACT

Asset growth is form of investment in which the company management adds value to shareholders wealth. This lucrative investment strategy is emerging to be the normative idea for many firms. It is also common knowledge for the management of a company to expect that an asset bought now as an investment will perform better in the future. However, the management has to assess the derivative impact of investing heavily on assets in relation to (long) term effect stock return if it is a listed company. Thus this project presents the first empirical evidence on the existence of asset growth effect in the Nairobi Securities Exchange.

We analyse Kenyan non financial listed companies over the 2001 - 2011 period inclusive, to investigate whether the rate of growth in total asset has predictive power over subsequent stock returns.

Using Portfolio sorting method we investigate the asset growth effect on stock returns not considering the firm size as factor. This project proves that Kenya Stock market non financial listed companies are inefficient in the allocating capitals and valuing investment opportunities since the negative asset growth effect on stock returns exist. Numerical instructions on the Kenyan listed firms data were performed which supports the theoretical analysis. Thus, this project is an important part of investment policy formulation of existing and new companies in their future endeavour of stock returns maximization.

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KEYWORDS AND ABBREVIATIONS

Asset growth, asset growth effect, asset pricing, total asset growth, expected stock returns,

nitial Public Offer (IPO), Nairobi Securities Exchange (NSE)

CHAPTER ONE:

Introduction

1.1. Introduction

Asset Investment is recognized a key component in the firm's management investment strategy in today's economic world of investment where the dynamics are changing fast. The world is embracing investments especially of assets as a means of expanding business empires and creating wealth for the shareholders. This may seem counterintuitive, but sometimes companies actually need smaller number of shareholders to make it big in the stock market if it is a listed company. As companies attract new investors and grow larger, their returns are often become jaded, weighed down by too many assets, thus they lose their potency and their returns reverting to the average for the group. Actually some companies stop accepting financing from new investors when their assets grow too many and this explains why so many once anticipated Initial Public Offering companies become less attractive to new investors in the long run (Safaricom IPO, 2008).

1.2. Background of the Problem

The role played by fundamental analysis will always remain one of the most interesting debates in the fields of finance and accounting. As a result of fundamental analysis, the semi-strong form of the efficient market hypothesis by Fama (1965) is violated since there is a possibility to systematically benefit from the analysis of companies' past financial statements and reporting then forecasting on the future stock price performance.

Nevertheless many researchers in this field have linked firm characteristics or various accounting-based valuation ratios, such as earnings, cash flow yields or book-to-market ratio, to cross-sectional average returns. The association between such financial attributes and returns has been studied and documented by several researchers, including Basu (1977), Fama and French (1992), Lakonishok, Shleifer and Vishny (1994). As these kinds of

relations are not explained by the pre-specified asset pricing equilibrium model or central paradigm theory they are defined as effect studies.

In addition to the studies investigating the growth in a single variable in the balance sheet, there is a growing amount of evidence which supports the view that the changes in balance sheet size and the anomalous return patterns are related to broader asset expansion and contraction phenomenon. Cooper et al. (2008) were the first to study this asset growth effect by using the change in total assets as a proxy for the company's growth and find convincing evidence that the companies with low asset growth over perform companies with high asset growth. Following the footsteps of Cooper et al. (2008), several research papers followed (e.g. Fama & French 2008; Chan et al., 2008; Lipson et al. 2010) did find similar evidence on the asset growth effect and provided a vast amount of different potential explanations for the drivers of this effect.

In recent studies researchers have focused on the return predictability of stock returns based on the growth in different balance sheet items. These studies can be divided to three broad categories, which are the growth in accruals (e.g. Sloan 1996), in investments (e.g.Titman et al., 2004) and in external financing (e.g. Pontiff & Woodgate 2008). The main findings of these studies were the identification of the negative relation between the balance sheet items expanding activities of the company and the subsequent company's stock price performance.

However, most previous studies related to the asset growth effect and other balance sheet growth effects have mostly been conducted in the U.S. Market - (Xi Li, Ying Becker, and Didier Rosenfeld, 2011), although some evidence of the existence of the effect has also been find from Australian and Pacific-Basin markets. Thus one of the objectives of this study is to expand the current research framework in this field also to a smaller and less efficient

Nairobi Securities Exchange. This kind of analysis will provide insight if the existence of the effect assuming is independent on the size and the efficiency of the stock markets and thus provides valuable evidence on this research field. In Kenya the body where shares and other securities are traded is the Nairobi Securities Exchange Limited.

1.2.1. Nairobi Securities Exchange Limited (NSE)

Securities are traded at the Nairobi Securities Exchange Limited. Here is the history of the NSE:

"In Kenya, dealing in shares and stocks started in the 1920's when the country was still a British colony. However the market was not formal as there did not exist any rules and regulations to govern stock broking activities. Trading took place on a 'gentleman's agreement.' Standard commissions were charged with clients being obligated to honor their contractual commitments of making good delivery, and settling relevant costs. At that time, stock broking was a sideline business conducted by accountants, auctioneers, estate agents and lawyers who met to exchange prices over a cup of coffee. Because these firms were engaged in other areas of specialization, the need for association did not arise.

In 1951, an Estate Agent by the name of Francis Drummond established the first professional stock broking firm. He also approached the then Finance Minister of Kenya, Sir Ernest Vasey and impressed upon him the idea of setting up a stock exchange in East Africa. The two approached London Stock Exchange officials in July of 1953 and the London officials accepted to recognize the setting up of the Nairobi Stock Exchange as an overseas stock exchange.

In 1954 the Nairobi Stock Exchange was then constituted as a voluntary association of stockbrokers registered under the Societies Act. Since Africans and Asians were not permitted to trade in securities, until after the attainment of independence in 1963, the business of dealing in shares was confined to the resident European community. At the dawn of independence, stock market activity slumped, due to uncertainty about the future of independent Kenya.

1988 saw the first privatization through the NSE,of the successful sale of a 20% government stake in Kenya Commercial Bank. The sale left the Government of Kenya and affiliated institutions retaining 80% ownership of the bank.

Notably, on February 18, 1994 the NSE 20-Share Index recorded an all-record high of 5030 points. The NSE was rated by the International Finance Corporation (IFC) as the best performing market in the world with a return of 179% in dollar terms. The NSE also moved to more spacious premises at the Nation Centre in July 1994, setting up a computerized delivery and settlement system (DASS). For the first time since the formation of the Nairobi Stock Exchange, the number of stockbrokers increased with the licensing of 8 new brokers.

In 1996, the largest share issue in the history of NSE, the privatization of Kenya Airways, came to the market. Having sold a 26% stake to KLM, the Government of Kenya proceeded to offer 235,423,896 shares (51% of the fully paid and issued shares of Kshs. 5.00 each) to the public at Kshs. 11.25 per share. More than 110,000 shareholders acquired a stake in the airline and the Government of Kenya reduced its stake from 74% to 23%. The Kenya Airways Privatization team was awarded the World Bank Award for Excellence for 1996 for being a model success story in the divestiture of state-owned enterprises.

On Monday 11 September 2006 live trading on the automated trading systems of the Nairobi Stock Exchange was implemented. The East African Securities Exchanges Association came into being in 2004, following the signing of a Memorandum of Understanding between the Dar-es-Salaam Stock Exchange, the Uganda Securities Exchange and the Nairobi Stock Exchange.

In May 2006, NSE formed a demutualization committee to spearhead the process of demutualization. A demutualization consultant (Ernst and Young) was appointed to advice on the process. In September 2006 live trading on the automated trading systems of the Nairobi Stock Exchange was implemented. The ATS was 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. The NSE ATS solution was customized to uphold the spirit of the Open Outcry Trading Rules in an automated environment.

In the same breadth, trading hours 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.

