

**EFFECT OF FINANCIAL REGULATIONS ON CAPITAL
MARKETS DEVELOPMENT IN KENYA**


GRACE AKINYI OCHIENG

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

Signed:  Date: 17th November 2022

GRACE AKINYI OCHIENG

D63/34067/2019

This research project has been submitted for examination with my approval as University Supervisor

Signed:  Date: November 24, 2022

DR. WINNIE NYAMUTE

DEPARTMENT OF FINANCE AND ACCOUNTING

FACULTY OF BUSINESS AND MANAGEMENT SCIENCES

UNIVERSITY OF NAIROBI

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DEDICATION

This research project is dedicated to my family who inspire me greatly to reach for the stars and without whom I would not have scaled the heights that I have.

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LIST OF ABBREVIATIONS

CBK	Central Bank of Kenya
CLRM	Classical Linear Regression Model
CMA	Capital Markets Authority
CMD	Capital Markets Development
EU	European Union
FDI	Foreign Direct Investments
GDP	Gross Domestic Product
KNBS	Kenya National Bureau of Standards
NSE	Nairobi Securities Exchange
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
USA	United States of America
VIF	Variance Inflation Factors

ABSTRACT

Capital markets are critical for economic growth and economies with efficient capital markets have the capacity to thrive. Financial regulations, on the other hand, have an impact on the growth of capital markets. Well-regulated capital markets are often considered a requirement for efficient resource allocation and can encourage long-term economic growth. Investors' portfolios may appear to be less secure when financial rules are weak and ineffective, which can result in confidence erosion, capital flight, and panic financial assets selling. Insufficient regulation is a concession to market abuse and a setback for market growth. Economic policies have limited influence in stabilizing economies, where there is a weak regulatory framework. The objective of this research was to determine the effect of financial regulations on the development of capital markets in Kenya. The study was based on capture theory of regulations, normative theory of regulation and agency theory. The independent variable was financial regulations while the control variables were; interest rate, inflation and unemployment rate. The dependent variable that the research attempted to explain was capital markets development in Kenya. The data was obtained on a quarterly basis for a duration of ten years (from January 2012 to December 2021). A descriptive research approach was relied on for the research, with a multivariate regression model utilized in examining the link between the research variables. The research conclusion depicted a 0.406 R-square value, signifying that the selected independent variables can describe 40.6 percent of the variance in Kenya's capital markets development, whereas the other 59.4 percent was attributable to other factors not surveyed in this research. The F statistic was significant at a 5% level with a $p=0.001$. This proposes that the model was satisfactory for explaining capital markets development in Kenya. Further, the results demonstrated that financial regulations had a positive and significant influence on Kenya's capital markets development. Interest rate and inflation had no significant influence on Kenya's capital markets development. Unemployment rate had a significant negative influence on capital markets development in Kenya. The study recommends the need for practitioners and policy makers to ensure that the level of financial regulations quality keeps on improving as this will enhance capital markets development in the country. Policy makers should also work towards developing policies aimed at reducing unemployment rate as this is an important determiner of capital markets development. Future studies can focus on other determinants of capital markets development in Kenya and other countries or regions.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Deep, liquid, and well-regulated capital markets are critical to an economy's financing and are the bedrock of a vibrant private sector, which is a major source of job creation as well as economic growth (Rajan & Zingales, 2003; Levine, 2003; Levine, Loayza & Beck, 2000;). Deep and well-developed capital markets can, in fact, play a number of beneficial roles for the economy. For example, market-based finance can encourage banks to improve their efficiency and lower bank capital costs by offering more diversified financing sources to the real sector which leads to increased competition in bank finance (Levine, 2004). According to Caprio and Levine (2006), a well formulated policy system coupled with regulation and good governance guarantees economic stability and better capital markets development. The promotion of good practices, however, has proved to be problematic due to rising levels of corruption, lack of clear democracy and legal origin among other issues. These issues create unrelated regulatory environments which hinder the implementation of effective guidelines.

Three theories guided this study. The anchor theory was the capture theory of regulation by Stigler (1971) which states that a regulatory institution might become immersed in the sector and begins chasing economic gains that are unique to it. This theory is important as it helps people to comprehend regulations and the reasons why the regulations may not achieve the intended result. The normative theory of regulation, on the contrary, examines the numerous types of regulation to establish which is the best and most effective, and then calls for that sort of regulation (Hertog, 2010). Lastly, Meckling and Jensen (1976) devised

the agency theory, which states that rules can be utilized to reduce agency costs and minimize conflicts between an organization's management and its owners.

World Bank's 2019 report emphasized the importance of a variety of prerequisites for capital markets development. These prerequisites are: a stable macroeconomic environment which includes economic growth, low inflation, and strong fiscal policies; a certain level of financial sector development, that includes a strong banking sector, institutional investors, as well as financial openness; and a strong legal and institutional environment, which includes measures to guarantee investor protection and, more broadly, that the state follows the rule of law. Regulators play a crucial role in implementing laws and regulations that protect investors and promote fair and efficient markets. The regulator ought to be able to examine whether its current regulatory framework and requirements effectively address threats to fair, efficient and transparent markets and whether they also address the mitigation of systemic risks on a frequent basis (World Bank, 2020). This study sought to establish how financial regulations in Kenya influence the development of capital markets.

1.1.1 Financial Regulations

Financial regulation as described by Agborndakaw (2010) refers to governmental legislation created for the governance of financial institutions. Christopher, Mike, Visit and Amy (2013) also outline the legislation applicable to operations of financial institutions. The goal of these regulations, according to Fisher (2018), is to maintain financial marketplaces by requiring financial service providers to be licensed, enforcing appropriate legislation together with market misbehavior prosecution, safeguarding investors and

customers, and fostering financial system stability. Regulators and intergovernmental organizations enact these rules.

The main roles of regulators in relation to market participants and products e.g licensing, oversight, and enforcement, are outlined in capital markets regulation. Market participant regulation must help protect investors by establishing minimum entrance standards and by continuously monitoring duties. Inspection, surveillance, and continuing compliance procedures should all be part of the supervision, as should regular dialogue between the regulator and market participants. Close coordination between local and foreign regulators is also required for effective supervision. Market manipulation and other unfair trade behaviors should be detectable, deterred, and punished by regulators (Servais, 2020).

Financial regulations, as per Naceur and Kandil (2009), can be quantified by comparing financial performance before and after new rules are formulated, and is accomplished by assessing financial performance before and after new regulations come into force. They are also assessed by surveys that reveal an increase in market outcomes due to regulation. It is also possible to make international comparisons. These allow you to compare outcomes in nations with similar regulatory structures. This study focused on measuring financial regulations using regulations quality index as provided by the World Bank on a quarterly basis.

