THE EFFECT OF SELECTED MACROECONOMIC VARIABLES ON THE FINANCIAL PERFORMANCE OF PRIVATE EQUITY FIRMS IN KENYA

BY

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OCTOBER 2013
DECLARATION

I, the undersigned, declare that this research project is my own original work and does not include any material already submitted for a degree at the University of Nairobi, or any other degree at any other university.

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D63/67955/2011

This research project has been submitted for examination with my approval as the university appointed supervisor.

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ACKNOWLEDGEMENTS

I would like extend my utmost gratitude to the Almighty God for His divine grace, care, mercy, tranquility and blessings that have been extremely instrumental for this work to come to fruition. We make plans but He crowns them all.

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My deepest gratitude go to my parents who through their sage wisdom and life experience acquired through the years, frequently advised, counseled, encouraged and supported me prior to, and during the entire duration of this challenging undertaking. You are my best friends and I thank God for you. This Magnus Opum is a tribute to you all.
DEDICATION

This dissertation is dedicated to my father, for his grand, useful and life altering teachings, sage advice and life lessons on how to soldier on when mist and darkness seek to envelope you, to my mother, for her encouragement, patience and support, to my sister, may this work serve as a beacon that no challenge is insurmountable when there is a laser like focus and an iron will.

“Trust in the LORD with all your heart
and lean not on your own understanding;
in all your ways submit to Him,
and He will make your paths straight”

Proverbs 3:5-6 NIV
Kenya has experienced vibrant activity relating to the acquisition of local firms by Private Equity (PE) and the size of PE transactions. Some notable PE firms are well known and are listed on the NSE, such as Centum Investments and Trancentury Group. A number of PE firms making inroads in Kenya are multinational such as Abraaj Group, Carlyle Sub Saharan Africa Fund and Emerging Capital Partners African Fund. PE as its name suggests, is very reclusive, private and confidential in nature; and the exact information about financial deals are difficult to ascertain. The research objective was to establish the effect of selected macroeconomic variables on the financial performance of PE firms in Kenya. The variables selected were those that were perceived by the researcher and supported by previous empirical studies, to have the highest effect on financial performance of PE firms as measured by Return on investment (ROI). These are inflation rate, GDP growth rate, bank lending rates, exchange rate of dollar versus KSH and systematic risks. ROI was taken to be the dependent variable while inflation, GDP growth rate, bank lending rates, exchange rate and systematic risk were taken to be the independent or predictor variables. The study also considered an error term as a representative of other non key variables which had not been included in the model. The study period ranged from 2005 to 2012 within every quarter of a year, therefore consisting of 32 observations. The data was analyzed using SPSS version 11 for Windows. Multivariate regression model was employed in the study. To further ensure the model’s significance and goodness of fit, an F test and Analysis of Variance (ANOVA) were used. Out of the private equity (PE) firms sampled, the study established that PE firms’ in Kenya ROI was heavily influenced by the selected macroeconomic variables with GDP having the largest influence and systematic risk having the least impact. The computed $R^2$ was established to be of 0.728 which shows there is a positive and strong correlation between the selected macroeconomic variables and ROI. 72.80% of ROI is influenced by the selected variables while 18.2% shows ROI affected by other variables not included in the regression, more specifically the error term. The study also established positive correlation between the dependent and independent variables albeit to varying degrees. Gross domestic product, inflation and banks lending interest rates in that respective order were established to be the macroeconomic factors that had the greatest positive effect on PE firms’ financial performance while exchange rate of the dollar against the Kenya Shilling showed a negative relationship albeit to a small extent. Hence, these macroeconomic variables should be carefully be considered by all stakeholders in the PE industry. Therefore this study proves, lends credence and confirms the researcher’s theory that the financial performance of PE firms is affected by fundamental macroeconomic factors such as GDP, inflation, currency exchange rate, interest lending rates and market risk. In summary, the aforementioned macroeconomic should be closely monitored and taken to account by PE funds and firms managers since they have an effect on the overall financial performance of PE firms.
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>APT</td>
<td>Arbitrage Pricing Theory</td>
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<tr>
<td>AVCA</td>
<td>African Venture Capital Association</td>
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<tr>
<td>CAPM</td>
<td>Capital Asset Pricing Model</td>
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<td>CBK</td>
<td>Central Bank of Kenya</td>
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<td>CDO</td>
<td>Collaterized Debt Obligation</td>
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<tr>
<td>CLO</td>
<td>Collaterized Loan Obligation</td>
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<tr>
<td>CMA</td>
<td>Capital Markets Authority</td>
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<tr>
<td>DFI</td>
<td>Development Financial Institution</td>
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<tr>
<td>EA</td>
<td>East Africa</td>
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<td>EMPEA</td>
<td>Emerging Markets Private Equity Association</td>
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<td>EVCA</td>
<td>European Venture Capital Association</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GP</td>
<td>General Partner</td>
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<tr>
<td>ICDC</td>
<td>Industrial and Commercial Development Corporation</td>
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<tr>
<td>IPO</td>
<td>Initial Public Offer</td>
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<tr>
<td>IRR</td>
<td>Internal Rate of Return</td>
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<td>KSH</td>
<td>Kenya Shilling</td>
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<tr>
<td>LBO</td>
<td>Leveraged Buy Out</td>
</tr>
<tr>
<td>LP</td>
<td>Limited Partner</td>
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<tr>
<td>MBO</td>
<td>Management Buy Out</td>
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<td>MPT</td>
<td>Modern Portfolio Theory</td>
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<tr>
<td>NSE</td>
<td>Nairobi Securities Exchange</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<td>PE</td>
<td>Private Equity</td>
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<tr>
<td>PEI</td>
<td>Private Equity International</td>
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<tr>
<td>ROI</td>
<td>Return on Investment</td>
</tr>
<tr>
<td>S &amp; P 500</td>
<td>Standard and Poor Index Rating Agency of 500 US listed firms</td>
</tr>
<tr>
<td>SME</td>
<td>Small and Medium Enterprises</td>
</tr>
<tr>
<td>USD</td>
<td>United States Dollars</td>
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<tr>
<td>VC</td>
<td>Venture Capital</td>
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<td>VIF</td>
<td>Variable Inflation Factor</td>
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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Investing through acquiring a share in companies is the traditional and most common practice by investors who want to grow their funds. The practice of owning equity in a private company led to the obvious and simple term “Private Equity.” Innate desire by wealthy individuals and those with disposable incomes creates a need to grow their wealth. Kocis (2009) gives examples of Netscape, Google, eBay, Cisco, Sun Microsystems and Amazon among many other, as some of the companies that have immensely benefited from Private Equity (PE) backing. The term private equity (PE) has continuously evolved over time from the initial one known as Venture Capital (VC). The objective of PE has still remained as that of committing funds obtained from investors into young and startup companies, overseeing the investments and finally exiting with an objective of reaping gains from the sale of investments. The activities of PE firms have recently attracted publicity due to the amount of capital invested in them, and the critical role played by these firms in financing companies, acting as a catalyst for economic growth and cementing the application of prudential and accountable corporate governance.

PE fund have been given the name; “the new kings of Wall Street.” This stems from their ability to raise billions of funds from institutional investors such as pension funds, endowments and the insurance industry (Harris et al., 2011). They do not only provide the initial capitalization for firms, but also management and operational advice. They
frequently steer fledgling firms to hire the right managers and increase sales and profits. In return these funds have consistently recorded an acceptable rate of return for their investors. PE plays a valuable role in helping to transform underperforming companies, restructuring them and enhancing their productivity (Dittmar et al., 2012).

PE is a type of investment aimed at gaining significant, or even complete, control of a company in the hopes of earning a high return. As the name implies, PE funds invest in assets that either are not owned publicly or that are publicly owned but PE buyer plans to take private. Though the money used to fund these investments comes from private markets, private equity firms invest in both privately and publicly held companies. Private equity is an asset class which has received considerable recent attention due to its perceived exceptional returns. Not surprisingly, it has grown to a considerable size, both in terms of assets under management and deal size. PE funds are actively involved in overseeing and “managing the managers” of their portfolio companies, setting them apart from other institutional investors such as money managers and hedge funds (Kaplan and Schoar, 2005).

