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AN ANALYSIS OF FACTORS INFLUENCING CAPITAL MARKET DEVELOPMENT IN THE EMERGING MARKET. A CASE STUDY OF RWANDA STOCK EXCHANGE

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POST GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF BUSINESS ADMINISTRATION IN ACCOUNTING AND FINANCE OF THE UNIVERSITY OF KIGALI

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DECLARATION

I, Muhamadi Nshimiyimana declare that the work titled " *An analysis of factors influencing capital market development in the emerging market. A case study of Rwanda stock exchange***"** presented in this research proposal is my original work and has never been presented anywhere else for any academic qualifications at any university or institution of higher learning.

Candidate's name: Muhamadi Nshimiyimana

Signature: …………………………………

Date of submission…**…./……** / 2022

APPROVAL

This is to certify that Muhamadi Nshimiyimana has conducted the research entitled "*An analysis of factors influencing capital market development in the emerging market. A case study of Rwanda stock exchange*" under our supervision and guidance.

Supervisor's name: Dr. TWESIGYE Daniel (PhD)

Signature: ………………………………………….

Date of submission: ……………/……………/2022

LIST OF ABBREVIATIONS, ACCRONYMS AND SYMBOLS

MINECOFIN: Ministry of Finance and Economic Planning

NBR **:** National bank of Rwanda

BNR : Bank National du Rwanda

CMA : Capital Market Authority

CMAC **:** Capital Market advisory council

GDP **:** Gross Domestic Product

IF : Inflation rate

ER : Exchange Rate

MC **:** Market Capitalization

BTD : Bond Trading Value

IR : Interest Rate

UR : Unemployment rate

WB : World Bank

EPS **:** Earning per share

CFPS : Cashflow per share

APT : Arbitrage Pricing theory

EMH **:** Efficient market hypothesis

GNP **:** Gross National Product

NISR **:** National Institute of statistics of Rwanda

GLM **:** Generalized linear model

ADF : Augmented Dick fuller

VAR **:** Vector Auto Regressive

CPI **:** Consumer price Index

ABSTRACT

Capital market performance has a stronger influence on a country's financial stability. Several studies have been undertaken in Rwanda analyzing the performance of the stock market, but few have explored the macroeconomic implications on stock market performance, and none have analyzed the influence of macroeconomic indicators on the bond market. The research examined the impacts of exchange rate, inflation rate, and interest rate on the performance of the capital market on the Rwanda stock exchange using monthly time series data spanning 2017 through June 2022. These statistics were obtained from RSE and BNR. The study's outcomes were evaluated using Eviews 12. The Cointegration test and Granger causality test for all the macroeconomic variables considered in the research, including the interest rate, exchange rate, and inflation indicated that the stock market and bond market have either a long-run relationship or a causal relationship with a P value which less than 5%. This demonstrates that there is, in fact, a link between the stock market and certain macroeconomic factors, and that these factors play a significant role in the growth of the capital market. The statistical data demonstrated that inflation rate and exchange rate have positive long-term relationships with the bond market, but interest rate has a negative long-term link with the market. Exchange rate and interest rate have positive long-term relationships with market capitalization, but inflation rate has a negative long-term link with market capitalization. By providing light on this uncharted area the findings have hypothetically added to literature. This will aid investors in predicting the direction of the market allowing them to concentrate only on the major elements and their influence on various economies. Second, there is a need for a continuous campaign on financial education to the general population, since this is an area that might play a significant role in the growth of the capital market. Additionally, the government should foster an atmosphere that promotes investments to flourish, therefore boosting the number of firms listed on the stock exchange hence promoting product innovation and diversification on the Rwanda stock exchange

Key word: Interest, Exchange rate, Inflation rate, Market capitalization, Bond Market

1.1. Background of the Study

Capital markets are one of the most significant drivers of economic growth and wealth creation, according to the World Bank's Capital Market Development Report for 2020. A well-developed domestic capital market gives governments and businesses access to long-term financing in the local currency, boosts innovation-focused investments, and fosters sustainable development with more job possibilities for an expanding middle class. In the next years, capital markets will likely play a larger role by supporting the mobilization of additional private finance into crucial areas such as infrastructure, housing, SME financing, and climate action funding. Unfortunately, many emerging markets and developing economies only experience a fraction of the capital market's advantages. Excluding China, around 11 percent of equity and debt issuances in 2019 were issued by corporations in developing economies.

