KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

COLLEGE OF ART AND SOCIAL SCIENCES

KNUST SCHOOL OF BUSINESS

PERFORMANCE EVALUATION OF COMPANIES LISTED ON THE GHANA STOCK EXCHANGE

BY

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NOVEMBER, 2015

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A Thesis submitted to the Department of Accounting and Finance, Kwame Nkrumah University of Science and Technology in partial fulfilment of the requirement for the degree of

MASTER OF BUSINESS ADMINISTRATION (FINANCE)

Knust School of Business

College of Arts and Social Sciences

NOVEMBER, 2015

KNUST

DECLARATION

I hereby declare that this submission is my own work towards the MBA and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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DEDICATION

I dedicate this work to my lovely mother *Mrs. Lucy Quarshie* and my kid brother *Wolanyo*

Ahiadu; they made me who I am today.

I also dedicate this work to my long time friend Miss Theodora Mensima Acquah, twelve years of

solid friendship and still counting. Your encouragements saw this come to pass.

AKNOWLEDGEMENTS

My ultimate appreciation goes to the most high God for his protection and guidance throughout my course of studies and the promise of his continuous protection.

I would like to say a big thank you to my dad Mr. Emmanuel Quarshie who through thick and thin has been there for me. Am most grateful for these two words you kept repeating since childhood; your education and your God. They saw me through.

Much appreciation also goes to my Supervisor Mr. Kwasi Poku who gave me guidance in bringing the best out of this thesis work.

Finally, much appreciation to everyone who contributed in various ways in making this work a success.
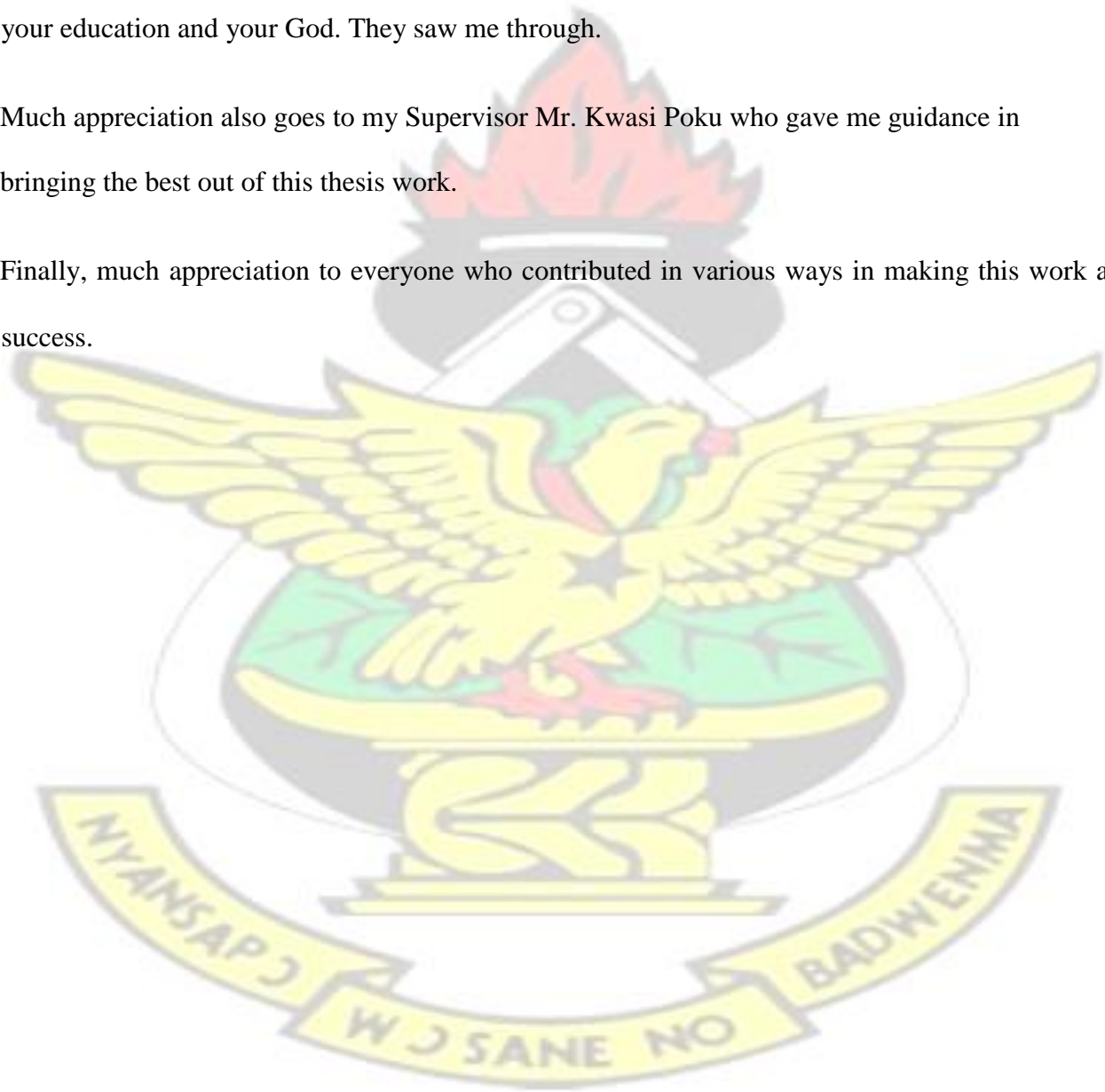
ABSTRACT

Given the attractive nature of stocks that outperforms the market, Efficient Market Hypothesis (EMH) proposed that in an efficient market, no investor is expected to consistently outperform or beat the market. However, the story was not different in the case of the Ghana Stock Exchange (GSE). The study evaluates the performance of twenty six (26) listed companies on the GSE coupled with the examination of the relationship between risk and returns. The study employed secondary data comprising of monthly share price, dividends, dividend yield, risk free rates and GSE composite index for the analysis. Using the regression and standard market model, the major finding was that majority of the stocks exhibited negative Jensen alpha indicating the underperforming nature of these stocks relative to the market. Additionally, the analysis indicates that, the beta of a stock positively predict the returns of the stock. The R^2 or coefficient of determination was strong that was significant. The regression equation indicates a positive relationship between risk and returns which was significant at 0.05 p-values. This implies that, there was a 95 percent confidence that, the higher the risk of a stock the higher it returns when market is rising. The study finally recommended that, perspective investors especially the risk averse ones who do not want to take up risky investments because of the tendency of losing their investments to take on the risk to invest. Lastly, companies on the GSE are also expected to put in place measures that can help them improve on their performance with respect to dividend payments and the returns that the companies pose.

Keywords: Dividend, announcement, share price, reaction, cash.

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LIST OF ABBREVIATIONS

AADs AADs shares

ACI   African Champion Industries Ltd

AGA AngloGold Ashanti Ltd.

ALW Aluworks Limited

AYRTN Ayrton Drug Manufacturing Ltd.

BOPP Benso Oil Palm Plantation

CAL   Cal Bank Ltd CLYD

Clydestone (Ghana) Ltd.

CMLT Camelot Ghana Ltd.

CPC   Cocoa Processing Co. Ltd.

EBG Ecobank Ghana Ltd.

ETI   Ecobank Transnational Inc.

FML Fan Milk Ltd.

GCB GCB Bank Ltd

GGBL Guinness Ghana Breweries Ltd.

GOIL Ghana Oil Company Limited
GSR   Golden Star Resources Ltd.

HFC   HFC Bank (Ghana) Ltd.

PBC   Produce Buying Company Ltd

PZC   PZ Cussons Ghana Ltd.

SCB   Standard Chartered Bank Gh. Ltd.

SIC   SIC Insurance Company Ltd.

UTB   UT Bank Ltd

SWL Sam Woode Ltd.
TOTAL   Total Petroleum Ghana Ltd.

UNIL Unilever Ghana Ltd.

CHAPTER ONE

Introduction

1.0 Background of the Study

Despite the remarkable economic growth exhibited by Africans in terms of continental annual average economic growth for the past 10 years, a lot needs to be done to lift the continent from lingering poverty, employment and overall economic underdevelopment. To sustain the current level of economic growth and encourage both domestic and foreign investments on the continent, Africa needs to rapidly expand, develop and modernize its financial markets. Evidence from recent empirical economic studies suggests that deeper, broader and better functioning financial markets can stimulate economic growth (Ndikumana, 2001).

In spite of the seemingly impressive progress, Africa is the least developed continent in the world. The combined Gross Domestic Product (GDP) of the continent in 2007 was US$ 1.15 trillion (US$ 2.57 trillion based on Purchasing Power Parity (PPP). This compares with the combined world GDP of US$ 65.6 trillion (PPP) and that of China US$6.99 trillion (PPP) in 2007 (Kumo, 2008). Over the past few decades, the world stock markets have surged, and emerging markets have been established in Ghana, Malawi, Swaziland, Uganda and Zambia.

Prior to 1989, there were just five stock exchanges in Sub-Saharan Africa and three in North Africa. Currently there are nineteen (19) stock exchanges. Stock market development has been central to the domestic financial liberalization programs of most African countries. It seems any program of financial liberalization in Africa is incomplete without the establishment and development of stock markets.

Stock exchanges have over the years performed the vital role of helping companies raise equity capital and providing a secondary market for the trading of listed securities. This dual role has provided an access to capital for companies and liquidity for investors (Yartey & Adjasi, 2007). The drive towards the establishment of stock markets in African countries during the last few decades may be linked to other important developments in the global economy. The financial markets of many advanced countries have undergone tremendous changes and become increasingly integrated. These changes have resulted from the operation of a number of interrelated factors (Cosh, Hughes & Singh, 1992) including: the progressive deregulation of financial markets both internally and externally in leading economies, the internationalization of these markets; the introduction of a number of financial products allowing riskier and bigger financial investments and the emergence and increasing role of new actors in the financial markets particularly, institutional investors.

Capital markets are places where companies who need long-term finance can meet investors who have finance (Watson et al, 2007). Active and vibrant capital markets, in which long-term funds are raised, have offered many economies the opportunity to rapidly speed their growth and therefore the need to prioritize their development cannot be over-emphasized. In Ghana, the main capital market is the Ghana stock exchange which since its establishment in 1990 has attracted thirty-six companies. These markets are the main platforms for rapid economic growth in countries over the world. The increase in the number of companies issuing shares on both the primary and secondary markets are proof of the fact that capital markets are an integral source of funding and hence the need to develop them in Ghana.

The performances of companies are mostly rated based on the returns posed by such companies without taking into consideration the risk associated with the industry or the market as a whole.

The issue of which company outperformed the market or other companies listed on the Ghana Stock Exchange (GSE) has always been misunderstood by most market watchers and many a participant of the Ghana Stock Exchange. Most people who invest in stocks of companies listed on the Ghana Stock Exchange mostly do so by just taking into consideration the absolute figure that the company pays out as dividend to such investors. This can be deceptive as a careful analysis of the company"s performance in relation to other companies or the total market as a whole can prove otherwise. The most popular model for assessing the value of a firm as a going concern starts from observation that an investor in a stock expects a return consisting of cash dividends and capital gains or losses (Arnold, 1998). Thus, a stock"s expected holding period return is the sum of expected divided yield and the expected rate of price appreciation, the capital gain yield. Investors on the Ghana Stock Exchange tend to purchase shares of companies that were able to pose higher returns even though such performance may be for a short period of time. This is because investors are rational and as such are enticed by expected return.

The Ghana Stock Exchange is the principal stock exchange of Ghana. The exchange was incorporated in July 1989 with trading commencing in 1990. As at December 2007, the GSE had 34 listed companies and 2 corporate bonds. All types of securities can be listed on the exchange. Criteria for listing include capital adequacy, profitability, spread of shares, years of existence and management efficiency. The GSE is located in Accra.

1.1 Statement of the Problem

Having emerged from more than two (2) decades of political instability, Ghana seems to have finally managed to achieve relative stability which creates an enabling environment for business to grow. In its effort to achieve accelerated economic growth, governments have formulated

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various policies to encourage large capital inflows into the country. Various methods of attracting funds have been pursued almost to the neglect of the development of the country"s financial markets, especially the capital market where businesses can access long-term capital to expand. The Ghana Stock Exchange (GSE) which is the ultimate builder of Ghana"s capital market has experienced certain criticism in terms of it efficiency following its commencement in 1990.

Frimpong and Oteng-Abayie (2007) examined the weak form Efficient Market Hypothesis (EMH) of the GSE using GARCH (1, 1) models in which the weak form Efficient Market (random walk) Hypothesis was rejected for the GSE which means that the market was inefficient. Again, Asamoah (2010) examined the impact of dividend announcement on share price behavior in Ghana using the Event Study Methodology. The major finding was that the GSE was not semi-strong efficient, resulting in the conclusion that the GSE must address itself to three forms of efficiency – operational efficiency, allocation efficiency and pricing efficiency.

Furthermore, Efficient Markets Hypothesis (EMH) states that, stocks are always in equilibrium and that it is impossible for an investor to consistently beat the market. Thus Equilibrium is the condition under which the expected return on a security is just equal to its required return, and the price is stable. Thus a critical study on whether companies listed on the stock exchange overperformed or underperformed is a critical factor in determining the efficiency of the GSE. Therefore, with few studies conducted within the framework of EMH on the performance of the Ghana Stock Exchange in relation to individual stocks, it is very important to carry out a research on the performance of companies listed on the Ghana stock exchange to contribute to academic knowledge on the inefficiency of the Ghana Stock Exchange.

