# THE RELATIONSHIP BETWEEN ECONOMIC GROWTH AND MARKET CAPITALIZATION OF COMPANIES LISTED AT THE NAIROBI SECURITIES EXCHANGE

BY:

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE  REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF  BUSINESS ADMINISTRATION,  UNIVERSITY OF NAIROBI

2020

# DECLARATION

This research project is my original work and it has not been presented and submitted to any in university or college for examination.

Signed                                    Date……………………………..

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

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# ACKNOWLEDGEMENT

This research project could not have been a success without the contribution of a few individuals and groups whom I want to acknowledge.

My sincere appreciation to my supervisor Dr.Winnie Nyamute for her professional guidance and reliability when I was writing this project.

Family and friends for their constant encouragement and support. Last but not least, I thank God for being a constant source of hope even when things got tougher.

# DEDICATION

This research project is dedicated to my family and in addition to everyone for their sacrifices and understanding when I was out to write this project.

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# LIST OF ABBREVIATIONS/ACRONYMS

**CBK** - Central Bank of Kenya

**CMA** - Capital Markets Authority

**EMH** - Efficient Market Hypothesis

**FDI** - Foreign Direct Investment

**GCF** - Gross Capital Formation

**GDP** - Gross Domestic Product

**GFCE** - Government Final Consumption Expenditure

**IPO** - Initial Public Offering

**KNBS** - Kenya National Bureau of Statistics

**NSE** - Nairobi Securities Exchange

**SMD** - Stock Market Development

# ABSTRACT

Evidence on the relation between economic growth and stock market capitalization are still ambiguous, as early studies support the existence of a positive association, while more recent contributions suggest a nonlinear U-shaped correspondence. Some opine that there is a positive relationship amongst financial depth and economic growth, while some have provided empirical evidence of nonlinear, an inverse U-shaped relationship. It is not excluded that the relationship is even more complex and the impact varies depending of level of a country economic and institutional development or level of integration, quality of the financial system, its structure, and other factors. The objective of this research is to to determine the relationship between economic growth and market capitalization of companies listed at the Nairobi Securities Exchange. It also aimed at reviewing the increasing body of theoretical and empirical studies that have endeavoured to examine the range of magnitude and relations between economic growth and stock market capitalization. Secondary sources of data were employed. Time series data was utilized, data was collected for the macro-economic phenomena over a varying time periods. The research employed inferential statistics, which included correlation analysis and Bayesian regression analysis so as to establish the effect of the economic growth on stock market capitalization. The study findings exhibited that both Gross Capital Formation and Government Final Consumption Expenditure had significant positive associations with stock market capitalization. Additional study findings were that economic growth has no significant effect on stock market capitalization and thus, it cannot be utilized to significantly predict the stock market capitalization. Further findings were that the economic growth components that entail; GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure had neither individual significant association nor relationship with stock market capitalization. Policy recommendations were made to the capital markets' regulators, the National Treasury and Capital Markets Authority to delink economic growth from development of the capital markets. The policy makers should direct their energy in crafting other policies and legislations to bolster the financial deepening of the capital markets and not bank on economic growth. Further recommendations were made to the capital markets practitioners such as firm management, consultants, investment banks, equity analysts, and individual investors not to rely on the information on the economy in order to determine the value of companies. Firm management should focus on the company fundamentals to increase the companies' intrinsic value. Investment banks, equity analysts, and individual investors should not anticipate a bull run during periods of booming economic growth. In contrast, they should endeavour to establish the companies' intrinsic values and future prospects in determining the counters to buy and hold or to sell.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

Although much debated in the recent literature, the linkage of monetary turn of events and financial development is still of highest significance, as it endeavours to answer how and why the fluctuating money related framework advancement level influences development differentials among nations. Confirmations on the association are so far obscure, as early examinations maintain the presence of a positive connection, at the same time may display nonlinear U-formed correspondence (Maranga, 2013). Panizza (2014) set up a positive relationship among financial significance, assessed by the proportion of local credit as a touch of Gross Domestic Product (GDP), and the surging financial development. Cecchetti and Kharroubi (2012), Law and Singh (2014), Arcand et al. (2015) and Sahay et al. (2015) provided evidence of nonlinear, an inverse U-shaped relationship. It isn't barred that the relationship is significantly more unpredictable and the effect fluctuates depending of level of a nation financial and institutional turn of events or level of mix (Demirgüç-Kunt et al., 2013; Masten et al., 2008), quality of the financial system, or its structure (Beck et al., 2014; Gambacorta et al., 2014), and other factors.

The Efficient Market Hypothesis (EMH), introduced classically by Roberts (1967) and Fama (1970), is one of the theories employed in the current study to explain how economic growth can predict market capitalization. The EMH positions that all information available is reflected in stock prices and as such always trade at their fair values. Thus, information about the economy should be incorporated in the share prices implying that economic

growth can impact on market capitalization of companies. The theory of capital and investment, introduced by Fisher (1930), is another theory anchoring this study. The theory postulates that the demand for loanable funds ought to be equivalent to supply for loanable funds for the total savings to be equal to total investments. Thus, the economy can be equated as total savings and market capitalization as total investments. Therefore, a change in total savings is expected to have an effect on total investments.

Organized stock markets in Kenya began operating in the early 1950s when the Nairobi Securities Exchange (NSE) was founded. A tremendous growth in the NSE has been recorded since its inception in terms of listed firm currently having more than sixty listed firms and also with a variety of products (CMA, 2016). Ever since the introduction of organized stock markets, the yearly financial development rates have been fluctuating over the time (KNBS, 2018). Kenya's Gross Domestic Product (GDP) in the year 2017 rose by 5.6 per cent in comparison with a growth rate of 5.3 per cent in 2016, the growth was attributable to other main sectors growth with financial markets being among them (KNBS, 2018). The NSE money related trade capitalization is about Kenya Shillings 2.5 trillion, which is underneath the half of the gross public pay. The securities exchanges are strategically positioned  for purposes of upholding the nations long haul money related and financial development (CMA, 2016).

### 1.1.1 Economic Growth

The increment in the Per capita GDP or any aggregate income measure is used to denote economic growth. Normally, the change in GDP rate is used to measure it. Economic

growth refers to produced quantity of goods and services. When the economic growth is negative, it can be said that the economy is shrinking and this is mainly in times when there are economic recession and depression (Barro, 1997). Economic growth is one of the main objectives of monetary policy and for any nation it is a significant macroeconomic target (Otieno, 2015). Mosiori (2014) alludes to money related improvement to mean the extension of creation and utilization of items and ventures in an economy. Companies as well as increment in savings by individuals can stimulate economic growth in a country through implementation of policies, which promotes accumulation of funds for investment (Mishkin, 2004).

Monetary development is referred to as the increase in the per capita total national output, also known as the GDP or other total wage measures, and is mostly is measured as the GDP growth rate. Monetary development implies only the goods and services produced which can be negative or positive (Omoke, 2010). There are numerous benefits that arise to different stakeholders in the economy when there is improvement in economic growth. Some of the benefits include creation of employment, betterment of standards of living, better markets for products and many other benefits (Mishkin, 2004).

Economic growth is measured by; GDP, household consumption expenditure, Gross Capital Formation (GCF), and Government Final Consumption Expenditure (GFCE). Economic growth is the annual growth of these measures expressed in annual percentage growth (Love, Inesa & Lea, 2006).

**1.1.2 Stock Market Capitalization**

The stock market is referred as the to a public market where equites, bonds and other types of securities are issued and traded be in over the counter market or even an organized security exchange. A stock trades promotes the exchange of stock and different securities by stock dealers. There are different participants in the stock markets including individuals, corporate institutions, the governments, and others. Households are net investors in the stock markers whereas the government and other firms are the net users (Mishkin & Eakins, 2012). Capital markets are composed of primary markets for example Initial Public Offerings (IPOs) that are issued with investors via underwriters and secondary markets whereby the succeeding trading occurs. Capital markets development refers to increase in volumes and sustainability of theses primary and secondary markets. In different countries, the government through its agencies regulates the local capital markets even though some markets especially exchanges, perform some part is self-regulating themselves (Demirguc-Kunt, Asli & Levine, 1996).

Capital markets are used by governments and companies in raising funds for use in their operations, for instance, the government may issue a treasury bonds so as to used its proceed to undertake a certain new or ongoing project whereas on the other side a company may issue IPO to get funds for its operations. On the other hand, the reason why investors buy a security in the stock market is to gain a return and profit from the securities. Since stock markets refer to where the trading of securities happens, its development entails increment in the volumes traded, which therefore translates to a sustainable market structure capitalization (Omoke, 2010). The protections trades improvement is a significant

piece of the money related section headway and supplements the piece of the dealing with a record system in budgetary progression .As a result of enhanced securities exchanges productivity is improved through liquidity arrangement, value disclosure, minimizing of exchange expense and hazard exchange. Improved market capitalization is in addition an indicator of the funds, which flows within an economy and enhanced resource allocation from areas that are unproductive to those that are productive.

Stock markets refer to place of trading of securities, which implies that their development involves increment if the volumes trades which brings out market capitalization and their sustainability. Thus, the variations in the volume traded and market index can be used in assessing the market capitalization (Omoke, 2010). Market capitalization is the worth of a business as determined by the stock market. This study will utilize the following formulae in calculating market capitalization; market capitalization = cost per share x Number of shares (Mishkin & Eakins, 2012). However, daily market capitalization figures are provided by respective securities exchanges.