Cumming and Johan (2007) described PE as a financial and investment intermediary between holders and providers of capital on one hand and specific types of private companies on another. (Jensen, 2007) discussed PE as a category of equity securities in private companies that are not publicly traded. PE offers an alternative investment to institutional investors and other capital market participants.
PE is an investment avenue aimed at gaining significant, or even complete, control of a company in the hopes of earning a high return. PE funds invest in assets that either is not owned publicly or that are publicly owned but the PE buyer plans to take private. Though the money used to fund these investments comes from private markets, PE firms invest in both privately and publicly held companies. Kaplan and Stromberg (2008) postulated that among the most common investment strategies in private equity involve leveraged buyouts, venture capital, growth capital, distressed investments and mezzanine capital. In a typical leveraged buyout transaction, a private equity firm buys majority control of an existing or mature firm. This is distinct from a venture capital or growth capital investment, in which the investors (typically venture capital firms or angel investors) invest in young or emerging companies, and rarely obtain majority control. PE is also often grouped into a broader category called private capital, generally used to describe capital supporting any long-term, illiquid investment strategy. PE can be also explained as a professionally managed pool of money raised by investors for the sole purpose of making actively-managed direct equity investments in private companies and with a well defined exit strategy which will be in form of a sale of an enterprise or Initial Public Offer (IPO).

PE firms obtain their funds from Limited Partners (LPs) which consist of pension funds, endowment funds, wealthy investors and leverage. The funds are managed by an active group of General Partners (GPs) who invest the funds in start up businesses, young and mature enterprises. The investments are usually for a lengthy period of time ranging from 3 years and beyond. Ljungqvist and Richardson (2003) discussed the objectives of PE
firms as to develop innovative portfolio companies with high growth potential or to increase the value of portfolio companies, through growth strategies implemented by actively monitoring the decisions taken by the management and establishing clear lines of responsibility and corresponding incentives.

1.1.1 Macro Economic Variables

Brinson et al. (1991) defined macro economic variables as those that are pertinent to a broad economy at the regional or national level and affect a large population rather than a few selected individuals. The variables identified as having major influence include; inflation, gross domestic product (GDP), currency exchange rate, interest rates, legal and regulatory environment and risk.

These variables are closely observed by business, governments, and consumers and by extension PE firms since they have an impact on their financial performance. Kwon & Shin (1999) observe that, that a country’s economy affects the performance of its organizations and by extension the most influential macro economic variables are GDP, currency exchange rate, interest rates, inflation and market risk. Sharma and Singh, (2011) found out that many PE firms, which normally carry out their investment over a long duration of time and usually they have an expectation that macro economic variables will remain stable and favorable to their operations over the entire duration of their investment.
1.1.2 Financial Performance of PE Firms

Financial performance can be defined as an approach to determining the extent to which the financial goals such as increase in shareholder value, profitability and cash flows are achieved in a particular period of time. PE firm’s financial performance can be expressed in terms of a J curve effect. The depth and length of a J-Curve depends on several factors. First, the J-Curve is influenced by the level of fees early on in the fund’s life. Since management fees are based on the entire committed capital to PE while this capital is only gradually invested over the first few years (Grabenwarter and Weidig, 2005).

Investment yields of PE during the initial are negative due to management fees and costs of outlay, which are quite large compare to the returns. There is also the presence of underperforming funds which are subsequently identified and removed from the PE portfolio. A PE fund usually also consists of different types of transactions: some very successful transactions, those that meet expectations and those that underperform. The latter can usually be identified fairly quickly and are hence written down or off early on in the fund’s life. For the companies meeting or exceeding expectations, it takes a longer time to implement the changes creating value and finally realize the positive outcome. It usually takes a considerable duration for PE firms to generate a considerable return commensurate to the initial investment. Over time, progress is made by investee companies and justifies a value for the business that is higher than its original cost, resulting in unrealized gains. In the final years of the fund, the higher valuations of the businesses are confirmed by the partial or complete sale of companies, resulting in cash flows to the partners. In practice, a PE portfolio involves a series of J-Curves because
funds are invested in at different times. However, not all funds will be profitable given the inherent risks of investing in PE, including macroeconomic factors and the performance of underlying companies (Burdel, 2009).

During the initial years PE investments initially have negative returns and accumulated negative net cash flows for a relatively long time period, which investors have to bear in mind when setting up a new programme or approving new investments. Due to the characteristics of the return and cash flow profile, this pattern is called the J-Curve, which illustrates the tendency of private equity funds to deliver negative returns and cash flows in the early years and investment gains and positive cash flows later in the investment fund’s life as the portfolio companies mature and are gradually exited.1 Portfolios of funds have a similar J-Curve pattern, but usually the J-Curve effect is more pronounced in the sense that it takes longer to report a positive internal rate of return (IRR) as capital calls of funds are drawn over a longer period of time (Magni, 2012).

1.1.3 Effects of Selected Macro Economic Variables on PE Financial Performance

Various theories such as the J curve phenomenon, modern portfolio theory and arbitrage pricing theory, have established that macroeconomic variables specifically influencing PE firms financial performance include; inflation, gross domestic product (GDP), industry regulations, currency exchange rates, number of IPOs or investments the PE firm is a participant, risk and interest rates during the entry, life and exit of the firm have a considerable impact (Siqueira et al, 2011; Phalippou and Gottschalg, 2005; Harris et al,
In the early years of the fund, a number of factors contribute to negative returns including management fees, investment costs and under-performing investments that are identified early and written down. Over time the fund will begin to experience unrealized gains followed eventually by events in which gains are realized. These include; IPOs, mergers and acquisitions, and leveraged buy recapitalizations (Grabenwarter and Weidig, 2005).

PE performance is also heavily influenced by the performance cycle and the intervention of macroeconomic variables within the industries or the ventures in which the funds invest, such as technology versus manufacturing, or venture capital versus buyout. Time duration also has notable effect on the returns realized. Generally, PE investments usually take an average time period ten to twelve years to recoup back their initial investment outlay and generate considerable returns for the managers to consider the exit option (Jensen and Smith, 2000).

PE financial performance is also highly correlated to the financial performance of the companies they invest in. Phalippou and Gottschalg (2005) used a unique and comprehensive dataset containing information on cash flows to and from investors and the investments made by about 700 PE funds. Their paper addressed related questions on the drivers of PE fund performance. To evaluate the influence of business cycles and stock-market cycles on performance, they first constructed a proxy for the CAPM-beta for PE funds.
1.1.4 Private Equity Firms in Kenya

Kenya has experienced vibrant activity relating to the acquisition of local firms by PE and the size of PE transactions. Some notable PE firms are well known and are listed on the NSE, such as Centum Investments and Trancentury Group. A majority of PE firms making inroads in Kenya are multinational such as Abraaj Group, Carlyle Sub Saharan Africa Fund and Emerging Capital Partners African Fund. PE as its name suggests, is very reclusive, private and confidential in nature; and the exact information about financial deals are difficult to ascertain. According to Tuimising (2012), excluding dedicated debt-providing companies, the cumulative Kenyan PE market as of December 2010 exceeded an estimated USD 1.5 billion in capital raised, since the first PE firms were established in 1954 and 1967 respectively. This capital has been invested in over 180 Kenyan companies. The government is also an influential PE player through its stake in ICDC. This is significant when placed into the context of the conflicting literature arguing that too much direct government PE has a stifling effect on PE. The remaining nearly 90% of the Kenyan PE market is made up of independent fund managers – meaning PE funds contributed and managed by private actors. The ongoing strong shift in attitudes and increases interest by banks towards the SME sector and their expanding risk appetite coupled with government’s policy shift in its approaches to financing large public infrastructure projects, indicate that it is likely that the Kenyan PE market will in the medium term witness growth.

funds come regularly. In February of that year the African Development Bank (AfDB) announced that it would chip in US$50 million towards a fund of the US-based Carlyle Group, which plans to invest at least $500 million in sub-Saharan Africa. In May 2012, the Brazilian investment bank BTG Pactual launched a $1 billion Africa-focused private equity fund. In the 15 months from January 2011 to March 2012, eight new funds focusing on EA were launched. EA alone has 16 dedicated funds, out of 53 active in that region. Officials of nearly three dozen funds responded to a survey, released in March by Deloitte, a global consultancy, and Africa Assets, a private research and consulting firm, showing that nearly four-fifths planned to increase outlays in the next year. The overall numbers are impressive, although a bit volatile. PE investment in sub-Saharan Africa jumped from $741 million in 2003 to $1.3 billion in 2012, with ups and downs in between.

1.2 Research Problem

The purpose of this research is to establish the effect of selected macro economic variables such as inflation, lending interest rates, GDP growth, undiversifiable risk and currency exchange rate on the financial performance of PE firms in Kenya. A positive relationship, depicted by improved PE financial performance, is expected between the rate of GDP growth, inflation and appreciation of the Kenya shilling versus a foreign currency. However a negative relationship, depicted by a drop in PE firms’ financial performance, is expected between increases in lending interest rates and undiversifiable market risk. There are other variables which have an impact on performance of PE, such as investment period, number of investments or IPOs, the practice of co-investment, fund
manager experience, and intensity of contact between managers and portfolio companies and the number of seats on the boards of the investee companies. However, the selected macro economic variables under this study are those beyond the control of a PE firm manager. It is quite difficult if not impossible to mitigate the effect of the selected macro economic variables.