1.2 Objectives of the Study

1. To examine the performance of companies on the Ghana Stock Exchange from 2009 to 2014

2. To determine stocks that over or underperformed the market on the stock exchange

3. To determine the relationship between risk and return on the Ghana Stock exchange

1.3 Research Questions

In view of the issues raised above, the role of the stock market is crucial and cannot be over emphasized. The questions arising from these viewpoints are:

1. What was the performance of companies on the stock exchange from 2009 to 2014?

2. Which Companies over or underperformed the markets on the Ghana Stock exchange?

3. What is the relationship between risk and return on the Ghana Stock Exchange?

1.4 Scope of the Study

The study considered twenty six (26) companies listed on the Ghana stock Exchange. The twenty-six comprised of companies from the various sectors of the economy. The study considered monthly data from 2009 to 2014 (72 monthly period) obtained from the Ghana Stock Exchange.

1.5 Significance of the Study

The goal of this study is to find out whether adjusting for risk, as a way of ensuring that a company's performance is better or the best in relative terms, gives a better way of assessing companies rather than relying on absolute figures which to a very large extent do not give a clear

picture of one"s performance. This seeks to correct the erroneous impression that, a company that records high returns is worth ones investments since the introduction of risk adjustment in most situations tend to be different.

The study will add to the body of knowledge about the subject matter by making a specific case for Ghana on how to adjust for risk to enable people make informed and well analyzed comparisons between and among listed companies. The research is important because it seeks to find the risk adjusted performance of companies listed on the Ghana Stock Exchange. The importance of this study stems from it being an empirical attempt in this direction to fill the gap in literature. The study explores ways of developing the GSE by trying to find what the challenges are and how to solve them. The research will be of immense benefit to the business community and the Ghanaian populace whose decision to invest in a company are mostly based on absolute figures that are presented by the companies at the close of the financial year. Social commentators who happen to provide information to people will be in a position to analyze and provide accurate information that can help the investing public to make an informed decision.

1.6 Limitations

Twenty-six companies were selected using the purposive sampling technique therefore it was impossible to reflect the research on the 38 listed stocks on the GSE. However, this is not to say that the data collected pertaining to the specific companies is inaccurate, but merely to identify the issues that potential research workers and other stakeholders should consider. The data acquired for the study was from secondary source on the GSE therefore the accuracy of the data cannot be justified. Among the different method of measuring performance of stocks of only the Jensen Alpha ratio was taken into consideration.

1.7 Organization of the Study

The study consists of five (5) chapters. Chapter one, focuses on Background of the study, statement of the problem, objectives of the study, purpose of the study, significance of the study, scope of the study and organization of the study. Chapter two contains the literature review of the study. Chapter three focused on the research methodology of the study. Chapter four consists of the analysis, findings and presentation of data. Chapter five is the final chapter which consists of summary of findings, conclusions, and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW
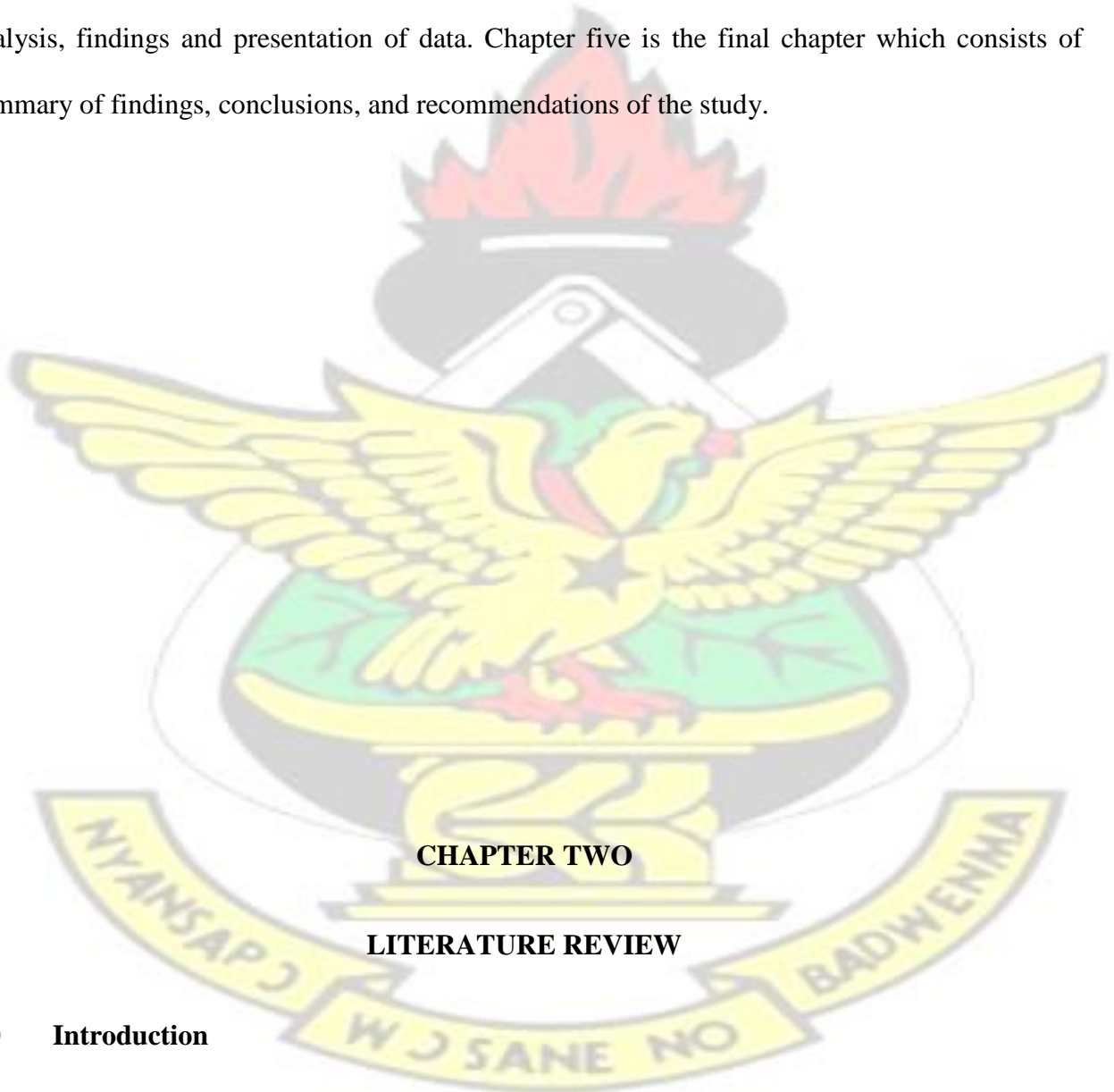
2.0   Introduction

A well functioning and efficient financial system is vital for the successful development of a strong and dynamic private sector in support of economic growth. The capital market, of which the stock

exchange plays a key role, is an integral part of the financial system, providing efficient delivery mechanisms for savings mobilization, allocation and corporate governance. Also the stock exchanges facilitate government debt management, the conduct of monetary policy and provide a channel for privatization. Prior to 1999, most companies in Ghana did not have the opportunity to trade their shares on an organized exchange. Trading shares was mostly done over the counter market. This created lack of confidence in the capital market system. Stock markets also provide an avenue for growing companies to raise capital at lower cost. In addition, companies in countries with developed stock markets are less dependent on bank financing, which can reduce the risk of a credit crunch. Stock markets therefore are able to positively influence economic growth through encouraging savings amongst individuals and providing avenues for firm financing.

2.1 Theoretical Literature

This chapter reviews related literature and other materials relevant to this study. It highlights what the stock exchange market is, its importance and the performance of the Ghana Stock Exchange (GSE) over the years. The chapter also looks at the relationship between risk and returns posed to companies listed on the exchange. Finally, it reviews how stocks are ascertained on the market.

2.1.1 What is a Stock Exchange?

A stock exchange also known as the organized security exchange according to Pearson (1972) is a secondary market for corporate securities. The exchanges essentially provide central market places where individuals and firm members buy and sell orders for securities admitted for trading. The existence of good markets where investors can buy or sell outstanding securities has an important, though indirect, effect on the ability of corporations to raise new capital through the sale of securities. Much of the secondary trading in corporate securities take place on organized security

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exchanges such as the Ghana Stock Exchange (GSE), Johannesburg Stock Exchange (JSE), and the New York Stock Exchange (NYSE) just to mention a few.

Philip (1988) indicates that a stock exchange is an exchange where companies issue equity to finance their new investment. It is a place where firms issue marketable securities as a means of acquiring other business and owners of other companies who wish to have the option of selling their shares at a future date. All these objectives can be achieved by obtaining a stock listing.

With reference to World Federation of Exchanges (Wikipedia), a stock exchange, share markets or bourse is a corporation or mutual organization which provides facilities for stock brokers and traders, to trade company stocks and other securities as well as other financial instruments and capital events including the payments of income and dividends. The securities traded on a stock exchange include shares issued by companies, unit trusts and other pooled investment products and bonds.

To be able to trade a security on a certain stock exchange, it has to be listed there. Usually, there is a central location at least for record keeping, but trade is less linked to such a physical place, as modern markets are electronic networks, which give those advantages of speed and cost of transactions. Trade on an exchange is by members only. The initial offering of stocks and bonds to investors is by definition done in the primary market and subsequent trading is done in the secondary market. A stock exchange is often the most important component of a stock market. Supply and demand in stock markets is driven by various factors which, as in all free markets, affect the price of stocks.

According to Philips (2001), the stock exchange fulfils two functions. These are the provision of a capital market where investors can be brought together with organizations which require new

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finance and of a secondary market for existing financial assets which are already held by the investor. However, the primary market is inextricably linked to the existence of a secondary market, as investors are more prepared to acquire new securities if they know their investment will be readily marketable on the stock exchange. Thus, although a new issue market could exist in the absence of a stock market, in reality new issues are usually subject to the regulations of the stock exchange as well as the relevant statutory rules.

The BPP Manual (1994) also indicates that the stock market performs two main roles. Firstly, the stock market brings companies and investors together, so that investors can put risk capital into companies. The companies can use the capital that they raise to invest in new capital projects. Secondly, the stock market provides investors with a means of selling their investment, should they wish to do so, by offering a ready market, in the buying and selling of secondary shares and loan stock.

2.2 Concept of Efficient Market Hypothesis (EMH)

The primary assumption for EMH is that stock prices accurately and quickly reflect all available information in such a way that no one can earn abnormal return. The time for the adjustment for any new information is considered a critical factor; if the market adjusts more rapidly and accurately, it is considered more efficient. Dyckman and Morse (1986) state, " A security market is generally defined as efficient if (1) the price of the security traded in the market act as though they fully reflect all available information and (2) these prices react instantaneously, or nearly so, and in unbiased fashion to new information". The alternative hypothesis is that security market is inefficient and that result of stock price is not accurately reflecting the new information. This might result from the following: the investor is unable to interpret the new information correctly; the

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investors have no access to the new information; the transaction cost in trading security is an obstruction for free trading; the restriction on short sale; and finally, the investors might be misled by the change in accounting principles.

2.2.1 Classification of Efficient Market Hypothesis (EMH)

The phrase "efficient market" used to describe the market price that fully reflects all available information was coined by Fama (1970). Furthermore, he classifies the market efficiency into three levels on the basis of the information: Weak, Semi-strong and Strong forms.

2.2.2 Weak form Market Efficiency

The weak-form occurs when the stock prices reflect information about the past share price series only. Another way to state this hypothesis is: Investors who depend on information about past data on share price to predict future prices of stocks are worthless. Thus the impact of chartist on price data is immaterial in establishing future prices of stocks. This degree of efficiency signals that prices follow a random walk and a buy and hold advice is impounded on investors of such a market. Several studies address the issue of whether stock price behavior is a random walk or not. Robert (1959) and Osborne (1959) found that stock price movement follows a random walk. "The random walk hypothesis simply states that at a given point in time, the size and direction of the next price change is random with respect to the knowledge available at that point in time." (Dyckman and Morse, 1986) argue that, the fact that stock price changes at random does not mean that stock price changes without any reasons; there is a reason for such movement, which has been the subject of empirical research for over a decade. There have been four major methods to test the dependence of return on time (Weak-Form of market efficiency): serial

correlation test, filter rule test, cyclical test, and volatility test.

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2.2.3 Semi-Strong Form Market Efficiency

The market is efficient in semi-strong form if the security prices reflect on all publicly available information. This means that the stock price is adjusted rapidly and in an unbiased way to all public announcements in newspapers, journals, corporate forecasting and annual reports. By EMH this degree of efficiency implies that investors cannot use publicly available information to predict the future prices. Thus the influence of financial analyst is immaterial. Semi-strong form of market efficiency is also considered weak form of efficiency and is relevant for accounting profession, because accounting is the primary source of public information, through the issue of financial reporting. If stock market is efficient in semi-strong form, then investors cannot achieve consistently above normal returns. On the other hand, if the investors can consistently obtain above normal return on trading at the time of the public announcement of specific information, then the stock market is inefficient with respect to this information.

2.2.4 Strong-form Market Efficiency

The strong form of market efficiency occurs if the stock price reflects all public and private information. This form is the most comprehensive case and testing EMH in strong form is very difficult because private information is difficult to observe. In the USA there is an official document by the Security Exchange Commission (SEC) which contains an official summary of insider trading, giving a record of trading transactions by officers, directors and major stockholders using private information. If these trades result in abnormal return, then the market is not efficient in strong form.

2.3 Empirical Review for Market Efficiency

Fama (1991) developed new classification for market efficiency: first, test for return predictability instead of weak-form test; second, event studies instead of semi-strong form test; and third, test for private information instead of strong-form test. For return predictability, he focuses on forecasting return with other variables like dividends yields and interest rate, test of assets pricing models and anomalies, and test for seasonal return and the volatility in security prices. On the other hand, event study is the clearest evidence of market efficiency because it gives a picture of the speed of price adjustment to new information. The test for market efficiency is conducted in event study with respect to the information about investment decisions, dividends changes, change in capital structure and corporate control transactions. Testing market efficiency with respect to private information can be performed by testing corporate insider"s activities, change in value line's rankings, analysts" survey and pension and mutual fund activities.