### 1.1.3 Economic Growth and Stock Market Capitalization

Stock markets manage the channelling of surplus funds to investors who are in need of the funds. Market capitalization is founded from the stock markets growth changes, supported by appropriated and sufficient regulations and legal framework that facilitates the progressive support system of monetary development (Mishkin, 2012).Proper guidelines establish an empowering and helpful climate for monetary development. Various researchers focussed on the causal association among to Stock Market Development

(SMD) and economic growth. Gursoy and Muslumov (1998) discovered that SMD and economic growth had a bidirectional causal relationship. Additionally, their findings revealed that the association was stronger in developing counties. Similarly, other researchers such as Hondroyiannis et al. (2005) and Luintel and Khan (1999) likewise discovered the bi directional association amongst SMD and economic growth.

Protections trades are key in supporting more critical financial capability by trading saves from speculators that have surplus to those that have deficiencies Market capitalization is said to improve when the inflows of the assets in the business sectors surpasses the surges and in this cases saves likewise holds. It is thus key to note that the stock markets activities to a large extent affects market capitalization which consequently directly affects the measures of economic growth for example, execution of firms and buyers, singular abundance and furthermore the recurrent execution of the economy. Low market capitalization due to immature stock markers can translates to low conditions of monetary returns, and in the long run prevents productive progression of assets at low expenses (Mishkin, 2004). When the stock market is well managed and organized, it is able to promote investment opportunities through identifying and financing profitable activities which lead to mobilization of domestic savings, assists in diversification of risk, allocation of capital proficiency, improves the exchange of goods and services (Mishkin, 2001; Caporale et al, 2004). Certainly, stock markets are required to improve the economic growth through promotion of better investment decisions, improving the financial assets liquidity, enabling the diversification of local and global risk and impacting corporate governance for example taking care of institutional issues by strengthening the

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interest/value of shareholders (Osei, 2005). Additionally, stock markets are the appropriate indicators for forecasting future economic activities and show the real causal relationship among the stock costs and future monetary development. In case the borrowing cost of a firm is more than the investment, this lead to slowing down of the economic growth.

Stock markets performs significant role in aspect of allocating capital to those in shortage, which promotes real economic activity. A number of counties especially the developing countries encounter financial constraints where you find bank loans are only offered to certain desirable individual investors and set of companies. This disputes can also depict credit markets constrains (Mirakhor & Villanueva, 1990). As a result of stagnated returns for the banks because of lending only to certain cluster of borrowers, the returns fail to rise as the interest rate to borrower's increases (Stiglitz & Weiss, 1981; Cho, 1986). As a way of ensuring suitable monetary policy efficient stock markets provides guidelines by issuing and also accessing the liquid market by repurchasing the government securities that is a significant step aimed on financial liberation. In the same way, well-organized and active stock markets might be able to modify the money demand pattern and would assist in creating liquidity that eventually improves economic growth (Caporale et al., 2004).

The EMH positions that all information available is reflected in stock prices and as such always trade at their fair values. Thus, information about the economy should be incorporated in the share prices implying that economic growth can impact on market capitalization of companies. The theory postulates that the demand for loanable funds ought to be equivalent to supply for loanable funds for the total savings to be equal to total

investments. Thus, the economy can be equated as total savings and market capitalization as total investments. Therefore, a change in total savings is expected to have an effect on total investments. This translates to economic growth having an impact on stock market capitalization.

### 1.1.4 Nairobi Securities Exchange

In the year 1954, the Nairobi Securities Exchange (NSE) was founded by stockbrokerS as a voluntary association and was given the responsibilities to regulate the trading activities and also develop the securities market. It has developed to be one of the leading African Exchanges and more even it acts as an iconic trading facility not only to local investors but also international investors who aims of gaining entrance to the economic growth of Kenya and Africa at large. It deals with both variable and fixed income securities and has 64 listed companies, an Income Real Estate Investment Trust (I-REIT), an Exchange Traded Fund (ETF) and a futures derivatives market (CMA, 2016).

The exchange plays an important part in the Kenyan economy through promoting savings and investments and also assisting both local and foreign companies obtain cost effective capital. NSE was the founding member of the both the African Securities Exchanges and the East Africa Exchanges Association. The NSE is also a partner in the United-nation led sustainable stock exchange initiative and more so a member of Association of Future markets. The Capital Market Authority regulates the NSE.

Ever since the introduction of organized stock markets, there has been an experience of fluctuating economic growth rates over the previous years (KNBS, 2018). Kenya's Gross Domestic Product (GDP) in the year 2017 rose by 5.6 per cent in comparison with a growth rate of 5.3 per cent in 2016, the growth was attributable to other main sectors growth with financial markets being among them (KNBS, 2018). The NSE securities exchange capitalization is about Kenya Shillings 2.5 trillion that is under half of the gross public return. The securities exchanges are situated so that they can uphold the nation's long haul monetary and financial development (CMA, 2016).

The capital market in Kenya has been portrayed to being narrow and shallow. More concern have been drawn on the capital market for instance institutional development of the stock markets and introduction of new instrument in the stock markets. It has been perceived that these endeavours will promote mobilization of sufficient resources and efficient allocation of the resources in order to attain growth objectives. Since the start of organized stock markets, there has been fluctuation in the annual economic growth rates of the country over the period (Omoke, 2010). It is imperative to investigate if this has any bearing on market capitalization at the NSE.

## 1.2 Research Problem

The conventional growth school of thought contend non-existence of any relationship amongst sector capitalization and financial development due to the presence of level effect (Omoke, 2010). Nonetheless, as indicated by the EMH, the stock markets are efficient which means that all times the information available is reflected by the stock prices, thus

optimum market capitalization level (Fama, 1970). This suggest efficiency if resource allocation take place across an economy; from areas with surplus to areas with shortages but profitable units, and this also implies a positive association amongst stock market capitalization and economic growth. The financial exchange has been connected to monetary advancement over its part as wellsprings of new detached capital, while monetary improvement might be the reagent for stock advancement (Osamwonyi & Kasimu, 2013). It is commonly accepted that tremendous abatements in securities exchange costs are an impression of a financial plunge while enormous expansion in stock costs are potential markers of monetary development (Har, Ee, & Tan, 2008).

Since the start of organized stock markets, there has been fluctuation in the annual economic growth rates of the country over the period (Omoke, 2010). In Kenya organized stock markets began to operate in the 1950s, when the NSE was founded; a significant growth has been eminent in the stock market in both the number of products and services offered and the listed firms (CMA, 2016). However, there have also been fluctuations in the performance of the NSE over the years. The lowest performances have been recorded in the periods of economic distress (Maranga, 2013). It is therefore imperative to investigate if economic growth has any bearing on the performance of the NSE.

Various global studies are already done on the association amongst stock market capitalization and economic growth and. Levine (1997) and Bencivenga (1991), indicated that markets that are more liquid are able to create long-term investment which leads to economic growth as a result of transaction cost being lower. In another study by Rajan and

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Zingales (1998), it contended that the stock market size and growth of financial dependent firms is correlated. Antonios (2010), Alghamedi (2012), and Levine (2005) opined that stock market enables capital allocation process through improving the financial instruments available to investors in order for them to diversify their portfolio offering them with a major capital source at a comparatively low cost. A stock market that is functioning properly will give the investors the ability of diversifying away their unsystematic risks and thereby increasing their marginal productivity of capital. Most of the studies undertaken were in support of the perception that stock markets promote economic growth; they made an observation that properly operating capital markets promote economic growth, efficiency and investments. It is imperative to investigate if this has any bearing on market capitalization.

Local studies also hold that stock markets influence economic growth. Dorko (2012) found out that existence of a fragile positive relativity with the degree of rate of development and market capitalization. Maranga (2013) asserts that there is a weak negative correlation amongst GDP and stock returns. Otieno (2015) established existence of an inverse relationship amongst interbank loaning financing and the monetary development. Sambu (2014) discovered that the stock market index to a large extent affects economic growth significantly. Mosiori (2014) revealed a positive impact of Foreign Direct Investment (FDI) on economic growth and a negative relationship of both interest and inflation rates on economic growth.

During the past few number of years, the roles which the stock markets places in stimulating economic growth has gained an increasing interest amongst academicians and it has generated diversified views. Four different perspectives on how stock market performance and economic growth relates exists. The supply-leading perspective backs that the causal direction moves from SMD to economic growth whereas the demand following perspective back that that SMD follow economic growth and demands of the real sector. The third perceptive is that economic growth and SMD have a common effect on each other. The forth perceptive contends there exists a relationship amongst economic growth and SMD (Zegada, 2011). Most of the studies enumerated in this research attempt to explain the relationship between stock market performance and economic growth through which stock market capitalization influences economic growth. Thus, this study aim on addressing the research question, what is the relationship between economic growth and the market capitalization of companies listed at the NSE?

## 1.3 Research Objective

The study aimed to determine the relationship between economic growth and market capitalization of companies listed at the Nairobi Securities Exchange.

## 1.4 Value of the Study

This study will be beneficial to many stakeholders ranging from scholars, researchers, government and its agencies, manager of listed firms, lawmakers, stock market official and many others. Additionally, this study will contribute much to the current knowledge body and aid in predicting market capitalization basing on economic growth. More so, other

scholars may use this study in future to reference their work. The study will also contribute in enlarging the breadth as well as quality of the research works and publications. Findings from the study will be of assistance in furtherance of the knowledge base on the study parameters

The study will be of great value in policy formulation. The financial markets regulator, CMA will find the study discerning as the connection between market capitalization and financial development will be contemplated and will give insight on how to stimulate the performance of listed companies. The CMA can put in place policy drafts and guidelines aiming to boost capital markets. With the helpful insight by this study, such policy drafts and guidelines will be of enhanced relevance and quality. Legislators and policy makers as well can gain from the study which will be useful when they are drafting polices and amending the policies. With good policy drafts and regulatory framework, the quality of policies and legislations will be assured.