An MoU between the Nairobi Stock Exchange and Uganda Securities Exchange was signed in November 2006 on mass cross listing. The MoU allowed listed companies in both exchanges to dualist. This will facilitate growth and development of the regional securities markets.

In February 2007 NSE upgraded its website to enhance easy and faster access of accurate, factual and timely trading information. The upgraded website is used to boost data vending business.

In July 2007 NSE reviewed the Index and announced the companies that would constitute the NSE Share Index. The review of the NSE 20-share index was aimed at ensuring it is a true barometer of the market.

A Wide Area Network (WAN) platform was implemented in 2007 and this eradicated the need for brokers to send their staff (dealers) to the trading floor to conduct business. Trading is now mainly conducted from the brokers' offices through the WAN. However, brokers under certain circumstances can still conduct trading from the floor of the NSE.

In 2008, the NSE All Share Index (NASI) was introduced as an alternative index. Its measure is an overall indicator of market performance. The Index incorporates all the traded shares of the day. Its attention is therefore on the overall market capitalization rather than the price movements of select counters.

In April 2008, NSE launched the NSE Smart Youth Investment Challenge to promote stock market investments among Kenyan Youths. The objective of the challenge is threefold:

i. *To occupy the minds of the youth positively and draw them away from the negative energy created by the current political, economic and social situation in the country;*
ii. *Encourage the culture of thrift and saving funds amongst the university students;*
iii. *Encourage the youth to invest their savings in the capital markets.*

After the resignation of Mr. Chris Mwebesa, the NSE Board appointed Mr. Peter Mwangi to be the New NSE Chief Executive in November 2008.

The Complaints Handling Unit (CHU) was launched in August 2009 to bridge the confidence gap with NSE retail investors. CHU provides a hassle free and convenient way to have any concerns processed and resolved. Investors, both local and in the diaspora can forward their issues via e-mail, telephone, fax, or SMS and have the ability to track progress on-line.

The Nairobi Stock Exchange marked the first day of automated trading in government bonds through the Automated Trading System (ATS) in November 2009. The automated trading in government bonds marked a significant step in the efforts by the NSE and CBK towards creating depth in the capital markets by providing the necessary liquidity.

In December 2009, NSE marked a milestone by uploading all government bonds on the Automated trading System (ATS). Also in 2009, NSE launched the Complaints Handling Unit (CHU) SMS System to make it easier for investors and the general public to forward any queries or complaints to NSE

In July 2011, the Nairobi Stock Exchange Limited, changed its name to the Nairobi Securities Exchange Limited. The change of name reflected the strategic plan of the Nairobi Securities Exchange to evolve into a full service securities exchange which supports trading, clearing and settlement of equities, debt, derivatives and other associated instruments. In the same year, the equity settlement cycle moved from the previous T+4 settlement cycle to the T+3 settlement cycle. This allowed investors who sell their shares, to get their money three (3) days after the sale of their shares. The buyers of these shares, will have their CDS accounts credited with the shares, in the same time.

In September 2011 the Nairobi Securities Exchange converted from a company limited by guarantee to a company limited by shares and adopted a new Memorandum and Articles of Association reflecting the change. In October 2011, the Broker Back Office commenced operations. The system has the capability to facilitate internet trading which improved the integrity of the Exchange trading systems and facilitates greater access to our securities market. In November 2011 the FTSE NSE Kenya 15 and FTSE NSE Kenya 25 Indices were launched. The launch of the indices was the result of an extensive market consultation process with local asset owners and fund managers and reflects the growing interest in new domestic investment and diversification opportunities in the East African region. As of March 2011, the Nairobi Securities Exchange became a member of the Financial Information Services Division (FISD) of the Software and Information Industry Association (SIIA). In March 2011 the delayed index values of the FTSE NSE Kenya 15 Index and the FTSE NSE Kenya 25 Index were made available on the NSE website The new initiative gives investors the opportunity to access current information and provides a reliable indication of the Kenyan equity market's performance during trading hours". (Source: www.nse.co.ke). The NSE was the dataset source of data used in this project.

1.3. Statement of Research Problem

Several empirical studies on investments of listed firms in Nairobi Securities Exchange (NSE) have been conducted. The main purpose of this study is to provide the first in depth analysis on the asset growth effect on the cross-sectional stock returns in the Nairobi Securities Exchange.

1.4. Objectives

The broad aim of this study is to provide an extensive analysis on the potential relation between asset growth and the subsequent stock returns in the Nairobi Securities Exchange. Other objectives are; defining the asset growth effect, applying the current research framework to the NSE in order to find evidence of the existence of the asset growth effect. Therefore the specific aim in this study is;

What are the asset growth effects on stock returns by listed non financial companies at the Kenyan stock market Nairobi Securities Exchange?

The main research objective and other objectives with their corresponding methodologies are displayed in Table 1.

Table 1: Research Objectives and their methodology

Research Question	Objective	Methodology
How asset growth effects defined	To summarise the current state of literature and find a suitable alternative for the asset growth	Literature review
What are the asset growth effects on stock returns by listed non financial companies at the Kenyan stock market?	Determining asset growth effect on subsequent stock returns	Portfolio sorting method
Does the asset growth effect exist in the Nairobi Securities Exchanges?	To test if the asset growth effect in the Nairobi Securities Exchanges	Portfolio sorting method

1.5. Justification/Significance of the study

Determination of Investment factors is paramount factor in our developing economy especially asset growth. This is because; there has been increasing trend of investing in assets by the listed companies over the last decade. Thus, the significant of this study is to bring out the effects of investing in assets by listed firms on stock returns on the Kenyan stock market. The academicians and researchers will use the findings of the study as a basis of further research into asset growth – stock return effects in the economy as a whole (both financial and non-financial firms). The raw data was provided by the month to month activities at the NSE bourse.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

The chapter provides more theoretical and empirical foundation to the main research objective of the project, the asset growth effect on stock returns. It deals with the review of available studies on asset growth effect – stock return which is the relevant literature for this study. The first section briefly defines the basic theories of asset growth effect in relation to the efficient market hypothesis, describes the most discussed effects and the relevant past studies conducted in this field. The second section describes the different perspectives of how the relation of firm's growth and stock returns has been studied. The third section discusses the studies using a broader measure of asset growth, which has also been utilized for this study. The fourth section provides potential theoretical explanations for the asset growth effect frequently used and tested in this field.

2.2. Basic theories of asset growth effect in relation to the efficient market hypothesis

The controversial efficient market hypothesis (EMH) has always remained one of the most discussed and researched topics in financial since it was introduced by Eugen Fama in his 1965 doctoral dissertation. Other critical studied followed suit by (Lo & MacKinlay, 1988) Akonishok, Shleifer & Vishny (1994) Shleifer, (2001), Schwert (2003) and, Shiller (2003) and many others have shown the empirical deviations of EMH. Basically the efficient market hypothesis (EMH) is described in three different forms:

1. The strong form implies that all information in markets is fully reflected in securities prices and thus insider information has no value in the markets and actually by definition does not exist.
2. The semi strong form implies that all publicly available information is fully reflected in securities prices and thus fundamental analysis has no value.

3. The weak form implies that all past market prices and data are fully reflected in securities prices and thus technical analysis has little or no value.

As can be clearly seen from the definitions of the three forms, the main difference in the forms is how the securities prices reflect different levels of information exposed to them. The outcome from the transparency of this kind of information is what investors analyse in order to earn excess returns in the markets. When considering the weakest form of the efficient market hypothesis, the future stock prices cannot be predicted by analyzing past price behavior or performance. This implies that investors are not able to systematically profit from inefficiencies, even though by fundamental analysis unsystematic excess returns are possible to obtain in the short term. The implied role of analysis and the incentives for the investors to perform different kind of analysis are important questions for the finance industry, thus still inspiring the research in the field with various hypotheses.