Frimpong and Oteng-Abayie (2007) examined the weak form of Efficient Market Hypothesis (EMH) in the case of the Ghana Stock Exchange (GSE), as a developing market. Daily returns from the Databank Stock Index (DSI) over a 5-year period 1999-2004 were used for the exercise. Random walk (RW) and GARCH (1, 1) models are used as the basis for their analysis. The GSE DSI returns series exhibit volatility clustering, an indication of inefficiency on the GSE. The weak-form efficient market (random walk) hypothesis was rejected for the GSE, meaning that the market is inefficient. The inefficient market has important implications for investors, both domestic and international. Knowledge of profitable arbitrage opportunities due to market predictability serves to attract investors to diversify from more efficient markets to invest on the GSE bourse to increase their returns.

Asamoah (2010) examined the impact of dividend announcement on share price behavior in Ghana. The event study methodology was used to achieve the research objective. Additionally, the Wilcoxon Matched-Pair signed Ranked Test was employed in testing the null hypothesis. The major finding was that the GSE was not semi-strong efficient resulting in the conclusion that the GSE must address itself to three forms of efficiency – operational efficiency, allocation efficiency and pricing efficiency.

Osei (1998) also examined asset pricing and information efficiency on the Ghana stock exchange. The study establishes that the market continues drifting up or down beyond the announcement week, i.e., week zero. This is inconsistent with the efficient market hypothesis (EMH). The conclusion is that the Ghana Stock Market is inefficient with respect to annual earnings information releases by the companies listed on the exchange.

Healy and Palepu (1988) expanded on the study conducted by Asquith and Mullins (1983) by including dividend omission announcements. They created two sets of samples to perform the study – one for dividend initiation announcement and the other for dividend omission announcement. In sample A, they took 131 companies who made a dividend announcement for the first time or companies who announced their dividend after 10 years of gap (1986-1996).

While, in sample B, they took 172 companies who announced that they would not provide dividends anymore or who decided not to pay dividends after 10 years continuous dividend payment. Expectedly, the result was not much different from what Asquith and Mullins found out 5 years before their research. They found out a significant same direction change in earning in the following year due to dividend initiation or omission announcement.

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However, in addition, they also found out that there is a strong correlation between stock price changes and dividend initiation or omission changes. Later, they also conducted one more study on information content of dividend hypothesis by emphasizing on the share price response due to dividend announcement by the company. They took one more variable in order to make the study more reliable which was the information environment of the companies in concern. Since it is complex to quantify information environment of the company, they took few proxy variables in order to quantify the information environment of the company.

In their study, they used size of the company, number of analysts following the company trade, number of institutional investors in company''s equity and percentage of equity held by institutional investors in order to measure information environment of the company. They took 80 companies who made dividend initiation announcement in the span of January 1976 to December 1987. They further divided the sample in three other categories called low, medium and high information environment. Once again, the finding was not different from the previous studies done on the same issue. However, they also found out that the stock price of the company who made their dividend initiation announcement went abnormally high on the 2nd day following the announcement.

2.4 Performances of Existing Stock Exchanges

On the whole, African stock exchanges record mixed performances. Apart from the Johannesburg Stock Exchange, which is modern and well known in the world, most of the other stock exchanges are bugged down by numerous problems including: low demand and supply of financial products, low volume of trade, high taxes, poor macroeconomic conditions, lack of market infrastructure, etc. Generally, African stock markets are mainly dominated by equity markets to which could be

added some fledgling covered bond markets. Stock markets for derivative instruments and other sophisticated products are not well developed, and thus are rare in Africa.

2.5 African Stock Exchanges

There are currently twenty-three stock exchanges on the African continent and are geographically distributed as follows: In Northern Africa, four stock exchanges: Algeria, Casablanca, Cairo and Alexandria (CASE) and Tunis; In West Africa, four stock exchanges: the

BRVM which brings together eight countries of the West African Economic and Monetary Union (WAEMU), Cape Verde, Ghana and Nigeria; In Central Africa, two stock exchanges: Douala and the BVMAC, regrouping the six countries of the Economic and Monetary

Community of Central Africa (CEMAC); In Southern Africa, eight stock exchanges: Botswana, Johannesburg, Malawi, Mozambique, Namibia, Swaziland, Zambia and Zimbabwe. In East Africa, five stock exchanges: Nairobi, Mauritius Island, Kampala, Tanzania and Sudan.

2.6 Structure of African Stock Exchanges

To ensure the effective and efficient functioning of stock exchanges, their regulatory authorities have, in keeping with international standards, adopted the principle of net separation of the missions and responsibilities of the various players. This choice is generally manifested in the creation of two distinct poles of competence on each stock exchange: a public pole which acts as the stock exchange regulatory and supervisory Authority with its main role being to regulate and supervise the stock exchange, and a generally private pole with the primary purpose of coordinating and organizing the stock exchange market.

The first pole acts as the representative of the State. It operates independently. It protects the general interest of actors of the market, and ensures the security and integrity of the stock exchange.

In most countries, a specific body is set up. In a few countries, this function is entrusted directly to a department in the Ministry in charge of finance. The missions and functions of the pole are broken down around the following elements: protecting savings invested in financial instruments and any other investment that may give rise to public invitations to save, providing complete and dependable information, in a fair manner, to all the stakeholders or investors, ensuring the proper functioning of stock exchanges and the smooth conduct of stock public sales, regulating and controlling all financial transactions relating to quoted companies (listing, capital increase, public sale or takeover, merger, etc.) and Developing an organized, fair and efficient stock exchange.

The second pole, commonly referred to as the stock exchange or company market place, has a mission to organize and coordinate the activities of the stock exchange. It is responsible, *inter alia*, for: listing of securities, quoting of securities, monitoring and controlling quotation sessions, disseminating/publishing of stock exchange information and setting rules to govern negotiations, clearing and settlement-delivery as well as the rules of good practice which brokers and dealers must respect in order to ensure transparency, impartiality and proper organization of the stock exchange.

Capitalizations measure the financial capacity of a stock exchange. It is equal to the total of the products of stock exchange prices of listed securities and the number of each of the shares listed. This indicator is used, *inter alia*, to assess how safe the investment is through the stock exchange weight of the companies listed. From 2002 to 2006, the capitalization of African stock markets increased from 238.4 to 955.5 billion US dollars, i.e. a 75.1% increase made possible by the growth of the number of stock markets, the relatively large size of the new listed companies and the flow of foreign investors on African markets such as South Africa and Egypt. (Pazisma Corporation).

In 2006, the JSE Limited accounted for nearly 75% of the capitalization of African stock markets, followed by CASE with 10%. Together, these two exchanges constitute about 85% of the capitalization of African stock exchanges but only 1.5% of the capitalization of the International Federation of Stock Exchanges, in which they (that is, JSE and CASE) are the only two African members.

However, the capitalization of the smaller African stock markets increased considerably between 2002 and 2006, the most notable variations have been noticed in Ghana (+ 1,559%), in Zambia (1,196%) and in Uganda (+1,085%). For its part, Swaziland appeared the least dynamic with only 57%.

In 2004, according to the IMF, the overall capitalization ratio compared to the GDP stood at 36% for Africa as against 161.3%, 70.6% and 25.4% for Malaysia, Thailand and Mexico respectively. Still in 2004, this ratio stood at 214.1% for the JSE Limited and 51.3% for CASE, figures which confirm the relatively advanced level of these two financial markets.

North Africa, with four stock markets, had a capitalization of 147 billion dollars in 2006 compared to 37 billion dollars in 2002, that is to say a 297% increase; lower than the average for the continent over the same period, which was 379%. The Cairo and Alexandria Stock Exchange (CASE) represents 63.7% of the capitalization of that region. While that of Algiers is still insignificant (0.1%) mainly due to the fact that it only went operational recently. In West Africa, stock capitalization on the three existing stock markets increased significantly between 2002 and 2006, from 8 billion to 50 billion dollars. This strong growth, 525%, is largely due to the dynamism of the Nigerian stock exchange, the fourth most active stock exchange and largest of the continent in 2006 and whose capitalization is about 80% of the region. The BRVM, despite of being regional,

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has a limited capitalization of 5% while the Stock Exchange of Ghana contributes 15% of the entire region. East Africa, with five stock markets, has a total stock capitalization of 4 billion dollars in 2002 and 22 billion dollars in 2006 - a 400% increase in five years. This growth, exceeding the continental average, is largely due to developments on the Kenyan market.

The Southern Africa region possesses the largest number of stocks in Africa, eight markets, and also the most active. Thus, its capitalization has increased from 188 billion in 2002 to 736 billion dollars in 2006 following an increase of 290%, a rate significantly below the continental average. From other stocks in the region, only Malawi has a market capitalization greater than $ 10 million in 2006 (12.29 million).

In the Central African region, with a listed company in 2006, the Douala Stock Exchange has a capitalization of approximately 4 million U.S. dollars while BVMAC has started operations in August 2008 with the listing of a government bond. Report of the feasibility study on the establishment of the pan African Stock Exchange; Department of Economic Affairs, December 2008.

2.7 Development of African Stock Markets

As diverse and contrasting as the continent of Africa is, so too are Africa''s capital markets. With 53 countries, the African continent has over 20 active stock exchanges, including one of the only regional stock exchanges in the world, linking eight French-speaking countries in West Africa. With a market capitalization of over US$ 180 billion in South Africa, Africa hosts one of the largest stock markets in the world. This is in stark contrast to the other African stock markets that have comparatively small market capitalizations. With the exception of the South African market and to a limited extent the North African markets, African stock markets are described as "frontier

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markets". These markets are typically characterized by a relatively small capitalization and liquidity levels. As a consequence, most of these markets are excluded from the main regional equity market indices and as a result attract little Global Emerging Markets (GEM) portfolio funds. However, amid bearish performance of developed stock markets over the past two and a half years, several leading African markets such as Botswana have bucked the negative trend and recorded solid performance.

Smaller African markets have proved relatively immune to global jitters hitting share values worldwide, due to their lack of correlation with developed markets. This distinct characteristic of African equity markets offers positive benefits in terms of risk diversification. African stock exchanges face a number of challenges before they could enter a new phase of rapid growth. The most critical issue is to eliminate existing impediments to institutional development. These include a wider dissemination of information on these markets, the implementation of robust electronic trading systems and the adoption of central depository systems. A number of countries have already begun implementing necessary changes, notably in the area of trading and settlement systems and regulatory regimes that will continue to improve. The 1990"s witnessed a deliberate shift, by a number of African governments, to free market policies driven by the desire to reduce the burden on government finances. This was achieved by implementing marketfriendly reforms. A central component of this process was the privatization of State-owned companies. A number of these privatizations were affected by listing on the local exchanges. In order to further stimulate the development of a local capital market, many subsidiaries of large international companies were also encouraged to list their local operation. For entrepreneurs as well as emerging private companies, capital raising in African equity markets is vibrant despite the relative small size of issues.

Some African governments have taken advantage of the development of the local capital markets to issue stock exchange listed treasury debt instruments. Kenya and Ghana are a case in point, where these governments have been able to issue long term instruments thus better managing local debt. The spinoff of this has been improved transparency in pricing of local bank lending facilities and increased competition within local banking industries. We continue to witness rapid development in the debt segment of the African capital markets.

An increasingly encouraging trend is the development of the local pension fund industry. With the exception of South Africa and to some extent Southern Africa, private and institutional cash flows have traditionally been invested mostly in real estate, term bank deposits and treasury bills. A number of African countries have introduced as part of wider financial sector reforms, new laws enabling the emergence of a local fund management industry. Looking ahead, African capital markets represent the final frontier of global capital (Robert , 1990).

2.8 Institutional Framework: The Ghana Stock Exchange

The Ghana Stock Exchange was established in 1989 as a private company limited by guarantee under Ghana‟s Companies Code, 1963. The Exchange was given recognition as an authorized Stock Exchange under the Stock Exchange Act of 1971 (Act 348) in October 1990. The Exchange however, changed its status to a public company limited by guarantee in April 1994. Trading on the floor of the Exchange commenced in November 1990.

The GSE currently has around thirty-five (35) listed companies and two (2) corporate bonds. Trading is carried on the Floor of the Exchange under the Continuous Auction Trading System (CAT). Securities traded on the floor of the exchange include Ordinary Shares (Common Stock), Debt Securities (Corporate) and Government bonds. Nonresident Ghanaians and foreigners have

been given permission through the Exchange Control to invest through the Exchange without any prior approval. However, one external resident portfolio investor (whether individual or institutional) can hold only up to 10% of any security approved for listing on the Exchange. Furthermore, the total holdings of all external residents in one listed security shall not exceed 74%. There is free and full foreign exchange remittability for the original capital plus all capital gains, returns and related earnings. There is a 10% withholding tax (which is also the final tax) on dividend income for all investors, both resident and non-resident. Capital gains on listed securities are, however, exempt from tax until the year 2015. There is also no stamp duty.

Since its inception, the GSE"s performance has varied considerably. All listings are included in the main index which is known as the GSE All-Share Index. In 1993, the GSE was the 6th best index performing emerging stock market, with a capital appreciation of 116%. In 1994 it was the best index performing stock market among all the emerging markets, gaining 124.3% in its index level. 1995"s index growth was a disappointing 6.3%, partly because of high inflation and interest rate. Growth of the Index for 1997 was 42% and at the end of 1998 it was 868.35 (1998 Review: Ghana Stock Exchange).

The manufacturing and brewing sectors dominate the exchange. A distant third is the banking sector while other listed companies fall into the insurance, mining and oil sectors. Total market capitalization increased from ¢30.46 billon in November 1990 to ¢3,913.85 million as at October 31, 2001. Total volume of shares traded from November 1990 to October 31 2001 were 569 million valued at ¢558,845.75 million.