Siqueira et al. (2011) investigated the macro economic variables on financial performance of PE and venture capital (PEVC) funds in Brazil. They used data covering the period between 1999 and 2007. Their results indicated that the factors influencing the performance of investments are: size of the fund, number of investments, the practice of co-investment, experience and foreign origin of the managing organization, focus on late stage, intensity of contact between managers and portfolio companies and the number of seats on the boards of the invested companies. The success grows with the number of investments at a declining rate. Brinson et al. (1991) presented a framework for determining the contributions of different aspects of the investment management process-asset allocation policy, active asset allocation, and security’s election to the total return of investment portfolios. Data from 82 large pension plans - the main PE fund contributors sampled in the study indicated that asset allocation policy, however determined, is the overwhelmingly dominant contributor to total return and financial performance of PE.

PE is an emerging concept in Kenya and only a limited number of studies have been done to explain its marked growth in Kenya which is the East African financial hub. The closest was a study done by Tuimising (2012) which analyzed the legal and institutional
issues surrounding PE in Kenya. Murithi (2012) carried a study to establish the link between risks and return trade off among PE firms in Kenya. Both authors postulated that while investment sizes remain limited, several large, PE financed deals were closed in 2011, and investors expect PE deal size to gradually grow over time. GPs with wider African mandates are also moving into the sub-region. These funds are becoming increasingly active in infrastructure, real estate, health care, agribusiness and green energy, in addition to consumer-driven sectors.

Foreign studies have been done to establish the effect of various macroeconomic determinants of financial performance of PE firms around the world (Brinson et al., 1991; Siqueira et al., 2011; Jeng and Wells, 2000). There exists a research gap since no study has been done locally to explain the effects of selected macroeconomic variables on the financial performance of PE firms. Although a number of limited studies have been done locally, macro economic factors vary from one jurisdiction to the other. An understanding on macroeconomic variables affecting the financial performance of PE is necessary which the previous local studies in PE done in Kenya such as Tuimising (2012) and Murithi (2012) have left unaddressed. This study therefore seeks to fill this research gap by answering the following question; what are the effects of the selected macroeconomic variables on the financial performance of PE firms in Kenya?
1.3 Research Objective

The objective of this study is to establish the effect of selected macroeconomic variables on the financial performance of private equity firms in Kenya.

1.4 Value of the Study

1.4.1 Institutional Investors

Pension schemes, mutual funds, insurance firms, and other institutional investors will only commit capital to PE funds if they expect a better return on a risk adjusted basis. This class of investors has traditionally taken up stakes in listed companies. However, with excess liquidity and growing need for alternative investment options, the study will provide important Fund managers will be able to make sound investment decision with due regard to returns and risks associated with PE firms.

1.4.2 Banks and Lending Institutions

These parties have a deep interest on the financial performance and solvency of their borrowers. This study will provide invaluable insight on the certainty and returns of PE firms especially those which undertake leveraged buyouts or transactions financed by a large proportion of debt.

1.4.3 Government

Information on PE will guide the authorities in formulating proper policies and legal mechanisms to guide the operations and foster the growth of this fledgling industry. This will widen the government tax base through attraction of both local and foreign players to PE. The study also aims at shedding light on how PE firms are influenced by various
macroeconomic factors which will aids practitioners in making concrete policies to guide the industry and promote good corporate governance.

1.4.4 Retail Investors and the General Public

PE in line with its name ‘private’ has been seen and is a very private industry with little or no information available for making investment decision. This study will aid them in understanding PE and in making informed decisions. Based on the impact of selected macroeconomic variables on PE firms’ financial performance, retail or small scale investors in the industry can lobby the government for more favorable policies to protect and ensure the growth of their investments.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter delves into the literature on PE, and financial performance of PE firms. The chapter also reviews literature done by other scholars touching on the area of PE and factors having an influence on PE firms and fund performance. The chapter addresses the theoretical framework on which the study is built and then presents literature on the measurement of the financial performance of PE firms.

2.2 Theoretical Background

2.2.1 The J Curve Phenomenon

This theory explains the returns on investment (ROI) of PE firms over the life of investment between point of entry and exit. The curve is generated by plotting the returns generated by a private equity fund against time from inception or investment point in time to termination or exit from the investment. The common practice of paying the management fee and start-up costs do not produce an equivalent book value. As a result, a private equity fund will initially show a negative return. When the first realizations are made, the fund returns start to rise quite steeply. After about three to five years the interim IRR will give a reasonable indication of the definitive IRR. This period is generally shorter for buyout funds than for early stage and expansion funds (Jeng and Wells, 2000).
In PE the J curve is used to illustrate the historical tendency of PE firms to deliver negative returns and investment gains in the later years as the portfolios of the companies they have invested in mature. In the early years, a number of factors contribute to negative returns. These include; management fees, investment costs, high leverage and underperforming investments, which are identified early and written down. Over time, the firm will start to experience unrealized gains followed by events in which gains will be realized. The widely accepted method of valuation of PE investments is the lower of the market value or the investment costs. This conservative approach to investment valuation also means that firms should be quick to write down any potential liabilities but hesitant to recognize potential gains. A steep J Curve illustrates that investors and PE firms are recouping their cash flow investments at a high rate (Grabenwarter and Weidig, 2005).

The depth and length of a J-Curve in PE depends on several factors. First, the J-Curve is influenced by the level of fees early on in the fund’s life. Since management fees are based on the entire committed capital while this capital is only gradually invested over the first few years and distributions are usually minimal. Management fees and organizational expenses have a significant effect on the shape of the J-Curve. Secondly, a PE fund usually consists of different types of transactions: some very successful transactions, those that meet expectations and those that underperform. The latter can usually be identified fairly quickly and are hence written down or off early on in the fund’s life. For the PE investee companies meeting or exceeding expectations, it takes a
longer time to implement the changes creating value and finally realize the positive outcome. Thirdly, the J-Curve effect is also more pronounced where PE firms’ managers are more conservative, thus writing down assets early on or carrying the value of their investments close to cost until they are forced to write up the value of their assets close to or at the time of the realization. Fourthly, the most important factor for the shape of the J-Curve is the timing of the investments and divestments. A steep J Curve indicates that fund managers took a shorter duration to invest their capital. The longer it takes to generate distributions, the longer (and usually deeper) the trough of the J-Curve (Meyer, 2005)

2.2.2 Modern Portfolio Theory

Any investment firm should have a portfolio of investments in different types of investment to maximize returns and minimize risks. Its standard practice for PE firms to invest in a diversified portfolio to minimize risk and harness the returns of the various investment options on offer (Cumming, 2009). The modern portfolio theory (MPT) is a theory of finance that attempts to maximize expected portfolio returns for a given amount of portfolio risk, or equivalently minimize risk for a given level of return by carefully choosing the proportions of various assets. MPT models a portfolio as weighted combination of assets, so that the return of a portfolio is the weighted combination of the assets return. The process of selecting a portfolio may be divided into two stages. The first stage starts with observation and experience and ends with beliefs about the future performances of available securities. The second stage starts with the relevant beliefs about future performances and ends with the choice of portfolio. One type of rule
concerning choice of portfolio is that the investor does (or should) maximize the discounted (or capitalized) value of future returns. Since the future is not known with certainty, it must be "expected" or "anticipated" returns which are discounted. Through combining different assets whose returns are not perfectly positively correlated, MPT seeks to reduce the total variance of the portfolio return. MPT also assumes that investors are rational and the markets are efficient (Markowitz, 1952).

2.2.3 Arbitrage Pricing Theory

A PE firm’s manager has to continuously evaluate investment options in light of limited resources and the paramount need to maximize shareholders returns. This can be termed as the process of arbitraging between the opportunities available. Arbitrage is the practice of taking positive expected return from overvalued or undervalued securities in the inefficient market without any incremental risk and zero additional investments. The arbitrage pricing theory (APT) is an asset pricing theory that states that the expected return of an investment or a financial asset can be modeled as a linear relationship of various macro-economic variables or where degree of correlation to changes in each variable is represented by a beta coefficient. The model-derived rate of return will then be used to obtain the price or value of the asset correctly. The asset value should equal the expected end of period asset value or future cash flows discounted at the rate implied by the model. If the asset value changes, arbitrage should bring it back to the line (Dybvig and Ross, 2003).
In the APT context, arbitrage consists of trading in at least two assets, with at least one being not its true market value. The arbitrageur sells the asset which is relatively too expensive and uses the proceeds to buy one which is relatively too cheap. Under the APT, an asset is said to be under or overvalued if its current price deviates from the price predicted by the model.