The efficient market hypothesis describes the basic framework and the structure of the financial markets, although is not an independent tool in the asset pricing in the markets. This has lead to other studies for instance; Sharpe (1964) and Lintner (1965) and Black (1972) studies opened a new chapter in the asset pricing theoretical sphere. The presented a model prominently known as the Capital Asset Pricing Model (CAPM) which has its foundation on the assumptions(Investors are rational, markets are rational, There are no taxes – or, more specifically, taxes play no part in financial decision-making, There are no transaction costs, An investor is indifferent between a shilling in dividends and a shilling in capital gains and a company (and its investors) are indifferent between a shilling of additional debt and a shilling of additional equity.) of the efficient market theory. The CAPM describes the positive relation between the expected return and the beta factor of the security, which according to the core idea of model should capture all the cross-sectional variation in expected returns. The aftermath studies following the introduction of CAPM have

analyzed and documented that the beta and concluded that it is not able accommodate to all the dimensions of the risk. Also the suitability of CAPM is overshadowed by the fact that the model is hard to empirically test due to difficulties in defining market portfolio. Despite these hurdles and criticisms the CAPM it is still widely used almost five decades later.

2.3. Different perspectives of how the relation of firm's growth and stock returns

2.3.1. The Financial Market Effects

The Financial market effects are defined to be patterns in the cross-sectional and the time series stock on stock returns that cannot be predicted by a theory or central paradigm. The market prices being in the theory and as a result pre-specified equilibrium model formation by (Capital Asset Pricing Model), which also depend on the central paradigm, in which case study being the efficient market hypothesis, and therefore a discovery of an effect will imply either market inefficiency or incorrect equilibrium model is used. The joint duality hypothesis is important aspect since the existence of an effect can be easily interpreted only as evidence of market inefficiency by ignoring the possibility failure in the asset pricing model.

Persistency in discovered effect is an important aspects relating to market efficiency and effects. As the effect is discovered and presented in the financial journals and publications, the investors usually arbitrage the effect away and thus the effect always lose its economic significance over a period of time. Thus if the evidence of the persistency of the effect is discovered, this evidence potentially will imply that the effect does not exist due to market inefficiencies, but to the contrary due to incorrect asset pricing model used in the studies. That is, investors are pricing some kind of risk premium; this explains the certain expected return patterns in the effect.

Past studies on arbitrage have shown that limits on arbitrage effects can be employed. Studies by De Long et.al (1990) & Schleifer and Vishny (1997) on real markets that prevents the rational investors to arbitrage the effect away. According to Schleifer and

Vishny (1997) these limiting factors are actually risky and costly to arbitrage therefore preventing the markets from being efficient from the information perspective.
Lam and Wei (2010) study on these limits to arbitrage considered; transaction costs, information costs, and arbitrage risk factors which are often determined with stock return volatility.

Asset growth effects are divided into three categories namely: - fundamental effect, technical effect and calendar related effect. Fundamental effects are actually irregularities emerging from the internal analysis of stocks behavior value and from other factors affecting the value of the company. Although this analysis provides extra value in terms of information, is a violation of the semi-strong form of the efficient market hypothesis. For instance a market fundamentalist might issue a purchase recommendation for a company which has consistently shown year-to-year earnings increases and is in an industry that he or she believes will grow faster than the economy. Several fundamental effects have been emerged over the time, but the most documented effects persisting in long-term time series studies are the value effect and the market capitalization effect.

Considering past studies on in this context, for instance the Basu (1977) study which proves that stocks with low price-to-earnings (P/E) ratio earn higher average returns than stock with high price-to-earnings ratio. The same effect has been further studied and published as a result Basu framework (e.g. Fama and French 2001, Chan et al. 1991) although Fama and French (2001) find that size and book-to-market equity captures the cross-sectional variation in average stock returns associated with P/E-ratio, it is still widely used concept as a part of fundamental analysis conducted in the markets. Market capitalization is fundamental effect itself, it was first studied and documented by Banz (1981). Banz find that stocks with low market capitalization were having much higher average stock returns than large stock, even when the profits are risk-adjusted though their beta-estimates are

considered. Several studies have followed Banz and in their analytically analysis provides a large number of potential explanations for the effect. Later studies by Keim (1983) and Reinganum (1983) and links the small-firm effect closely to seasonality and precisely to January-effect as they show that the effect is strongest in the beginning of the year. The potential explanations for the effect include among others the tax-loss trading incentive and also the risk-based neglected-firm effect as highlighted by Arbel and Strebel (1983).

Fama and French (1993) study follows the risk-based explanations for the size and book-to-market effects. In their finding, they show that stocks with higher factor loadings for size or market-to-book have also higher average returns; they further interpret risk premium evidence. With this evidence and in the spirit of arbitrage pricing, this is an extension to the CAPM with an inclusion of two additional risk factors; factors for market capitalization and factor for the book-to-market ratio. This model is commonly called Fama-French three-factor model and according to their study in cross-section, the relation between the market beta and the average stock is flat and their factors for size and book-to-market capture the cross-sectional variation in stock returns. Even though the size and book-to-market ratio are not per se risk factors, Fama and French (1993) state that they might be proxies for fundamental determinants of risk and thus these patterns could be consistent with the efficient market hypothesis.

Technical effects are reflected in the market behavior of the stock as a result of the explanatory power of the cross-sectional stock return analysis, in terms of the momentum effect (Jegadeesh and Titman 1993). Momentum effect on the future stock returns are explained by the past three to 12 months returns, thus good past returns are predict good future returns. The momentum seems to be constant trend since it was first documented as an effect Jegadeesh and Titman (2001) contrary to other effects. With constant growing evidence of this effect, numerous studies have followed three-factor model framework by Fama-French to include fourth, momentum factor Carhart (1997).

2.3.2. The definition of the asset growth effect

Past studies highlighted in the literature review have documented vast evidence on the relation between the asset growth effect and the subsequent stock returns. Therefore the subsequent sections on this project will introduce the literature that has concentrated on the specific items on the balance sheet and have not considered the possibility that the return patterns are not driven by broader phenomenon.

According to Cooper et al. (2008), Lipson et al. (2010) and (Richardson et al. (2010) We define asset growth effect as

> *" a pattern in cross-sectional and time series stock returns, according to which corporate events associated with asset expansion in the asset growth tend to be followed by periods of abnormally low returns, whereas events associated with asset contraction in the asset growth tend to be followed by periods of abnormally high returns."*

Asset growth expansions are in the form of; acquisitions, investment to property, public equity offerings, bank loan, initiations and public debt offerings. Whereas asset growth contraction include; share repurchases, spin offs, dividend initiations and debt prepayments. Effects can be as a result of several unique aspects and factors cited in the previous literature such as investment, accrual, and external financing factor.

Investment effect is as a result to the expansions and contractions in the asset side of the balance sheet, whereas, the financing effect relates to changes in liabilities side of the balance sheet. Accrual effect relates to changes both in assets and liabilities side of the balance sheet. Asset growth effect and Investment effect will define a firm's investment activities; investments to fixed assets, and stock returns.

2.3.3. Balance Sheet growth studies

As asserted in the definition of the asset growth effect the relation between growth in balance sheet and the resulting stock returns can be classified into three categories:

1. Accrual effect studies
2. Investment effect studies
3. External financing effect studies

Sloan (1996) was the first to study and documented the accrual effect. According to Sloan, one period reporting high accruals companies tend to have low stock returns in following period and vice versa. Accruals are defined as non-cash accounting items, which are added to firm's operating cash flows to generate a firm's current reported accounting income. Sloan argument is that the effect exists due to inexperienced investors fixating on bottom line earnings thus misinterpreting the cash flow and accrual components of earnings. Hirschleifer et.al (2004) concurs with idea of investor fixation hypothesis propagated by Sloan (1996).