1.1.2 Capital Markets Development

A capital market is a financial market that buys and sells debt and equity securities (World Bank, 2019). These markets transfer money from savers to long-term users who will put the money to good use. Capital markets development, as per Roubini and Bilodeau (2018),

can be characterized as enabling infrastructure components, institutions, and regulations that result in broad and deep access to financial services and capital, as well as operative financial intermediation. Mehrotra and Yetman (2015) defined capital markets development as the enhancement of financial services that are tailored to all the levels in the society thus increasing the availability and accessibility of the financial services in an economy. Capital markets development is a vital segment of financial sector development since it complements the banking sector's role in economic development (Singh, 2014).

Capital markets, according to Liu (2001), are crucial in provision of market liquidity which is essential in the implementation of projects with longer time frames and therefore long-term profits hence promoting the growth of an economy. Capital markets help to reduce data costs by generating and distributing data on companies that lead to efficient and effective markets where prices include all current data. Additionally, capital markets enable investors to access resources and they also facilitate injection of foreign financial resources into the economy (Adan, 2017).

Capital markets development has been measured using a number of variables. Robinson (2016) used the return on stock and the change in market prices to assess capital markets development in India. Makau (2015) utilized the capitalization rate as a proxy for capital markets development in his study. Changes in stock market prices and return on stock were employed as metrics of capital markets development in research by Imala (2015) on the effect of macroeconomic variables on capital markets development in Nigeria. The current study measured capital markets development using stock market capitalization divided by GDP.

1.1.3 Financial Regulations and Capital Markets Development

The agency theory suggests that an agent's risk decisions are prejudiced by the degree of control and rules in place (Donnellan & Rutledge, 2016). Naturally, one might anticipate regulations to mitigate any risk of a financial crisis and enhance efficiency. However, several critics contended that regulations interfere with market efficiency whereas those backing regulations such as Sinha et al. (2011) held that well-structured and appropriately implemented regulations make markets more equitable and efficient.

Although empirically, competent and effective financial market regulation is a requirement for market development, most studies focus on developed nations with scant data from developing economies. Akyol et al. (2014) argue that securities regulation improves financial reporting quality, openness, and investor confidence and Levine (1999) states that financial markets are well-established in nations with a well-functioning legal and regulatory system.

According to Shi et al. (2013), the latest global financial crisis in 2008 has reawakened debate about the need for broad-based capital market regulations. Although, the link between stock markets and regulatory quality has been explored in developed countries, outcomes are inconsistent. Securities characterized by massive stock market returns, according to empirical evidence (Eng, et al., 2013; Frost et al., 2006) are linked to market expansion (Ng et al., 2015; Demirgüç-kunt and Maksimovic, 1998), increased trade volume (Bailey et al., 2003), and increased market turnover (Bagnoli et al., 2008).

1.1.4 Financial Regulations and Capital Markets Development in Kenya

In Kenya, three main bodies are mandated with financial regulations. The Capital Markets Authority (CMA) is a regulatory body charged with supervising, licensing, and monitoring the activities of market intermediaries, including the stock exchange, the central depository and settlement system and all other institutions covered by the Capital Markets Act. The Central Bank of Kenya (CBK) formulates and implements monetary policy among other roles and the Nairobi Securities Exchange (NSE) provides securities trading platform (World Bank, 2021).

With regards to capital markets development, a report by the World Bank (2020) shows Kenya's financial sector has grown significantly in size and complexity thus boosting overall economic growth to a great extent. Kenya's financial sector constitutes mainly insurance, banking, capital markets, savings, credit cooperatives, pension funds, foreign exchange bureaus, microfinance institutions, money remittance companies, and financial development institutions.

1.2 Research Problem

Capital markets are essential in every economy because of the benefits they provide. According to Azman et al, (2010), capital markets are critical for economic growth and economies with efficient capital markets have the capacity to thrive. Financial regulations, on the other hand, have an impact on the growth of capital markets. According to Ben et al. (2014), established and well-regulated financial markets are often considered a requirement for efficient resource allocation and can encourage long-term economic growth. Investors' portfolios may appear to be less secure when financial rules are weak and ineffective, which can result in confidence erosion, capital flight, and panic financial

assets selling. Government policies, according to Bumgarner and Prime (2000), have an impact on investor confidence. As Hussain et al. (2015) point out, insufficient regulation is a concession to market abuse and a setback for market growth. Economic policies have limited influence in stabilizing economies, where there is a weak regulatory framework.

Kenya experiences a decline in credit growth, inadequate access to monetary benefits, and inadequate monetary product diversity (Absa Africa Financial Report, 2019). In addition, the capital markets development measure, private credit to GDP (%), for Kenya has been below the average for low and medium-income countries for the period 1964-2020 (World Bank, 2021). Regulators play a crucial role in implementing laws and regulations that protect investors and promote fair and efficient market operation. According to the World Bank (2020), the regulator ought to examine whether its current regulatory requirements and framework effectively address threats to fair, efficient and transparent markets and whether they also address the mitigation of systemic risks on a frequent basis.

There are several empirical studies conducted in this area. Majority of empirical research globally focuses on the effect of financial regulations on the performance of financial institutions, specifically commercial banks. Zhang et al. (2016), for example, observe that a comprehensive policy framework guarantees a lower rate of non-performing loans for banks in China which ultimately boosts their financial performance. The same conclusion was reinforced by Amel-Zadeh et al, (2017) from the US who discovered that bank regulations yield financial system stability. A survey conducted by McKinsey and Company, Chiarella et al. (2011) found that increased policy on corporate banking operations in European countries resulted in substantial decline in credit costs and profitability, which remained considerably below 2007 levels. Further research into the

importance of financial market regulation reveals a negative link (Ramiah, et al., 2015; Giannetti, and Koskinen, 2010) which suggests that policymakers are making little effort to ensure market compliance and enforcement of new regulations.

In Kenya, Mwenda (2018) investigates the effect of financial regulations on financial performance of microfinance institutions in the country. The findings revealed an affirmative and statistically substantial link between financial regulations and financial performance. Wakarindi (2018) noted that financial guidelines had a positive impact on the financial performance of listed commercial banks in Kenya. Mwangeli (2016) explored the effect of regulation on the financial performance of banks in Kenya and the study revealed that there is no link between commercial bank financial performance and regulations.