### 2.3 Empirical Review

Schertler (2003) carried out a study in Europe to examine the determinants of PE investments across 21 European countries between 10 year periods of 1997 to 2006. The study’s empirical model included many of the macroeconomic determinants already tested in previous studies. However first time variables were included to capture the institutional environment. Using a panel data technique of estimation, it was established that GDP growth, market capitalization, research and development expenditures and unemployment are the most influential macroeconomic determinants of European PE investments. The study also showed that early stage investments and funds raised are differently affected by institutional quality. Thus, while the index of economic freedom had a significant and a positive effect on funds raised by PE firms, it appeared a significant determinant of early stage PE investments. This review confirms that there exists a relationship between GDP growth rate and PE firms’ financial performance as earlier hypothesized in this study.
Kaplan and Schoar (2005) carried out a research to investigate the characteristics of fund performance in the US PE industry and compared that performance with a selected list of well performing firms listed in the S&P 500 index. The research relied on a data set of individual fund performance collected from the venture economics database. The venture economics data set is based on voluntary reporting of fund returns by the private equity firms or general partners (GPs) as well as their limited partners (LPs). The venture economic databank collects quarterly information on individual funds in the PE industry. The sample taken covered the period from 1981 to 2001. Internal Rate of Return (IRR) and public market equivalent (PME) were employed as analytical tools. IRR measured the discounted future cash flows generated from PE investments while PME compared an investment in a PE fund to an investment in the S&P 500. PME was considered a sensible measure for LPs as it reflects the return to PE investing relative to the alternative of investing exclusively in public equities. The authors established that there exists substantial persistence in fund performance in the PE industry for both leveraged buyout funds (LBOs) and venture capital (VC) funds. The authors also found out those general partners (GP) who actively managed the PE firms’ investment portfolio and outperformed the PE industry, were more likely to outperform the industry in subsequent investments. The general results trends in the study was that on average PE returns exceed those of the S&P 500 index of firms gross of management fees which take a huge chunk of the costs of managing PE firms when both PE firms and the rest other publicly listed entities are subjected to the same macroeconomic conditions. Hence PE financial performance is a focus since the research aims to unearth what type of macroeconomic conditions has an impact on PE financial performance.
In Harris et al. (2011) the study sought to shed more light on PE firms’ financial performance. A total of 1400 US buy out and venture capital funds were studied using a data set obtained from Burgiss. This is a data set was sourced exclusively from LPs and includes their complete transactional and valuation history between themselves and their primary fund investments. The data included all funds and cash flows from the LPs that provide the data. To ensure data validity, the data obtained was compared to other leading global commercial data sets such as Cambridge associates, Preqin and Thomson Venture Economics. The study established that PE firms financially outperformed the S&P 500 index of publicly listed firms by an average of 20% to 27% over the firms’ life. In their conclusion, their findings strongly suggest that buyout funds have outperformed the public equity markets net of fees over most of the sample period.

Oehler et al. (2007) analyzed the determinants of the European PE market. Using fixed and random effects models on a data set with 23 countries and for the period from 1992 to 2003 they concluded that GDP growth, the level of interest rate, stock market growth, PE divestments are significantly and positively associated with PE. In the case of IPO divestments, they concluded that the IPO divestments remain one of the strongest determinants for PE financings, or for PE investments. Similar results are observed for the trade sales divestments. Finally, they concluded that the unemployment rate and the price/book ratio are relevant in the European PE markets. A similar result was found in Jeng and Well (2000), where different types of PE financing are affected differently by certain factors. In the case of high-tech investment they find that the economic growth,
the level of the long term interest rates, the level of unemployment rates and the market capitalization growth are the most important determinants of PE. However, in the case of early stage investment, only the level of long term interest rates, the level of unemployment rate, the IPO divestments and the price-book ratio are its main determinants. This study illustrates that apart from GDP growth rate, levels of interest rates have an impact on PE firms’ financial performance.

Romain & Pottelsberghe, (2004) investigated the macro economic impact of PE among the Organization for Economic Development Countries (OECD) Europe member states. They developed a theoretical model which took into account the variables that affect the demand and supply of venture capital. These factors are the GDP growth, the interest rate, technological opportunity, the growth rate of business, research and development capital stock, the number of triadic patents, the labor market rigidities, the level of entrepreneurship and the impact of corporate income tax rate. Secondly, they conducted an empirical analysis. They used a panel data set of 16 Organization for Economic Development Countries (OECD) covering the period of 1990 to 2000. Regression analysis was employed where interest rates, unemployment rate, market capitalization and GDP growth rate were taken to be the independent macroeconomic determinants of PE investment. They observed that GDP growth and both short term and long term interest rate have a positive impact on PE financial performance.
Locally, PE being a fresh alternative asset in Kenya, limited studies have been carried out locally. Murithi (2012) did a study on the risk return assessment among PE firms in Kenya. He analyzed data using the Fama and French model to measure risk and return of PE investments. Out of a population of 14 firms he sampled, he established that low risk experienced in the period of his study was as a result of high Treasury bill rate during this period. Another factor is that the financial sector was not immediately affected during the financial crisis in Europe and. At the onset some commentators were pessimistic about the prospects for PE-backed buyouts in Kenya. The study also established that the PE industry being young in Kenya was attracting many international firms to invest because he argued that Kenya has a lot of potential in PE which is unexploited. The risk free rate was higher than the return in some years. It is also known that PE companies generally have higher financial leverage which the author established that it is often in parallel with stronger productivity growth. PE portfolio firms take advantage of the young market in Kenya to mobilize capital through advertising and encouraging pension funds managers to participate.

In Tuimising (2012), the researcher sought to analyze the emerging institutional and legal issues affecting PE in Kenya. His studies focused on the legal and regulatory environment impact on growth of PE firms in Kenya. The model involved classifying the PE deal into three main stages, entry, growth and exit. He administered questionnaires to fund managers concerning the legal issues they faced at each stage. Out of 43 companies he sampled in his study, the author observed that Kenya is one of the countries in Sub-Saharan Africa where PE has taken root. African trends in PE show that there are
primarily four regions of concentrated PE activity: Southern Africa (with South Africa as the leading destination of all private equity investments in Africa), West Africa (with Nigeria being the lead destination), East Africa (with Kenya being the lead destination), and North Africa (which is lumped with the Middle East in industry surveys). This means that in Kenya, there are a reasonable number of PE intermediaries (fund managers and advisors, as well as investors) that can support an empirical enquiry on all research questions raised earlier. Furthermore, the basic elements constituting the necessary financial infrastructure onto which PE could anchor also exist in Kenya. Kenya has a well-developed banking sector, a wide mix of financial service providers, as well as a functional public equities market that has three investment segments: the main investments segment, the alternative investment segment, and the securities investments segment.

Illo (2012) carried out a study to establish the effect of macroeconomic factors affecting commercial banks financial performance in Kenya. The author identified interest rates, GDP growth rate, currency exchange rate, money supply and inflation as the main macroeconomic factors affecting commercial banks financial performance. A total of 10 commercial banks were sampled in the study for a 10 year period from 2002 to 2012. Regression analysis was used with the factors taken as the independent variables and Return on Assets (ROA) taken to be the dependent variable. Commercial banks financial performance was found to be positively correlated with money supply, interest rates and GDP growth. On the other hand a negative relationship was established between inflation and depreciation of the local currency. Though this study was carried out among
commercial banks, macro economic variables remain the same and they affect every economic activity albeit with varying degree of proportions.

2.4 Selected Macroeconomic Variables Affecting Private Equity

2.4.1 Inflation

Inflation refers to the general increase in the price of commodities over a given duration. Inflation tends to push up the price of commodities without a corresponding increase in their real value. PE firms are adversely affected by inflation since they tend to hold investment over duration of time between acquisition and exit (Nielsen, 2011). PE investors provide capital to private companies, usually for expansion, new product development, or restructuring of the company’s operations, management, or ownership. As the firm grows, PE investors sell their stakes in the company either to return the capital to the limited partners or to find new investee companies through an IPO or a private placement. Many academics and practitioners have argued that the success of PE firms’ buyouts and their financial performance by extension stems at least in part from a to a gradual inflation rate which does not distort the value of investments. PE firms are also extremely wary of government measures to control inflation through currency devaluation since it ultimately affects PE firms illiquid investments which cannot be easily disposed (Parra-Bernal and Blount, 2011).

Inflation has an adverse effect on the exit returns when PE firms divest or dispose their stake in an investment (Parra-Bernal and Blount, 2011). IPOs form a favored channel for PE firms when they choose to disinvest or sell their investments and stake in companies
they have previously acquired. Gilson and Black (1997) established a relationship between the degree of development of a country's stock market and the overall volume of PE investments.

2.4.2 Gross Domestic Product

Several papers show that gross domestic product (GDP) growth plays a significant role in attracting PE investment. Gompers and Lerner (1998) established that higher GDP growth implies higher attractive opportunities for entrepreneurs, which in turn lead to a higher need for venture funds. While Jeng and Wells (2000) do not find a significant effect of GDP growth on PE investments, (Bernoth, Colavecchio, & Sass, 2010) confirm the positive relationship between PE financial performance and GDP growth.