The Exchange seeks to intensify its efforts in increasing listings and promote fund mobilization and encourage privatization of State Owned Enterprises on the Exchange. Also, the exchange will

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encourage the listing of corporate and government debt instruments and the development of new products such as collective investment schemes. Capacity building will be enhanced by upgrading the knowledge of its staff and market operators both locally and externally to enhance professionalism in the industry. Nonetheless, there will be infrastructure put in place for the automation of trading, clearing, settlement and depository system to raise the efficiency of the securities market for all users (www.gse.com)

2.9 The Development of the Ghana Stock Exchange

In order to deal with challenges facing the GSE, a number of propositions have been suggested by various studies. Yartey and Adjasi (2007) discuss policy options for promoting the development of the stock markets in Africa. To address the challenges of stock exchanges in Africa, they recommended robust electronic trading systems and central depository systems as being very crucial. The findings of their study are useful and may have re-enforced the need for an electronic platform and hence the automation of the GSE. However, it takes much more than automation and institutional developments to enhance liquidity. If the shares of a listed equity are not available, no matter how robust the electronic trading systems are, the level of liquidity would still be relatively low. To deal effectively with liquidity, there should be amongst other things, the existence of a large pool of investors and relatively large float of shares.

Wallenius (2009) illustrates the securities clearing and settlement on the Ghana Stock Exchange in the light of international standards set for these processes. She compares and contrasts the clearing and settlement process on the GSE with other emerging market. She suggests that the modernization of the clearing and settlement processes will lay a good foundation for the overall improvement of the stock exchange. Clearing and settlement refers to everything that happens after

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that initial declaration to cause the actual transfer of assets and ownership. The modernization of the clearing and settlement process would offer real opportunities to drive down transaction costs, shorten the settlement cycle and increase the volume of successful trades.

There is ample evidence to support the need to automate daily trading on the GSE. This will require a strong political will and significant financial commitment to automate the trading system; its cost will be outweighed by the increase in efficiency of the GSE. The GSE now uses an electronic trading platform which allows stockbrokers to trade from the floor of the Ghana Stock Exchange, their offices through and any location through a secured internet connection.

There is an electronic clearing and settlement system operating alongside the trading system. The System allows for mutual settlement of trade on T+0 or T+1 basis. On settlement dates, shares are moved automatically to client''s accounts in the depository system and the broker''s settlement account debited. There is also a securities and depository system which offers depository services to complement the Exchange's automated trading, clearing and settlement systems. The System allows investors to transfer, pledge and access security information in a more efficient manner.

It is expected that this revolution will make it easier for investors to trade in listed securities thereby boosting liquidity and reduce risk such as impersonation and forgery that were associated with the previous paper certification. In general, the electronic trading is expected to improve upon efficiency and enhanced liquidity in the market. The electronic technology has provided direct access to trading information in real-time available to investors across the globe via the Bloomberg Professional service.

2.10 Challenges Facing the Ghana Stock Exchange

The spectacular performance of the GSE since its inception does not mean that the GSE is advanced like the New York or the London Stock Exchange. From related literature, two types of constraints have hampered the development of Ghana stock market. The first one relates to the political and macro-economic set up and the second one concerns the exchange specifically.

Ghana‟s macroeconomic policies over the last two decades have been characterized by volatile and generally high inflation, high interest rates and large exchange rate swings. These factors prevent investors from having a clear-cut visibility of the macro environment in the medium to long term. Investors, generally, are ready to put up with diversifiable risks, but they are unwilling to look at markets characterized by political and macro-uncertainties.

According to Benimadhu (2003), among the exchange specific issues affecting stock markets in Africa are low level of liquidity, few listed companies and the small size of the exchange as well as efficiency. This study assumes that the stock exchanges in Africa face the same challenges.

Other factors which has stifled the development of the GSE relates to the absence of a strong and active domestic investor base, led by institutional investors such as pension funds and insurance companies. Clearing, Settlement and Trade systems as well as trading infrastructure are also lagging behind world class stock market. Until 2009, the GSE operated manual trading, clearing and settlement systems.

2.11 Importance of the Ghana Stock Exchange

In principle, the stock market is expected to accelerate economic growth by providing a boost to domestic savings and increasing the quantity and the quality of investment (Singh, 1997).

In improving liquidity in the capital market, the Ghana stock exchange, one of the premier stock exchanges in Africa, was given recognition as a stock exchange by executive instrument in October 1990 under the Stock Exchange Act 1971 (Act 384). The Ghana stock exchange was set up with the following objectives: To provide the facilities and framework to the public for the purchase and sales of bonds, shares and other securities, regulate the dealings of members with their clients and with other members and to control the granting of quotations on the securities market in respect of bonds, shares and other securities of any firm, corporation, government, municipality, local authority or other corporate

The stock market is expected to encourage savings by providing individuals with an additional financial instrument that may better meet their risk preferences and liquidity needs. Better savings mobilization may increase the savings rate (Levine and Zervos, 1998).

Additionally, stock markets also provide an avenue for growing companies to raise capital at lower cost. As well, companies in countries with developed stock markets are less dependent on bank financing, which can reduce the risk of a credit crunch. Stock markets therefore are able to positively influence economic growth through encouraging savings amongst individuals and providing avenues for firm financing.

The stock market is supposed to ensure through the takeover mechanism that past investments are also most efficiently used. Theoretically, the threat of takeover is expected to provide management with an incentive to maximize firm value. The presumption is that, if management does not maximize firm value, another economic agent may take control of the firm, replace management and reap the gains from the more efficient firm. Thus, a free market in corporate control, by providing financial discipline, is expected to provide the best guarantee of efficiency in the use of

assets. Similarly, the ability to effect changes in the management of listed companies is expected to ensure that managerial resources are used efficiently (Kumar, 1984).

Critics of the stock market argue that, stock market prices do not accurately reflect the underlying fundamentals when speculative bubbles emerge in the market (Binswanger, 1999). In such situations, prices on the stock market are not simply determined by discounting the expected future cash flows, which according to the efficient market hypothesis should reflect all currently available information about fundamentals. Under this condition, the stock market develops its own speculative growth dynamics, which may be guided by irrational behavior. This irrationality is expected to adversely affect the real sector of the economy as it is in danger of becoming the by-product of a casino.

Critics further argue that stock market liquidity may negatively influence corporate governance because very liquid stock market may encourage investor myopia. Since investors can easily sell their shares, more liquid stock markets may weaken investors" commitment and incentive to exert corporate control. In other words, instant stock market liquidity may discourage investors from having long-term commitment with firms whose shares they own and therefore create potential corporate governance problem with serious ramifications for economic growth (Bhide, 1994).

Critics also point out that the actual operation of the pricing and takeover mechanism in well functioning stock markets lead to short term and lower rates of long term investment. It also generates perverse incentives, rewarding managers for their success in financial engineering rather than creating new wealth through organic growth (Singh, 1997). This is because prices react very quickly to a variety of information influencing expectations on financial markets. Therefore, prices on the stock market tend to be highly volatile and enable profits within short periods. Moreover,

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because the stock market undervalues long-term investment, managers are not encouraged to undertake long-term investments since their activities are judged by the performance of a company‟s financial assets, which may harm long run prospects of companies (Binswanger, 1999).

In addition, empirical evidence shows that the takeover mechanism does not perform a disciplinary function and that competitive selection in the market for corporate control takes place much more on the basis of size rather than performance (Singh, 1971). Therefore, a large inefficient firm has a higher chance of survival than a small relatively efficient firm.

These problems are further magnified in developing countries especially sub-Saharan African economies with their weaker regulatory institutions and greater macroeconomic volatility. The higher degree of price volatility on stock markets in developing countries reduces the efficiency of the price signals in allocating investment resources. These serious limitations of the stock market have led many analysts to question the importance of the system in promoting economic growth in African countries.

2.12 Performance of the Ghana Stock Exchange

The GSE All-Share Index, a measure of the general performance of the stock exchange, has increased from 77.25 points in 1990 to around 5,572.34 points at the end of December 2009. In 2008, the index recorded an all-time high level of 10,431.64 points in spite of the global financial crisis.

The Ghana Stock Exchange has been in existence for two decades. It is no doubt that the Exchange has been one of the best performing stock market among all emerging market and the world at large. For instance, the GSE emerged the 6th best performing emerging stock market posting an impressive return of 114% in 1993. In 1994, the GSE was voted the best performing market

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amongst all emerging markets by Birinyi Associates, a research Group in USA with its gain of 124%.

In 2008, the Ghana Stock Exchange was the World‟s best performing stock exchange. The year 2008 saw a very bullish market on the GSE. Irrespective of the global financial crisis, the GSE gained 58%. In 2009, GSE was one of the worst in performance in the world losing 47% and posed 32% in 2010.

2.13 Efficiency of the Ghana Stock Exchange

Many studies have raised concerns about the efficiency of the Ghana Stock Exchange. Frimpong (2008) examines the weak-form EMH in the case of the GSE. The weak-form EMH was rejected for the GSE and he concluded that the GSE is weakly inefficient. Osei (2002) also tested the response to annual earnings announcements of the GSE. The study established that the market was inconsistent with the EMH. The conclusion was that, the GSE was inefficient with respect to annual earnings information releases by the companies listed on the exchange.

Therefore, it can be inferred that a sizeable amount of stock prices on the GSE are either undervalued or overvalued as the market is generally inefficient. From the EMH, it will therefore not be a waste of time for interested experts to analyze the stocks. There is a chance for a hardworking analyst to consistently outperform the market averages. The inefficient Ghana stock market also has important implications for investors, both domestic and international. Knowledge of profitable arbitrage opportunities serves to attract investors to diversify from more efficient markets to invest on the GSE bourse to increase their returns.

If the GSE is not efficient, then the market prices of common stocks and similar securities are not accurately priced and tend to deviate from the true discounted value of their future cash flows.

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Hence, the market forces drive share prices above or below their true value. Though investors can profit from such inefficiencies, the companies whose shares are consistently underpriced are adversely affected. Many shareholders judge the performance of their companies by the appreciation of share prices. It is very discouraging for managers when the price of their shares is constantly underpriced by the market which most often is the case on the GSE. Market inefficiencies may discourage other firms from listing on the GSE.

2.14 Performance Measurements

In the 1980s, shareholder activism reached unprecedented levels and led to increased pressure on firms to maximize shareholder value consistently. For example, Time magazine summarized this activism as "Angry investors closed out the Decade of Greed with demands that executive compensation should be tied to company performance" (Smolowe 1996). The idea is that if managers are offered compensation contracts that are tied to shareholder wealth changes, their incentives will be better aligned with those of shareholders than is the case for other types of contracts. In designing such contracts, however, an important issue is which measure of shareholder performance to use in designing the contract.

The obvious metric for judging firm performance is the stock price itself (Jensen and Murphy 1990 and Milbourn 1996). Stock price itself, or returns based on stock price however, may not be an efficient contracting parameter because it is driven by many factors beyond the control of the firm"s executives. Any financial performance measure used in managerial compensation, on the one hand, must be correlated highly with changes in shareholder wealth and on the other should not be subject to all of the randomness and „noise" inherent in a firm"s stock price. This dichotomy is the fundamental tension a good performance measure must resolve. A recent example of a

performance measure that seeks to resolve this tension is economic valve added (EVA). This measure, proposed by Stern Stewart Management Services, creatively links the firm's accounting data to its stock market performance (Stewart 1991).Before examining the correlation between shareholder wealth and a performance measure, one must first define the appropriate way to measure changes in shareholder wealth. We contend that shareholders are concerned with the abnormal return they earn in any period, that is, the return they earn in excess of what they expected to earn for a firm within a given systematic risk class. When this return is positive, shareholders have more than covered their risk-adjusted opportunity cost of providing their capital. Conversely, when this return is negative, they have been inadequately compensated for risk." Given this relationship, a good financial performance measure should correlate highly with abnormal stock returns.

2.15 Importance of Stock Exchange for Developing Economies

The study explores ways to improve the stock exchange in Ghana. However, the issue of whether or not the improvement of the GSE and for that matter any stock exchange is beneficial to the economy as a whole has generated a lot of theoretical disagreements.

One school of thought holds a view that the development of the stock market is important in mobilizing savings, allocating of capital, exerting corporate control and easing risk management as well as boosting economic growth. Levine and Zervos (1997) investigated the relationship between economic growth and stock market development. They found a strong positive controlling for the initial level of per capita GDP, initial level of correlation between the stock market development and long-run economic growth after controlling for the initial level of per capita GDP, initial level of investment in human capital, political instability and measures of fiscal and

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monetary policies as well as exchange rate policy. Although the study established a strong link between stock market development and economic growth, the results does not identify a causal interaction between the two variables. Agarwal (1997) in his time series crosssection data for nine African countries showed that stock market development is correlated with investment and in turn with economic growth. Although the paper sheds light on the role of stock market development on economic growth, it also does not establish causality.

Both studies assert that the performance of the stock exchange plays a significant role in economic growth. The above studies imply that the stock market influences economic growth and vice-versa. Against this backdrop, overcoming the challenges facing the Ghana Stock Exchange will impact the Ghanaian economy at large.

Osei (2005) investigated the impact of stock market on economic growth in Ghana specifically. The empirical results indicated that stock market development (Granger Statistical Concept) causes economic growth in Ghana and the causation is unidirectional from stock market to economic growth. Thus, the study has revealed that the establishment of Ghana Stock Exchange (GSE) has impacted positively on economic growth since it became operational and therefore matters for economic growth in Ghana.

An Africa Recovery report asserts that stock markets promote private enterprise expansion and thus stronger national economic growth. The report continued that "if you have stronger companies that have greater access to capital for their growing businesses ... then there is the potential for creating more sustainable jobs, which can also lead to a reduction in poverty".