Financial analyst mostly performs due diligence and background check on their investment targets. Henceforth, this study will offer them immeasurable insights which will help them when advising their clients. Also, financial analyst usually carries out in house research studies; with the assistance of the study findings, those kinds of researches will be improved. They would be able to estimate market capitalization by using economic conditions, and thus be able to predict bear and bull markets.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

In this chapter, the literature on the research variables is reviewed. Additionally, the theories together with prior empirical evidence in the area of study are undertaken and finally the determinants of economic growth are discussed.

## 2.2 Theoretical Review

Theoretical Framework reviews the theories relevant to the present study which include: Efficient Markets Hypothesis (EMH) and theory of capital and investment.

### 2.2.1 Efficient Markets Hypothesis

This hypothesis by Fama (1970) suggests that the price of stocks wholly reflects all the information that is available in the market. This hypothesis holds the assumption that all the market participants have access to information available free of charge and that this information comes in randomly, therefore stock prices are always priced correctly and where there is mispricing, the prices is immediately priced correctly through arbitrage activities. It is also assumed that the market participants are rational and aim on maximizing their returns; therefore, the stock markets allocate funds to the units with shortage from those with surplus in an effective and efficient manner.

In current times, new information, excessive volatility, small firm effect, means reversion and market overreactions do not get incorporated in the stock prices immediately which

implies that this hypothesis may not always hold wholly. This proof implies that EMH might be a reasonable point to begin assessing the financial or monetary markets however may not be used to generalize all the financial market behaviour. The EMH holds that technical analysis, investment advice and hot tips are unable to assist an advisor in outperforming the market. The investors are therefore advised to seek to buy and hold a stock for longer time period Okpoto (2015). Generally, empirical studies back the effects of EMH in the stock market. As indicated by Okpoto (2015) prior test of EMH have depended on long-range reliance om equity returns. It uncovered that past information has been seen as in improving predictive accuracy. This report appears not to back the EMH in greater part of the developing countries

While EMH predicts when there is no change in fundamental information the movement of price is random, non-trending, various studies have indicated a noticeable inclination for trending of stock markets for weeks or even longer periods (Khan and Arshad, 1986) and additionally, a positive correlation exists amongst the length of study time frame and extent of trending (Granger et al., 2007). Nevertheless, over significant time-frame periods, the inclining is sinusoidal in appearance. Different clarifications for such enormous and clearly nonrandom price changes have been declared. Though, the best way to for confirmation is that the appropriation of stock market prices is non-Gaussian, where EMH, with its current framework, would not be carefully pertinent (Granger et al., 2007).

EMH is relevant to this study as it acts as a linkage of economic growth and capital market. It illuminates the relationship amongst economic growth and capital market capitalization.

Henceforth, it provides a structure of investigating the efficiency of capital markets. Thus, information about the economy should be incorporated in the share prices inherently testing the semi-strong form market efficiency. Thus, information about the economy is incorporated in the share prices. This implies that economic growth can impact on market capitalization of companies.

### 2.2.2 Theory of Capital and Investment

Irving Fisher pioneered this theory in his Nature of Capital and Income (1906) and Rate of Interest (1907), in spite of the fact that it is most clear and most celebrated piece in his Theory of Interest (1930), what is important is what he referred his "second approximation to the theory of interest" (Fisher, 1930) that portrays the firm's investment decisions as an inter-temporal problem. In his theory, Fisher made the assumption that all capital was in circulation. Which means that all capital is utilized in the production process, meaning stock of capital is non-existence or maybe, all "capital", is truth be told, Investment.

Hayek (1941) critiqued this theory mainly based on Fisher (1930) means of reconciling this theory with the Clarkian theory of production that triggers the factor market equilibrium. Hirshleifer (1958, 1970) indicated that this problem could be resolved by reviewing the Fisher's full theory of investment in two stages of budgeting process. Hirshleifer precisely indicated that if firms were to be considered as owned by entrepreneurs, therefore we ought to    integrate Fisher's (1930) "consumption saving decision", the "first approximation" of the owner-entrepreneur with the investment decision, the "second approximation" of the "firm which that entrepreneur owns".

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The theory links to the study because it explains how the economy influences market capitalization. Thus, the theory of capital and investment, introduced by Fisher (1930), is another theory anchoring this study. The theory postulates that the demand for loan able funds ought to be equivalent to supply for loan able funds for the total savings to be equal to total investments. Therefore, a change in total savings is expected to have an effect on total investments. Therefore, a change in economic growth is expected to have an impact on the performance of securities exchanges, which is denoted by market capitalization.

## 2.3 Economic Growth

The indicators of economic growth, which comprise of GDP, unit utilization use, Gross Capital Formation (GCF), and government last utilization use, are specified here.

### 2.3.1 Gross Domestic Product

GDP indicates to the complete market estimation of the two products and enterprises, which are created in a particular nation inside a predetermined time-frame regularly a year (Lepenies, 2016). The history of GDP is traceable to the 1930s, with any estimates of national income before that decade either completely ignored or very briefly touched upon as a mere pre-history of the 'modern' version. Second, and as a direct result of not studying the historical and political context of national income estimates from the 17th to the 19th centuries, recent critiques consider GDP to be a statistical measure, flawed but nonetheless designed to objectively measure economic activity such as total production and income. Third, and naturally following from the second feature, the proposed remedies for GDP's

shortcomings are likewise statistical patches, whether replacing GDP with a happiness index, supplementing it with a dashboard of various indicators, or adjusting it to include unpaid care-work and the costs of environmental degradation. In all these cases, the belief is that, if one only applies the recommended cure, the patient would heal and be able to fulfil its original destiny, that is, to measure the true wealth or income of nations (Fleurbaey & Blanchet, 2013).

## 2.3.2 Household Consumption Expenditure

Consumer behaviour refers to any action undertaken by an individual when it comes to utilization of products or services, which also entail the processes of economic, decion making so as to establish the behaviour (Block and Roering, 1979). As per Goldsmith (1996), the patterns of household consumption changes depending on the changes in times. So as to meet essential expenses, income or money is quickly spent as quickly as it is received. This is on the grounds that the change in time has become one of the variables that impact the pattern of household consumption indirectly, as the change presently influences the prices of obtaining services and goods, because of the prevailing inflation in a country.

So as to be able to meet the purchasing needs of goods and services which are in the market, it is important to plan for household consumption. Therefore, the main aim of any household is ability to meet its basic need for example clothing, shelter, food, education and transportation (Fereidouni & Tajaddini, 2017). Todaro and Smith (2015) characterize development as a procedure that perspectives on different measurements, including the

establishment and changes of monetary and social framework. A country in unstable economic condition will not be able to develop for example in times of financials and economic crisis. Besides significant indebtedness amongst households, additional affects their financial status dues to their inclination to make personal loans so as to meet daily expenses.

### 2.3.3 Gross Capital Formation

Gross Capital Formation (GCF) comprises of domestic producer's acquisitions minus the disposal of fixed assets within a particular time period add some increment in the non-produced assets realised value by the productive activity Fixed assets are those assets that are used in production over 1 year and above for example machinery, buildings, transport equipment, or intellectual property such as software or the results of research and development (Eurostat, 2013).

Analysts and policymakers are interested in the concept of business investment, which while it is not a national accounts concept, can be defined using the GCF data. It includes investment by public non-financial corporations and all private sector institutions, but excludes expenditure on dwellings and the costs of ownership transfer on non-produced, non-financial assets (Drew, Lewis & McLaren, 2016). More broadly, GCF is the total value of gross fixed capital formation, change in the level of inventories and the acquisitions less disposals of valuables, all measured at purchasers' prices (Barker, & Ridgeway, 2014).

**2.3.4 Government Final Consumption Expenditure**

This comprises of the expenses that the government incurs when producing non market last products and ventures, less GCF and market merchandise and enterprises offered as social exchanges in Kind. An absolute general government last utilization is a vital segment of all out GDP, and furthermore goes about as a reflected picture of its immediate part as a "customer" of extreme products and ventures is basic (OECD, 2013).

The general government final consumption can be categorized in two different groups. The first group comprises of collective consumption expenditure for instance justice, defence among others, which advantage the whole society or most part of the society and are commonly referred to as public goods and services. The second groups comprise of individual consumption for instance education housing, health care among others, which shows the expenses that the government uses for an individual household. This group of expenses is equivalent to social transfers in kind made to the households by the government and comprises of government expenditure on market goods and services given to households. Because the goods and services that the government produced normally do not have market prices, the respective products are valued at the sum of costs required so as to produce these goods and services. Mainly this costs comprises of employees' compensation, depreciation and intermediate deprecation. Final government consumption can be approximated as the expenditure government incurs to produce goods and services while government output is the payments made for production of goods and services and the applicable output, which is utilized for fixed capital formation (OECD, 2013).

**2.4 Empirical Literature**

In the global context, Arzarmi et al (2005) investigated on how SMD is related to economic growth in India. The findings of the study indicated that no relationship existed between Indian SMD and economic growth for the period under investigation. However, there was proof that SMD was relevant in economic development in the Pre-liberalization period, a negative association was revealed between economic development and SMD in the post liberalization period. In another study, Obreja et al (2008) aimed on finding out the correlation amongst economic growth and capital market development in Romania where he utilized VAR and regression model. The results from the study exhibited that capital market is related to economic growth positively. More so, they discovered that the strongest association is from economic growth to capital market. Other researcher like Bose (2005), Garretsen et al (2004), and Beck et al (2006) have concurred that there exist correlation of economic growth and capital market development.

Atje and Jovanovic (1993) did a sampling of 94 countries during the time frame 1970-1988 where they tested the hypothesis that stock markets positively impact economic growth. The study accepted the hypothesis meaning SMD indeed positively affected economic growth. Similarly, Levine and Zervos (1996) in their study using time series regression on 41 countries within the time frame 1976-1993 indicate that SMD is positively connected with economic growth. Cheung and Ng (1988) applying the Johansen co-integration models discovered empirical proof of long run covariance amongst stock market indexes of five countries and indicators of aggregate real activity for example real output, real money, real consumption and real oil price.