During period of high GDP growth and increase in aggregate demand, PE experiences solid performance and easily obtains funds to fund their acquisitions. This translates to a larger and more diversified portfolio for PE firms which subsequently are more likely to post good results. It is not surprising that cornerstone partner of PE firms such as hedge funds, mutual fund managers, insurance companies and pension funds have sought to increase their exposure to this rapidly growing asset class in their fund allocations particularly when faced with high liquidity (Bernoth et al, 2010). GDP is expected to have a positive relationship with financial performance of PE firms.
2.4.3 Level of Interest Rate

As debt is a key component of PE, a key signal of the performance of PE is the level of interest rates and the arbitrage opportunities to which they give rise. This is ultimately an issue of global savings availability and liquidity policies. When liquidity and savings are plentiful, and rates are low, investors will have a high appetite for investment and PE firms’ step in to fill this gap.

Miles and Ezzell (1980) discuss the Modigliani and Miller which presented the classical study on firm capital structures, showing that in perfect capital markets, the value of a firm is unaffected by its capital structure. In essence, their theorem states that in markets with no taxes, no bankruptcy costs and with perfect information, the way a firm is financed does not determine its value, i.e. firm value is determined by its real assets and not by the securities it issues. In spite of much less than perfect capital markets real life presents, this pioneering work has provided a fundamental understanding of optimal capital structures. One important aspect of the theorem is that it strongly suggests financial leverage as a way of financing firms. PE firms finance firm buyouts by using high levels of debt, mainly because this is cheaper than equity financing. The LP structure essentially subordinates returns to equity investors with respect to creditor returns. Thus as a compensation, providers of equity capital require relatively larger returns. Since debt capital is more cost effective in this sense, debt financing which enable higher returns on investments. The inherent tax shield in debt is another important reason why debt financing is cheaper. Interest paid on debt is tax-deductible, thus the investment returns highly depends on the size of the tax shield.
2.4.4 Legal and Regulatory Environment

Various studies highlight that a country's legal environment strongly affects the size and extent of its capital market and plays a major role in local firms’ abilities to receive outside funding from PE firms. Different degrees of investors’ protection, shareholders rights and enforceability determine the amount of capital raised and invested and the way it is split between debt, equity and other securities. More recently Adongo (2012) showed that the quality of a country's legal system matters more than the size of a country's stock market when it comes to facilitating PE-backed exits. Bezozo et al. (1991) conclude that cross-country differences in legality have a significant impact on the governance of investments in the PE industry. The underlying idea is that better laws facilitate investors' board representations and simplify the origination and the screening of the deals by PE firms prior to investment.

Institutional investors hesitate investing in countries with exaggerated labour market protection and immobility which are regarded as legal constraints. Jeng and Wells (2000) established that labour market rigidities, government programs for entrepreneurship and bankruptcy procedures contribute to explain a significant part of cross-country variations in PE investments. A positive relationship is expected between legal and regulatory environment and financial performance of PE firms.

2.4.5 Exchange Rate

PE firms in Kenya usually have a high proportionate ownership of foreign LP partners. Currency exchanges between the investee country and the investors home currency have an impact on PE firms financial performance (Cumming and Johan, 2007). Real
exchange rate is commonly known as a measure of international competitiveness. It is also known as index of competitiveness of currency of any country and an inverse relationship between this index and competitiveness exists. Lower the value of this index in any country, higher the competitiveness of currency of that country will be. It is a widely held view that exchange rate volatility should affect corporate expected cash flows and hence its performance by causing changes in the home currency denominated revenues (costs) and the terms of competition for firms with international activities (Hinchberger, 2013).

Metrick and Yasuda (2007) did a study on casual relationship between exchange rates and PE performance where it was established that fluctuations affects the profits repatriated to PE foreign investors. Adongo (2012) asserts that exchange rate policy in Kenya has undergone various shifts mostly driven to a large extent by the economic events especially balance of payment crisis. Depreciation of Kenya shilling against United States Dollar is expected to decrease PE firms’ financial performance.

### 2.4.6 Risk

Risk measurement and management is an integral part in PE. Firms have to take a calculated risk since it’s the difference between reaping gains and losing value on their investments. Cochrane (2005) asserts that PE is a high risk investment channel with the problem compounded by difficulties in forecasting future pay offs when investments are sold and future macroeconomic variables which may affect negatively the PE investment. The need for diversification is of paramount importance in the investments of PE. Kocis
(2009) observes that PE investments and are highly illiquid due to the absence of an efficient secondary market. Exact valuations can only be obtained at certain points in time, e.g. during financing rounds or at exits through sale or IPO. At other times, the general manager simply marks to market using a mixture of current and stale prices, and this introduces smoothing in the quarterly observed returns. A consequence of this is well documented: true volatilities and co-variances with public markets are understated, and these have a direct impact on the optimal allocation to PE, as well as the risk management of balanced portfolios. Risk is expected to have a negative impact on PE financial performance.

2.5 Chapter Summary

This chapter examined the determinants of PE firms’ financial performance such as IPOs, GDP, Legal environment, exchange rate, risk and investment horizon and their impact. It also delves into theories relating to PE such as the J curve phenomenon illustrating perceived PE returns, modern portfolio theory, arbitrage pricing theory and internal rate of return theory which try to illustrate the behavior of PE firms in the quest of maximizing their owners’ returns.

The review has established a research gap in Kenya because despite the increased investment in the PE asset class and the potential importance of PE investments for the economy as a whole, we have only a limited understanding of PE returns, its performance and the correlation between the macroeconomic factors and PE firms financial performance. One of the main obstacles has been lack of available data because PE, as
the name suggests, is largely exempt from public disclosure requirements. This study aims at unraveling and bringing to light the drivers behind emergence of PE as an alternative source of financing for corporations as a new financial order and the effect of macroeconomic variables on PE firms’ financial performance.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the procedures and methodologies that were undertaken in conducting the study to arrive at conclusions regarding the effect of selected macro economic variables on the financial performance of PE firms in Kenya. Specifically, the chapter covers: research design, population, study sample; data collection, data analysis and model specification.

3.2 Research Design

Dul and Hak (2008) describe a research design as an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance with the research purpose. The study employs descriptive as well as correlation research designs. Harris et al. (2011) conducted his measurement by comparing the various variables affecting financial performance and performed regression analysis. Time series empirical data on the selected macroeconomic variables will be used to examine the causal relationship between independent macroeconomic variables such as inflation, GDP, exchange rate, systematic risk, interest rates and investment horizon period by on return on investment (ROI) which is the dependent variable and a measure on the financial performance of PE firms. Financial performance will be denoted by return on Investment outlay (ROI). ROI will be computed from the ratio of profit before tax to un-quoted (those not publicly listed) PE firms investments. ROI PE growth rate was calculated and used to compute quarterly ROI to maximize accuracy.
3.3 Population and Sample

The total population of PE firms in Kenya as at 30th July 2013 is 28 active firms. To indentify the firms the researcher relied on information from various PE databases such as Africa assets, African venture capital association (AVCA), Capital Market Authority, news and press releases that indicates existing 28 PE firms. The research will include 2 public listed firms, 3 foreign PE firms and 5 PE firms specializing on different sectors of the economy such as agricultural, financial services, manufacturing, telecommunication and real estate.

3.4 Data Collection

This study employed secondary data obtained from Africa assets, PEI and AVCA, which are commercially available data banks and various sources such as, publications, government and private financial reports, newsletters, journals and business magazines. The figures for (GDP) were acquired from the central bank of Kenya libraries. In addition, annual reports of the PE companies were reviewed to obtain information on their performance and additional information on variables such as legal environment affecting the PE firms’ financial performance. This enabled the researcher to obtain information that assisted in making inferences towards effect of macroeconomic factors on PE performance. The data on lending interest rates and exchange rates was obtained from quarterly CBK published reports based on its benchmark lending rate. Risk free rate was calculated from the Treasury bill rates and from CBK data bank. The period of study for which data was obtained focused on a six year period between December 2006 and December 2012 where notable PE activity has occurred.
3.5 Data Analysis

The study made use of various analysis software such as, STATA version 11.0, advanced Microsoft Excel and SPSS version 16 to analyze the data. Given that the study model is multivariate and descriptive in nature, the study will use multiple regression technique in analyzing the relationship between the selected determinants and the financial performance of PE firms in Kenya. The analyses will entail the computation of the various coefficients of the independent macroeconomic variables correlated against the ROI. The macro economic variables coefficients are denoted as $\beta$ in the model. Africa assets, PEI, and AVCA collect quarterly information on individual funds in the PE industry. The data set is based on voluntary reporting of fund information by the GPs as well as by their LPs. The databases claim that because they receive information from both the GPs and LPs in a PE, there is little opportunity for inconsistent reporting.