In developing countries like Ghana, the banking sector rather than the stock exchange is the main source of financing for business. Ghana is predominantly dominated by sole proprietors and small-

medium enterprises. Such businesses are more comfortable borrowing from the banks. The findings of Bokpin and Isshaq (2008) also suggest that the size of the Ghanaian stock market is not yet significant to impact on financing choices of firms in Ghana. It is important to note that the development of the stock market will undeniably create more jobs. The second school of thought holds a contrary view on the contribution of stock markets. Lucas (1988) as quoted by Osei (2005) regards the increasing growth in financial sector as unimportant for small economies like Ghana. This implies that small African economies should not devote further scarce resources and efforts to promoting them at this point, since there are many weightier problems to address in Africa: high poverty levels, inadequate social services and undeveloped infrastructure.

Demirguc-Kunt (1996) challenges the liquidity of the stock market to long-term growth. He pointed out that increased liquidity may deter growth since stock market liquidity encourages investor myopia, adversely affecting corporate governance and thereby reducing growth. Some authors take an extreme position and argue that stock markets are likely to harm economic development due to their susceptibility to market failure, which is often manifested in the volatile nature of stock markets found in many developing countries (Singh,1997) as cited by Osei (2005).

Claessens et al. (2002) shows that in last two decades, financial markets - especially stock markets - have grown considerably in both developed and developing countries. However, they advocate that countries might be better off not focusing on developing full-fledged local stock exchange but rather concentrate on creating the conditions such as improving shareholders rights and quality of local legal system that allows corporations to issue and trade shares abroad efficiently.

The theoretical framework of this study is shaped by all the factors discussed above in this chapter. Yartey and Adjasi (2007) theorize policy options for promoting the development of the stock

markets in Africa. For them, African stock exchanges basically need better technical and institutional development to address the problem of low liquidity. To address these challenges, they recommended robust electronic trading systems and central depository systems as being very crucial. For example, the Ghana Stock Exchange has to use computers and internet technology not only to increase the trading volume enormously but also change the behavior and expectations of investors.

Using New York, London and Hong Kong Stock Exchanges as models, Garcia and Liu (1999) identifies certain common and key characteristics of world-class exchange. Garcia and Liu (1999) found income level, banking sector development, domestic savings and investment, and stock market liquidity as important determinants of stock market development in emerging markets. The study identifies the key structural factors that contribute to the creation of worldclass stock exchange. They do not imply an exhaustive review of all factors necessary for establishing a world-class exchange. Rather, their purpose is to highlight the essential broad institutional building blocks of a world-class exchange.

2.16 Risk and Return

The Merton (1973) inter-temporal capital asset pricing model (ICAPM) suggests that the conditional expected excess return on the stock market should vary positively with the market''s conditional variance. Where „g'' is the coefficient of relative risk aversion of the representative agent and, according to the model, „m'' should be equal to zero. The expectation and the variance of the market excess return are conditional on the information available at the beginning of the return period, time „t''. This risk-return trade-off is so fundamental in financial economics that it could be described as the „„first fundamental law of finance.''''

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An important foundation of the risk-return relationship is the notion that managers are generally risk averse. This approach is well accepted in formalist theories of decision making that are based on notions of individual rationality and maximization of utility. Agency theory, a formalist theory, is based on assumptions of rational behaviour and economic utilitarianism (Ross, 1973), and assumes a linear positive relationship between risk and return. Risk behaviour has been associated with assumptions of rational behaviour, outcome weighing, and utility maximization.

Financial theory posits that risk averse behaviour is manifest when low risk is associated with low return, as well as when high risk is rewarded by high return (Fisher and Hall, 1969). This risk averse outlook also assumes that for each strategic alternative, firms and managers will choose that alternative which maximizes utility (Schoemaker, 1982). A number of other studies have also found support for a positive risk-return relationship (Bettis, 1981).

2.16.1 Jensen Ratio

A risk-adjusted performance measure that represents the average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM), given the portfolio's beta and the average market return. This is the portfolio's alpha. The concept is sometimes referred to as "Jensen's alpha. The various literature reviewed above gives an overview of works done by others with respect to stock exchange in general and the Ghana Stock Exchange in particular but not with respect to the use of Jensen index as a means of determining over and under-performed stocks.

CHAPTER THREE

METHODOLOGY

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3.0   Introduction

This chapter presents the procedures employed to the obtain data and the techniques used in analysing the data. Methodology employed includes, sample size and technique, data collection method, method of data analysis, statistical procedure and Organizational profile.

The study aims to examine the performance of companies listed on the Ghana stock exchange using the Jensen alpha ratio. The Jensen alpha measures the performance of individual stocks relative to the market performance or movement. The ratio again has the ability to reveal the companies that are underperforming or over performing the market by indicating either positive or negative values. Theoretically, the Jensen ratio can also be used to confirm EMH literature on stock market efficiency thus no investor is expected to beat or outperform the market in an efficient financial market. Lastly the market model was also employed in order to estimate the Beta (risk) of listed companies under study.

3.1 Research Approach

Using quantitative approach, the study examines the performance of companies listed on the Ghana stock exchange from 2009 to 2014, determines stocks that over or underperformed the market on the stock exchange and to establish the drivers of return of individual stocks on the Ghana Stock exchange.

3.2 Population of study

The population for the study comprises all the 38 listed stocks (companies) (from 36 companies and 2 corporate bonds) on the GSE that have been grouped into seven (7) sectors in Ghana. The sectors include, finance, manufacturing, distribution, agriculture, food and beverages, ICT, and mining.

3.3 Sample size

Twenty six (26) companies were sampled out of the thirty eight (38) companies listed on the GSE through judgemental sampling technique. Companies within this category have announced their cash dividend in 2009 to 2014 and have been listed on the stock exchange from 2009 to 2014 - companies that were not listed in 2009 and have not been paying dividend where delisted. The researcher adapted to the GSE Composite Index (CI) which is the measurement of the market performance of all listed companies. The CI format was more convenient for the analysis. Monthly data of 4 years, covering up to 72 monthly periods was used to determine the constant of regression and the slope of the regression equation.

3.4 Sampling technique

A sample is a portion of the population selected for analysis. For the purposes of this study, purposive or judgmental non- probability sampling technique was mainly used. The two judgmental sampling techniques that the researcher used were expert sampling and snowball sampling. Judgmental sampling was used to select the samples used for this research because the researcher needed to ensure that stocks in the sample have the required features, as such, would be appropriate for the study and also would ensure a fair representation of the population of interest.

Expert sampling involves the assembling of a sample of stocks with known or demonstrable experience and expertise in a specific area. The researcher adopted this technique because it was the best way to elicit the views of stocks that have specific expertise in the topic area and also to provide evidence for the validity of the report. Snowball sampling relies on referrals from initial subjects to generate additional subjects (Goodman, 1961). This technique allowed the researcher to select stocks that has the capacity to handle the issue being studied. It was therefore impossible for the sample size to reflect on the whole population.

3.5 Data collection

The data collection mode was mainly from secondary source. Secondary data, comprising of, trading month end stock prices, dividend yield of stocks, cash dividend of selected listed companies, risk free rates and monthly GSE Composite Index from 2009 to 2014 was used for the analysis.

3.6 Calculating Beta and Constant of regression.

Valid beta data was calculated using the single market model which is the most popular method amongst analyst. The researcher was also keen on using this method because of its simplicity. Prior to calculating a stocks beta, the researcher calculated its return using the month end share price from 2009 to 2014. Dividends were also accounted for in the years in which it was declared and paid. The researcher then calculated the return of market for the same period. The market model is presented below relation include:

3.6.1 The standard market model

The standard single market model used as a basis for estimating the valid beta on a security is specified as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + U_{it} \ldots\ldots\ldots\ldots (1)$$

R_{it} = actual or realized monthly returns at period t

α_i = constant in regression equation called alpha

R_{mt} = rate of return of the market index in period t

β_i = slope of the regression equation called the beta value.

U_{it} = disturbance term or excess returns

CAPM $(R_t) = R_f + (R_m - R_f)\beta$. making β the subject of the relation yields

$$\beta = \frac{R_t - R_f}{(R_m - R_f)}$$

R_t = actual return of stock

R_m = return of the market

R_f = risk free rate

β = the beta of the stock(riskiness)

3.6.2 Market returns

$$R_{mt} = \frac{CI_t - CI_{t-1}}{CI_{t-1}} + Div$$

CI_t = the current stock composite index of the period t

CI_{t-1} = the previous stock composite index of the period t

Div = the average dividend yield of the index over the period t

R_{mt} = rate of return of the market index in period t

3.6.3 Actual or realized monthly returns

$$R_{it} = \frac{P_t - P_{t-1} + \text{cash div.}}{P_{t-1}}$$

R_{it} = actual or realized monthly returns at period t

P_t = price at the end of period t

P_{t-1} = price at the beginig of period t

cash div = cash divend over the period t

3.6.4 Jensen alpha model

$$\alpha = r_p - \left[r_f + (r_m - r_f)\beta_p \right]$$

where

r_p = actual or realized returns of security p
r_f = risk free rate

β_p = beta of security p

$(r_m - r_f)$ = risk premium thus compensation of the market for divesification.

r_m = return of the market

α = Jensen alpha determines the performance of the stock to that of the market

3.7 Organizational Profile (The Ghana Stock Exchange; GSE)

The Ghana Stock Exchange (GSE) is the principal stock exchange of Ghana. The exchange was incorporated in July 1989 with trading commencing in 1990. It currently has around 36 listed companies and 2 corporate bonds. All types of securities can be listed. Criteria for listing include capital adequacy, profitability, spread of shares, years of existence and management efficiency. The GSE is located in Accra. Since its inception, the GSE's listings have been included in the main index, the GSE All-Share Index. In 1993, the GSE was the sixth best index performing emerging stock market, with a capital appreciation of 116%. In 1994 it was the best index performing stock market among all emerging markets, gaining 124.3% in its index level. 1995's index growth was a disappointing 6.3%, partly because of high inflation and interest rates. Growth of the index for 1997 was 42%, and at the end of 1998 it was 868.35.

As of October 2006 the market capitalization of the Ghana Stock Exchange was about 111,500 billion cedis ($11.5 billion). As of December 31 2007, the GSE's market capitalization was 131,633.22 billion cedis. In 2007, the index appreciated by 31.84%. The manufacturing and brewing sectors currently dominate the exchange. A distant third is the banking sector while other listed companies fall into the insurance, mining, and petroleum sectors. Most of the listed companies on the GSE are Ghanaian but there are some multinationals. Although non-resident investors can deal in securities listed on the exchange without obtaining prior exchange control permission, there are some restrictions on portfolio investors not resident in Ghana. The current limits on all types of non-resident investor holdings (be they institutional or individual) are as

follows: a single investor (i.e. one who is not a Ghanaian and who lives outside the country) is allowed to hold up to 10% of every equity. Secondly, for every equity, foreign investors may hold up to a cumulative total of 74% (in special circumstances, this limit may be waived). The limits also exclude trade in Ashanti Goldfields shares. These restrictions were abolished by the Foreign Exchange Act, 2006 (Act 723). There is an 8% withholding tax on dividend income for all investors. Capital gains on securities listed on the exchange will remain exempt from tax until 2015. The exemption of capital gains applies to all investors on the exchange. There are no exchange control regulations on the remittance of original investment capital, capital gains, dividends, interest payments, returns and other related earnings. Potential changes at the exchange include the introduction of automated trading and the listing of some state banks.

The Bank of Ghana plans the development of mutual funds, unit trusts and municipal bonds at a subsequent date. These changes are aimed at making the exchange more relevant, efficient and effective. The exchange was also involved in preparing the draft law on collective investment vehicles. The exchange has pre-market sessions from 9:30am to 10:00am and normal trading sessions from 10:00am to 12:00 noon on all days of the week except Saturdays, Sundays and holidays declared by the exchange in advance. (www.gse.com.gh). There are six licensed brokers on the Ghana stock exchange. The Ghanaian stock market has been around for close to two decades. The creation of the Ghana Stock Exchange was part of the recommendations of the economic reforms carried out in the 1980s to generate sustainable economic growth and development. As Boateng (2004) observes, after many years of experiment with heavy state intervention in the economy, a consensus emerged that the achievement of a more dynamic economic growth required a greater role for the private sector and stock markets are good levers for boosting private sector access to finance. The dynamism of an economy can be boosted by

developments in the financial market as the principal intermediation function provided by financial

market participants has significance for lubricating the pace of economic activity in the economy.

Financial markets also play a crucial role of distributing resources.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.0 Introduction

The chapter presents the analysis on the performance of twenty-six (26) stocks listed on the Ghana

stock exchange using the Jensen alpha ratio. The Jensen alpha measures the performance of

individual stocks relative to the market performance or movement. The ratio again has the ability to reveal the companies that are underperforming or over performing the market by indicating either positive or negative values. Theoretically, the Jensen ratio can also be used to confirm EMH literature on stock market efficiency, thus, no investor is expected to beat or outperform the market in an efficient financial market. Furthermore, the single market model was also employed in order to estimate the Beta (risk) of listed stocks under study.

The systematic risk (beta) of a stock as defined in the literature as the variability of returns on a stock or portfolio associated with changes in return on the market as a whole. The beta of a stock which is a measure describing the relation of a stock‟s return to the returns of the entire market is that index which measures a stocks systematic risk. Of the companies that the researcher analyzed as indicated in table 2 revealed that companies listed on the Ghana Stock Exchange are less risky - relative to the entire market. Their argument was based on the fact that, though most of the 26 companies listed on the Ghana Stock Exchange have low betas, a significant amount of stocks varies to some high degree with the entire market. The analysis begins with the estimation of the monthly stocks and market returns before other analysis.

4.1 Regression analysis on the Monthly stocks and market returns from (2009-2014) to obtain the beta (risk) values of twenty six (26) stock listed on the GSE.