Although there are several studies on the subject matter, there are still contextual, methodology, and conceptual gaps. The conceptual gaps mostly relate to the operationalization of study variables and conflicting result findings. Additionally, the studies carried out were done using methodologies in varying contexts making the generalization of the findings to a specific context difficult. Lastly, none of the studies have documented interactions between financial regulations and capital markets development in Kenya using the measures proposed in the current study hence an empirical literature gap. This leads to the research question, what is the effect of financial regulations on capital markets development in Kenya?

1.3 Research Objective

This research sought to establish the effect of financial regulations on capital markets development in Kenya.

1.4 Value of the Study

This review will add to the discussions on capture theory of regulations, normative theory of regulation, and agency theory. The study will also add value to publications on financial regulations and capital markets development and other studies may be conducted in line with the recommendations provided by this study for further research.

The study will be valuable to policymaking organizations such as governments and other economic bodies responsible for the formulation of various policies on capital markets development and financial regulations. Additionally, policy makers may use recommendations from the study to design effective borrowing strategies that enhance economic growth.

The study can be used as a point of reference for institutions tasked with managing financial regulations and capital markets development and lastly, it will help investors to better understand the implications of financial regulation which may in turn inform their decision making.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The theoretical review chapter documents various theories guiding the study and the relationship with the study variables as well as empirical linkages among the variables under review. A conceptual framework has also been developed from the review.

2.2 Theoretical Foundation

The primary theories relied on in this study to interpret the impact of financial regulation on capital markets development are capture theory of regulations, normative theory of regulation and agency theory.

2.2.1 Capture Theory of Regulation

The capture theory of regulation proposed by Stigler (1971) is the anchor theory of this study. The theory states that when a state organ tasked with formulating policies becomes captivated in the sector, it promotes the interests of special groups that dominate the industry, rather than serve public interest. This results in unfavourable consequences for some sectors or segments of the general public.

According to the theory, regulations are intended to protect public interest, yet agencies are vulnerable to unwarranted effects from the same organizations they are meant to regulate. As a result, Beck et al. (2003) supports regulation of entities by a handful of powerful persons with the aim of improving efficiency. Posner (1974) argues that the theory is not liberated of public interest theory because it reinforces that safeguard of the public good is in the government's control through regulations. Equally, the theory does not expressly explain how entities can capture regulatory agencies and the remedy for such an occurrence

when it happens. Despite this shortcoming, the theory succeeds in explaining that regulations may be detrimental to an entire industry due to “fights” between regulatory agencies and the entities they seek to regulate (Laffont & Tirole, 1991).

The capture theory of regulation is appropriate for this research because it describes why regulations might fail to meet their objectives. While authorities release financial guidelines for purposes of streamlining operations and protecting consumers of financial services, financial institutions, on the other hand, may agitate for the elimination of restrictions, thereby jeopardizing the regulations' initial objective.

2.2.2 Normative Theory of Regulation

This theory was pioneered by Joskow and Noll (1981) and it advocates that authorities need to bolster healthy competition wherever possible and reduce the costs of acquiring information from various stakeholders to minimize information asymmetry (Igbiosa et al., 2017). The normative approach to regulation explains the necessity for both the government and a nation's monetary authority to regulate the banking industry by highlighting crucial areas that can result in bank failure. Government intervention, as per the theory, must only take place if the government foresees a banking sector failure (Koumbarakis, 2017).

Sheehy and Feaver (2015) posit that effective bank regulation is necessary for accomplishing the aims of the banking industry, customers, and the government while avoiding any undesirable consequences. Normative theory indicates that in the financial sector, monetary authorities must ensure that the economy has a sustainable price structure and build effective regulatory frameworks that increase the predictability, accountability,

transparency and credibility of the existing policy process (Igbinsosa, 2017). In the context of the current research, normative theory suggests that efficient financial regulation is desired, and that regulation ought to not possess a negative impact on the financial sector's stability and soundness.

2.2.3 Agency Theory

Meckling and Jensen (1976) developed the agency theory, often known as the principal-agent theory, to address limits in relations between principal and agent (Laiho, 2011). An arrangement where one party (principal) contracts another party (agent) to act on their behalf is known as an agency relationship. In this relationship, the principal delegates decision-making power to the agent.

Agency concerns arise from the inability of the principal to account for entire conceivable behaviors of an agent whose decisions influence both his personal well-being and the principal's (Donnellan & Rutledge, 2016). Agency issues are often driven by conflicts of interest between the principal and the agent, and thus have the potential to be nearly endless, resulting in agency costs that can be interpreted as a loss of shareholder value (Palia & Porter, 2007).

According to the agency theory, agents may not always assume decisions that are in line with the interests of the principal. In the face of such a failure, agency theory highlights the significance of separating control and ownership to ensure that owners (principals) and management (agents) are on the same page (Palia & Porter, 2007). Financial regulations protect the interest of the principal by barring asymmetric information, which might expose the agent to risks they are unaware of if only the principal has all the information.

Financial institutions are inherently vulnerable to fraud and other criminal activities such as money laundering, terrorism financing among others. The separation of ownership and control in financial institutions heightens the risk of financial crimes particularly when those in management abandon the interests of stakeholders in favor of pursuing their own ambitions (Namazi, 2013). The agency theory endorses the notion that financial regulation can be utilized to control conduct of management and lessen agency problems linked to separation of ownership and control.

2.3 Determinants of Capital Markets Development

This section presents the determinants of capital markets development. It has been globally acknowledged that capital markets development is a multidimensional issue and its improvement requires an in-depth and comprehensive approach as outlined below:

2.3.1 Financial Regulations

The agency theory suggests that an agent's risk decisions are impacted by the degree of control and regulations in place (Donnellan & Rutledge, 2016). Naturally, one might anticipate regulations to minimize any financial crisis risk and improve efficiency. Numerous critics have contended that regulation has adversely affected market efficiency whereas the ones backing regulation like Sinha et al. (2011) have held that well-structured regulations have the potential to make markets equal and more efficient.

Stigler (1971) claimed that, like other commodities and services, there is a market for regulation. The concept that market behavior is generally motivated by fairly narrow conceptions of self-interest is reasonable since most market interests are regularly influenced on the regulation process of interest groups by regulatory authorities. The

general goal of the study on the effects of financial regulations on capital markets development was inspired by the aforesaid notion.

2.3.2 Interest Rates

Interest rate significantly influences the pricing of goods and services both regionally and abroad. Without interest rates stability, domestic and foreign investors will stay away and resources will be diverted elsewhere. In fact, econometric evidence of capital markets development indicates that in addition to conventional factors (past growth of economic activity, and private sector credit), capital markets development is significantly and negatively influenced by interest rate instability (Barksenius & Rundell, 2012).