Levine and Zervos (1998) in another study noted that faster growth of capital and output was reported in countries that stock market capitalization was higher. Beck and Levine (2004) studied the effect of stock market and banks on economic growth using GMM technique and sampling 40 countries in the time frame 1976-1998 and found a positive influence of stock market and banks on economic growth. Rousseau and Wachtel (2000) utilized a panel VARs for 47 countries during the time frame 1980-1995 and showed that stock market liquidity impacted per capita output positively. Boubakari and Jin (2010) additionally examined the causality association amongst stock market and economic growth where they studied 5 Euronext countries which are United Kingdom, Portugal, Netherlands, France and Belgium using time series data. The study time frame was 1995 to 2008. The findings suggested existence of a positive linkage amongst economic growth and stock market in some countries that had highly active and liquid stock market.

Bernard (2011) applied a time series data for the year 1994 to 2009 and aimed on investigating the role that SMD played on economic growth. In his finding, he indicated a strong relationship of stock market turnover ratio on economic growth whereas there was a weak insignificant correlation of stock market capitalization ratio on economic growth. Further, Harris (1997) who studied the association of stock market performance on economic growth by sampling 49 countries during the time frame 1980- 1991 discovered a very weak relationship. Harris (1997) did not find substantial proof to show that stock market activity assists in explaining per capita output growth.

Locally, Otieno (2003) conducted an investigation on the contribution of privatization to capital market development: The case of companies privatized at the NSE. Otieno found out that capital markets become broader and deeper because of privatization and this leads to increased investors base, more listed and bigger market size, enhance liquidity as well as regulatory system and better awareness. More so, privatization is seen to have created opportunities for diversification of risk, more government attention and improved professionalism. Ndegwa (2008) studied the East African countries with degrading factors associated with the integration of capital markets. He found that weaknesses in banking systems for example high interest rates on bank deposits were a contribution to unsustainable capital inflows. Reducing the weakness to volatile capital markets as well as ensuring that vulnerabilities in the financial sector do not inhibit the capabilities of authorities in seeking to make the required macroeconomic policies so as to guarantee monetary stability was established a main challenge for policymakers in the regional marker counties.

Maranga (2013) used a causal research design is his endeavours to determine the association of stock market returns and economic growth. The period under study was year 1982- 2012 and the focus on the NSE 20 share index and GDP. He used secondary data and utilized regression analysis, correlation analysis and descriptive statistics for the analysis. The findings of the study revealed existence of negative relationship amongst GDP and stock market returns. Mosiori (2014) on the other hand wanted to establish how FDI and economic growth in Kenya related. The study period was year 1994-2014 where he utilized secondary data that were acquired from World banks and Central Bank of Kenya

(CBK). The research design used was a descriptive survey research design whereas regression analysis was applied in establishing the relationship of the variables where it was revealed that both FDI and exchange rate affected economic growth positively and on the contrary, both interest rates and inflation rates negatively related to economic growth.

Otieno (2015) sought to investigate how interest rate has an impact on the general economic growth in Kenya. Causal research design was adopted and utilized secondary data extracted from CBK and KNBS publications. A period of 15 years ranging 2000 to 2014 was the study period. Regression analysis which was used analysis established that interbank lending interest rates negatively related to economic growth and a recommendation was made that the government should formulate and implement policies for controlling the movement of interest rates. Sambu (2014) also pursued an examination on the relationship of stock markets development and economic growth in Kenya. He covered the time frame 1990-2011 where he collected secondary data. Regression analysis was undertaken to explain the relationship. R-test and F-statistics were undertaken in testing for significance. Conclusively it was concealed that the economic growth is propelled by the surging stock market.

## 2.5 Conceptual Framework

As indicated by Young (2009), the conceptual framework is a diagrammatic outlay that exhibits the association between independent and dependent variables. It can also be defined as a detailed description of the variables under study by use of a visual or graphical representation of the key study variables (Mugenda, 2008). For this research, the independent variables are the indicators of economic growth, which are; GDP, household

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consumption expenditure, GCF, and GFCE while the dependent variable is stock market capitalization. Figure 2.1 clearly illustrates the structure, which enables the researcher to make deductions from the findings.

The indicators of economic growth; GDP, household consumption expenditure, GCF, and GFCEare hypothesized to being positively related to stock market capitalization, both jointly and in isolation. This is according to the studies by Levine (1997) and Bencivenga (1991), who opine that markets that are more liquid are able to create long-term investment which eventually translates to economic growth as a result of transaction cost being lower. Additionally, studies by Antonios (2010), Alghamedi (2012), and Levine (2005) that outlined that stock market enables capital allocation process through improving the financial instruments available to investors in order for them to diversify their portfolio offering them an essential source of capital at a comparatively low cost and that a stock market which is functioning properly will give the investors the ability of diversifying away their unsystematic risks and thereby increasing their marginal productivity of capital supports thos hypothesis.

**Independent Variables**

**Dependent Variable**

| Gross Domestic Product (GDP |
|---|

| Household Consumption Expenditure |
|---|

| Stock Market Capitalization |
|---|

| Gross Capital Formation (GCF) |
|---|

.

| Government Final Consumption Expenditure |
|---|
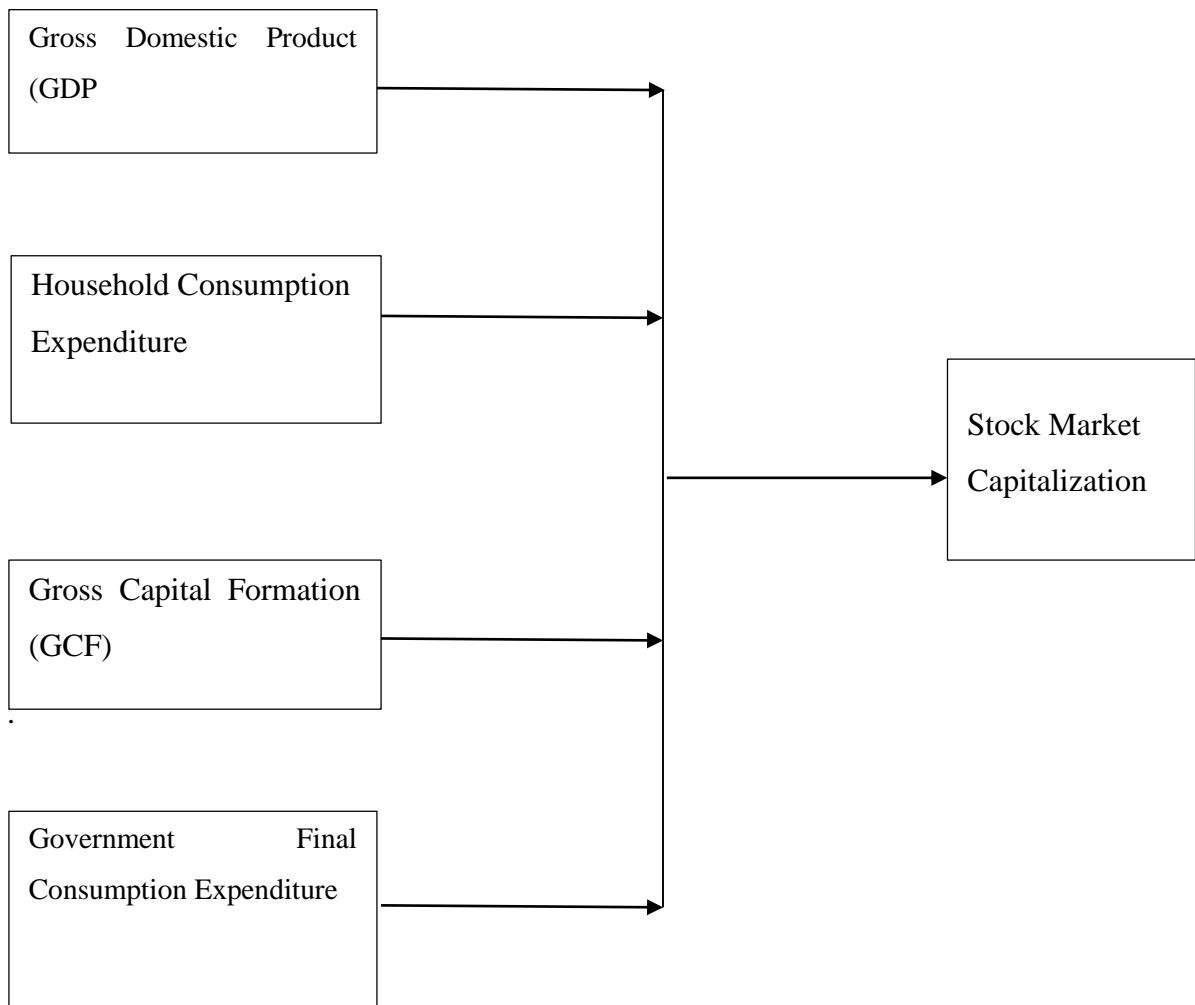
**Figure 2.1: Conceptual Model**

## 2.6 Summary of the Literature Review

Many of the global and local studies reviews support the understanding that stock markets stimulate economic growth and that a capital market which is well functioning enhances economic efficiency, investment and growth. This presents a knowledge gap because they did not address the effect of economic growth on stock market capitalization. This is with

regards the demand following by Zegada (2011) which stipulates that SMD follows economic growth and demands of the real sector.