Table 1: **beta and average returns of stocks**

Stocks	Beta	Rt
AADs	-0.100	3.242
ACI	-0.590	-1.823
AGA	-0.085	4.367
ALW	-0.450	-0.003

AYRTN	0.001	0.662
BOPP	0.195	5.615
CAL	0.095	5.835
CLYD	-0.003	-0.551
CMLT	0.012	0.989
CPC	0.336	2.804
EBG	0.138	6.347
ETI	0.410	3.943
FML	0.070	2.783
GCB	0.209	7.466
GGBL	0.196	1.941
GOIL	0.159	4.826
GSR	-0.016	-0.132
HFC	0.091	4.058
PBC	-0.055	5.540
PZC	0.206	4.146
SCB	0.161	3.581
SIC	-0.080	13.624
UTB	0.200	4.120
SWL	-0.004	4.644
TOTAL	7.280	218.314
UNIL	0.440	3.614

4.1.1 Discussion of Beta

Beta is a quantitative measure of the volatility of a given stock, relative to the overall market. It is evident from table 2 above that, only one company or stock had its beta above that of the market. TOTAL was thus considered an aggressive stock. Based on the calculated beta index,

stocks AADs, ACI AGA ALW AYRTN BOPP CAL CLYD CMLT CPC EBG ETI FML GCB GGBL GOIL GSR HFC PBC PZC SCB SIC UTB SWL and UNIL averagely have their betas below the market beta of 1. Thus these betas are defensive betas. This implies that they are

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defensive beta and consequently depict the risk nature of stocks listed on the GSE. Thus, these betas should be encouraged when market performance is declining.

4.1.1.1 Beta Greater than 1

A stock with a beta of more than one is termed as an aggressive stock. This is because the stock‟s excess return varies more than proportionally with the excess return of the market portfolio. In essence, this stock has more unavoidable risk than the market has a whole. Table 2 indicates that only TOTAL represent aggressive beta. These stocks are best purchased when the market is rising. For instance beta of 7.28 indicates that if the market performance is rising by 10% the returns of TOTAL‟s stocks will rise by 72.8% but if the market is falling by 10% the stock of HFC will fall by 72.8%.

4.1.1.2 Beta less than 1

A stock with a beta of less than one means that, the stocks excess return varies less than proportionally with the excess return of the market portfolio. This type of stock is often termed as defensive stocks. These stocks are best purchase when the market is falling. For instance

BOPP beta of 0.195 indicates that if the market is falling by 100% the returns of BOPP will fall by 19.5% but if the market is rising by 100% the stock of BOPP will rise by only 19.5 %. This confirms the theory of risk-return trade off, thus, the higher the risk the higher the returns.

Majority of the stocks in table 1 above are defensive stocks.

4.1.1.3 Beta equal to 1

A stock with a beta of one implies that, excess return for the stock varies proportionally with excess return of the market portfolio. This type of stock has the same systematic risk as the market as a whole. This stock rises and falls along with the market movement or performance. None of the companies or stocks in table 1 exhibited this form of beta.

4.1.1.4 Negative beta

A stock with a negative beta implies that excess return for stock is inversely related with the excess return of the market portfolio. That is, as the market rises, its stock returns falls. AAD, ACI, AGA, ALW, CLYD, CPC, GSR, PBC, SIC and SWL had their returns vary inversely with that of the market. Research by Shapiro and others indicated that high-beta firms did significantly better than low-beta firms in a rising market and significantly worse in a falling market, just as the capital asset pricing model predicts (Lakonishok et al, 1984). That is, about 39 percent of the stocks listed on the GSE exhibited negative betas.

4.1.2 Relationship between risk and returns

The study had, as one of its objectives, the determination of the relationship between risk and return. Beta is the appropriate measure of a stock"s relevant risk. However for a given level of risk as measured by beta, it is important to determine the rate of return that investors require to compensate them for bearing a particular level of risk. The betas of the twenty-six stocks were computed using monthly GSE Composite index and prices of the selected companies for the period of the study (2009-2014). The estimated beta was regressed against stocks average monthly returns. The regression is presented below:

Table 2: Model Summary of regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.989[a]	.978	.977	6.42529

a. Predictors: (Constant), risk

The table above provides the R^2 (coefficient of determination or predictive power) value. The R^2 value is 0.978 representing a strong correlation. The value indicates a strong degree of determination of the dependent variable (stock returns) by the independents variable (beta). When the R^2 value falls between .70 and .90 it is considered a strong correlation. The R^2 value indicates how much of the dependent variable stocks returns can be explained by the independent variable (beta). In this case, 97.8% can be explained, which is strong. Thus the degree of how high a return can be does not occur by chance but rather based on the beta or the riskiness of the stock.

Table 3: ANOVA of regression

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43544.011	1	43544.011	1.055E3	.000[a]
	Residual	990.825	24	41.284		
	Total	44534.836	25			

a. Predictors: (Constant), risk

b. Dependent Variable: return

The table above indicates ANOVA of regression. The ANOVA indicates how well the independent variables significantly predict the outcome variable which is the stock"s returns. The Sig. value on the regression row indicated 0.00 which is less than the p-value of 0.05 and indicates

that, the model applied is significantly good enough in predicting the outcome variable (stock returns).

Table 4 Coefficients of regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.048	1.296		1.580	.127
	risk	29.118	.897	.989	32.477	.000

a. Dependent Variable: return

4.1.3 Regression equation on the relationship between risk and returns of stocks.

From the coefficients table above, the relationship between risk and returns of stocks can be established using the specified beta and its corresponding coefficients (B) highlighted in the coefficient table. The relationship is presented as: $R_t = 2.0488 + 29.118R_m$. The regression equation indicates a significant positive relationship between risk and returns which was significant at 0.05 p-values. This implies that, the higher the risk of a stock the higher it returns when market is rising.

Graphical representation of risk and return of stocks listed on the GSE.
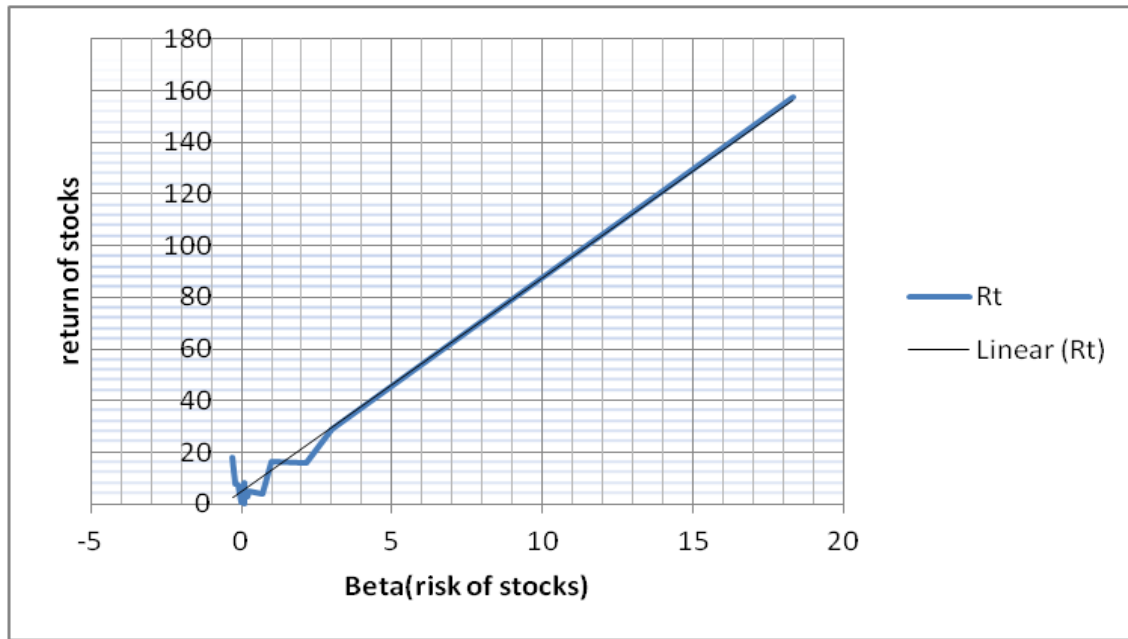
Figure 1: relationship between risk and return of stocks

Table 5: Performance of stocks relative to the market performance

Stocks	Jensen alpha	Rm	Ranking
TOTAL	332.986	2.45	1st

SIC	-8.968	2.45	2nd
UNIL	-9.280	2.45	3rd
ETI	-9.511	2.45	4th
GCB	-9.736	2.45	5$_{th}$
BOPP	-11.849	2.45	6$_{th}$
CPC	-12.030	2.45	7th
EBG	-12.179	2.45	8th
PZC	-13.112	2.45	9th
UTB	-13.250	2.45	10th
GOIL	-13.309	2.45	11th
CAL	-13.493	2.45	12th
SCB	-14.516	2.45	13th
HFC	-15.345	2.45	14th
GGBL	-15.503	2.45	15th
SWL	-16.531	2.45	16th
PBC	-16.586	2.45	17th
FML	-17.011	2.45	18th
AGA	-18.318	2.45	19th
AADs	-19.723	2.45	20st
CMLT	-19.887	2.45	21st
AYRTN	-20.420	2.45	22nd
GSR	-21.530	2.45	23rd
CLYD	-21.707	2.45	24th
ALW	-29.496	2.45	25th
ACI	-33.926	2.45	26th

4.2 Examining the performance of twenty-six (26) stocks listed on the Ghana stock exchange.

It can be inferred from table 5 that only one stock had its Jensen alpha above the market (indicating a positive value) whiles majority had their Jensen alpha below the market (indicating negative value). That is, stocks are said to be underperforming the market if there is an indication of a negative Jensen alpha value. Again stocks are said to be over performing the market if there is an indication of a positive alpha ratio.

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4.2.1 Discussion of Jensen alpha ratio.

Table 6 above reveals that 96 percent of companies averagely have been underperforming while only 4 percent have been over-performing the market based on the negative and positive values generated by the Jensen Alpha. This analysis conforms to the Efficient Market Hypothesis: no investor is expected to consistently outperform or beat the market. Therefore it can be inferred that in performance assessment, the GSE was efficient in controlling the outperforming rate of stocks listed on the exchange. Other researchers including Frimpong (2010) have argued the inefficiency of the Ghana Stock Exchange using other advanced and complex methods, signaling that there are other factors that are causing the GSE to be inefficient. In view of this analysis, GSE was partially efficient. Stocks with negative Jensen alpha imply that, they are underperforming the market, thus, it is better to sell when market is falling. This includes AADs,

ACI AGA ALW AYRTN BOPP CAL CLYD CMLT CPC EBG ETI FML GCB GGBL GOIL GSR HFC PBC PZC SCB SIC UTB SWL and UNIL while stocks with positive Jensen alpha implies that, they are over performing the market it is better to hold when market is falling and sell when market is rising. This includes TOTAL

Graphical representation of performance of stocks relative to the market performance
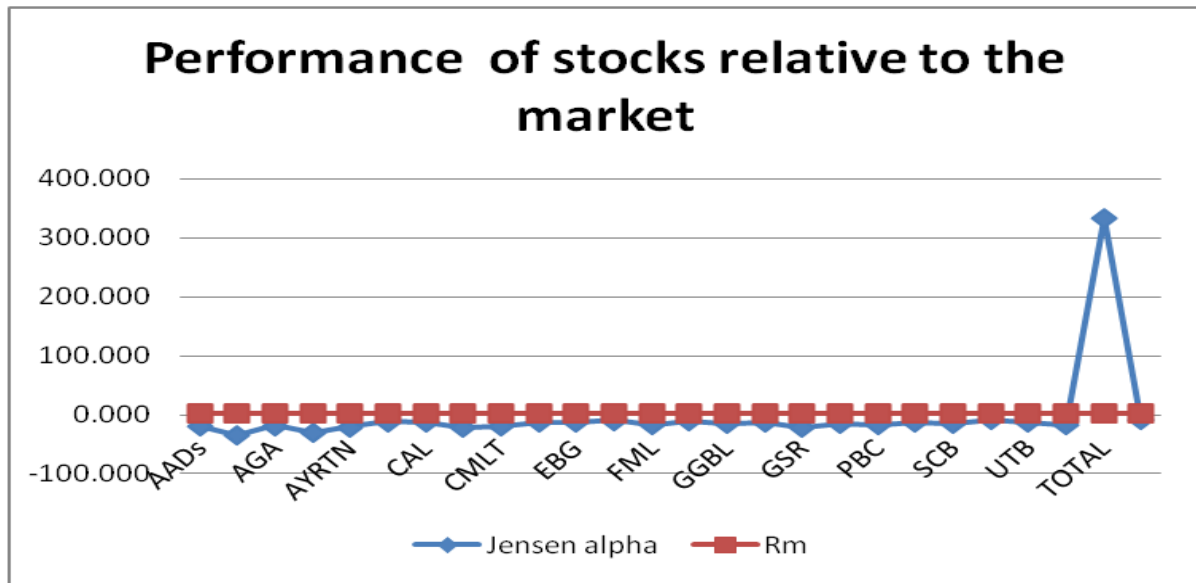
Figure 2: Performance of stocks relative to the market
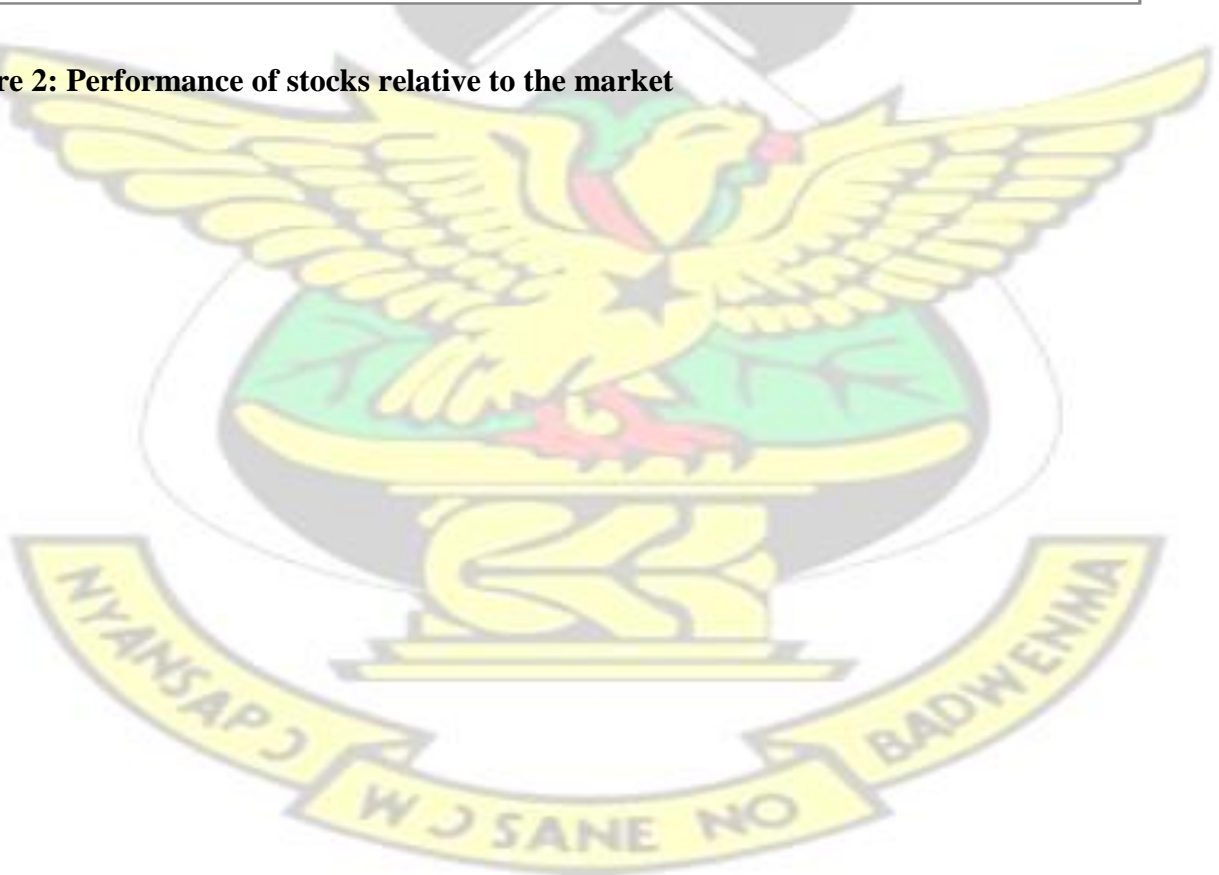
CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The chapter presents the summary of the main findings of the study with special focus on the three objectives. The chapter ends with conclusion and recommendations which have been made based on the findings of the study.