3.5.1 Analytical Model Specifications

Regression will be employed to examine the effect of selected determinant variables on the performance of PE firms. The regression equation is a multivariate function. The independent variables of the study will comprise of inflation, GDP growth, interest rates, exchange rate, investment period, risk. The dependent variable which is the financial performance of PE will be expressed as ROI. ROI compares the initial investment outlay versus the exit returns in. Where limited information is available on cash flows, audited and published earnings of PE firms will be used as a proxy for ROI. Alternatively the cash flows to LPs over the investment period of PE firms will be used as a control to
check which determinants vary a great deal with fluctuations in cash flows. Thus, the regression equation will appear as follows:

\[
\gamma = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \epsilon
\]

Where:

\(\gamma\) Return on Investment (ROI) of PE firms

\(X_1\) Inflation Rate (Consumer Price Index used as proxy).

\(X_2\) GDP Growth Rate

\(X_3\) Weighted Commercial Bank Lending Interest Rate

\(X_4\) Exchange Rate of Ksh against US Dollar

\(X_5\) Systematic Risks or undiversifiable risk among PE firms.

\(\epsilon\) Error term consisting of legal environment and other unaccounted variables

\(\gamma\) represents ROI which will be obtained from individual PE firms’ financial reports, Africa assets and published AVCA financial information. \(X_1\) is the inflation rate, obtainable from the national bureau of statistics and CBK. For the GDP growth, the study will take into consideration the GDP growth figures computed by KNBS. The Exchange rate between Kenya Shillings and US dollar is obtainable from the already compiled figures by the CBK. Systematic risks will be calculated based on a proxy of the NSE all share index. It’s impractical and cumbersome to measure impact of legal and regulatory environment on PE hence this will be included in the error term together with other possible factors to mitigate the difficulties of including it in the model.
3.5.2 Model’s Goodness of Fit Statistics

The model’s validity will be measured on how well the regression model fits the data by comparing explanatory variables that were proposed actually explain variations in the dependent variable. Quantities known as goodness of fit statistics are available to test how well the sample regression function (SRF) fits the data how or how close’ the fitted regression line is to all of the data points taken together. The most common goodness of fit statistic is known as $R^2$ (Brooks, 2008). A correlation coefficient must lie between $-1$ and $+1$ by definition. Since $R^2$ defined in this way is the square of a correlation coefficient, it must lie between 0 and 1. If this correlation is high, the model fits the data well, while if the correlation is low (close to zero), the model is not providing a good fit to the data. $R^2$ is the square of the correlation coefficient between the values of the dependent variable and the corresponding fitted values from the model.
CHAPTER FOUR
DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results, finding and discussion with reference to and based on the research topic and study objectives. The results are shown in summary tables and analysis charts. A regression equation and tests of correlation have been employed to answer the research objective. The data used in this study was primarily obtained from KNBS, PE databases, CBK and individual companies annually published financial statements as identified under the population of study.

4.2 Regression Model

Multivariate linear regression has been employed in this study where a number of selected independent variables such as inflation rate, GDP growth rate, interest rate, exchange rate, undiversifiable risk are regressed against a restricted and identified dependent variable which returns on investment. A goodness of fit statistic, confidence interval and correlation analysis has been employed to further explain the relationship between the independent macroeconomic variables and financial performance of PE.
4.3 Descriptive Statistics

Table 1: Descriptive Statistics of the Variables

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Investment</td>
<td>5.5234320</td>
<td>2.3464633</td>
<td>32</td>
</tr>
<tr>
<td>Consumer Price index</td>
<td>98.0138</td>
<td>20.67629</td>
<td>32</td>
</tr>
<tr>
<td>GDP Growth Rate</td>
<td>4.7103</td>
<td>2.28730</td>
<td>32</td>
</tr>
<tr>
<td>Weighted Bank Lending Rate</td>
<td>1.4794201</td>
<td>2.2566454</td>
<td>32</td>
</tr>
<tr>
<td>Exchange Rate USD/KSH</td>
<td>7.6703121</td>
<td>7.8336892</td>
<td>32</td>
</tr>
<tr>
<td>NSE 20 Share index (Risk Proxy)</td>
<td>4.11953</td>
<td>759.61473</td>
<td>32</td>
</tr>
</tbody>
</table>

Source Data: Appendix II SPSS 16’ Output

Table 1 show a summary of the mean, standard deviation and number of observations (N) included in the analysis which are 32. The smaller the mean and standard deviations of the variables included in the analysis, the more the accuracy of the model. In the 4.3.1, Return on Investment, GDP Growth rate, Weighted Bank Lending Rate, NSE 20 Share Index and Exchange Rate have a relatively lower mean compared to CPI. The inference drawn from the analysis is that apart from CPI which shows a remote connection to the model, the other variables have a significant impact on the financial performance of PE firms.
4.4 Data Analysis and Findings

Multiple regression was conducted to predict the effect of the selected macroeconomic variables on ROI. All the five independent variables were entered into the analysis. ROI was taken to be a ratio of PE firms’ earnings against the total PE firms unquoted investments and the summarized results obtained from unstandardized beta coefficients are as follows;

\[
\gamma = -25.0950 + 0.033X_1 + 0.2X_2 + 0.101X_3 + 0.212X_4 + 0.002X_5
\]

Where;

\( \gamma \) - Return on Investment

\(-25.0950\) - \((k)\) Constant or the y intercept for the regression equation

0.033 - \((\beta_1)\) Inflation Rate

0.2 - \((\beta_2)\) GDP Growth Rate

0.101 - \((\beta_3)\) Weighted Banks Lending Rate

0.212 - \((\beta_4)\) Exchange Rate of Dollar/Ksh

0.002 - \((\beta_5)\) Systematic Risk/ Undiversifiable Risk

Source: Table 2 data analysis
### Table 2: Detailed Analysis of Regression Results

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>95% Confidence Interval for β</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>(Constant)</td>
<td>-25.095</td>
<td>5.966</td>
<td>-4.206</td>
<td>.000</td>
<td>-37.358</td>
</tr>
<tr>
<td>Consumer Price index</td>
<td>.033</td>
<td>.034</td>
<td>.288</td>
<td>.957</td>
<td>.347</td>
</tr>
<tr>
<td>GDP Growth Rate</td>
<td>.200</td>
<td>.136</td>
<td>.195</td>
<td>1.470</td>
<td>.154</td>
</tr>
<tr>
<td>Weighted Bank Lending Rate</td>
<td>.101</td>
<td>.209</td>
<td>.097</td>
<td>.481</td>
<td>.635</td>
</tr>
<tr>
<td>Exchange Rate USD/KSH</td>
<td>.212</td>
<td>.072</td>
<td>.707</td>
<td>2.930</td>
<td>.007</td>
</tr>
<tr>
<td>NSE 20 Share index (Risk Proxy)</td>
<td>.002</td>
<td>.000</td>
<td>.686</td>
<td>4.241</td>
<td>.000</td>
</tr>
</tbody>
</table>

*a. Dependent Variable: Return on Investment

**Source Data: Appendix II SPSS 16’ Output**

**4.4.1 Return on Investment and Inflation Rate**

Analysis from table 2 shows a positive correlation of 0.033 between ROI and Inflation Rate depicted by CPI which has been employed as a proxy. This is in tandem with the
earlier estimated hypothesis of existence of positive relationship between inflation and financial performance PE firms. Also, at 95% confidence level, for every increase in CPI, the ROI decreases by -0.037 and an increase of 0.103 as illustrated by the confidence levels lower and upper limits respectively.

Although inflation erodes the value of savings, PE firms invest their funds in growing stocks and inflation tends to increase their overall investment value in real terms. This result depicts consistency with previous studies done to study relationship between inflation and PE firms’ financial performance (Williams, 2009 and Bassi & Grant, 2006).

4.4.2 Return on Investment and GDP Growth Rate

There exists a positive relationship of 0.200 between ROI and GDP growth Rate. High GDP rates are a result of accelerated growth of individual firms and PE firms, having a portfolio of firms, post higher returns during boom periods. Also, the inference drawn is that at 95% confidence level, for every increase in GDP rate, the ROI decreases by -0.08 and an increase of 0.48 as illustrated by the confidence levels lower and upper limits respectively.

In Kelly (2012), he observed that during periods of high periods of energy demand due to a more robust economy, PE firms with an interest holding in the sector posted impressive results. A similar observation of positive correlation between GDP growth and ROI in PE firms’ has also been established (Siqueira et al., 2011a).
4.4.3 Return on Investment and Weighted Bank Lending Rate

The study also shows a positive relationship of 0.100 between bank lending rates and ROI. A negative relationship had been earlier hypothesized in the study since PE firms’ leverage their investment by acquiring them using debt capital. A higher rate would translate to higher financing cost. However prominent PE firms’ have key portfolio holdings in banks, and PE firms’ performance is heavily correlated with that of the held firm, higher rates translate to higher returns for banks and therefore higher returns for PE firms’ respectively. Also, the inference drawn is that at 95% confidence level, for every increase in weighted bank lending rate, the ROI decreases by -0.33 and an increase of 0.531 as illustrated by the confidence levels lower and upper limits respectively.