The COVID-19 epidemic poses further obstacles to the growth of capital markets. For many emerging markets and developing economies, difficulties have increased because of the deterioration in the macroeconomic environment, including the contraction of the economies and larger fiscal deficits, (ii) reduced investor appetite due to uncertainty, and (iii) the nature and scale of the interventions used by governments to support the economy, which, while necessary, may have limited the viability of different capital markets solutions, at least in the short term. However, this does not change the underlying assumption that it is essential to provide alternate financing methods for vital core industries. In fact, the demand for capital markets solutions is more than ever given the much-reduced space that governments and maybe banks will have in the future to support fresh funding. (2020 World Bank report) Capital markets refer to a segment of the financial system aimed at channelling the savings of an economy to those in need of capital. These transfers of capital are undertaken through financial Money markets are a subset of the financial system designed to route an economy's savings to people in need of capital. These capital transfers are conducted using financial instruments and securities. These may include money market assets, sovereign and non-sovereign bonds, securitized assets like mortgage-backed securities, participations in collective investment schemes like mutual funds, and business stock. Unlike deposits, investors assume the risk

associated with such investments. The capital markets are comprised of a primary market, where the financial instruments described above are sold to investors by their issuers (governments, corporations, collective investment schemes, and special purpose vehicles), and a secondary market, where already-issued securities are traded between investors. Private placements or public offerings may be used to issue securities. Private placements are often confined to institutional and other skilled investors, with limited pricing transparency and trading activity. Accessible to everybody, including retail investors, securities offered via a public offering are traded on regulated markets with appropriate pre- and post-trade price transparency. Capital markets rely on professional intermediaries and require a number of market infrastructures, such as trading platforms, clearing houses, and central securities depository, as well as a legal and regulatory framework tailored to capital markets and supported by government supervision and enforcement. (2020 World Bank report)

Rwanda's economy has considerably recovered from the catastrophic effects of the COVID-19 pandemic, according to the March 2020 NBR Monetary policy and financial statement report. Despite consecutive waves of COVID-19 that forced a tightening of virus containment procedures, including partial lockdowns, the economy continued to recover during 2021. After contracting by 3.4% in 2020, Rwanda's economy expanded by 10.9% in 2021, aided by substantial fiscal and monetary policy assistance, reducing COVID-19 control measures, improved global and regional economies, and favorable meteorological conditions. The economy is anticipated to continue to improve in 2022, with a forecast growth rate of 7.2%. In 2021, average headline inflation decreased from 7.7 percent in 2020 to 0.8 percent. The decline in headline inflation was mirrored in its major components, mostly due to an increase in agricultural supplies and base effects in the transport services, food, and solid fuels inflation components. (NBR,2021)

The majority of the Rwandan financial market consists of Money markets, Securities markets, and foreign exchange markets. The money markets dominate the Rwandan financial sector with 96.5 percent of total outstanding amount (of which 60.9% comes from Treasury bills for the Government) Rwanda's securities market is dominated by government bond transactions. Rwanda's major stock market is the Rwanda Stock Exchange (RSE). It began operations in January 2011. The RSE is governed by Rwanda's Capital Market Authority (CMA), formerly known as the Capital Markets Advisory Council (CMAC), which is accountable to the Ministry

of Finance and Economic Planning (Logie et al. 2008). The stock exchange opens for business on January 31, 2011.

The stock market, which is open five days per week, is a member of the African Stock Exchanges Association and owns two indexes, including the Rwanda share index and the all-share index. The performance of the Rwanda Stock Exchange (RSE) increased in 2020 compared to 2019 as a result of increased trading activity across the board.

In accordance with Soumaré, Kanga, and Tyson, & Raga S. In 2021, capital markets augment bank finance on the continent in a significant way. Since 1997, governments and private companies in Africa have raised about $560 billion via the sale of bonds denominated in local currency. In addition, the number of stock exchanges on the continent has increased from five in 1989 to twenty-eight now, with the number of listed shares and the volume of trading increasing steadily. From 1992 to 2018, the capitalization of African stock markets expanded from $113 billion to over $1,130 billion, a tenfold rise.

Despite these advancements in the markets for securities (bonds and equities), the capital markets in Africa remain underdeveloped. Excluding South Africa, Mauritius has the largest market capitalization in Africa in 2018 (69 percent of the GDP). The capitalization of the Mauritius stock exchange was much lower than the regional average (83 percent of GDP) and that of high-income nations (119 percent of GDP). Numerous reasons, such as the small size of domestic economies, macroeconomic and business climate, quality of institutions and financial infrastructures, etc., might explain the underdevelopment of capital markets. In the majority of African stock markets, listing and issuance requirements are binding restraints on the form and capacity of indigenous corporations. For instance, the long administrative processes for listing, the high transaction costs, the lack of training and understanding about capital markets, and the lack of transparency in some of these marketplaces are important limiting factors for the growth of many African capital markets (Soumaré, 2020).