5.1 Summary of findings

5.1.1 Examining the performance of stocks listed on the Ghana stock exchange using the Jensen alpha ratio.

The analysis revealed that only one stock had its Jensen alpha above the market (indicating a positive value) whiles majority had their Jensen alpha below the market (indicating negative value). That is, stocks are said to be underperforming the market if it indicates a negative Jensen alpha value. Again stocks are said to be over performing the market if it indicate a positive alpha ratio. Additionally, 96% of companies averagely have been underperforming while only 4 percent have been over-performing the market based on the negative and positive values generated by the Jensen Alpha. This analysis conforms to the Efficient Market Hypothesis: no investor is expected to consistently outperform or beat the market. Therefore it can be inferred that in performance assessment the GSE was efficient in controlling the outperforming rate of stocks listed on the exchange. Other researchers including Frimpong (2010) have argued the inefficiency of the Ghana Stock Exchange using other advanced and complex methods signaling that there are other factors that are causing the GSE to be inefficient. In view of this analysis GSE was partially, efficient.

5.1.2 Examining the stock that underperformed or over-performed the market.

The analysis implies that, stocks with negative Jensen alpha imply that, they are underperforming the market thus it is better to sell when market is falling. This includes AADs, ACI AGA ALW AYRTN BOPP CAL CLYD CMLT CPC EBG ETI FML GCB GGBL GOIL GSR HFC PBC PZC SCB SIC UTB SWL and UNIL covering about 96% of the companies under study while stocks with positive Jensen alpha implies that, they are over performing the market. It is better to hold when market is falling and sell when market is rising. This includes TOTAL, covering only 4% of the stocks under study.

5.1.3 Examining the relationship between risk and returns

The regression analysis indicates that, the beta of a stock positively predict the returns of the stock. The R^2 or coefficient of determination was strong that was significant. The relationship is presented as: $R_t = 2.0488 + 29.118 R_m$. The regression equation indicates a positive relationship between risk and returns which was significant at 0.05 p-values. This implies that, the higher the risk of a stock the higher its returns when market is rising. Thus the degree of how high a return can be does not occur by chance but rather based on the beta or the riskiness of the stock. In this case, 97.7% can be explained, which is strong.

5.2 Conclusion

Quantitative analysis of the research results revealed that only one company listed on the Ghana Stock Exchange has its beta value above that of the market. Whilst most companies have beta

values between zero (0) and one (1), few stocks had negative betas. Therefore, in effect most companies listed on the Ghana Stock Exchange are considered defensive stocks which were in conformity with Ocran (2010) study on systematic risk assessment of companies listed on the Ghana stock exchange. The Jensen alpha also indicated that, majority of the companies were underperforming the market with few over-performing. There was also a significant positive relationship between stock returns and its beta.

5.3 Recommendations

The study recommends the GSE to perspective investors, especially the risk averse ones, who do not want to take up risky investments because of the tendency of losing their investments to take on the risk to invest. This stems from the fact that out of the twenty-six (26) companies that the study considered, only three were very risky, making the GSE less volatile and hence a good investment avenue for such investors. The study also recommends that perspective investors who require higher returns for their investments should not conclude as a matter of necessity that companies with high risk will end up giving higher returns. This is due to the fact that the much held belief that there is a positive correlation between risk and return could not be affirmed by the study. Companies on the GSE are also expected to put in place measures that can help them improve on their performance with respect to dividend payments and the returns that the companies pose.

There is the need for the development of a more reliable and sophisticated statistical procedure for computation of company betas and CAPM for easy of analysis. Performance of listed companies on the stock exchange should be readily available to enable analyst and perspective investors make informed decisions.

5.4 Recommendation for further studies

This thesis work sought to look at the performance of companies listed on the Ghana Stock Exchange for a period of four (4) years. The performance the study wanted to ascertain was risk adjusted performance using Jensen index to see whether that would have any impact on the absolute returns that companies mostly pose. The study recommended that further studies be done on the performance of any stock exchange over a longer period of time to determine whether the performance and the risk adjusted performance would differ.

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APPENDICES

Appendix 1   Table 1: Monthly Returns on Stocks (R_t) and Market (Rm) 2009-2014

	Period	AADs	ACI	AGA	ALW	AYRTN	BOPP	CAL	CLYD	CMLT	CPC	EBG	ETI	FML	GCB	GGBL	GOIL	GSR	HFC	PBC	PZC	SCB	SIC	UTB	SWL	TOTAL	UNIL	Rm
2009	JAN	0.00	0.00	1.91	6.56	0.62	1.58	1.25	3.75	2.81	0.80	1.61	6.14	1.02	5.61	1.72	2.93	0.00	1.61	0.00	0.00	3.82	2.48	0.00	14.33	9.32	1.63	0.97
	FEB	-14.29	0.00	0.42	6.56	0.62	1.58	-23.75	3.75	2.81	0.80	-7.70	6.14	1.02	-31.12	-8.29	2.93	0.00	1.61	0.00	7.14	3.82	-6.22	-3.33	14.33	9.32	1.63	-1.35
	MAR	21.90	0.00	21.90	-3.28	0.62	-5.79	-21.22	3.75	2.81	0.80	-4.08	-0.52	-10.09	-18.55	1.91	2.93	0.00	1.61	0.71	-8.33	3.95	-13.95	-6.86	14.33	9.32	1.63	-3.70
	APR	25.23	0.00	21.90	-1.82	0.62	-14.20	-7.50	3.75	2.81	0.80	-29.17	4.20	-23.85	45.56	1.35	-3.73	0.00	1.61	0.71	0.00	-11.05	-9.23	-19.19	14.33	9.32	1.63	-2.33
	MAY	21.19	0.00	21.90	8.00	0.62	2.03	-8.50	3.75	2.81	0.80	-5.88	-15.21	-15.13	-10.83	0.80	-7.57	0.00	1.61	0.71	0.00	-5.57	9.23	5.05	14.33	9.32	1.63	-12.23
	JUN	21.19	0.00	21.90	8.00	0.62	-7.43	-17.50	3.75	2.81	0.80	11.24	-41.36	13.84	23.96	-26.88	-20.48	0.00	1.61	0.71	0.00	5.17	-10.42	5.05	14.33	9.32	1.63	-27.64
	JUL	21.19	0.00	21.90	8.00	-5.63	-8.21	17.25	3.75	2.81	0.80	10.4	4.78	20.57	49.07	2.72	-0.63	0.00	1.61	-4.05	0.00	5.17	-8.58	-4.95	16.67	9.32	0.32	-0.91
	AUG	21.19	0.00	21.90	8.00	0.66	2.50	20.23	3.75	2.81	0.80	50.46	41.18	24.50	14.00	2.72	-11.78	0.00	1.61	0.75	0.00	5.17	12.59	0.06	16.67	9.32	1.65	15.37
	SEP	17.97	0.00	21.90	-4.00	0.66	-14.17	1.80	3.75	2.81	-19.20	5.81	33.91	6.00	6.88	5.90	25.87	0.00	1.61	0.75	0.00	5.17	38.13	11.82	16.67	9.32	-5.01	9.15

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	OCT	25.23	0.00	21.90	9.09	-6.01	3.00	-2.29	3.75	2.81	-24.00	-1.83	-21.18	8.28	19.38	4.52	4.89	0.00	1.61	0.75	0.00	6.03	5.90	5.61	16.67	9.32	-1.09	-12.02
	NOV	21.19	0.00	21.90	9.09	-6.44	-7.00	-2.50	3.75	2.81	1.33	9.46	21.27	3.38	-2.78	5.21	-0.66	0.00	1.61	-4.25	0.00	7.69	5.90	16.72	16.67	9.32	1.82	2.62
	DEC	17.97	0.00	21.90	9.09	0.76	10.00	7.25	3.75	2.81	1.33	2.23	36.65	18.56	-3.05	2.87	5.18	0.00	1.61	0.79	0.00	5.00	-4.10	10.05	16.67	9.32	1.82	5.96
2010	JAN	21.90	0.00	21.90	9.09	0.77	9.38	7.25	3.75	2.81	1.33	7.67	18.40	9.84	6.08	2.13	28.71	-3.23	1.61	0.79	0.00	5.67	17.67	14.33	16.67	9.32	1.82	3.35
	FEB	21.90	0.00	21.90	9.09	8.46	2.94	-15.00	0.00	0.00	1.33	16.66	11.73	12.40	17.12	3.64	4.19	0.00	1.61	-8.58	0.00	7.62	5.90	8.74	16.67	9.32	4.76	0.84
	MAR	0.43	-10.00	13.77	9.09	1.50	-1.96	18.82	-12.50	0.00	0.00	21.84	7.14	2.94	23.20	5.84	-9.52	0.00	-8.87	-44.88	0.00	5.65	-10.00	8.63	0.00	0.00	2.29	10.77
	APR	10.43	0.00	0.38	0.00	15.79	0.00	27.37	0.00	0.00	-7.27	13.33	4.35	22.69	7.11	10.74	0.00	11.82	59.67	0.00	28.79	25.93	-11.72		0.00	16.00	3.11	10.62
	MAY	-90.72	0.00	0.38	10.00	1.31	64.00	26.96	0.00	0.00	0.00	-6.44	11.76	9.58	60.67	16.47	55.20	-10.00	5.83	9.79	0.00	10.73	-5.88	43.19	0.00	16.00	4.36	12.16
	JUN	12.52	0.00	0.38	10.00	7.56	-10.98	0.71	0.00	0.00	-33.33	0.00	-18.84	2.86	-6.99	-3.71	-16.53	0.00	-2.42	-10.87	0.00	9.33	3.13	3.69	-33.33	16.00	4.44	-5.94
	JUL	-2.35	0.00	0.38	-7.50	-4.65	5.92	0.74	0.00	0.00	0.00	-11.68	2.80	-1.28	-1.51	3.15	8.50	25.93	-2.54	2.85	0.00	5.99	18.18	-17.00	0.00	16.00	15.35	-0.91
	AUG	11.47	-11.11	0.38	15.15	1.31	7.19	20.00	0.00	0.00	0.00	8.47	2.80	14.47	24.08	2.49	16.16	6.47	-4.46	33.62	0.00	6.00	-2.56	22.04	0.00	16.00	4.37	8.77
	SEP	15.33	0.00	0.38	-2.94	1.31	7.00	0.67	0.00	0.00		4.69	-3.87	5.93	7.14	2.49	-3.43	33.98	-2.88	-15.47	0.91	7.79	4.66	-3.44	0.00	16.00	9.74	2.45
	OCT	4.63	0.00	0.38	-20.69	1.31	4.26	0.69	0.00	0.00	0.00	-8.96	10.14	2.89	-3.22	2.49	0.15	25.15	-1.02	2.64	3.60	6.55	4.66	24.28	0.00	16.00	5.55	1.54
	NOV	25.27	0.00	0.38	-10.53	1.31	-6.00	11.43	0.00	0.00	0.00	-1.64	2.80	15.59	22.93	2.49	-3.84	-2.80	3.19	2.64	0.87	7.18	15.18	3.57	0.00	16.00	2.81	2.23
	DEC	0.22	0.00	0.38	-29.41	1.31	11.89	7.33	0.00	0.00	0.00	0.00	2.82	-75.71	18.94	2.49	30.61	-11.86	-3.19	-4.50	3.45	5.54	6.60	3.57	0.00	16.00	8.65	10.39
2011	JAN	-8.12	0.00	0.38	58.33	1.31	11.09	29.68	0.00	0.00	50.00	17.33	2.80	5.71	0.95	1.28	10.48	0.00	-1.14	25.92	1.88	5.91	20.40	-6.43	0.00	53.60	-39.27	-83.45
	FEB	0.24	0.00	0.38	15.79	7.56	4.15	-7.18	0.00	0.00	-33.33	-0.57	2.80	4.82	-9.46	0.00	3.35	-23.08	5.95	14.81	16.88	8.60	-0.46	3.96	0.00	53.60	6.19	0.38
	MAR	0.24	0.00	0.38	0.00	-5.88	1.25	-19.14	0.00	-31.25	50.00	0.57	2.80	-2.39	7.08	-20.89	-3.23	-15.00	-6.98	43.78	2.36	9.62	38.96	22.22	0.00	0.00	7.99	5.01
	APR	-3.33	0.00	0.51	0.00	6.25	-1.23	15.93	0.00	0.00	-33.33	4.55	0.00	4.49	9.60	0.00	3.33	-11.76	6.50	-4.48	1.63	15.99	36.12	-9.37	0.00	0.00	10.74	6.60
	MAY	-5.34	0.00	0.51	-9.09	0.00	10.46	1.00	0.00	13.64	0.00	6.90	-6.67	18.75	14.98	2.40	3.23	0.00	3.90	-0.52	1.63	16.16	42.24	14.29	0.00	50.82	9.09	9.45
	JUN	0.34	0.00	0.51	-5.00	-5.88	6.47	7.93	0.00	4.17	50.00	5.11	7.14	3.31	2.33	12.50	-3.13	-0.33	1.46	31.27	1.63	2.51	34.04	12.90	0.00	50.82	6.73	5.12
	JUL	0.34	0.00	0.51	-15.79	0.00	2.86	-2.33	-14.29	-4.17	0.00	5.71	-6.67	0.00	1.33	3.47	0.00	0.00	-8.50	3.14	1.63	-5.74	35.96	11.76	0.00	50.82	5.07	0.74
	AUG	0.34	0.00	0.51	-12.50	-6.25	7.96	1.07	0.00	4.55	-33.33	5.71	0.00	-8.44	-0.67	6.04	3.23	0.00	7.43	3.14	1.63	-6.22	35.28	5.41	0.00	50.82	2.09	1.04
	SEP	0.34	0.00	0.51	0.00	13.33	7.86	12.22	-16.67	4.55	50.00	3.14	-14.29	-14.29	-10.42	-1.27	0.00	-8.03	4.44	3.14	2.35	1.15	19.81	-13.16	0.00	-19.11	-5.58	-4.07
	OCT	0.34	0.00	0.51	0.00	0.00	7.77	-5.86	0.00	4.55	-33.33	6.74	0.00	1.68	-16.73	-3.21	0.00	0.00	7.22	-11.14	1.61	-16.17	24.89	15.63	0.00	168.98	2.79	-4.66
	NOV	0.34	0.00	0.51	0.00	0.00	26.95	5.00	0.00	13.64	0.00	5.52	-8.33	0.83	-2.48	0.00	-3.13	0.00	9.73	7.83	-81.24	5.53	38.29	-8.33	0.00	168.98	4.35	2.19