The global studies reviewed were conducted in other jurisdictions and thus were not conducted in the Kenyan context and this presents a contextual gap. There is a methodological gap in the studies conducted by Arzarmi et al (2005), Obreja et al (2008), Garretsen et al (2004), Bose (2005), and Beck et al (2006) because they used correlation analysis to determine the association between economic growth and stock markets' capitalization. The current study will utilize inferential statistics to establish the causal relationship between the two phenomena.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

The research methodology that was applied is laid out in this chapter This chapter contains several sections which includes research design explaining the design applied, data collection to explain procedure for gathering data, the population, and the data analysis methods to applied.

## 3.2 Research Design

The study applied an explanatory, ex post facto and causal research design. It was longitudinal data with the scope being a census. It was a field setting with the unit of analysis being the country. This method was utilized because it addresses the aim of research in examining the association amongst variables of the research. The design took into account aspects like the variables used in the research and data gathering methods (Polit & Beck, 2013). This research design was undertaken so as to establish both the extent and nature of cause and effect relationships and also evaluate effects of certain changes on some processes and existing norms.

## 3.3 Target Population

All the 67 listed firms at the NSE formed the population in this study. No sample was derived for the study because gathering data from the population was not affected by time and financial constraints. Thus, the study was a census.

## 3.4 Data Collection

The process of gathering data is critical as it ultimately impacts on the authenticity of the results (Grabich, 2012). In this regard, the researcher utilized secondary data. In particular, the investigator relied on data provided by CMA and NSE, which contained the index representing market capitalization, this was quantitative secondary data. The researcher also utilized data from KNBS entailing the indicators of economic growth, which included GDP, household consumption expenditure, GCF, and government final consumption expenditure. This was secondary quantitative data. The study was gathered data for a period of 31 years, from 1989 to 2019. Data on the Nairobi All Share Index (NASI), GDP, household consumption expenditure, GCF, and GFCE was collected for the period.

## 3.5 Data Analysis

Data collected was organized, tabulated and simplified so as to make it easier to analyze, interpret and understand. Data analysis was done using SPSS Version 25. Correlation analysis was used to show whether and how strongly changes in economic growth are associated to stock market capitalization while Bayesian linear regression analysis was employed to determine the relationship between economic growth and stock market capitalization. The multiple linear regression was utilized because the frequency obtained in the study was less than the threshold of 30. The quantitative reports obtained from the investigation were displayed using tabulations.

### 3.5.1 The Model of Analysis

The objectives of the research were attained through use of a Bayesian linear regression analysis, which tested whether economic growth has any effect on capital market capitalization. The statistical tests were conducted at 95% significance level meaning that the study allowed for an error of up to 5%. The model is illustrated as shown;

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

$Y$ = Market Capitalization denoted by the percentage change of the NASI index

$\alpha$ = Constant

$\beta_1 - \beta_4$ = Beta coefficients

$X_1$ = Gross Domestic Product (GDP) denoted by the percentage change

$X_2$ = Household consumption expenditure denoted by the percentage change

$X_3$ = Gross Capital Formation (GCF) denoted by the percentage change

$X_4$ = Government final consumption expenditure denoted by the percentage change

$\epsilon$ = error term

**Table 3.1: Operationalization of the study variables**

| Variable | Measurement |
| --- | --- |
| Market Capitalization | Will be measured by change in the NSE market capitalization; $(MktCap_{t+1} - MktCap_t)/ MktCap_t$ |
| Gross Domestic Product (GDP) | $(GDP_{t+1} - GDP_t)/ GDP_t$ |
| Household Consumption Expenditure (HCE) | $(HCE_{t+1} - HCE_t)/ HCE_t$ |
| Gross Capital Formation (GCF) | $(GCF_{t+1} - GCF_t)/ GCF_t$ |
| Government Final Consumption Expenditure (GFCE) | $(GFCE_{t+1} - GFCE_t)/ GFCE_t$ |

## 3.5.2 Diagnostic Tests

For the validity of regression analysis, a number of assumptions are done in conducting linear regression models. These are; no multi-collinearity, observations are sampled randomly, conditional mean ought to be zero, linear regression model is "linear in parameters", spherical errors: there is homoscedasticity and no auto-correlation, and the optional assumption: error terms ought to be distributed normally. According to the Gauss-Markov Theorem, the first 5 assumptions of the linear regression model, the regression OLS estimators, are the Best Linear Unbiased Estimators (Grewal *et al*., 2004).

The aforementioned assumptions are of great importance since when any of them is violated would mean the regression estimates will be incorrect and unreliable. Particularly, a violation would bring about incorrect signs of the regression estimates or the difference of the estimates would not be reliable, resulting to confidence intervals that are either too narrow or very wide (Gall et al., 2006).

The diagnostic tests are conducted so as to guarantee that the assumptions are met to attain the Best Linear Unbiased Estimators. Regression diagnostics assess the model assumptions and probe if there are interpretations with a great, unwarranted effect on the examination or not. Diagnostic examinations on normality, linearity, multicollinearity, and autocorrelation were done on the collected data to establish its suitability in the formulation of linear regression model. Normality was tested by the Shapiro Wilk which though uncommon, fails to work well where large amount of data is involved, and the test was supplemented by the Kolmogorov-Smirnov test which is suitable for testing distributions of Gaussian nature which have specific mean and variance. Linearity indicates a direct proportionate association amongst dependent and independent variable such that variation in independent variable is followed by a correspondent variation in dependent variable (Gall et al., 2006). Linearity wias tested by determining homoscedasticy, which was determined, by the Breuch-Pagan test.

Tests for multicollinearity of data was carried out using variance inflation factors (VIF) and Tolerance statistics to determine whether the predictor variables considered in the research are significantly correlated with each other. According to Grewal *et al*. (2004) the

main sources of multicollinearity are small sample sizes, low explained variable and low measure reliability in the independent variables. Auto-correlation test was carried out through the Durbin-Watson Statistic.

### 3.5.3 Tests of Significance

The study adopted a confidence interval of 95%. The results were set out to be statistically significant at the 0.05 level, which indicates that the significance value should be less than 0.05. A statistical inference technique was used in making conclusions relating to the accuracy of the model in predicting the market capitalization. The model significance was tested using the significance values at 95% confidence. The meaning of the association amongst every predictor variable plus response variable was also determined by the significance values, which illustrates how much standard error indicated that the sample deviates from the tested value.

# CHAPTER FOUR

# DATA ANALYSIS, RESULTS, AND FINDINGS

## 4.1 Introduction

This chapter entails of the data analysis, interpretation and the discussions of the outcomes. This part subsequently is divided to four sub areas, which involve indicative tests, inferential insights, and translation and the conversations with respect to the results. Conclusively, this section sums up the stage for information introductions, examination, translations, and conversations.

## 4.2 Diagnostic Tests

Diagnostic tests were conducted as a precursor to conducting linear regression so as to ensure Best Linear Unbiased Estimates. Analytic tests done in this study included the ordinariness tests, homoscedacity tests, multicollinearity tests, and autocorrelation tests. Normality test was carried out using Shapiro Wilk test, which was supplemented by the Kolmogorov-Smirnov test. The homoscedacity test was conducted through the Breusch-Pagan test. A test on Multicolinearity of data was carried out using VIF and Tolerance tests. The autocorrelation test was done through the Durbin-Watson stastic.

### 4.2.1 Normality Test

The normality tests for all the variables employed in the study are highlighted in Table 4.1.

**Table 4.1: Normality Test**

| | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | Statistic | df | Sig. | Statistic | df | Sig. |
| Δ in MktCap | .231 | 31 | .000 | .788 | 31 | .000 |
| GDP Growth | .190 | 31 | .006 | .871 | 31 | .001 |
| Δ in HCE | .168 | 31 | .026 | .912 | 31 | .015 |
| Δ in GCF | .085 | 31 | .200* | .979 | 31 | .782 |
| Δ in GFCE | .112 | 31 | .200* | .959 | 31 | .277 |

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

In testing for normality of the data, the null hypothesis holds that the data has a normal distribution. The level of significance adopted in the study is 5%. Since the significance values in both tests for Gross Capital Formation and Government Final Consumption Expenditure are greater than the α (0.05), the null hypothesis is not rejected. Hence, the data series of the variables are normally distributed. However, the significance values in both tests for market capitalization, GDP growth, and Households Consumption Expenditure are greater than the α (0.05), the null hypothesis is rejected. Hence, the data series of the variables are normally distributed.

### 4.2.2 Test for Homoscedacity

The homoscedacity tests for all the predictor variables employed in the study are enlisted in Table 4.2. The Breusch-Pagan test was applied. There is no direct Breusch-Pagan test of heteroscedasticity in SPSS. However, there is an indirect method of conducting it. The Unstandardized and standardized residuals were saved and transformed by squaring them

and regressing the resultant variable with all the independent variables included in the study. The resulting output in the Analysis of Variance is the Breusch-Pagan test

**Table 4.2: Test for Homoscedacity**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|--|----------------|-----|-------------|------|------|
| 1 | Regression | 1.130 | 4 | .282 | 1.494 | .233[b] |
| | Residual | 4.914 | 26 | .189 | | |
| | Total | 6.044 | 30 | | | |

a. Dependent Variable: RES_1SQ

b. Predictors: (Constant), Δ in GFCE, GDP Growth, Δ in GCF, Δ in HCE

The null hypothesis is that there is homoscedasticity. The level of significance adopted in the study is 5%. Since the significance value obtained in the findings (0.233) is greater than $\alpha$ (0.05), the null hypothesis is not rejected. Hence, the data series of all the predictor variables are homoscedastic.

## 4.2.3 Test for Multicollinearity

Results on Test for Multicollinearity of data carried out using Tolerance and Variance Inflation Factors (VIF) are displayed in Table 4.3.