As per Barnor (2014), an unforeseen shift in the interest rates affects investment decisions which in turn affect the economy. Khan and Sattar (2014), state that capital markets development can be affected either negatively or positively by interest rates depending on the movement. Savings are adversely affected by a reduction in interest rates on deposits and increased consumption.

2.3.3 Inflation Rate

Rates of inflation can affect the economy of a country substantially. A high inflation rate results in the general increase of cost of goods which in turn affects capital markets development as purchasing power declines. Therefore, many investors in both stock and bond markets usually include an allowance for inflation (Biller, 2007).

A high rate of inflation translates to higher consumer prices thereby slowing down business and ultimately reducing firms' earnings. High prices also trigger a regime that has a higher interest rate (Hendry, 2016). According to Fama (1998), inflation is likely to be negatively

associated with real economic activity, and as a result likely to be negatively related to capital markets development.

2.3.4 Unemployment Rate

Unemployment causes workers to suffer financial hardship that impacts families, relationships, and communities. When it happens, consumer spending, which is one of an economy's key drivers of growth, goes down, leading to a recession or even a depression when left unaddressed. Further, unemployment may lead to higher spending from governments leading to more public debt which can crowd out private credit leading to low financial development (Hood & Waters, 2017).

The prosperity of a nation, according to both theory and empirical literature, is linked to its level of economic development, which is affected by factors like unemployment rate, GDP, inflation rate, remittances, capital supply, interest rate, and exchange rate. Variations in economic fundamentals drive share price movements, and these fundamentals may affect capital markets development (Gignac, 2022).

2.4 Empirical Studies

Under the empirical studies section, various surveys linked to the research variables, which have been undertaken by various authors around the world, were reviewed to establish the methodologies used and the gaps in those studies.

2.4.1 Global Studies

Wiley and Navickas (2021) set out to investigate the impact of financial regulation on the functioning of the banking system in the United States of America (USA). The research inferences were based on the findings of previous investigations. According to the study's

findings, financial rules have both a positive and negative effect on the performance of the banking system in the USA with unfavorable policies/regulations having an adverse impact on performance. Some regulations may have a negative influence on bank competition, resulting in higher loan pricing and ultimately a higher risk of default. According to the findings, government regulations are crucial in defining the national banking sector's performance. The research also found that it is critical for the government to provide favorable financial regulatory conditions to financial systems.

Umar and Nayan (2018) used a pooled mean group model to empirically assess the regulatory quality impact on African capital markets development from 1996 to 2016. According to the study, quality control has a positive effect on the development of stock markets. Far-reaching policy reforms are required to guarantee effective financial market regulation, which will restore investor confidence and boost market development. When robust and effective financial market regulations are implemented, there will be a greater expectation for the stock market's growth and development to withstand the effects of future financial crises.

James and Quaglia (2017) sought to answer the question on why the UK has varying preferences on financial regulation using banks capital markets and banks as examples. The study assesses how regulatory institutions and political processes balance the demands of big economic interests. Political pressure to reinstate financial stability was intense in banking, and regulatory bodies were greatly strengthened. This allowed UK authorities to stand up to industrial lobbying and seek tougher harmonized standards at the international and European Union (EU) levels (known as trading up). Whereas for capital markets, UK authorities lacked political will and were institutionally weaker. Consequently, the industry

was significantly more successful in molding UK preferences in order to safeguard its competitiveness (trading down).

In Asia Pacific, Regan (2017) studied the link between capital markets development, infrastructure investment, public institutions' role, and economy development. The research takes a review approach, relying on empirical evidence from the last few decades. According to the study, capital markets development is also necessary to raise long-term local currency finance and evidence suggests that progress with regional capital market integration is slow and a continuing reform agenda is required. The potential of better levels of economic growth for regional countries is a dividend, as capital market expansion, infrastructure investment, and FDI have all been proved to possess a positive and resilient relationship with growth. The role of national and regional institutions in increasing the efficiency with which infrastructure is managed is a critical link in this affiliation recognized in the review, and it provides promising ground for future research where the importance of these links can be investigated in greater depth.

Lastly, Akpomudje (2017) conducted a study which focusses on legal restrictions controlling the Nigerian stock market. The study examines important issues that affect Nigerian capital market, such as insider trading, information asymmetry and delay in the implementation of capital market regulations, using rules and practices from the United Kingdom. The points raised, while not exhaustive, illustrate fundamental and foundational faults with Nigeria's current regulatory system. Using a combination of doctrinal and relative research, the study contends that Nigeria's current capital market regulation lacks several of the necessary legislative and enforcement mechanisms to address the issues raised.

2.4.2 Local Studies

Mwenda (2018) researched the effect of financial regulation on the financial performance of Kenya's microfinance institutions. The study employed a descriptive research design and the population encompassed 13 microfinance banks as at 31st December 2017. The study relied on secondary data covering the 5-year period between 2013 and 2017. Secondary data analysis was performed via inferential and descriptive statistics. Findings of the study revealed an affirmative and statistically substantial link between capital adequacy and financial performance, a positive though statistically insignificant correlation between liquidity and financial performance, and a statistically substantial negative connection between loan loss provisions and financial performance of microfinance banks in Kenya.

Wakarindi (2018) conducted research on the impact of financial guidelines on financial performance of publicly listed commercial banks in Kenya. The research utilized a descriptive research design comprising of 11 banks listed on the NSE. Secondary data was obtained from the annual audited reports of publicly listed banks from 2013 to 2017. The research reveals that liquidity has a negative and substantial impact on financial performance. In addition, capital adequacy had a positive but non-significant impact on the financial performance of Kenyan banks. Credit risk was determined to have a substantial negative effect on the financial performance of commercial banks in Kenya.

Makokha (2016) examined the effect of selected financial regulations on financial performance of Kenyan commercial banks. The research took up a descriptive research design to analyze the link between selected financial regulations and financial performance. Eleven banks listed on the NSE were considered as the study's population

with data retrieved from each of the banks' annual reports. The research found that all metrics of corporate governance and capital requirements are key determiners of fiscal performance of listed banks in Kenya. Liquidity management was however not substantial in explaining the profitability of listed banks in Kenya.

Mwongeli (2016) explored the effect of financial regulations on the financial performance of banks in Kenya. The study's population consisted of 43 banks, and the research period spanned 2010 to 2015 which covers three years before and three years after the revised financial requirements for banks were implemented. The financial requirements were implemented in 2013. The Chi square test of independence was used to examine the association between the two variables. A test was performed on each of the ratios, revealing that there is no link between commercial bank financial performance and regulations.