1.3. Statement of the Problem

From the empirical examination of prior research, it can be concluded that the studies concur that macroeconomic factors have an influence on capital market development, although of differing scale and in a variety of directions, depending on the country under investigation. As

a result, little is known about the effects of macroeconomic issues on the bond market since researchers have mostly ignored the bond market in their analyses.

Current research include both stock and bond markets. In addition, this research is only aware of two studies that examined the effect of macroeconomic factors on the growth of the stock market in Rwanda, and none of these studies addressed the bond market. In addition, none of the two studies examined the influence of unemployment rate on the stock and bond markets in Rwanda's capital growth. With this perspective, the purpose of this research is to fill the gap indicated in the literature review.

1.4. General Objectives

This research's primary purpose is to analyze the variables impacting the development of capital markets in developing markets, using the Rwanda stock exchange as a case study

1.4.1. Specific Objectives

The following are the precise aims of this study:

1. Determine the effect of exchange rate on the growth of the stock and bond markets in Rwanda.
2. Examine the effect of inflation on the growth of the stock and bond markets in Rwanda.
3. Determine the effect of Interest on the growth of the stock and bond markets in Rwanda.

1.5. Research Questions

The precise aims of this research are as follows:
1. What effect does the exchange rate have on the growth of the stock and bond markets in Rwanda?
2. What effect does inflation have on the growth of the stock and bond markets in Rwanda?
3. What effect does interest have on the growth of the stock and bond markets in Rwanda?

1.6. Research Hypothesis

To achieve the study aims, the following null and alternative hypotheses have been developed:

- **H10:** The interest rate has no effect on market capitalization or the bond market index.

- **H11**: The interest rate has effect on market capitalization and the bond market index.

- **H20**: The inflation rate has no effect on market capitalization or the Bond Market Index.

- **H21**: The inflation rate has effect on market capitalization and the Bond Market Index

- **H30:** The exchange rate has no effect on capital market capitalization or bond market index.

- **H31:** the Exchange rate effect capital market capitalization and bond market index.

LITERATURE REVIEW

2.2.1. The Efficient Market Hypothesis

The effective market hypothesis is associated with Fama (1970), who coined the term "proficient market." Fama (1970) defined a competent market as one in which stock prices consistently reflect all available facts. Three structures comprise the productive market theory: the weak structure, the semi-solid structure, and the solid structure. This analysis concludes that the semi-solid structure is increasingly acceptable since, on this market, stock prices reflect all publicly available facts. Stock prices fluctuate because every macroeconomic variable influencing an organization's stock must be evaluated to determine its offer price under a semi-solid type of proficient economy. The majority of data on macroeconomic parameters are available to the public via distributions by the World Bank, the International Monetary Fund, and national central banks. As a result, businesses operating in a certain sector may be adequately screened, and offer prices cannot be inflated for profit, as information about the firm is accessible to everyone. Moreover, investors often make clever and well-informed investment decisions to avoid investment losses caused by a lack of information.

2.2.2. Arbitrage Pricing Theory (APT)

This research is supported by the Arbitrage Pricing Theory, which explains the relationship between stock prices and macroeconomic conditions (Ross, 1976; Chen, Roll and Ross, 1986). Various experimental evidence demonstrates that macroeconomic factors are connected to financial exchange execution. According to Naik and Padhi (2012), the link between certain macroeconomic conditions and stock prices varies from market to market and might fluctuate depending on the time periods considered. Ross (1976) argues that the primary influences on stock returns emanate from macroeconomic forces, such as the inflation rate, lending rate, swapping scale, changes in risk premiums, contemporary production, and the degree of financial development. Chen et al. (1986) recognize that each stock is dependent on both

anticipated and unanticipated macroeconomic elements, which constantly determine the arrival acknowledged by financial experts.

2.3. Empirical Review

I conducted a search of various previous research. This search is supported by more than 25 high-quality publications, the majority of which were published between 2015 and 2021. The study is segmented into causes in which one or more indicators of capital markets development serve as dependent or explained variables, and effects in which these indicators serve as explanatory variables for a variety of stock and bond market performance measures. In turn, these studies are categorised according to whether they are based on macro-level data including large panels of industrialized, emerging, and developing nations throughout time. Depending on the mix of factors, procedures, and tests used, the findings of each study have yielded varied conclusions. The following are some past works and their conclusions.