**Table 4.3: Multicollinearity Statistics**

| Model | | Collinearity Statistics | |
|-------|--|-------------------------|-----|
| | | Tolerance | VIF |
| 1 | GDP Growth | .779 | 1.284 |
| | Δ in HCE | .281 | 3.556 |
| | Δ in GCF | .439 | 2.276 |
| | Δ in GFCE | .275 | 3.634 |

a. Dependent Variable: Δ in MktCap

The common rule in statistics is that tolerance values should be greater than 0.1 and VIF values should be less than 10 and greater than 1. The findings indicate that that tolerance values exceed 0.1 while VIF values fall below 10 and greater than 1 for all the variables. Thus, there is no presence of multicollinearity in the predictor variables enumerated above.

### 4.2.4 Tests for Autocorrelation

The result on the autocorrelation test carried out using the Durbin-Watson Statistic is presented on Table 4.4.

**Table 4.4: Autocorrelation Test**

| Model | Durbin-Watson |
|---|---|
| 1 | 2.484[a] |

a. Predictors: (Constant), Δ in GFCE, GDP Growth, Δ in GCF, Δ in HCE
b. Dependent Variable: Δ in MktCap

The Durbin-Watson statistic ranges from point 0 and point 4. If there exist no correlation between variables, a value of 2 is shown. If the values fall under point 0 up to a point less than 2, this is an indication of a positive autocorrelation and on the contrast a negative autocorrelation exist if the value falls under point more than 2 up to 4. As a common rule in statistics, values falling under the range 1.5 to 2.5 are considered relatively normal whereas values that fall out of the range raise a concern. Field (2009) however, opines that values above 3 and less than 1 are a sure reason for concern. Therefore, the data used in this panel is not serially autocorrelated since it meets this threshold having a Durbin-Watson Statistic of 2.484.

## 4.3 Inferential Statistics

Inferential insights are utilized in deciding the heading, relationship, and quality of the relationship between the indicator factors and the reaction variable. The segment involves the inferential insights utilized in the examination, which involved correlation analysis and multiple linear regression.

### 4.3.1 Correlation Analysis

Correlation analysis establishes whether there exists an association among two variables. The association falls between a perfect positive and a strong negative correlation. The study used Pearson Correlation. This study employed a Confidence Interval of 95% and a two tailed test.

**Table 4.5: Correlation Analysis**

|  |  | $\Delta$ in MktCap | GDP Growth | $\Delta$ in HCE | $\Delta$ in GCF | $\Delta$ in GFCE |
|---|---|---|---|---|---|---|
| $\Delta$ in MktCap | Pearson Correlation | 1 | .124 | .232 | .366[*] | .377[*] |
|  | Sig. (2-tailed) |  | .507 | .209 | .043 | .036 |
| GDP Growth | Pearson Correlation | .124 | 1 | .219 | .453[*] | .201 |
|  | Sig. (2-tailed) | .507 |  | .236 | .011 | .278 |
| $\Delta$ in HCE | Pearson Correlation | .232 | .219 | 1 | .650[**] | .837[**] |
|  | Sig. (2-tailed) | .209 | .236 |  | .000 | .000 |
| $\Delta$ in GCF | Pearson Correlation | .366[*] | .453[*] | .650[**] | 1 | .655[**] |
|  | Sig. (2-tailed) | .043 | .011 | .000 |  | .000 |
| $\Delta$ in GFCE | Pearson Correlation | .377[*] | .201 | .837[**] | .655[**] | 1 |
|  | Sig. (2-tailed) | .036 | .278 | .000 | .000 |  |
|  | N | 31 | 31 | 31 | 31 | 31 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.5 displays that Gross Capital Formation and Government Final Consumption Expenditure are the only economic growth components that are significantly correlated at the 5% significance level to stock market capitalization. They both have a significant positive relationship with stock market capitalization. However, GDP growth, and Households Consumption Expenditure are not significantly correlated at the 5% significance level to stock market capitalization.

## 4.3.2 Multiple Linear Regression Analysis

The cause and effect relationship between the predictor variables and response variable was evaluated using a multiple linear regression model. The data did not meet all the First-Order conditions to conducting linear regression. The market capitalization, GDP growth, and Households Consumption Expenditure data series did not meet the condition of normality. The thus standardization was applied to the variables as a remedy for rectifying normality. The regression analysis adopted a 5% significance level. The significance critical value exhibited from the Analysis of Variance (ANOVA) was compared with the critical value obtained in the analysis ($\alpha=0.05$). The significance critical value exhibited from the model coefficients was compared with the critical value obtained in the analysis ($\alpha=0.05$). When the economic growth components entailing; GDP growth, Households Consumption Expenditure, Gross Capital Formation and Government Final Consumption Expenditure were regressed against market capitalization, the findings are displayed in Table 4.6 and Table 4.7.

**Table 4.6: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .455[a] | .207 | .085 | .95653339 |

a. Predictors: (Constant), Δ in GFCE, Zscore: GDP Growth, Δ in GCF, Zscore: Δ in HCE
b. Dependent Variable: Zscore: Δ in MktCap

The Co-efficient of Determination ($R^2$) indicates deviations in response variable as a consequence of variations in the predictor variables. From Table 4.6, the $R^2$ value is 0.207, a discovery that economic growth causes a 20.7% of the deviations in stock market capitalization. Other factors not incorporated in the model justify for 79.3% of the variations in stock market capitalization.

**Table 4.7: Analysis of Variance**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.211 | 4 | 1.553 | 1.697 | .181[b] |
| | Residual | 23.789 | 26 | .915 | | |
| | Total | 30.000 | 30 | | | |

a. Dependent Variable: Zscore: Δ in MktCap
b. Predictors: (Constant), Δ in GFCE, Zscore: GDP Growth, Δ in GCF, Zscore: Δ in HCE

The null hypothesis is that the model consisting of economic growth components entailing; GDP growth, Households Consumption Expenditure, Gross Capital Formation and Government Final Consumption Expenditure does not significantly impact on stock market capitalization. The significance value obtained in the study (0.181) is greater than the critical value of 0.05. Consequently, the null hypothesis is not rejected. Thus, the model

does not significantly impact on stock market capitalization and it cannot be used to significantly predicts stock market capitalization.

**Table 4.8: Model Coefficients**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. | 95.0% Confidence Interval for B Lower Bound | 95.0% Confidence Interval for B Upper Bound |
|---|---|---|---|---|---|---|---|---|
| 1 | (Constant) | -.420 | .259 | | -1.622 | .117 | -.951 | .112 |
| | Zscore: GDP Growth | -.027 | .198 | -.027 | -.138 | .891 | -.434 | .379 |
| | Zscore: Δ in HCE | -.374 | .329 | -.374 | -1.136 | .266 | -1.051 | .303 |
| | Δ in GCF | 1.585 | 1.442 | .290 | 1.099 | .282 | -1.379 | 4.548 |
| | Δ in GFCE | 3.605 | 2.369 | .507 | 1.522 | .140 | -1.265 | 8.474 |

a. Dependent Variable: Zscore: Δ in MktCap

The null hypothesis was that there was no significant relationship between each of the economic growth components entailing; GDP growth, Households Consumption Expenditure, Gross Capital Formation and Government Final Consumption Expenditure and stock market capitalization. The study findings exhibited that no components of economic growth financing had a significant effect on stock market capitalization. This is because their significance values are greater than the critical significance value ($\alpha$) of 0.05. Thus, the null hypothesis is not rejected, there was no significant relationship between each of the economic growth components and stock market capitalization.

**4.4 Interpretation and Discussion of Findings**

The study endeavoured to assess the impact of economic growth on and market capitalization of companies listed at the Nairobi Securities Exchange. The data utilized in the study did not meet all the First-Order conditions to conducting linear regression. The market capitalization, GDP growth, and Households Consumption Expenditure data series did not meet the condition of normality. The thus standardization was applied to the variables as a remedy for rectifying normality.

The study findings established that Gross Capital Formation and Government Final Consumption Expenditure are the only economic growth components that are significantly correlated at the 5% significance level to stock market capitalization and they both have a significant positive relationship with stock market capitalization. However, GDP growth, and Households Consumption Expenditure are not significantly correlated at the 5% significance level to stock market capitalization. Additionally, the study findings revealed that economic growth does not significantly impact on stock market capitalization and therefore, it cannot be utilized to significantly predict stock market capitalization. Finally, the study findings also exhibited that the economic growth components that entail; GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure do not individually significantly impact on stock market capitalization.

The finding that there that there is neither a significant relationship between the economic growth components that entail; GDP growth, Households Consumption Expenditure,

Gross Capital Formation, and Government Final Consumption Expenditure, in isolation, and stock market capitalization contradicts the Efficient Market Hypothesis (EMH), introduced classically by Roberts (1967) and Fama (1970), which posits that all information available is reflected in stock prices and as such always trade at their fair values and thus, information about the economy should be incorporated in the share prices implying that economic growth can impact on market capitalization of companies. The finding also contradicts the theory of capital and investment, introduced by Fisher (1930), which postulates that the demand for loanable funds ought to be equivalent to supply for loanable funds for the total savings to be equal to total investments. Thus, the economy can be equated as total savings and market capitalization as total investments. Therefore, a change in total savings is expected to have an effect on total investments. However, the study established that there is a significant positive association of both Gross Capital Formation, and Government Final Consumption Expenditure and stock market capitalization.

The finding is however in tandem with the assertion by Zegada (2011) that there exists no relationship amongst economic growth and stock market development. However, the study established that there is a significant positive association of both Gross Capital Formation, and Government Final Consumption Expenditure and stock market capitalization.

The finding is not in tandem with the findings of a study conducted by Panizza (2014), which established a positive relationship amongst financial depth, measured by the amount of domestic credit as a portion of Gross Domestic Product (GDP), and economic growth.