Mwega (2014) investigated the probable tradeoff between policy guideline and financial sector stability by conducting a case study in the Kenyan financial services sector. The study concentrated on the banking industry. The research followed an empirical approach, which included quantitative research and policy analysis. The researcher claimed that sound regulation promotes economic development, and that the primary goal of regulations is to maintain stability and boost a country's economy. He observed that financial sector changes over the last ten years have improved the performance of the banking industry. Clients are being provided better products, and the quality of service has significantly improved in addition to notable improvements in profitability and stability. Therefore, according to this study, regulations have increased profitability in the banking industry. He however claims that Kenya's banking sector is only minimally regulated.

2.5 Summary of the Literature Review and Research Gaps

The theoretical reviews summarized above depicted the projected link between financial regulations and capital markets development. There is, however, a knowledge gap that should be filled based on the research examined. Various conclusions about the relationship between financial regulations and capital markets development have been drawn from the studies that have been analyzed. Conceptual, contextual, and methodological gaps can explain the disparities in the studies.

The conceptual gaps mostly relate to the operationalization of study variables and conflicting result findings. Further, different methodologies were used to carry out the studies in different contexts making the generalization of the findings to a specific context difficult. Additionally, none of the conclusive studies have documented interactions between financial regulations and capital markets development in Kenya using the measures proposed in the current study resulting in an empirical literature gap. This leads to the study query, what is the effect of financial regulations on capital markets development in Kenya?

2.6 Conceptual Framework

This study's conceptual model comprises financial regulations and capital markets development as the independent and dependent variables respectively and the control variables are interest rates, inflation rate and unemployment rate. Financial regulations were measured using the regulatory quality index provided by the World Bank on a quarterly basis. Figure 2.1 depict the study's conceptual model.

Independent variable

Dependent variable

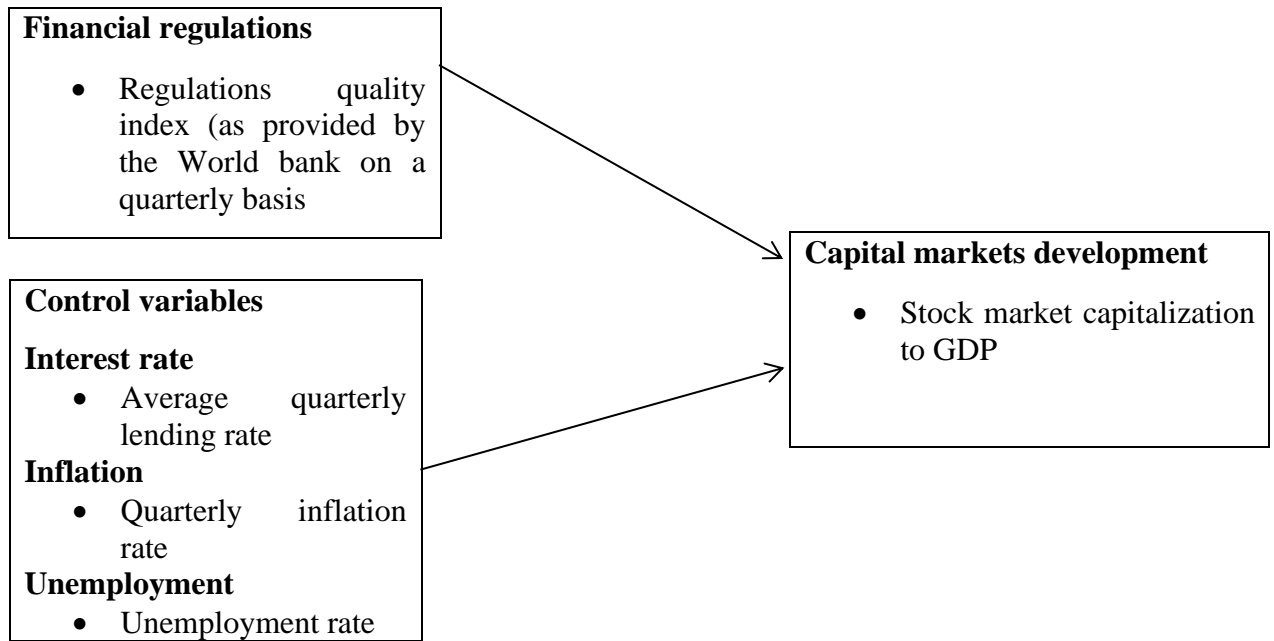


Figure 2.1: Conceptual Model
Source: Author (2022)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter highlights the steps and methods used in the execution of the proposed study.

It covers the data collection methods, research design, operationalization of the variables, and data analysis techniques.

3.2 Research Design

The descriptive study design was adopted in this study to estimate the effect of Kenya's financial regulations on capital markets development. Cooper and Schindler (2013), suggest that the most systematic research design is the descriptive one as it consists of a practical inquiry whereby the researcher does not directly control the independent variable due to their manifestation having already occurred or their inherent inability to manipulate. A defining study method was the most suitable as the study sought to create a profile about the link between capital markets development and financial regulations.

3.3 Data Collection

This research relied fully on secondary data, namely, World Bank reports, Central Bank reports and KNBS reports for the quarterly periods between January 2012 and December 2021 which were captured in a data collection sheet. The 10-years quarterly period was considered long enough to provide adequate data to achieve the research objectives. A secondary data collection sheet was used in compiling the secondary data collected. The specific data collected included stock market capitalization, regulations quality index, unemployment rate, interest rate, inflation rate as well as GDP.

3.4 Diagnostic Tests

The linear regression was based on a number of assumptions including no autocorrelation, no or little multi-collinearity, homoscedasticity and multivariate normality. The diagnostic tests to be performed are outlined in Table 3.1 below.

Table 3.1: Diagnostic Tests

Test	Meaning	Statistical method	Interpretation	Diagnosis
Autocorrelation	Occurs when the residuals lack independence from each other.	Durbin-Watson statistic	When the test outcomes fall within critical values ($1.5 < d < 2.5$) there is no autocorrelation	Correlogram (Autocorrelation Function-ACF plot) Review model specifications
Multicollinearity	How closely related are the independent variables of the study	Variance Inflation Factors (VIF)	VIF less than 10 implies that there is no multicollinearity	Data that was causing Multicollinearity was adjusted using log transformation
Heteroscedasticity	When data lacks similar variance as assumed by standard linear regression model	Breusch Pagan Test Levene Test Normal P-P plots	Data split into high and low value. If data differs significantly, there is an element of heteroscedasticity	Non-linear transformation
Normality Test	When linear regression analysis for all variables is multivariate normal	Goodness of fit test Shapiro-Wilk test	Kolmogorov-Smirnov test prob. > 0.05. If the test is not substantial, the distribution is possibly normal.	Data that was not normally distributed was adjusted for using log transformation and non-linear log transformation.
Stationarity	A unit-root test to establish if the data was stationary	Jarque Bera unit root test	A p value less than 0.05 implies that the data is stationary	Robust standard errors were used where data failed the test.