Fairfield et al. (2003) examine the accrual effect in keeping in mind the growth net operating asset growth. According to their findings, they argue that accrual effect seems to be a subset of a more general growth effect as the stock prices acts the similar manner inconsequential of the accruals growth or long-term net operating assets. The relation between firm's balance sheet growth and subsequent stock returns has also been widely studied with different alternatives for the firm's investments. For instance Titman, Wei, and Xie (2004) utilize capital expenditures to form their measure of firm's capital investments. The relation of the asset growth effect and financial constraints to find evidence, how financial constraints and free cash flows affected the relation between investments and stock returns. They conclude that firms that are not financially constrained, measured by debt ratios, have a reason to over-invest and that free cash flows affirms this behavior.

Anderson and Garcia-Feijoo (2006) following Titman et al. (2004) study use capital expenditures as an alternative for firm's investments. They study the relation between investments and stock returns from the perspective of the growth option model of Berk, Green and Naik (1999). With capital expenditures as a alternative for investments they also document a significant Investment factor. They also discover that an association between this Investment effect and the book-to-market and the capitalization effect of Fama and French (2001), according to which firms with low-book-to market value did accelerate investments and also experience increase in market values in past years. This evidence links the investment effect closely to these two well-known effects. Xing (2008) also find correlating results using in addition to growth in capital expenditures as explanatory factor but also utilizes the investment-to-capital ratio, which is defined as ratio between capital expenditures and net fixed assets.

Several studies on the liabilities side of balance sheet have been also documented. For example Ritter (1991) and Loughran & Ritter (1995) did show that equity and debt issuers were under-performing the non-issuers with similar characteristics. Lyandres, Sun and Zhang (2008) solved this phenomenon by using an investment-based hypothesis of the under-performance. The main idea behind this study was that the issuers invested more and thus due to q-theory of investment, the expected return of issuers is generally lower. They construct an Investment effect model, which measures the annual change in gross property, plant and equipment and inventories and find that this factor helps to demystify the under-performance of both the debt and the equity puzzle. Lyandres et al. (2008) also find that, Investment effect is significant explanatory factor in cross-sectional stock returns and also independent of the HML and SMB factors of Fama and French (2001).

Shares repurchasing effects relates to high subsequent average stock returns according to Ikenberry, Lakonishok and Vermaelen (1995) study, although this reverse effect to shares issuing effect. Previous evidence on stock issues and repurchases documented by Pontiff and Woodgate (2008) shows that using a factor for net stock issues can capture both effects on issuing and repurchasing of the stock. With this factor they show that a significant negative relation between the net stock issues and average returns. Daniel and Titman (2006) show similar results with using net stock issues as an alternative. This line of study conducts support for the basic idea of this project; the asset expansions are related to low stock returns and vice versa.

The relations between accrual factors, investment effect and external financing effects have been also been discussed and documented in some studies. For instance, Fairfield et al. (2003) links the Accrual effect to larger growth effect. Dechow, Richardson and Sloan (2008) find that the Accrual effect incorporates the external financing factor as according to their study the use of external financing proceeds is the predictive factor of future returns. Lyandres et al. (2008) are also explaining the external financing efffect with the investment activity of company.

Balance Sheet growth studies have shows the relation between the growth in different items in the balance sheet and their subsequent stock returns has been broadly studied. The empirical evidence documented is in line to the asset growth definition, asset growth effect and subsequent periods of low stock returns and vice versa.

2.3.4. Total asset growth studies

Asset expansion effect results to accrual factors, investment factors and financing effects. this impact can be measured by using only one definition of the growth of the firm. Thus total asset growth studies elaborates the main studies conducted using this effect.

Cooper et al. (2008) were the first to study and document a more inclusive definition of the asset growth. In their study the define asset growth as a measure of previous years' growth in firm's total assets. In their argument of inclusive definition of asset growth measure is able to capture all components of firm's total investment and financing activities. This definition itself is in contrary to the past studies of using a less inclusive definition of asset growth according to Fama & French (2008), Anderson and Garcia-Feijoo (2006), Xing (2008), evidence of the asset growth effect in all firm sizes, even among large companies, which frequently are left outside of the effect studies according to Fama and French (2008). Using the U.S. panel data from they find that their equally weighted zero investment portfolio, which goes long in companies with low asset growth and short in companies low asset growth earn annualized risk-adjusted returns of 9.1% on average. The corresponding value weighted portfolio earned 8.4% on average. They also compared the explanatory power of asset growth factor with past studies on the determinants of the cross-section of returns (i.e. book-to-market ratios, accruals, capitalization, and other growth determinants). With this comparison they find that total asset growth dominates the other determinants in the predictive abilities of cross-sectional returns.

Cooper et al. (2008) also find that the asset growth effect is constant and therefore it has an impact on the stock returns over the one-year time horizon up to five years. Nyberg and Pöyry (2010) find similar results as they study the relation between momentum returns and firm expansion. The affirm that the asset growth measure of Cooper et al.(2008) is significant and strong predictor of momentum returns in cross-section in the U. S. market.

Fama and French (2008) comprehensive study the asset growth effect in their paper "Dissecting effects" simultaneously as they studied the size, value, profitability, accruals, net stock issues, and momentum effects. Contrary to Cooper et al. (2008) they use total assets with an adjustment of split-adjusted shares outstanding to measure the firm's asset growth. They avoid the dominance problem and bias in their results of either microcaps or few large stocks, they resolve to examine the average returns from separate sorts of microcaps, small stocks, and big stocks. In their study they find asset growth effect in average returns of microcaps and small stock, but do not find any evidence for the existence of the effect for large stocks. Thus they conclude that even though the asset growth effect is significant, it is not economically material.

Lipson et al. (2010) study agrees with the principal idea of Cooper et al. (2008). Furthermore they differ with the previous research evidence on the asset growth effect, propagated by Fama and French (2008), who adjust their total asset growth measurement by ignoring the external financing factor in to large companies. Therefore the exclusion of the net stock issuing factor explains according to Lipson et al. (2010), why the study of Fama and French (2008) fail to find the asset growth effect among the large companies.

In another study Lipson et al. (2010) test different measures of asset growth used in past research papers, and find that the more inclusive definition of asset growth employed by Cooper et al. (2008), dominates the other measures in previous literature and thus incorporates the explanatory power of other growth measures. They also find that the asset growth effect is strongly linked to the idiosyncratic volatility of the company; portfolios formed of companies with low volatility do not contribute to the asset growth effect. They consider volatility as a strong indicator of arbitrage costs thus indicating that the asset growth effect could be explained by mispricing.

Lam and Wei (2010) study find a similarly result to Lipson et al. (2010) connection between the asset growth effect and certain limits of arbitrage: arbitrage risk, information risk and transaction costs. By using these alternatives for the limits of arbitrage they find that the asset growth effect is stronger when limits of arbitrage are more severe supporting the arguments of Lipson et al. (2010). They also conclude that according to their evidence the asset growth effect is mostly driven by the poor performance of the high growth stocks, which implies that investors are overreacting to growth or underreacting to overinvestment. In contrast to studies of Cooper et al. (2008) and Lipson et al. (2010) they find that only high growth stocks are supporting the effect and on the basis of this they argue that the anomaly cannot be explained by risk-based arguments, as the effect is one-sided.

In conclusion, the total asset growth studies have shown the total asset growth as measure of company's growth has provided robust and significant results from U.S. stock market. The recent studies especially by the Lipson et al. 2010 have also managed to tackle some of the criticism directed against them. With these arguments, I will adapt this total asset growth measure in this study to examine the asset growth effect in the Nairobi Securities Exchange.