Year	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	DEC	0.34	0.00	0.51	-7.14	0.00	15.37	12.69	-20.00	4.17	0.00	-1.17	-9.09	-0.42	1.05	1.32	3.23	0.00	19.49	3.52	9.42	2.79	47.95	3.13	0.00	168.98	4.96	1.05
2012	JAN	0.34	0.00	0.51	0.00	0.00	18.52	-2.50	0.00	-4.17	0.00	6.58	2.70	-5.49	4.32	0.00	0.00	0.00	3.56	3.52	9.42	1.28	-3.08	3.13	0.00	168.98	9.29	5.24
	FEB	0.34	0.00	0.51	-7.69	0.00	46.32	-2.69	0.00	4.55	0.00	6.25	2.70	1.82	3.23	2.61	0.00	0.00	3.56	-0.48	9.42	8.55	4.78	3.13	0.00	168.98	18.90	6.46
	MAR	0.90	0.00	1.33	-58.33	6.65	-0.06	15.00	0.00	13.64	0.00	4.06	22.70	3.18	3.78	6.37	6.25	0.00	3.56	3.67	9.42	4.42	7.49	0.00	0.00	168.98	5.46	4.69
	APR	0.90	0.00	1.33	20.00	-4.83	3.49	10.40	0.00	4.17	-50.00	4.79	18.92	0.45	6.49	4.79	15.88	0.00	4.44	3.67	9.42	-1.55	46.58	6.45	0.00	165.00	7.73	3.62
	MAY	0.90	0.00	1.33	0.00	0.76	1.73	2.40	0.00	0.00	100.00	5.59	-5.21	-3.18	4.74	6.86	27.37	0.00	4.44	3.67	1.08	-6.61	41.32	3.13	0.00	165.00	6.39	-2.49
	JUN	0.90	0.00	1.33	-16.67	0.76	4.21	37.39	0.00	0.00	0.00	8.42	9.77	-5.74	6.25	22.99	7.23	0.00	4.44	3.67	-3.36	-3.98	40.83	3.13	0.00	165.00	5.15	4.08
	JUL	0.90	0.00	1.33	20.00	0.76	-0.06	15.86	0.00	0.00	0.00	8.72	-19.50	27.46	5.08	2.17	8.98	0.00	4.44	-13.00	6.63	-2.58	53.64	-6.25	0.00	165.00	5.78	-1.36
	AUG	0.90	0.00	10.15	-16.67	0.76	-0.70	11.61	0.00	0.00	-50.00	11.33	-6.64	10.33	3.50	0.85	6.54	0.00	4.44	-45.60	18.11	-4.23	111.21	13.79	0.00	75.00	5.78	1.31
	SEP	0.90	0.00	1.22	0.00	0.76	4.63	8.13	0.00	0.00	0.00	7.42	22.70	10.27	3.50	5.49	4.44	0.00	4.44	38.80	1.37	-1.16	34.04	6.25	0.00	1650.00	5.78	4.80
	OCT	0.90	0.00	1.22	0.00	0.76	12.01	14.38	0.00	0.00	0.00	6.47	-6.08	23.78	6.00	4.80	11.64	0.00	4.44	6.77	19.18	34.12	34.04	3.03	0.00	1650.00	7.23	9.61
	NOV	0.90	0.00	1.22	0.00	0.76	-1.94	19.41	0.00	8.33	100.00	6.23	2.45	2.00	7.80	0.00	5.67	0.00	4.44	6.77	12.56	-84.35	34.04	9.09	0.00	1650.00	6.06	2.30
	DEC	0.90	-12.50	1.22	0.00	6.65	-2.07	6.84	0.00	7.69	0.00	8.00	11.55	1.70	1.40	0.00	2.26	0.00	4.44	22.15	12.56	28.92	34.04	11.43	0.00	1675.00	6.51	11.29
2013	JAN	4.90	-14.29	1.22	20.00	0.72	5.00	21.05	0.00	0.00	0.00	8.00	2.25	4.79	23.81	11.45	10.32	0.00	0.00	25.87	12.56	6.96	-35.19	0.00	0.00	2020.00	23.00	24.42
	FEB	0.87	0.00	1.22	33.33	-4.83	69.39	17.39	0.00	7.14	0.00	33.00	52.25	40.59	25.30	16.44	34.93	0.00	23.26	21.56	34.78	-7.64	5.31	29.73	0.00	165.00	11.00	18.98
	MAR	0.87	0.00	1.22	-12.50	0.76	30.92	0.00	0.00	6.67	0.00	33.60	23.72	4.21	6.13	4.41	18.43	0.00	5.88	8.95	28.45	40.93	-0.94	6.38	0.00	165.00	19.59	20.20
	APR	0.00	0.00	0.00	-14.29	0.76	-15.34	23.15	0.00	0.00	5.45	-21.50	3.67	40.37	7.04	31.25		0.00	3.85	-23.27	8.69	-0.56	-10.00	2.04	0.00	160.00	12.57	7.37
	MAY	0.00	0.00	0.00	0.00	0.00	3.51	34.13	0.00	0.00	0.00	-2.09	13.35	2.65	19.63	13.16	4.81	0.00	1.85	24.25	43.31	-2.83	85.19	10.20	0.00	197.14	9.08	8.41
	JUN	0.00	0.00	0.00	0.00	0.00	10.68	5.56	0.00	0.00	0.00	6.59	0.00	0.00	-7.84	2.79	-9.64	0.00	0.00	30.95	17.89	-9.76	-14.00	3.85	0.00	197.14	6.12	3.92
	JUL	0.00	0.00	0.00	-16.67	0.00	19.23	40.85	0.00	0.00	0.00	6.59	0.00	3.45	10.96	1.81	-32.40	0.00	3.64	-13.00	8.36	3.87	-6.98	1.92	0.00	197.14	1.70	7.23
	AUG	0.00	0.00	0.00	0.00	0.00	12.20	4.91	0.00	0.00	0.00	6.59	5.26	2.50	12.20	4.67	6.63	0.00	14.04	4.40	48.15	-2.76	-5.00	0.00	150.00	197.14	2.23	6.77
	SEP	0.00	0.00	0.00	20.00	0.00	0.70	-1.32	0.00	0.00	5.45	-5.00	3.58	1.12	15.71	5.17	0.00	0.00	-5.60	63.61	0.64	0.00	-4.08	-60.00		197.14	12.23	5.97
	OCT	0.00	0.00	0.00	0.00	5.88	2.29	-5.05	0.00	0.00	0.00	26.21	-5.26	4.87	-3.02	13.58	1.67	0.00	6.15	-0.67	-4.11	2.33	2.63	2.22	50.00	197.14	8.80	7.61
	NOV	0.00	0.00	0.00	-16.67	0.00	-13.99	1.50	0.00	0.00	0.00	13.27	0.00	-1.20	-1.80	-1.45	5.00	0.00	39.13	5.18	-3.22	3.17	2.56	4.55	0.00	197.14	2.98	5.40
	DEC	0.00	0.00	0.00	0.00	-5.56	2.72	2.55	0.00	0.00	0.00	5.36	5.56	0.30	4.61	1.64	-2.69	0.00	0.00	5.18	1.58	-0.27	-2.50	6.82	0.00	197.14	1.56	5.28
2014	JAN	0.00	0.00	0.00	0.00	0.00	2.29	8.56	0.00	0.00	0.00	18.89	21.05	5.44	6.39	0.00	1.80	0.00	1.56	5.18	-11.06	12.65	0.00	4.44	0.00	182.86	0.25	10.21

Month																											
FEB	0.00	0.00	0.00	0.00	0.00	-3.08	1.30	0.00	0.00	0.00	28.68	-4.35	7.55	-15.54	-3.23	-11.69	0.00	20.74	5.18	0.38	28.42	12.82	13.33	0.00	213.33	1.41	11.89
MAR	0.00	0.00	0.00	20.00	5.88	-1.59	2.08	0.00	0.00	0.00	-6.06	4.55	3.01	3.17	-1.67	7.27	0.00	12.27	-0.71	-1.12	-0.49	18.18	-8.16	0.00	276.00	1.36	-0.09
APR	0.00	0.00	0.00	0.00	-5.56	-19.35	-12.24	0.00	0.00	0.00	-12.03	-4.35	2.15	3.18	-2.03	11.85	0.00	7.08	118.00	-1.17	-2.65	0.00	2.33	33.33	276.00	1.36	-3.14
MAY	0.00	-50.00	0.00	-16.67	0.00	-8.00	2.33	0.00	0.00	0.00	19.83	0.00	-5.72	30.42	-3.46	2.92	0.00	18.80	-12.12	0.43	-3.16	5.77	-11.90	0.00	276.00	0.86	4.71
JUN	0.00	0.00	0.00	0.00	0.00	12.61	-3.41	0.00	-6.25	0.00	11.16	18.18	-1.29	7.77	-9.14	7.33	0.00	9.31	6.48	0.45	3.74	0.00	20.00	0.00	272.00	-0.69	4.36
JUL	0.00	0.00	0.00	0.00	5.88	11.97	0.00	0.00	-6.67	0.00	0.81	19.23	-3.37	2.50	-30.97	5.89	0.00	-10.65	6.27	0.46	3.15	0.00	2.50	0.00	287.50	1.45	-0.85
AUG	0.00	0.00	0.00	-20.00	0.00	24.14	3.53	-25.00	0.00	-50.00	6.85	6.45	-21.69	-8.79	-28.57	2.63	-14.91	2.59	-3.61	-21.74	2.69	0.00	-10.26	0.00	287.50	-1.95	-2.32
SEP	0.00	0.00	0.00	-25.00	-5.56	1.39	2.27	0.00	-14.29	100.00	6.66	12.12	-0.20	19.28	23.20	0.60	0.00	-1.11	-7.31	3.15	2.47	0.00	-15.15	-25.00	300.00	-10.26	4.03
OCT	0.00	0.00	0.00	33.33	0.00	8.49	10.00	0.00	0.00	-50.00	6.48	-8.11	1.63	7.63	1.62	1.62	0.00	1.92	3.38	8.36	6.04	5.45	7.69	0.00	266.67	-4.96	2.84
NOV	0.00	0.00	0.00	0.00	0.00	2.02	6.06	0.00	0.00	100.00	9.82	-11.76	4.09	6.81	1.92	1.62	0.00	7.36	-0.46	0.65	12.00	0.00	0.00	0.00	12.83	-9.81	2.67
DEC	0.00	-33.33	0.00	-25.00	0.00	1.49	-3.81	0.00	0.00	0.00	8.51	-3.33	6.80	0.37	0.63	7.68	0.00	6.30	15.52	-15.11	4.75	0.00	0.00	0.00	41.04	-11.43	1.68