3.5 Data Analysis

Data analysis was done using the SPSS software version 24. Graphs and tables presented the quantitative conclusions. Measures of central tendency and dispersion were calculated using descriptive statistics, and standard deviation was provided for all the variables. Regression and correlation were relied on for the inferential statistics. Correlation determined the extent of the relationship that exists between the study variables whereas the effect of the independent variables on the dependent was established using regression.

3.5.1 Analytical Model

The following equation was applicable:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where: Y = Capital markets development measured by stock market capitalization divided by GDP quarterly

β_0 = y intercept of the regression equation.

$\beta_1, \beta_2, \beta_3, \beta_4$ = are the regression coefficients

X_1 = Financial regulations measured using regulations quality index per quarter

X_2 = Interest rate measured as quarterly average lending rate

X_3 = Inflation rate measured as the quarterly inflation rate

X_4 = Unemployment measured as the quarterly unemployment rate

ε = error term

3.5.2 Tests of Significance

Parametric tests determined the general model and individual variable's significance. The F-test determined the overall model's significance, and this was achieved using ANOVA while a t-test determined coefficient significance.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the results of the study. It will provide the results from the descriptive analysis, the correlation tests, the diagnostics as well as the regression analysis.

4.2 Descriptive Analysis

The research extracted quarterly data on financial regulations, interest rate, inflation, unemployment rate and capital markets development for the period between January 2012 and December 2021. The study summarized the indicators using descriptive values as shown in Table 4.1

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CMD	40	21.0	38.3	27.630	5.6669
Financial regulations	40	22.5962	32.2115	29.149008	2.5358626
Interest rate	40	7.0	18.0	9.528	2.5379
Inflation rate	40	3.5	16.9	6.435	2.3729
Unemployment rate	40	2.6400	10.4000	3.747500	1.7972782
Valid N (listwise)	40				

Source: Research Findings (2022)

4.3 Correlation Analysis

Pearson correlation was employed to establish the link between Capital markets development (CMD) in Kenya and the characteristics of the study i.e financial regulations, inflation, interest rate and unemployment rate. Table 4.2 depicts the outcomes.

Table 4.2: Correlation Analysis

		CMD	Financial regulations	Interest rate	Inflation rate	Unemployment rate
CMD	Pearson Correlation	1				
	Sig. (2-tailed)					
Financial regulations	Pearson Correlation	.442**	1			
	Sig. (2-tailed)	.007				
Interest rate	Pearson Correlation	-.119	.249	1		
	Sig. (2-tailed)	.466	.121			
Inflation rate	Pearson Correlation	-.114	-.087	.653**	1	
	Sig. (2-tailed)	.486	.595	.000		
Unemployment rate	Pearson Correlation	-.484**	-.577**	-.483**	-.172	1
	Sig. (2-tailed)	.002	.000	.002	.288	

** . Correlation is significant at the 0.01 level (2-tailed).
b. Listwise N=40

Source: Research Findings (2022)

From the study’s findings, a weak positive link that is statistically significant exists between financial regulations and CMD ($r = .442, p = .007$). The correlation results further indicate a weak negative as well as significant statistical connection between unemployment rate and CMD ($r = -.484, p = .002$). The rate of interest displays an insignificant negative relationship to CMD in Kenya ($r = -.119, p = .466$) and inflation displays a weak, negative and not significant link with CMD in Kenya ($r = -.114, p = .486$).

4.4 Diagnostic Tests

The study applied various diagnostic tests to determine whether the data collected was suitable for regression analysis. Multicollinearity, normality, autocorrelation, and stationarity tests were conducted in the survey.

4.4.1 Multicollinearity

In a multiple regression model, multicollinearity is displayed whenever predictor variables exhibit a substantial relationship. An event where independent variables have great correlations is unfortunate. Parameters are said to have multicollinearity if they have a perfect linear connection. Outcomes for the test on multicollinearity are displayed in Table 4.3.

Table 4.3: Collinearity Statistics

	Collinearity Statistics	
	Tolerance	VIF
Financial regulations	0.412	2.427
Interest rate	0.392	2.551
Inflation rate	0.401	2.494
Unemployment rate	0.533	1.876

Source: Research Findings (2022)

Variance Inflation Factors (VIF) value is utilized whenever values that fall below 10 are not multi-linear. One condition for multiple regressions to occur is that no strong connection should be evidenced among variables. Based on the outcomes, every VIF variable is below 10 as indicated in Table 4.3 which shows that independent variables in the study experience no significant statistical multi-linearity.

4.4.2 Normality Test

To establish if the data was normally distributed, the researcher used the Shapiro-wilk tests. If the p-value exceeds 0.05, there is normal distribution of data and vice versa. The test's outcomes are as shown in Table 4.4.

Table 4.4: Normality Test Results

	Shapiro-Wilk	P-value
CMD	0.869	0.178
Financial regulations	0.911	0.198
Interest rate	0.918	0.202
Inflation rate	0.881	0.194
Unemployment rate	0.853	0.171

Source: Research Findings (2022)

Since the data displayed a p value of more than 0.05, therefore having a uniform distribution, the researcher adopted the alternative hypothesis. This data was fit to be subjected to tests and analysis such as variance, Pearson's Correlation and regression.

4.4.3 Autocorrelation Test

A serial correlation test established the relationship of error terms over various time intervals. For the research to obtain the desired model parameters, the Durbin Watson serial correlation test was used to carry out the analysis of autocorrelation in the data, which is a shortcoming in the data analysis that must be examined. The findings are depicted in Table 4.5.

Table 4.5: Autocorrelation Results

Durbin Watson Statistic
1.977

Source: Research Findings (2022)

From the null hypothesis, no first-order serial/auto correlation exists. The 1.977 Durbin Watson statistical varies from 1.5 to 2.5 indicating no serial correlation.

4.4.4 Stationarity Test

The research variables were subjected to a unit-root test to establish if the data was stationary. The unit root test was ADF test. With a standard statistical significance level of 5%, the test was compared to the corresponding p-values. In this test, the null hypothesis states that every variable has a unit root, and the alternative hypothesis is that the variables are stationary. The findings are depicted in Table 4.6.