2.3.5 Theoretical explanations for the asset growth effect

Past studies have propagated several unique and partially mutually exclusive arguments for potential theoretical explanations for the asset growth effect. The negative correlation between asset growth and stock returns is clearly explained mainly by the two dominant theories. Lyandres et al. (2008) asserts that this as a result of the compensation for the risk of the company due to investments, and according to Lakonishok et al. (1994) this is due to the mispricing of growth in the markets. Therefore the main debate is between the rational or irrational asset pricing models.

Table 2 presents an overview of the potential explanations for the asset growth effect.

The table presents an overview of the potential explanations for the asset growth and its sub-components provided by the previous empirical literature on the different factors of the asset growth effects: investment, accrual and external financing effects.

The examined growth factor	The provided explanation for the effect	Study
Accruals	• Earnings management • Naïve fixation on earnings	• Chan, Chan, Jegadeesh and Lakonishok (2006) • Sloan (1996)
Investment (Capex)	• Overinvestment • Q-theory of investment, stochastic discount rates • Growth options theory	• Titman, Wei and Xie (2004), Lam and Wei (2010) • Xing (2008) • Anderson and Garcia-Feijoo (2006)
External financing	• Capital structure market timing • Earnings management	• Baker and Wurgler (2002) • Teoh, Welch, Wong (1998)
Total asset growth	• Investors' extrapolation of past growth	• Cooper, Gulen and Schill (2008), Lam and Wei (2010)

One of the rational asset pricing explanations is the financial market effects. The potential explanation here is that for an effect in the market to exist, there is a failure in the applied asset pricing model. This aspect shows that CAPM does not include all the potential risk factors priced in market and therefore explaining the expected stock returns. In the asset growth effect context this risk-based explanation argues that companies with lower past asset growth rates are bearing some kind of risk, which is priced by the investors and due to this should have higher expected returns and contrary, companies with high past asset growth should have lower risk factor than companies with low growth, which explains the lower expected return. Therefore in according to risk-based explanations the effect exists only due to compensation of certain risk factor to investors.

The priced risk factor is not in correlation to the common asset pricing, past studies have presented many potential arguments for what explains the change in company's risk profile due to investments. One of such explanation in terms of the rational asset pricing results from the Tobin's q-theory framework adjusted by Cochrane (1991, 1996), which actually gives an argument for the negative expected return-investment relation. Their investment-based asset pricing model shows that the net present value (NPV) of company's investment is dependent on the discount factor of the project or simply the cost of capital of the company. The total optimal amount of investments of the company is increased as the NPV increases, therefore as the cost of capital, or expected return, decreases. In conclusion, companies with low expected returns are companies with high investment, which provides an argument for risk-based explanation of the asset growth effect in the presence of a stochastic discount factor. Another risk-based argument relating to the real options model has been propagated by Berk, Green and Naik (1999, Carlson), Fisher, and Giammarino (2006), Lyandres, Sun and Zhang, (2008). According to the model companies bearing real options relating to the expansion of their different assets, therefore the value of the firm is equal to the value of the assets in place and growth options.

These options are considered to be more risky than the overall general composition of the company due to the uncertainty related to them. Also these growth options can be regarded to be "leveraged" on the existing assets according to Gomes, Kogan and Zhang, (2003). As companies utilize and exercise these expansion options, their overall risk is greatly reduced due to lower amount of options their risk profile is bearing. In conclusion the companies with larger growth in their assets are generally associated with lower returns than companies with small growth due to the lowered risk premium exposure.

The failure in the asset pricing model is an effect that can be interpreted from the EMH explanation of market inefficiency. The mispricing outcome of the asset growth effect has its empirical and theoretical foundation in the behavioral finance field and the prior studies of DeBondt and Thaler (1985) and Lakonishok, Shleifer, and Vishny (1994) show that. This study explains that investors tend to overreact to past firm performance by creating a reversal phenomenon on the firm's stock price. The investors tend to use excessive extrapolation of the past performance, a violation of EMH on predicting future stock performance, thus creating biased and not so true expectations. In the asset growth framework this would imply that investors are overreacting to companies' announcements including some sort of asset expansion (i.e. acquisitions, public equity offerings, investments to properties, and public debt offerings) creating overpricing of these stocks and vice versa.

The firm's management's empire-building theory is a potential explanation for the asset growth argument. This is theory is partially related to the behavioral finance field. The argument presented, closely follows Jensen (1986) framework which implies that the excessive accumulation of assets, and therefore overinvestment, can be interpreted as impact of agency costs and the empire-building behavior of the firm's management, which serves only their vested interest. If the shareholders learn that their investment is not

optimally allocated, the price adjusts to this behavior. Behavioral finance scholars have studied the market timing effect related to raising and retiring external financing and its relation to the stock returns. Scholars like Baker & Wurgler (2002) find that firms are more likely to issue equity when their market value is higher relative to book value and to repurchase shares when the equity valuation is lower due to market timing activities of the firm's management. Therefore with repurchases the stock is more likely to be undervalued and high subsequent stock returns are expected, and vice versa with stock issues.

In addition, earnings firm's management has been linked to balance sheet growth effects. In accruals context, Chan, Chan, Jegadeesh and Lakonishok (2006) find that the high accruals capture the earnings firm's management activities of the management and thus this activity explains the accrual effect. With the same framework, though in the relation to the external financing anomaly, Teo, Welch and Wong (1998) find that companies are managing their earnings prior to financing activities, which explains the low stock returns in the subsequent periods. Therefore these studies provide evidence that the earnings firm's management activities can provide a potential explanation for the individual parts of the asset growth effect.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research design and methodology that will be employed in this project to study asset growth effect on stock returns. In the first section I will start by describing the broad measure of the asset growth is defined. The second section discuss the methodological issues of portfolio sorting method used to examined on the asset growth effect - stock returns. The third section defines the test methodology used in particular the portfolio sort method. Last limitation of the study are highlighted in the fourth section

3.2. Broad measure of the asset growth

Growth rate is important to investors and management to determine future success of a business. A company's growth is measurable in several categories. These categories include profit growth, employee growth, asset growth or any other type of variable an investor or management this is an important indicator future success to the company (eHow.com). The general asset growth measure defined and used e.g. by Cooper et al. (2008) and Lipson et al. (2010) is used. The total asset growth ratio in June of year t is defined as the percentage change in total assets from fiscal year t-2 to t-1:

$$ASSETG_1 = \frac{Total\ Assets_{t-1} - Total\ Asset_{t-2}}{Total\ Asset_{t-2}} \quad (1)$$

Where: $ASSETG_1$ = the asset growth ratio of the company at time t;

$Total\ Asset_{t-1}$ = the total assets of the company at time t-1; and

$Total\ Asset_{t-2}$ = the total asset of the company at time t-2.

Even though this project adapts the broad asset growth defined above, it is important to understand that this measure can be affected by the change in several different balance sheet items. Cooper et al. (2008) divide the different balance sheet items to asset investment and asset financing compositions. The asset investment composition is further divided as follows:

Total asset growth (ASSETG) (2)

= Cash growth

+ Non-cash current asset growth

+ Property, plant, and equipment growth

+ Other assets growth

Whereas the financing side of the balance sheet is decomposed as follows:

Total asset growth (ASSETG) (3)

= Operating liabilities growth

+ Retained earnings growth

+ Stock financing growth

+ Debt financing growth

3.3. Methodological issues of using the portfolio sorts

Two different approaches are often used to identify effects. These approaches are using either portfolio sorts of shares into portfolios based on the effect variable or with cross-sectional according to Fama-MacBeth regressions (1973). As both of the methods have their advantages and disadvantages, many studies have chosen to implement both

methods simultaneously, which provides more comprehensive perspective to the research issue and a robust cross check. However in this study we use the only the portfolio sorting method based on the simplicity and transparency of our data.

The main advantage of the portfolio sorting method as stated before is its simplicity and transparency, and therefore the results are easily practically applicable. In addition to this sorts are not dependable on any specific model and thus do not pose any linear restrictions. The main drawback is that the sorting method does not define the functional form of the relation between the variable and stock returns, thus does not provide direct estimates of the marginal effects. Also sorting method allows only testing a limited number of variables thus restricting the possibility to include other potential explanatory variables to tests.