It is also not congruent with the assertions by Cecchetti and Kharroubi (2012), Law and Singh (2014), Arcand et al. (2015) and Sahay et al. (2015), who provided evidence of nonlinear, an inverse U-shaped relationship between economic growth and stock market capitalization. However, the study established that there is a significant positive association of both Gross Capital Formation, and Government Final Consumption Expenditure and stock market capitalization.

The study finding was also not similar to the finding of a studies conducted by Gursoy and Muslumov (1998), Hondroyiannis et al. (2005), and Luintel and Khan (1999) which discovered that stock market develoment and economic growth had a bidirectional causal relationship. The study finding is also not parallel t the study findings of a study conducted by Boubakari and Jin (2010) that examined the causality association amongst stock market and economic growth by studying 5 Euronext countries which are in the United Kingdom, Portugal, Netherlands, France and Belgium from 1995 to 2008. The study findings suggested existence of a positive linkage amongst economic growth and stock market in some countries that had highly active and liquid stock market. However, the study established that there is a significant positive association of both Gross Capital Formation, and Government Final Consumption Expenditure and stock market capitalization.

The study finding that there is a significant positive association of both Gross Capital Formation, and Government Final Consumption Expenditure and stock market capitalization is in agreement to the findings of the study conducted by Rajan and Zingales (1998), which contended that the stock market size and growth of financial dependent firms

is correlated. The finding is also in tandem with the study findings of the study conducted by Levine and Zervos (1996), which established stock market development, is positively connected with economic growth. It is also congruent to the findings of the study conducted by Cheung and Ng (1988), which discovered empirical proof of long run covariance amongst stock market indexes of five countries and indicators of aggregate real activity for example real output, real money, real consumption and real oil price. However, the study findings established that there that there is neither a significant relationship between the economic growth components that entail; GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure, in isolation, and stock market capitalization

However, the study finding is not in sync with the finding of a study conducted by Maranga (2013), which endeavoured to determine the association of stock market returns and economic growth in Kenya from 1982- 2012 while focusing on the NSE 20 share index and GDP. The findings of the study revealed existence of negative relationship amongst GDP and stock market returns.

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

## 5.1 Introduction

This section shows the study findings summary, offered conclusions, and recommendations on the relationship between economic growth and market capitalization of companies listed at the Nairobi Securities Exchange. Additionally, the research limitations and further research suggestions are also outlined.

## 5.2 Summary of Findings

The study endeavoured to assess the relationship between economic growth and market capitalization of companies listed at the Nairobi Securities Exchange. The study also sought to establish the effect of each individual economic growth component that entailed; GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure, on market capitalization of companies listed at the Nairobi Securities Exchange. The study employed the use of correlation and Bayesian regression analyses.

The correlation analysis employed in the study established that Gross Capital Formation and Government Final Consumption Expenditure are the only economic growth components that are significantly correlated at the 5% significance level to stock market capitalization and they both have a significant positive relationship with stock market

capitalization. However, GDP growth, and Households Consumption Expenditure are not significantly correlated at the 5% significance level to stock market capitalization.

The multiple linear regression analysis revealed that economic growth does not significantly impact on stock market capitalization. Therefore, the Kenyan economic growth cannot be utilized to significantly predict the market capitalization of companies listed at the Nairobi Securities Exchange. Further findings were that the economic growth components that entail; GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure do not individually significantly impact on the market capitalization of companies listed at the Nairobi Securities Exchange.

## 5.3 Conclusion

In this section, the conclusion of the study is given; the conclusion is affiliated to the study objective, which was to assess the relationship between economic growth and market capitalization of companies listed at the Nairobi Securities Exchange. Other incidental objectives were to establish the effect of each individual economic growth component that entailed; GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure, on market capitalization of companies listed at the Nairobi Securities Exchange.

The study concluded that economic growth does not significantly impact on stock market capitalization and therefore, it cannot be utilized to significantly predict stock market capitalization. The study further concluded that the economic growth components that

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entail; GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure do not neither have individual significant association nor relationship with stock market capitalization. The study however concluded that there is a positive significant association of the economic growth components Gross Capital Formation, and Government Final Consumption Expenditure and stock market capitalization.

The study conclusion that economic growth does not significantly impact on stock market capitalization is in tandem with the conclusion by Zegada (2011) that there exists no relationship amongst economic growth and stock market development. However, the conclusion contradicts the Efficient Market Hypothesis (EMH), introduced classically by Roberts (1967) and Fama (1970), which posits that all information available is reflected in stock prices and as such always trade at their fair values and thus, information about the economy should be incorporated in the share prices implying that economic growth can impact on market capitalization of companies. The conclusion also contradicts the theory of capital and investment, introduced by Fisher (1930), which postulates that the demand for loanable funds ought to be equivalent to supply for loanable funds for the total savings to be equal to total investments. Thus, the economy can be equated as total savings and market capitalization as total investments. Therefore, a change in total savings is expected to have an effect on total investments. However, the conclusion that there is a positive significant association of the economic growth components Gross Capital Formation, and Government Final Consumption Expenditure and stock market capitalization contradicts this assertion.

The study conclusion that the economic growth components that entail; GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure were neither significantly associated nor related with stock market development contradicts the conclusion of the study conducted by Rajan and Zingales (1998), which contended that the stock market size and growth of financial dependent firms is correlated. The conclusion is also not in tandem with the study conclusion of the study conducted by Levine and Zervos (1996), which established stock market development, is positively connected with economic growth. The conclusion is also not congruent to the findings of the study conducted by Cheung and Ng (1988), which discovered empirical proof of long run covariance amongst stock market indexes of five countries and indicators of aggregate real activity for example real output, real money, real consumption and real oil price. However, the current study conclusion that there is a positive significant association of the economic growth components Gross Capital Formation, and Government Final Consumption Expenditure and stock market capitalization contradicts these study conclusions.

## 5.4 Recommendations

The study findings will aid in further researches to be conducted on the field of the relations between economic growth and stock market capitalization. Later scholars keen in research on relations between economic growth and stock market capitalization will use the study findings as referral. Policy recommendations are made to the National Treasury and CMA that since it has been established that economic growth does not significantly impact on

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stock market capitalization and therefore, the Kenyan economic growth cannot be utilized to significantly predict the market capitalization of companies listed at the Nairobi Securities Exchange, to delink economic growth from development of the capital markets. The policy makers should direct their energy in crafting other policies and legislations to bolster the financial deepening of the capital markets and not bank on economic growth. The study findings have portrayed that a country can have a robust economy but have dampened capital markets. Thus, this recommendation will guide the government regulators in making policies and practices to boost the financial system and enhance financial deepening.

The finding that economic growth does not significantly impact on stock market capitalization will guide the capital markets practitioners such as firm management, consultants, investment banks, equity analysts, and individual investors not to rely on the information on the economy in order to determine the value of companies. firm management and consultants should not bank on a booming economic growth and favourable macro-economic environment to bolster company values. Instead, they should focus on the company fundamentals to increase the companies' intrinsic value. investment banks, equity analysts, and individual investors should not anticipate a bull run during periods of booming economic growth. In contrast, they should endeavour to establish the companies' intrinsic values and future prospects in determining the counters to buy and hold or to sell.

**5.5 Limitations of the Study**

Because of time and cost confines, the research scope was restricted to 31 years, 1989-2019. It is therefore difficult to make a conclusion that the results would hold for a longer period. Moreover, it was undefined whether comparable results would hold past 2019. Further studies can be done to analyze the effect of the Kenyan economic growth on stock market capitalization of firms listed at the NSE from the inception of the NSE in 1952 to the current time period.

There are numerous indicators of economic growth, but the study only concentrated on GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure. Additionally, the model used did not explain much deviation in stock market capitalization. Many additional factors affect stock market capitalization, which were not included in the model. Accordingly, a study can be done incorporating more economic growth indicators and also other factors influencing stock market capitalization.

The research employed secondary sources of data, some of this data was not readily available; especially data on certain firms, and it took great lengths and costs to obtain it. Some information could also not be implemented in their raw state, for instance the valuation ratios, and further calculations and manipulation of the data was required. Consequently, delay was imminent as data information was to be corrected and further processed before the researcher could compile it.

## 5.6 Recommendations for Further Study

Exploring the relations between economic growth and stock market capitalization is of great importance the policy makers in the National Treasury and CMA and also the practitioners in the Capital Markets. In any case, the current investigation was done in the managed capital business sectors setting; a similar report could be done across other unregulated trades to set up if the examination discoveries would hold. Further studies can also be conducted to ascertain if economic growth impacts on the value of enterprises across the economy in various segments, for instance, Small and Medium Enterprises (SMEs). Regardless, the current examination was done in the oversaw of the capital business areas setting, a comparative report should be possible across other unregulated exchanges to set up if the assessment disclosures would hold.

The study only considered the economic growth components that entailed; GDP growth, Households Consumption Expenditure, Gross Capital Formation, and Government Final Consumption Expenditure as influencing stock marketing capitalization An examination can be directed to determine it there is different components that impact financial exchange capitalization. Moreover, further examinations can be directed to determine if there are factors that moderate on the relationship financial development and securities exchange capitalization. This investigation utilized auxiliary information, an ensuing exploration ought to be embraced applying essential information to determine if the examination discoveries would hold and either supplement or reprimand the finding of this investigation. Bayesian relapse and relationship investigation were applied in the

examination; different investigation strategy for instance bunch examination, discriminant examination, granger causality and elements ought to be joined in the ensuing explores.