Table 4.6: Stationarity Test

Variable	ADF test Statistic	p value
----------	-----------------------	---------

CMD	2.7578	0.0000
Financial regulations	3.1648	0.0000
Interest rate	3.4628	0.0000
Inflation rate	2.1936	0.0000
Unemployment rate	2.9852	0.0000

Source: Research Findings (2022)

As demonstrated in Table 4.6, this test concludes that the data is stationary at a 5% level of statistical significance since the p-values all fall below 0.05.

4.5 Regression Analysis

Regression analysis was conducted to achieve the study objective. The test was done at 5% level of significance. Table 4.7 to 4.9 display the results.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.637 ^a	.406	.338	4.6117

a. Predictors: (Constant), Unemployment rate, Inflation rate, Financial regulations, Interest rate

Source: Research Findings (2022)

The R squared indicator shows how the explanatory variables may describe variations in the response variable. As indicated in Table 4.8, the 0.406 R square, indicates that changes in financial regulations, interest rate, inflation, and the unemployment rate account for 40.6 percent of the CMD in Kenya. 59.4 percent of the CMD variation to Kenya is explained by other variables that were not examined in this research. The correlation coefficient (R) of 0.637 showed a strong link amongst predictor factors and CMD.

Table 4.8: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	508.087	4	127.022	5.973	.001 ^b
	Residual	744.357	35	21.267		
	Total	1252.444	39			

a. Dependent Variable: CMD
b. Predictors: (Constant), Unemployment rate, Inflation rate, Financial regulations, Interest rate

Source: Research Findings (2022)

The value of P obtained by ANOVA is 0.001, which is below $p=0.05$. This demonstrates that the model described how financial regulations, interest rate, inflation, and unemployment rate affect Kenya's CMD.

The relevance of various variables was determined using the model's coefficients. The statistics of t and values of p were used to accomplish this. This study is significant since it allowed the researcher to determine which independent variables were chosen (Financial regulations, interest rate, inflation and unemployment rate) significantly influence the CMD in Kenya. Table 4.9 summarize the findings.

Table 4.9: Model Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	50.046	12.755		3.924	.000
	Financial regulations	1.203	.448	.539	2.683	.011
	Interest rate	-.123	.371	-.055	-.332	.742
	Inflation rate	.246	.438	.103	.562	.577
	Unemployment rate	-2.390	.557	-.758	-4.288	.000

a. Dependent Variable: CMD

Source: Research Findings (2022)

Table 4.9 displays that only financial regulations and unemployment rate, with a p value less than 0.05, were a significant predictor of CMD in Kenya. Other independent factors (interest rates, and inflation) were not significant predictors of CMD in Kenya, as evidenced by low t values and p values greater than 0.05.

The following regression was estimated:

$$Y = 50.046 + 0.539X_1 - 0.758X_2$$

Where,

Y = CMD

X₁ = Financial regulations

X₂ = Unemployment rate

Using the constant = 50.046, we can see that if selected independent variables (financial regulations, interest rates inflation, and unemployment rate) were rated zero, the CMD would be 50.046. Increasing financial regulations by one unit would increase CMD by 0.539 units while increasing the unemployment rate by one unit yields the CMD to decline by 0.758. The other variables considered had no statistically significant influence.

4.6 Discussion of Research Findings

This objective of this research was to establish the effect of the predictor variables on CMD in Kenya. Independent variables included financial regulations, interest rate, inflation together with unemployment rate. CMD was the dependent variable, and it was measured as the ratio of stock market capitalization to GDP. Correlation as well as regression analysis

were utilized to show the connection linking the independent variables to dependent variable.

The Pearson model showed that a weak positive link that is statistically significant exists between financial regulations and CMD. The correlation results further indicate a weak negative as well as significant statistical connection between unemployment rate and CMD. The rate of interest displayed a negative relationship that is not significant to CMD in the Kenyan economy. Inflation displayed a weak negative and not significant link with CMD in Kenya.

The independent variables accounted for 40.6% of variances in CMD, in accordance with the summary of the model. The predictor variables of this research had explanatory power that fitted a 95% confidence level as indicated by the 0.001 p value, which was below the threshold of significance that is 5%. Therefore, the overall model employed in this study is a good and sufficient prediction model to determine CMD in Kenya.

This research is in agreement with Umar and Nayan (2018) who used a pooled mean group model to empirically assess the impact of regulatory quality on African capital markets development from 1996 to 2016. According to the study, quality control has a positive effect on the development of stock markets. Far-reaching policy reforms are required to guarantee effective financial market regulation, which will restore investor confidence and boost market development. When robust and effective financial market regulations are implemented, there will be a greater expectation for the stock market's growth and development to withstand the effects of future financial crises.

This research is also in agreement with a study conducted by Makokha (2016) who examined the effect of selected financial regulations on financial performance of Kenyan commercial banks. The research took up a descriptive research design to analyze the link between selected financial regulations and financial performance. Eleven banks listed on the NSE were considered as the study's population with data retrieved from each of the banks' annual reports. The research found that all metrics of corporate governance and capital requirements are key determiners of fiscal performance of listed banks in Kenya.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The objective of this research was to investigate the effect of financial regulations on CMD in Kenya. The findings from the above sections are outlined in this chapter together with the conclusions and limitations of this study. This section also outlines the strategies that can be adopted by policymakers and recommendations.

5.2 Summary of Findings

The research assessed how financial regulations influenced CMD in Kenya. Financial regulations, interest rates, inflation, as well as unemployment rates were adopted to be the predictor variables of the research. The study used descriptive design to do analysis as well as data collection. Secondary data was obtained from CBK as well as KNBS and analyzed using SPSS version 24 program. The study utilized 10 years compiled quarterly data.

The Pearson model showed a weak positive link that is statistically significant exists between financial regulations and CMD. The correlation results further showed a weak negative as well as significant statistical connection between unemployment rate and CMD. The rate of interest displayed a negative relationship that is not significant to CMD in Kenya. Inflation displayed a weak negative and not significant link with CMD in Kenya.

The independent variables accounted for 40.6% of variances in CMD, in accordance with the summary of the model. The predictor variables of this research had explanatory power that fitted a 95% confidence level as indicated by the 0.001 p value, which was below the threshold of significance that is 5%. Therefore, the overall model employed in this study is a good and sufficient prediction model to determine CMD in Kenya.

The regression results further indicated that, if selected independent variables (financial regulations, interest rates inflation, and unemployment rate) were rated zero, the CMD would 50.046. Increasing financial regulations by one unit would increase CMD by 0.539 units while increasing the unemployment rate by one unit yields the CMD to decline by 0.758. The other variables considered had no statistically significant influence.