One of the main issues in the portfolio sorts methodology is the choice of the stock weights in the formed portfolios. There are two most commonly used methods for these portfolio weights: equally weighted (EW) or value weighted (VW) methods. However, the choice of method affects the potential problems the tests and the analysis of the results may confront. EW-portfolios may be dominated by micro-capitalization stocks, whereas few large stocks could potentially drive the returns of VW-portfolios. Both of these issues may bias the results and give possibility to draw invalid conclusions from the tests. Naturally these issues are affected by the structure of the sample. (Fama & French, 2008)

The cross-sectional regression provides direct estimates on the marginal effects of the explanatory variable while imposing a linear structure on the functional form of the relation between the variable and stock returns. The main advantage is naturally the possibility to include multiple variables to the equation and simultaneously examine the potential relations. However, for the chosen variable, the assumed linear form might be incorrect, which creates biased results. Also the explanatory variables in the cross-sectional analysis maybe highly correlated.

To avoid the shortcomings of the portfolio sort method and to provide extensive overview of the asset growth effect, I will utilize a model in this project. This way I am able to measure the potential marginal estimates of the effect and also provide more evidence of the existence of the asset growth effect with time-series analysis.

3.4. Test

This section introduces the tests performed in this project in order examine the asset growth effect by the portfolio sorts method.

3.4.1. Portfolio Sorting Tests

The portfolios are formed at the end of the last trading day of June each year by sorting the companies according to the total asset growth ratios of the previous year as defined in the section 3.3. June is chosen as the portfolio formation in order to ensure that the investors have received the financial information from the year prior to the portfolio formation. Similar portfolio formation technique is also a convention in prior studies of Fama & French (2008); Cooper et al. (2008).

After sorting, allocation of the companies to ten equal sized portfolios and according to their prior year asset growth is implemented e.g. the high asset growth portfolio contains the companies with the highest 10% growth in total assets at the end of the year prior to portfolio sorting. Thereby all together ten different portfolios are formed. Portfolios are named in a manner that the high asset growth portfolio will be called P10; the next highest asset growth portfolio will be P9 and so forth. Zero investment reporting is done on the long-short portfolio, which has goes long in the low growth portfolio and short on the high growth portfolio. The holding period for each portfolio is one year and the rebalancing is performed at the end of June each year. For each portfolio calculation of both the equally weighted and value weighted raw returns over the one-year holding period due to the reasoning.

As the number of firms listed on the main list of Nairobi Stock Securities has varied between the sample years, also the number of stock per portfolio between years has changed. In addition to this in each year the number companies in the sample is not always dividable by the number of portfolios, therefore I have chosen that the middle portfolio P5 will include all additional companies or less companies than other companies in each. This is no need for adjustments to be done in order to achieve the same number for the high and low asset growth portfolios, which are under the main focus in this portfolio sorting method. In order to calculate abnormal monthly returns of the portfolios, regression of the monthly excess returns over risk free rate to a simple market model. The regression equation for the model is thus the following:

$$r_{jt} - r_{fj} = \alpha_j + \beta_j (r_{mt} - r_{ft}) + \varepsilon_{jt} \qquad (4)$$

where r_{jt} is the monthly return of the portfolio, r_{ft} is the risk – free rate, r_{mt} is market return, and ε_{jt} is the average monthly abnormal return of portfolio j.

In order to control potential priced risk premium I will calculate the abnormal monthly returns for the formed portfolios by regressing the raw portfolio returns to Fama-French (1993) three factor model. The equation for this model is the following:

$$r_{jt} - r_{fj} = \alpha_j + \beta_j (r_{mt} - r_{ft}) + s_j SMBT + h_j HML_t + \varepsilon_{jt} \qquad (5)$$

where r_{jt} is the monthly return of the portfolio, r_{ft} is the risk – free rate, r_{mt} is the market return, SMB_t is the difference of return between small and large firms, HMLt is the difference of returns between low and high market – to – book firms and ε_{jt} is the average monthly abnormal return of the portfolio j

To test for further robustness I will in addition to this regress the portfolios returns to the following Carhart (1997) four factor model:

$$r_{jt} - r_{fj} = \alpha_j + \beta_j (r_{mt} - r_{ft}) + s_j SMBT + h_j HML_t + d_t UMD_t + \varepsilon_{jt} \quad (6)$$

where in addition to the factors in model (*5*) also a price momentum factor (UMD) is introduced.

3.5. Limitation of the study

The main objective of this project is to examine asset growth effect on future stock returns in the Nairobi Securities Exchange listed non-financial firms. Therefore I will not consider financial firms in my sample since their accounting reporting procedures are not uniform across the industry this could result to biasness. It should still be noted that the findings of the project might give some evidence to support either of these perspectives. Other potential methodological limitations are highlighted in the interpretation analysis of sample of the study

CHAPTER FOUR: DATA ANALYSIS, RESULT AND DISCUSSION

4.1. Data Analysis procedures and Presentation

Data analysis procedures and Presentation the empirical findings from the tests defined in section 3.4. to provide analysis on the results. The first section describes the sample size and sampling procedures. In the second section concentrates on the characteristics of each asset growth portfolio including the number of stock each year and the results from the simple portfolio sorting method, which uses only the total asset growth measure to form the portfolios.

4.2. Sample size and Sampling procedures

The sample data consists of all Kenya stocks non-financial listed in Nairobi Securities Exchange between July 2001 and June 2011. All financial companies are excluded from the sample, which is a common practice in most effect studies. One reason for this procedure is that accounting principles are different with these companies and as this study relies on accounting information, this could bias the results. All stock returns and accounting information are collected from Nairobi Stock Securities Limited.

To ensure the reasonable amount of companies in the sample and the availability of the balance sheet information, the portfolio tests conducted in this project start from July 2001 and end in the June 2011. If company is missing any required data in one period it is excluded from the sample in that period to avoid any biases in this respective. The descriptive statistics of the market indexes used in this study are presented in Table 3. These equally and value weighted market indexes are formed of the sample data in order to provide suitable baseline for the performance of the different sample portfolios.

Table 3: Descriptive statistics stock market index data

This table presents descriptive statistics for stock market index in Nairobi Securities Exchange constituted by using the companies from the sample. The data consists of monthly return observations from June 2001 to July 2011. The days, when the stock exchange in question is closed, are excluded from the sample. All numbers are in decimal format, e.g. 0.01 is 1 %.

Index	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
Equally Weighted	0,0105	0,0539	-0,2637	0,2735	-0,3977	4,1662
Value Weighted	0,0088	0,0456	-0.2702	0,1253	0,9713	4,4115

4.3. Characteristics and return analysis of portfolios

The portfolio sorting method can lead to biased results due to the different characteristics of the asset growth portfolios, especially if there is some extreme variation between the portfolios, e.g. dominance of small stocks or high differences in book-to-market ratios. Thus it is important to analyze the characteristics, in order to identify potential issues. Table 4 presents the characteristic of the asset growth portfolios formed with one stage portfolio sorting method. Panel A presents financial and past return characteristics of the asset growth portfolios and Panel B shows the number of individual companies in the portfolios across the sample years.

Table 4: Asset growth portfolios - Financial and return characteristics

The table presents an overview of the financial and return characteristics of the ten different asset growth portfolios. The portfolios are formed in the end of June each year t over 2001-2011 by sorting the stocks according to their total asset growth (ASSETG), which is defined as the percentage change in total assets from the fiscal year ending in t-2 to fiscal year ending in t-1. The stocks are then allocated to ten portfolios, thus the 10% highest asset growth are allocated to P10-portfolio, stocks with the 10% lowest growth are allocated to P1 and so forth. Market value (MV), in millions of Ksh, is calculated using the closing price and the number of shares outstanding at the end of June of year t. Book-to-market ratio (BM) is calculated using the financial information from the fiscal year ending in t-1. RET6M is the buy-and-hold return over January to June in year t. The numbers in each cell are time series averages of yearly cross-sectional medians. All numbers, with the exception of MV, are in decimal format, e.g. 0.01 is 1 %.