Talmor and Vasvari (2011), states that since debt is a highly negotiated instrument agreement between PE firms’ and banks which give them a syndicated loan, this shields PE firms from fluctuations in lending rates hence yielding a lower beta of 0.001. This analysis shows consistency with other studies done to illustrate relationship between lending rates and PE firms’ financial performance (Miles & Ezzell, 1980 and Williams, 2009)

4.4.4 Return on Investment and Mean Dollar/KSH Exchange Rate

Exchange Rate of US Dollar against Ksh was hypothesized to have an impact on PE firms’ financial performance. Majority of the PE firms are foreign backed and funded. In Tuimising (2012), postulated that for foreign controlled PE firms’ repatriations of cash flows and capital injection to local targets necessitate conversion of currencies. Results
from the analysis done above show a positive relationship of 0.212 between exchange rate and ROI. The inference is that depreciation of the local currency results in better financial performance illustrated by a higher ROI. Also, the inference drawn is that at 95% confidence level, for every increase in dollar/Ksh exchange rate, the ROI increases by 0.063 and 0.361 as illustrated by the confidence levels lower and upper limits respectively. During periods of local currency depreciation, foreign LPs find it easier and financially viable to invest in local firms compared to a stronger shilling case. This analysis is consistent with the observation of Heckmann (2009), who noted that a stable exchange rate created a conducive macroeconomic climate which favored the growth of PE firms’.

4.4.5 Return on Investment and Systematic Risk

The inference drawn is that at 95% confidence level, for every increase in systematic risk as shown by movement of the NSE20 share index which has been used as a proxy, the ROI increases by 0.001 and 0.03 as illustrated by the confidence levels lower and upper limits respectively. The analysis shows a positive relationship between Systematic Risk and Return on Investment of 0.002. This is a very small figure because PE firms’ normally hold an investment for a given period and most of them arbitrage on the valuation and price between entry and exit. Only a few earn dividends from their investment, which is usually delayed according to the postulation under the J curve phenomenon. PE firms’ are only remotely affected by systematic risk and market volatility. This stems from due diligence carried out prior to investment (Sender, 2013).
4.5 Summary of Findings and Interpretations

Table 3: Summary of Selected Macroeconomic Variables Correlation

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Return on Investment</th>
<th>Consumer Price Index</th>
<th>GDP Growth Rate</th>
<th>Weighted Bank Lending Rate</th>
<th>Exchange Rate USD/KSH</th>
<th>NSE 20 Share index (Risk Proxy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return on Investment</td>
<td>1.000</td>
<td>.558</td>
<td>.249</td>
<td>.394</td>
<td>.534</td>
<td>.151</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td>.558</td>
<td>1.000</td>
<td>-.336</td>
<td>.825</td>
<td>.779</td>
<td>-.430</td>
</tr>
<tr>
<td>GDP Growth Rate</td>
<td>.249</td>
<td>-.336</td>
<td>1.000</td>
<td>-.275</td>
<td>-.105</td>
<td>.366</td>
</tr>
<tr>
<td>Weighted Bank Lending Rate</td>
<td>.394</td>
<td>.825</td>
<td>-.275</td>
<td>1.000</td>
<td>.548</td>
<td>-.400</td>
</tr>
<tr>
<td>Exchange Rate USD/KSH</td>
<td>.534</td>
<td>.779</td>
<td>-.105</td>
<td>.548</td>
<td>1.000</td>
<td>-.628</td>
</tr>
<tr>
<td>NSE 20 Share index (Proxy)</td>
<td>.151</td>
<td>-.430</td>
<td>.366</td>
<td>-.400</td>
<td>-.628</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Source: SPSS 16 Results from Appendix II Study Data

Processed data from the table 3 above shows that all the selected variables are positively correlated with the dependent variable ROI. However between the selected macroeconomic variables themselves, there is a negative correlation between GDP Growth rate and inflation, lending rate and exchange rate. A positive relationship is observed between lending rates, lending rates and inflation illustrating that higher cost of credit accelerates inflation.
In summary, inflation rate and exchange rate show the highest correlation with ROI at 0.558 and 0.534 respectively, lending rates and GDP show a smaller level of correlation at 0.394 and 0.249 respectively, while risk has the lowest correlation with ROI at 0.151. The net effects of the correlations are therefore consistent and factored in the regression model.

### 4.5.1 Model Summary

#### Table 4: Regression Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.853a</td>
<td>.728</td>
<td>.676</td>
<td>1.353869</td>
<td>.728</td>
<td>13.94</td>
</tr>
</tbody>
</table>

*a. Predictors: (Constant), NSE 20 Share index (Risk Proxy), GDP Growth Rate, Weighted Bank Lending Rate, Exchange Rate USD/KSH, Consumer Price index

*b. Dependent Variable: Return on Investment

**Source: SPSS 16 Results from Appendix II Study Data**

The R square measure ($R^2$) shows how well the study data fits into the preconceived model or how a model explains and forecasts future outcomes. It also measures the goodness of fit of the model and the value expressed as ranging between -1 and 1. The model yields an $R^2$ measure of 0.728 which shows there is a strong correlation between
the selected variables and ROI. When expressed as a %, 72.80% of ROI is influenced by
the variables while 18.2% or (100% - 72.80%) shows ROI affected by other variables not
included in the regression, more specifically the error term. The model can therefore be
deduced to be quite robust and fitting to the data set. The model is also quite reliable in
predicting the future effect of selected macroeconomic variables on ROI of PE firms in
Kenya. Durbin Watson test of auto correlation was employed to detect the presence of
autocorrelation among variables. Auto correlation measures the relationship between
variables separated by a time lag. Table 4 shows to a small extent a positive
autocorrelation between the predictors.

4.5.2 Test of Overall Regression Model Significance

Table 5: Analysis of Variance (ANOVA)

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>124.318</td>
<td>5</td>
<td>24.864</td>
<td>13.943</td>
<td>.000a</td>
</tr>
<tr>
<td>Residual</td>
<td>46.365</td>
<td>27</td>
<td>1.783</td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>170.683</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), NSE 20 Share index (Risk Proxy), GDP Growth Rate,
   Weighted Bank Lending Rate, Exchange Rate USD/KSH, Consumer Price index
b. Dependent Variable: Return on Investment

Source: SPSS 16 Output of Appendix II Study Data

The F value is employed in testing statistical models that have been aligned to a data set.
The F value from the table for 32 observations and 5 predictor variables at 5%
significance level is 2.17. The computed F value is 13.943. If F test statistic was greater than computed F value, an insignificant relationship between the predictor variables and dependent variable would have been inferred. However 13.943 > 2.17 hence there exists a significant relationship between the predictor variables and dependent variable.

4.5.3 Multicollinearity Diagnostics

Table 6: Collinearity Diagnostic

<table>
<thead>
<tr>
<th>Model</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
</tr>
<tr>
<td></td>
<td>Consumer Price index</td>
</tr>
<tr>
<td></td>
<td>GDP Growth Rate</td>
</tr>
<tr>
<td></td>
<td>Weighted Bank Lending Rate</td>
</tr>
<tr>
<td></td>
<td>Exchange Rate USD/KSH</td>
</tr>
<tr>
<td></td>
<td>NSE 20 Share index (Risk Proxy)</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Return on Investment (ROI)

Source: SPSS 16 Output of Appendix II Study Data

When the variables selected in a multiple regression model are highly correlated, it is difficult to identify the unique contribution of each variable in predicting the dependent variable because the highly correlated variables are predicting the same variance in the dependent variable (Brooks, 2008). Multicollinearity exists when tolerance is below 0.1
and VIF is greater than 10 or an average much greater than 1. The inference drawn from the above table 6 is that, since none of the predictor variables has variance inflation factor (VIF) greater than 10 and all the tolerance levels are above 0.1 there is no apparent multicollinearity problems; in other words, there is no variable in the model that is measuring the same relationship/quantity as is measured by another variable or group of variables.

4.5.4 Normal P – P Plot of Regression Standardized Residuals

Figure 1: Normal P - P Plot of regression Residuals

![Normal P-P Plot of Regression Standardized Residuals](image)

Source: SPSS 16 Output of Appendix II Study Data

The normal plot of the standardized residuals obtained from the regression equation shows the points close to a diagonal line. Thus it is safe and reasonable to assume that that the selected macroeconomic objectives have an impact on the ROI of PE firms.
CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter draws a summary of the key observations, inferences, findings and conclusions arising from the study.