5.3 Conclusion

The study's findings show that financial regulations and unemployment rate have a significant impact on Kenya's CMD. The research finds that more financial regulations lead to a significant increase in CMD in Kenya while higher unemployment rate leads to a decline in CMD in Kenya. The research also finds that while interest rate and inflation have an impact on CMD, the impact is not statistically significant.

The study concludes that the factors under research – financial regulations, interest rate, inflation and the unemployment rate – affect CMD by describing 40.6% of the variations. This means that the variables not covered by the model are responsible for 59.4% of variations of CMD in Kenya. It is therefore substantial to infer that the outlined factors affect CMD as shown in the ANOVA summary which indicates a p-value below 0.5.

The conclusions of this research concur with Mwega (2014) who investigated the probable tradeoff between policy guideline and financial sector stability by conducting a case study in the Kenyan financial services sector with a focus on the banking industry. The research followed an empirical approach, which included quantitative research and policy analysis. The researcher claimed that sound regulation promotes economic development, and that the primary goal of regulations is to maintain stability and boost a country's economy. He observed that financial sector changes over the last ten years have improved the performance of the banking sector. Clients receive better products, and the quality of service has significantly improved in addition to notable improvements in profitability and stability. Therefore, according to this study, regulations have increased profitability of the banking sector.

5.4 Recommendations

Outcomes show that financial regulations possess a positive and considerable effect on CMD in Kenya implying an increase in the quality of financial regulations can have a positive effect on CMD. This study recommends that policy makers adopt measures aimed at enhancing financial regulations, since this might contribute towards CMD and ultimately boost the economy. Policy makers should also follow up to ensure that the regulations in place are being followed.

Outcomes show that unemployment rate possesses a negative and considerable effect on CMD in Kenya implying a rise in unemployment rate can have a negative effect on capital markets development in the country. This also means that stock market capitalization is likely to drop with a rise in unemployment rate. The research proposes that policy makers adopt measures aimed at reducing the level of unemployment rate, since this would lead to a rise in capital markets development.

5.5 Limitations of the Study

This research covered a 10-year period (2012-2021). This does not give substantial evidence that in an added timeframe, the findings will remain the same. Additionally, it is unclear that these conclusions will be sustained after 2021 as various factors might change.

The main drawback of the study was the quality of data. It is not possible to reliably state the results obtained in the survey as the correct reflection of the general situation. Since the research relies on secondary data, accuracy and reliability of the data collected are assumed to a certain degree. Additionally, the determinants of CMD have been partially considered because of unavailability of data for all determinants.

Regression models were used to conduct data analysis. It might be impossible for the researchers to generalize outcomes because of the setbacks accruing from model utilization such as erroneous and deceptive conclusions emanating from altering variable value. For instance, if more data was to be added in the regression model, it is possible that the results would differ.

5.6 Suggestions for Further Research

The aim of the research was to determine the impact of financial regulations on CMD in Kenya. Research utilizing primary data or one that mixes primary data with secondary data is recommended to recognize qualitative elements that might have been overlooked in the current research.

This research did not consider all independent variables that affect CMD of an economy. A suggestion therefore arises to include other factors in future studies to come up with more specific findings. These factors include money supply, balance of payments, corruption, foreign direct investments and financial literacy. Providing details how each of them affects CMD will enable policymakers make decision on the steps to take in order to enhance CMD.

Due to the unavailability of data, this study focused on the latest 10 years. Other future studies should employ a wider range to come up with a valid conclusion. This study was also under restriction because it focused solely on Kenya. Similar studies should be conducted in other countries and regions. Lastly, the study adopted a regression model to do a confirmation or rejection of the findings. Future studies could adopt other independent methods to confirm or reject their findings.

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APPENDICES

Appendix I: Research Data

Year	Quarter	CMD	Financial regulations	Interest rate	Inflation rate	Unemployment rate
2012	1	20.9760	29.8600	18.0000	16.8700	2.8600
	2	20.9760	29.8600	18.0000	11.7767	2.8600
	3	20.9760	29.8600	14.7500	6.3833	2.8600
	4	26.6820	29.8600	11.0000	3.5300	2.8600
2013	1	26.6820	29.8600	9.5000	4.0767	2.8700
	2	26.6820	29.8600	8.5000	4.3667	2.8700
	3	26.6820	29.8600	8.5000	6.9967	2.8700
	4	36.1630	29.8600	8.5000	7.4233	2.8700
2014	1	36.1630	29.8600	8.5000	6.7800	2.8200
	2	36.1630	29.8600	8.5000	7.0333	2.8200
	3	36.1630	29.8600	8.5000	7.5433	2.8200
	4	38.3100	29.3269	8.5000	6.1800	2.8200
2015	1	38.3100	29.3269	8.5000	5.8167	2.8000
	2	38.3100	29.3269	8.5000	6.9933	2.8000
	3	38.3100	29.3269	11.5000	6.1433	2.8000
	4	29.7710	28.8462	11.5000	7.3500	2.8000
2016	1	29.7710	28.8462	11.5000	7.0233	2.6400
	2	29.7710	28.8462	10.5000	5.3567	2.6400
	3	29.7710	28.8462	10.5000	6.3333	2.6400
	4	25.4360	28.3654	10.0000	6.5000	2.6400
2017	1	25.4360	28.3654	10.0000	8.7700	2.6400
	2	25.4360	28.3654	10.0000	10.7967	2.6900
	3	25.4360	28.3654	10.0000	7.5233	2.6900
	4	29.7260	31.2500	10.0000	4.9833	2.6900
2018	1	29.7260	31.2500	10.0000	4.4900	2.6900
	2	29.7260	31.2500	9.5000	3.9867	2.7600
	3	29.7260	31.2500	9.0000	4.6967	2.7600
	4	22.5050	32.2115	8.5000	5.6067	2.7600
2019	1	22.5050	32.2115	8.5000	4.3967	2.7600
	2	22.5050	32.2115	8.5000	5.5900	4.7000
	3	22.5050	32.2115	8.5000	5.0333	4.9000
	4	24.8100	30.2885	8.5000	5.4433	5.2000
2020	1	24.8100	30.2885	7.7500	6.2633	5.3000

Year	Quarter	CMD	Financial regulations	Interest rate	Inflation rate	Unemployment rate
	2	24.8100	30.2885	7.0000	5.3100	5.4000
	3	24.8100	30.2885	7.0000	4.3067	6.6000
	4	21.8060	22.5962	7.0000	5.2633	6.6000
2021	1	21.8060	22.5962	7.0000	5.7900	6.6000
	2	21.8060	22.5962	7.0000	5.9833	6.6000
	3	21.8060	22.5962	7.0000	6.6767	7.2000
	4	21.4320	25.9615	7.0000	5.9933	10.4000