PANEL A : Financial and Return characteristics

	P1 (Low)	P2	P3	P4	P5	P6	P7	P8	P9	P10 (High)	Spread (P10-P1)
ASSETG	-0,23	-0,07	-0'01	0,03	0,07	0,12	0,18	0,27	0,49	1,49	1,72
MV	271	595	696	705	911	777	721	554	616	390	119,08
BM	0,89	0,93	0,92	0,87	0,79	0,78	0,90	0,73	0,83	0,75	-0,14
RET6M	0,07	0,05	0,04	0,05	0,07	0,04	0,08	0,10	0,06	0,05	-0,02

PANEL B: Number of stocks in asset growth portfolios

Date	P1 (Low)	P2	P3	P4	P5	P6	P7	P8	P9	P10 (High)	Total no. of stocks
2001	21	21	21	21	21	21	21	21	21	21	210
2002	22	22	22	22	22	22	22	22	22	22	224
2003	23	23	23	23	23	23	23	23	23	23	231
2004	23	23	23	23	23	23	23	23	23	23	231

Date	P1 (Low)	P2	P3	P4	P5	P6	P7	P8	P9	P10 (High)	Total no. of stocks
2005	23	23	23	23	23	23	23	23	23	23	231
2006	23	23	23	23	23	23	23	23	23	23	231
2007	23	23	23	23	23	23	23	23	23	23	231
2008	23	23	23	23	23	23	23	23	23	23	231
2009	23	23	23	23	23	23	23	23	23	23	231
2010	23	23	23	23	23	23	23	23	23	23	231
2011	23	23	23	23	23	23	23	23	23	23	231

Panel A shows that the time series averages of yearly cross-sectional medians on asset growth have quite high variance between the different portfolios. Mostly the high spread between the portfolios P1 and P10 is driven by the extremely high asset growth of P10, in fact the spread between P10 and P9 is also quite high in comparison with the differences of other adjacent portfolios. It is also interesting that the time series averages of the three lowest asset growth portfolios have actually been negative thus the companies of these portfolios have on average reduced their total assets, whereas in the rest of the portfolios the total assets have on average increased.

Panel A also shows that both the low asset growth portfolio P1 and the high asset growth portfolio P10 contain on average smaller stocks in regards to market value than the peer portfolios. The largest companies are on average in the middle portfolio P5. The quite high variation in the average company size between the portfolios requires closer scrutiny, which will be performed in the section 3 though it is important to note that between the two portfolios P1 and P10, which are under closer dissection, the difference is not remarkably high.

Book-to-market ratios usually don't reveal any extreme variation between the asset growth portfolios; even though it seems that on the average book-to-market ratios are higher on the low asset growth portfolios than in the high asset growth portfolios. This characteristic has been also found in previous studies according Lipson et al. (2010), which also provided evidence that the book-to-market effect is separate from the asset growth effect. Thus this aspect is not examined more closely in the scope of this project, but should be considered when the results of this thesis are scrutinized. Furthermore the past return characteristics are not revealing any significant differences between the portfolios on average, even though the spread between the high and the low asset growth portfolio is slightly negative. Thus indicates that on the portfolio formation year, the low asset growth portfolio has over-performed the high asset growth portfolio and thus if the portfolio sorting would be done earlier, before the end of June, the asset growth effect returns could potentially be positively affected.

Panel B shows the number of companies in each portfolio has varied across the sample years with the low point being 10 companies in each portfolio in the year 2001. Thus the number of companies should be sufficient enough in order to avoid dominance of single companies in the portfolios and to provide robust results. The one-stage portfolio sorting method allows the companies to be allocated evenly to portfolios, however, if the total number of companies is not dividable by ten then portfolio P5 includes less or more companies than the peer portfolios, which can be seen from Panel B. The total number of different individual stocks during the whole sample period is 2218 and thus these companies were listed to the final portfolio formation year 2011.

Table 5: Asset growth portfolios raw and risk adjusted returns

The table presents value and equally weighted returns of ten portfolios sorted on the growth of the total assets. All stocks from Nairobi Securities Exchange are included in the sample with the exception of companies from the financial industry. The ten different portfolios are formed in the end of June each year t over 2001-2011 by sorting the stocks according to their total asset growth, which is defined as the percentage change in total assets from the fiscal year ending in t-2 to fiscal year ending in t-1. Portfolio P1 (P10) consists of the stock with the 10% lowest (highest) total asset growth. EW stands for equally weighted portfolio returns and VW for value weighted portfolio returns. Spread (P1-P10) is the difference on monthly returns between portfolios P1 and P10. The numbers in each cell are averages of time series monthly stock returns. All numbers are in decimal format. e.g. 0.01 is 1%. For each variable of interest, ***, **, and * indicate that the estimate is statistically different from zero at 1%, 5% and 10% confidence levels respectively.

PANEL A: Asset growth portfolios raw and risk adjusted returns

	p1	p2	p3	p4	p5	p6	p7	p8	p9	p10	Spread(p1-p10)	t(spread)
returns(EW)	0.0132	0.0125	0.0130	0.0118	0.0117	0.0109	0.0097	0.0091	0.0070	0.0062	0.0070	1.2821*
(EW)	0.0690	0.0550	0.0535	0.0507	0.0521	0.0511	0.0522	0.0561	0.0614	0.0684	0.0343	
returns(VW)	0.0107	0.0124	0.0113	0.0108	0.0102	0.0091	0.0094	0.0107	0.0076	0.0073	0.0034	0.6943
(VW)	0.0633	0.0690	0.0498	0.0527	0.0539	0.0497	0.0498	0.0563	0.0575	0.0614	0.0482	

PANEL B: Portfolio alphas(EW)

	p1	p2	p3	p4	p5	p6	p7	p8	p9	p10	Spread(p1-p10)	t(spread)
ean excess	0.0077	0.0074	0.0081	0.0066	0.0067	0.0058	0.0045	0.0035	0.0018	0.0009	0.0068	1.2791*
turns												
PM alpha	0.0044	0.0047	0.0055	0.0041	0.0042	0.0033	0.0019	0.0008	-0.0011	-0.0024	0.0070	3.4112***
factor alpha	0.0068	0.0051	0.0063	0.0043	0.0042	0.0036	0.0022	0.0016	-0.0005	-0.0007	0.0075	2.5504***
factor alpha	0.0066	0.0065	0.0071	0.0056	0.0056	0.0051	0.0041	0.0031	0.0013	0.0009	0.0057	1.9534**

PANEL C: Three-factor regression coefficients(EW)

M	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
MB	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
ML	-0.3836	-0.0564	-0.0130	-0.0309	-0.0025	-0.0412	-0.0454	-0.1330	-0.0870	-0.2670

The results from the one-stage portfolio sorting method described in the section 3.4. The Table 5 presents the results and the performance of the trading portfolios based on past asset growth. Panel A presents both value weighted and equally weighted raw returns of ten different asset growth portfolios during the sample period. The Panel B shows the risk-adjusted returns of all ten asset growth portfolios including the simple excess return over the Kenya bond yield and the alphas related to the CAPM, the Fama-French three factor model (1993) and the four factor model of Carhart (1997). The final Panel C shows the factor loadings on the factors in Fama-French model.