5.2 Summary of Findings

The aim of this research was to establish the effect of selected macroeconomic variables on the financial performance of PE firms in Kenya. The selected variables were those perceived by the researcher and supported by previous empirical studies, to have the highest effect perceived effects on financial performance of PE firms as measured by ROI were inflation rate, GDP growth rate, bank lending rates, exchange rate of dollar versus KSH and systematic risks. ROI was taken to be the dependent variable while inflation, GDP growth rate, bank lending rates, exchange rate and systematic risk were taken to be the independent or predictor variables. The study also considered an error term as a representative of other non key variables which had not been included in the model. The study period ranged from 2005 to 2012 within every quarter of a year, therefore consisting of 32 observations. The data was analyzed using SPSS version 11 for Windows.

The study established that PE firms’ ROI was heavily influenced by the selected macroeconomic variables with GDP having the largest influence and systematic risk having the least impact. The computed $R^2$ was established to be of 0.728 which shows
there is a positive and strong correlation between the selected variables and ROI. When expressed as a percentage, 72.80% of ROI is influenced by the variables while 18.2% or (100% - 72.80%) shows ROI affected by other variables not included in the regression, more specifically the error term. The research also established positive correlation between the dependent and independent variables albeit to varying degrees.

The model was therefore inferred to be quite robust and fitting to the identified data set. To further test the models significance and goodness of fit, F test and Analysis of Variance (ANOVA) were used which showed that from the 32 observations representing every quarter for a period of 8 years and 5 predictor variables, the F test statistic was 2.17. The computed F value from the study was 13.943. If the test statistic was greater than the study computed F value, an insignificant relationship between the independent variables and dependent variable would have been inferred. However 13.943 > 2.17 hence there exists a significant relationship between the predictor variables and dependent variable.

5.3 Conclusion

The study established varying degrees of influence between the independent macroeconomic variables selected for the study and returns of PE firms’ as measured by ROI. From the variable with the highest influence to the one with the least, their correlation can be ranked as inflation rate, GDP growth rate, lending rate, exchange rate and systematic risk. The objective of the study, to establish the effect of selected
macroeconomic variables on the financial performance of PE firms’ was therefore laid to rest.

A number of studies align to the same hypothesis that there are identifiable effects of the selected macroeconomic variables on the financial performance though none has been carried prior to this research locally in Kenya. Global empirical and studies carried out and reviewed in the empirical literature include; Burdel (2009), Gompers. & Lerner (1998), Siqueira et al., (2011), Harris et al., (2011), Illo (2012) among others. They all point out to existence of a relationship and consistent findings as those established in the study.

5.4 Recommendation

The study established that the selected macroeconomic variables had an effect on the financial risk. Future forecasts should take into account inflation rate and GDP in particular as having the greatest influence on the direction taken by PE firms’ earnings. All the variables had a positive correlation with ROI though some of the variables it was small and not as significant.

Gross domestic product, inflation and banks lending interest rates in that respective order were established to be the macroeconomic factors that had the greatest positive effect on PE firms’ financial performance while exchange rate of the dollar against the Kenya Shilling showed a negative relationship albeit to a small extent. Hence, these macro
economic variables should be carefully be considered by all stakeholders in the PE industry.

5.5 Suggestions for Further Research

Though the PE is a sub sector o the economy, its investments portfolio usually include diverse industries to mitigate risk. However the studies can be expanded to other sectors such as energy and allied, telecommunication and financial services.

While narrowing down to PE, studies need to be carried out to establish the impact of management practices and due diligence on the financial performance because apart from the macroeconomic variables identified, there exists other key influence on returns of PE firms. There are gaps in relationship between regulation, investment holding period, mergers and acquisitions on PE firms returns.

5.6 Limitation of the Study

Due to the constantly evolving macro economic climate, the study may likely be exceeded by new macroeconomic variables such as unaccounted legal regulations and taxation instituted by the government thorough the relevant regulatory bodies. They are key variables with a likely possible impact on performance of PE but whose effect has not been captured in the study.

The study relied on secondary data publicly available in CBK, KNBS which are government databases due to the scale and cost constraints of the information. The
researcher cannot therefore independently validate the data if it was not prepared objectively.

PE firms are quite private and since most of their deals do not involve public companies, they are largely exempt from regulators disclosure requirement and annual filing. This lack of transparency makes it difficult to independently verify the data generated through self reporting.

The sample size taken was also considered small due to the wide variations of PE firms deal size and investment funds at their disposal. The PE industry is also a fledgling and young concept in Kenya and is yet to be fully embraced by wary investors whose primary aim is to protect and increase their wealth.

The study was carried out using ROI which was obtained from the ratio of profits before taxes and unquoted investments held by PE firms. Other measures used to measure PE firms such as IRR, dividend payout and Gordon growth model can be used in place of ROI to check if results will be consistent with those presented in the previous chapter.
REFERENCES


APPENDIX I: PRIVATE EQUITY FIRMS IN KENYA AS AT JULY

2013

1. Acacia Fund Limited
2. ACTIS Kenya
3. Abraaj Capital Group (formerly Aureos Capital East Africa Fund)
4. African Agricultural Capital Fund
5. East African Capital Partners
6. Blue Link Mirror Fund
7. Business International Limited (BPI)
8. Carlyle Sub Saharan Africa Fund (CSSAF)
9. Cassia Capital (Africa Intergras Fund)
10. Centum Investments (formerly ICDC and ICDCI)
11. Emerging Capital Partners Africa Fund
12. Fanisi Fund
13. Fusion Capital (Kenya Venture Fund)
14. Grofin East Africa
15. Industrial and Commercial Development Corporation (ICDC)
16. Industrial Promotion Services (Aga Khan Fund for Economic Development)
17. Investment Fund for Health in Africa
18. InvestQ African Frontier Fund
19. Jacana Partners
20. Kibo Fund
21. Leapfrog Investments
22. Loita Capital Partners
23. Miliki Ventures
24. Origins Investment Group
25. Root Capital
26. Sanlam Private Equity
27. Small Enterprise Assistance Fund
28. Trans Century Kenya
## APPENDIX II: STUDY DATA

<table>
<thead>
<tr>
<th>YEAR</th>
<th>QUARTER</th>
<th>Return on Investment (ROI)</th>
<th>Weighted Average Proceeds on Disposal of Unquoted Investments by</th>
<th>Inflation Rate (Represented by Consumer Price Index CPI)</th>
<th>GDP Growth Rate</th>
<th>Weighted Bank Lending Rate</th>
<th>Exchange Rate USD/KSH</th>
<th>Systematic Risk (Movement of the NSE 20 Share Index used as Proxy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>Q 1</td>
<td>3.95622%</td>
<td>70384.47</td>
<td>70.41</td>
<td>2.00%</td>
<td>12.8441</td>
<td>74.80</td>
<td>3209.00</td>
</tr>
<tr>
<td></td>
<td>Q 2</td>
<td>4.24621%</td>
<td>70580.81</td>
<td>73.22</td>
<td>7.33%</td>
<td>13.0888</td>
<td>76.68</td>
<td>3972.00</td>
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<tr>
<td></td>
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<td>4.60204%</td>
<td>70821.73</td>
<td>73.23</td>
<td>8.38%</td>
<td>12.8259</td>
<td>74.10</td>
<td>3833.00</td>
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<tr>
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<td>Q 4</td>
<td>4.87586%</td>
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<td>5.95%</td>
<td>13.1607</td>
<td>73.11</td>
<td>3973.00</td>
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<td>7.63%</td>
<td>13.3278</td>
<td>69.29</td>
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<td>Q 2</td>
<td>7.23564%</td>
<td>191264.68</td>
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<td>7.52507%</td>
<td>191780.90</td>
<td>88.38</td>
<td>4.00%</td>
<td>14.7904</td>
<td>96.36</td>
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<td></td>
<td>Q 4</td>
<td>7.88777%</td>
<td>192427.82</td>
<td>88.81</td>
<td>4.82%</td>
<td>20.0438</td>
<td>86.66</td>
<td>3123.00</td>
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<td>2012</td>
<td>Q 1</td>
<td>7.46434%</td>
<td>1185591.74</td>
<td>90.36</td>
<td>3.46%</td>
<td>20.2200</td>
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<td>7.71066%</td>
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<td>Q 3</td>
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<td>8.42806%</td>
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Source: KNBS, CBK, AVCA Databases

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### APPENDIX III: PE FIRMS FINANCIAL DATA KSH “(000)”

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<th>TRANCENTURY</th>
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**CARLYLE SUB S AHARAN AFRICA FUND**

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**AFRICA INTERGRAS FUND**

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<td>2010</td>
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**JACANA PARTNERS**

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**ABRAAJ CAPITAL GROUP**

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