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# APPENDICES

## Appendix I: Companies Listed at the Nairobi Securities Exchange

| Agricultural | |
|---|---|
| **Ticker** | **Company Name** |
| EGAD | Eaagads Limited |
| KUKZ | Kakuzi Limited |
| KAPC | Kapchorua Tea Company Limited |
| LIMT | Limuru Tea Company Limited |
| SASN | Sasini Tea and Coffee |
| WTK | Williamson Tea Kenya Limited |

| Automobiles and Accessories | |
|---|---|
| **Ticker** | **Company Name** |
| G&G | Car & General Kenya |

| Banking | |
|---|---|
| **Ticker** | **Company Name** |
| BBK | Barclays Bank of Kenya |
| CFC | CfC Stanbic Holdings |
| DTK | Diamond Trust Bank Group |
| EQTY | Equity Group Holdings Limited |
| HFCK | Housing Finance Company of Kenya |
| I&M | I&M Holdings Limited |
| KCB | Kenya Commercial Bank Group |
| NBK | National Bank of Kenya |
| NIC | National Industrial Credit Bank |
| SCBK | Standard Chartered of Kenya |
| COOP | Cooperative Bank of Kenya |

| Commercial and Services | |
|---|---|
| **Ticker** | **Company Name** |
| XPRS | Express Kenya Limited |
| KQ | Kenya Airways |
| LKL | Longhorn Kenya Limited |
| EVRD | Eveready East Africa |
| SCAN | Scangroup |
| NMG | Nation Media Group |
| SGL | Standard Group Limited |
| FIRE | Sameer Africa Limited |
| TPSE | TPS Serena |
| UCHM | Uchumi Supermarkets |

| Construction and Allied | |
|---|---|
| **Ticker** | **Company Name** |
| ARM | ARM Cement Limited |

| | |
|---|---|
| BAMB | Bamburi Cement Limited |
| BERG | Crown-Berger (Kenya) |
| CABL | East African Cables Limited |
| PORT | East Africa Portland Cement Company |

**Energy and Petroleum**

| Ticker | Company Name |
|---|---|
| KEGN | Kengen |
| KENO | KenolKobil |
| KPLC | Kenya Power and Lighting Company |
| TOTL | Total Kenya Limited |
| UMME | Umeme |

**Insurance Segment**

| Ticker | Company Name |
|---|---|
| BRIT | British-American Investments Company |
| CIC | CIC Insurance Group |
| CFCI | Liberty Kenya Holdings Limited |
| JUB | Jubilee Holdings Limited |
| KNRE | Kenya Reinsurance Corporation |
| PAFR | Sanlam Kenya Plc |

**Investments**

| Ticker | Company Name |
|---|---|
| ICDC | Centum Investment Company |
| OCH | Olympia Capital Holdings |
| HAFR | Home Afrika Ltd |
| TCL | TransCentury Investments |

**Investment Services**

| Ticker | Company Name |
|---|---|
| NSE | Nairobi Securities Exchange |

**Manufacturing and Allied**

| Ticker | Company Name |
|---|---|
| BOC | BOC Kenya Limited |
| BAT | British American Tobacco Limited |
| CARB | Carbacid Investments Limited |
| EABL | East African Breweries |
| EVRD | Eveready East Africa |
| ORCH | Kenya Orchards Limited |
| MSC | Mumias Sugar Company Limited |
| UNGA | Unga Group |

**Telecommunication and Technology**

| Ticker | Company Name |
|---|---|
| SCOM | Safaricom |

**Appendix II: Data Collection Form**

| | Year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Data** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| Market Capitalization | | | | | | | | | | | | |
| Gross Domestic Product (GDP) | | | | | | | | | | | | |
| Household Consumption Expenditure (HCE) | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gross Capital Formation (GCF) | | | | | | | | | | | | |
| Government Final Consumptio n Expenditure (GFCE) | | | | | | | | | | | | |

**Appendix III: Research Data**

| | Market Capitalization | Δ in MktCap | GDP Growth | HCE | Δ in HCE | GCF | Δ in GCF | GFCE | Δ in GFCE |
|---|---|---|---|---|---|---|---|---|---|
| 2019 | 2.53E+12 | 0.203604 | 0.055366 | 7.88E+10 | 0.089597 | 1.66E+10 | 0.055042 | 1.25E+10 | 0.08446 |
| 2018 | 2.10202E+12 | -0.16645 | 0.063185 | 7.23E+10 | 0.121703 | 1.58E+10 | 0.048022 | 1.15E+10 | 0.12808 |
| 2017 | 2.52177E+12 | 0.285358 | 0.063185 | 6.45E+10 | 0.181896 | 1.5E+10 | 0.189982 | 1.02E+10 | 0.138243 |
| 2016 | 1.96192E+12 | -0.04461 | 0.063185 | 5.45E+10 | 0.080671 | 1.26E+10 | -0.08073 | 8.95E+09 | -0.00719 |
| 2015 | 2.05352E+12 | -0.11184 | 0.063185 | 5.05E+10 | 0.028008 | 1.37E+10 | -0.00319 | 9.02E+09 | 0.056446 |
| 2014 | 2.3121E+12 | 0.20378 | 0.063185 | 4.91E+10 | 0.103551 | 1.38E+10 | 0.244307 | 8.54E+09 | 0.095622 |
| 2013 | 1.9207E+12 | 0.509984 | 0.063185 | 4.45E+10 | 0.120848 | 1.11E+10 | 0.02319 | 7.79E+09 | 0.115125 |
| 2012 | 1.272E+12 | 0.135714 | 0.063185 | 3.97E+10 | 0.200483 | 1.08E+10 | 0.189059 | 6.99E+09 | 0.188455 |
| 2011 | 1.12E+12 | -0.09677 | 0.063185 | 3.31E+10 | 0.071318 | 9.11E+09 | 0.092207 | 5.88E+09 | 0.037183 |
| 2010 | 1.24E+12 | -0.49214 | 0.063185 | 3.09E+10 | 0.093258 | 8.34E+09 | 0.164749 | 5.67E+09 | 0.006213 |
| 2009 | 2.44163E+12 | 1.2495 | 0.033069 | 2.82E+10 | 0.044027 | 7.16E+09 | 0.01665 | 5.63E+09 | 0.001143 |
| 2008 | 1.08541E+12 | -0.18663 | 0.002323 | 2.7E+10 | 0.130287 | 7.04E+09 | 0.076836 | 5.63E+09 | 0.203372 |
| 2007 | 1.33446E+12 | 0.17284 | 0.068507 | 2.39E+10 | 0.215111 | 6.54E+09 | 0.358558 | 4.68E+09 | 0.261842 |
| 2006 | 1.1378E+12 | 0.782277 | 0.064725 | 1.97E+10 | 0.393466 | 4.81E+09 | 0.455083 | 3.71E+09 | 0.137717 |
| 2005 | 6.38399E+11 | 0.640719 | 0 | 1.41E+10 | 0.16225 | 3.31E+09 | 0.211345 | 3.26E+09 | 0.132903 |
| 2004 | 3.89097E+11 | -0.06976 | 0.059067 | 1.22E+10 | 0.057569 | 2.73E+09 | 0.111368 | 2.87E+09 | 0.063741 |
| 2003 | 4.18276E+11 | 1.922371 | 0.051043 | 1.15E+10 | 0.112056 | 2.46E+09 | 0.234258 | 2.7E+09 | 0.203536 |
| 2002 | 1.43129E+11 | 0.369262 | 0.029325 | 1.03E+10 | 0.000293 | 1.99E+09 | -0.18433 | 2.25E+09 | 0.082501 |
| 2001 | 1.0453E+11 | -0.16735 | 0.005469 | 1.03E+10 | 0.038794 | 2.44E+09 | 0.102866 | 2.07E+09 | 0.084457 |
| 2000 | 1.25539E+11 | -0.32025 | 0.037799 | 9.95E+09 | -0.01841 | 2.21E+09 | 0.105353 | 1.91E+09 | -0.0585 |
| 1999 | 1.84684E+11 | -0.11574 | 0.005997 | 1.01E+10 | -0.07457 | 2E+09 | -0.1492 | 2.03E+09 | -0.11297 |
| 1998 | 2.08857E+11 | 0.151984 | 0.023054 | 1.1E+10 | 0.081747 | 2.35E+09 | 0.184713 | 2.29E+09 | 0.123956 |
| 1997 | 1.81302E+11 | 0.007782 | 0.032902 | 1.01E+10 | 0.104708 | 1.99E+09 | 0.098774 | 2.04E+09 | 0.114324 |
| 1996 | 1.79902E+11 | -0.1083 | 0.004749 | 9.16E+09 | 0.462457 | 1.81E+09 | -0.08438 | 1.83E+09 | 0.361865 |
| 1995 | 2.01751E+11 | -0.3378 | 0.041468 | 6.27E+09 | 0.404344 | 1.97E+09 | 0.431277 | 1.34E+09 | 0.239494 |
| 1994 | 3.0467E+11 | 1.865864 | 0.044062 | 4.46E+09 | 0.228799 | 1.38E+09 | 0.361525 | 1.08E+09 | 0.300699 |

| 1993 | 1.0631E+11 | -0.43695 | 0.026328 | 3.63E+09 | -0.34284 | 1.01E+09 | -0.27079 | 8.33E+08 | -0.35306 |
| 1992 | 1.8881E+11 | 0.007072 | 0.003532 | 5.53E+09 | 0.067164 | 1.39E+09 | -0.18741 | 1.29E+09 | -0.05832 |
| 1991 | 1.87484E+11 | -0.0491 | -0.00799 | 5.18E+09 | -0.03196 | 1.71E+09 | -0.17477 | 1.37E+09 | -0.14454 |
| 1990 | 1.97164E+11 | 0.03492 | 0.014383 | 5.35E+09 | -0.06267 | 2.07E+09 | 0.005865 | 1.6E+09 | 0.068496 |
| 1989 | 1.90512E+11 | -0.00865 | 0.041921 | 5.71E+09 | 0.109637 | 2.06E+09 | -0.03151 | 1.5E+09 | -0.02746 |
| 1988 | 1.92174E+11 | | | 5.14E+09 | | 2.13E+09 | | 1.54E+09 | |