In accordance with the asset growth effect, the high asset growth portfolio has been during the sample period the worst performing portfolio measured in both equally weighted and value weighted average monthly raw returns with 0.67% average equally weighted monthly return and with 0.73% weighted monthly return. The low asset growth portfolio has been outperforming the high asset growth portfolio in both equally and value weighted raw returns and the low asset growth portfolio has actually been also the most solid performer in the whole group if considering equally weighted raw returns with 1.32% average monthly return. It is interesting that the low asset growth portfolio is only the fourth best performing portfolio in the whole group with 1.07% monthly raw return.

The raw return equally weighted portfolio spread between the highest and lowest asset growth portfolios has been on average 0.70% on monthly basis and it is statistically significant on 10% confidence level. With value weighted monthly raw returns the spread is also positive, even though it is lower, 0.34% and not statically significant on 10% confidence level. The reason for this insignificant result might be due to the relatively low performance of the low asset growth portfolio. This could indicate similar results than in the study of Lam and Wei (2010). They argued that the asset growth effect is mostly driven by the poor performance of the high asset growth stocks.

In addition to this, when calculating the equally weighted raw returns the performance of the portfolios is increasing in linear fashion from the highest growth portfolio to the lower asset growth portfolios, with the exception of order on P2 and P3 portfolios; Between these portfolios the P2 portfolio has been on average performed slightly worse than the P3 portfolio with 0.5 % average monthly difference. Overall the linear pattern in equally weighted stock returns indicates a negative relation between stock returns and prior year asset growth. On value weighted returns the return pattern also seems to hold some linear structure, even though the pattern is not as coherent as with equally weighted returns. As mentioned previously the lowest asset growth portfolio P1 is only the fourth highest

performing portfolio on monthly returns while portfolio P8 is performing surprisingly well compared to other high growth portfolios.

By adjusting the returns with other potential risk premiums of each portfolio the asset growth effect is strengthened, which can be seen from the higher spreads between portfolios P1 and P10 in Panel B. The alpha spreads also show more economically significant results than on the raw return level. The CAPM alpha spread is highly significant on 0.01% confidence level, whereas Fama-French alpha spread is significant on 1% confidence level. With the momentum factor included the spread still remains significant, even though on 2.5% confidence level.

By examining the risk-adjusted individual portfolio alphas, the drivers of the significant spreads are more apparent. Even though the low asset growth portfolio is performing relatively well in the peer group, the wide spreads can be explained by the extremely bad performance of the high asset growth portfolio. The average monthly alpha has been actually negative in CAPM and Fama-French models with -0.2 and -0.1% average monthly returns respectively. The observation, that high asset growth portfolio P10 is not performing outstandingly well in the peer group, is consistent with the results of Lam and Wei (2010).

The general linear negative relationship between asset growth and subsequent stock returns persists in some level also with risk-adjusted returns. The effect is not completely symmetrical; the five portfolios with the highest asset growth companies are the worst performers and the return is linear with the level of asset growth, whereas within the five companies with the highest asset growth the performance does not clearly depend on the asset growth though, the group of five portfolios (from P1 to P5) with the lowest asset growths still outperforms the five portfolios with highest asset growths (from P6 to P10).

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CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Summary

This study examined the existence and the characteristics of the asset growth effect in the Nairobi Securities Exchange. Especially I concentrated on the asset growth effects on cross-sectional stock returns in the stock market. The substitute for asset growth in this project is adapted from Cooper et al. (2008) and is measured as a lagged growth in total assets of the balance sheet. In addition to investigating the potential negative relation between lagged total asset growth and subsequent stock returns. According to my knowledge, this project is the first to study the potential existence and features of the asset growth effect in Kenya stock markets in this scope and scale. The summary of the main results is presented in Table 6.

Table 6: Presents the main study objectives and empirical conclusions

Objective	Conclusion
To summarise the current state of literature and find a suitable alternative for the asset growth	Comprehensive literature review shows balancing of assets and liabilities is essential in order to maximise returns
To test if the asset growth effect on future stock returns exists in the Nairobi Securities Exchange	Negative relationship does not exist and is not visible in the results of the portfolio sorting method. Asset growth is not a significant determinant of the cross-sectional returns, even though marginal effect is quite modest.

5.2. CONCLUSION AND RECOMMENDATIONS

Consistent with the studies of Cooper et al. (2008) and Lipson et al. (2010) from the U.S. market the results from the one stage portfolio sorting method indicates that there is a negative relation between the total asset growth and the expected stock return.

For additional future research, it could be interesting to examine more carefully the components of the total asset growth driving the performance and to compare whether these drivers vary depending of the size of the company. The specific drivers in the balance sheet have already been identified (Cooper et al. 2008), however according to my knowledge the relation to size has not been studied further. It could be argued in theory that the drivers could significantly vary between different size groups as different size of companies are dependent on different sources of financing affecting the financing side of the balance sheet (section 2.3.1). This aspect could also potentially explain, why the strength of the asset growth effect profit vary between different size groups and actually are non-existent in some size groups as was according to the results of this study the case with the medium sized companies in the Nairobi Securities Exchange.

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APPENDICES

Appendix I: List of quoted companies at the NSE

	Agricultural Sector		Automobiles & Accessories Sector
1	Eaagads Limited	1	Car & General (K) Ltd
2	Kakuzi Limited	2	CMC Holdings Ltd**
3	Kapchorua Tea Co. Ltd	3	Marshalls (E.A.) Ltd
4	The Limuru Tea Co. Ltd	4	Sameer Africa Ltd
5	Rea Vipingo Plantations Ltd		Construction & Allied Sector
6	Sasini Ltd	1	Athi River Mining Ltd
7	Williamson Tea Kenya Ltd	2	Bamburi Cement Ltd
	Banking Sector	3	Crown Berger Kenya Ltd
1	Barclays Bank of Kenya Ltd*	4	E.A.Cables Ltd
2	CFC Stanbic of Kenya Holdings Ltd*	5	E.A.Portland Cement Co. Ltd**
3	Diamond Trust Bank Kenya Ltd*		Energy & Petroleum Sector
4	Equity Bank Ltd*	1	KenGen Co. Ltd
5	Housing Finance Co.Kenya Ltd*	2	KenolKobil Ltd
6	Kenya Commercial Bank Ltd*	3	Kenya Power & Lighting Co Ltd
7	National Bank of Kenya Ltd*	4	Total Kenya Ltd
8	NIC Bank Ltd*		Insurance Sector
9	Standard Chartered Bank Kenya Ltd*	1	British-American Investments Co.(Kenya)Ltd*
10	The Co-operative Bank of Kenya Ltd*	2	CFC Insurance Holdings Ltd*
	Commercial and Services Sector	3	Jubilee Holdings Ltd*
1	Express Kenya Ltd	4	Kenya Re Insurance Corporation Ltd*
2	Hutchings Biemer Ltd**	5	Pan Africa Insurance Holdings Ltd*
3	Kenya Airways Ltd		Manufacturing & Allied Sector
4	Nation Media Group Ltd	1	A.Baumann & Co Ltd**
5	Scangroup Ltd	2	B.O.C Kenya Ltd**
6	Standard Group Ltd	3	British American Tobacco Kenya Ltd
7	TPS Eastern Africa Ltd	4	Carbacid Investments Ltd**
8	Uchumi Supermarket Ltd**	5	East African Breweries Ltd
	Investment Sector	6	Eveready East Africa Ltd
1	Centum Investment Co Ltd*	7	Kenya Orchards Ltd
2	City Trust Ltd*	8	Mumias Sugar Co. Ltd
3	Olympia Capital Holdings Ltd*	9	Unga Group Ltd
4	Trans-Century Ltd*		Telecommunication & Technology Sector
		1	AccessKenya Group Ltd
		2	Safaricom Ltd***

Source: NSE 2012. * indicates financial sector companies listed in the NSE. ** indicates companies suspended from trading at the NSE. *** indicates companies listed after the year 2007