As the following studies demonstrate, the link between inflation and capital market growth has been determined to be mostly negative and positive. In Nigeria, Okulenu et al. (2016) discovered a negative correlation between inflation and capital market growth. In addition, Talla (2013) discovered a negative correlation between Sweden's inflation rate and stock prices. Moreover, several studies in developing and developed nations have identified a negative long-term relationship between inflation and market capitalization. including onyinyechi (2019), Barakat et al. (2016), and Bayar, Y. (2016), Gatsinzi (2018). Nonetheless, a number of studies have uncovered a positive correlation, and this is the case with Funso T. Kolapo's 2018 study, Unraveling the Impact of Macroeconomic Fundamentals on Stock Market Performance in Nigeria. His findings revealed a favorable and robust link between inflation and stock performance in Nigeria.

Similarly, similar studies conducted by Ibrahim Bello Abdullahi (2020), who examined the effect of Unstable Macroeconomic Indicators on banking sector stock price behavior in the Nigerian Stock Market, confirmed the above result. GIRI A. K. (2017) also investigated the effect of macroeconomic indicators on the stock prices of India. The ARDL long-run

estimations revealed a positive and statistically significant link between economic growth and stock prices. It also demonstrated that inflation has a large and favorable effect on stock price fluctuations in India.

In addition, several research have been unable to establish a statistical correlation between inflation and capital market growth. For instance, Cyuzuzo, G. (2018) explored elements impacting the growth of Rwanda's capital markets. Its primary purpose was to investigate how macroeconomic factors influence the growth and development of the Rwanda Stock Exchange (RSE). Using secondary quarterly data from 2011 to 2016, this research estimates two models using the GLM approach. Among the four macroeconomic factors, only the money supply demonstrated a statistically meaningful association with market capitalization, ruling out inflation as a factor impacting the growth of the Rwandan stock exchange. Moreover, Kamazima and Omurwa (2018) demonstrated that inflation rates had a little impact on the financial sector growth in Tanzania. Nicholas (2011), Barnor (2014), and Charles (2014) had previously found the similar finding in Kenya and Ghana.

Similar results were found by Ho and Odhiambo (2018), whose findings indicate that exchange rates have had favorable effects on the short-term growth of the Philippine stock market. Contrary to the conclusions of Gatsinzi (2018), the exchange rate has a detrimental impact on stock performance and the growth of the Rwanda Capital Market.

Regarding the bond market, According to Burger, J. D.'s (2015) research study on the development of the bond market in Asia, excessive inflation volatility poses a significant barrier to bond market growth. And they discovered that smaller emerging Asian nations might facilitate bond market growth by implementing creditor-friendly policies and bolstering borrowers' legal rights. Nkwede (2017) investigated the macroeconomic determinants of bond market development in Nigeria and found that exchange rate, interest rate, inflation rate, and banking sector development have a negative and significant impact on the capitalization of the Nigerian bond market, thus demonstrating that they are strong macroeconomic determinants of bond market development in Nigeria.

In contrast, Githinji (2013) observed that three macroeconomic factors (exchange rate, interest rate, and gross domestic product per capita) had a favorable influence on the growth of the bond market in Kenya. Mu et al. (2013), who conducted extensive research on bond markets

in Africa, assert that despite the African bond market's consistent growth rate, the sector is still immature. According to the findings of their analysis, the size of the government bond market is positively correlated with better institutions and interest rate volatility, but negatively correlated with fiscal balance, larger interest rate spread, exchange rate volatility, and openness of the capital account. Furthermore. Using quarterly data from 2010Q1 to 2017Q4 for the bond market, Koketso Molefhi (2021) investigated the influence of macroeconomic variables on the development of the capital market in Botswana. The findings demonstrated that none of the factors are relevant in the short run; nevertheless, inflation rate and lending rate have a substantial influence on the development of the bond market in the long run.

2.3.1. Research Gaps

From the literature, it can be concluded that the studies agree that macroeconomic variables influence capital market development, albeit to varying degrees and in a variety of directions, depending on the country under study. Nonetheless, from the empirical literature, it can also be drawn that the studies focused more on the stock markets without including the bond market on their analysis, and therefore, little is known on how macroeconomic factors affect the bond market. Current research incorporate both the stock and bond markets. This study is only aware of two studies that investigated the impact of macroeconomic variables on the stock market development in Rwanda and none of them tackled the bond market.

2.4. Conceptual Framework

The research of theoretical and empirical literature reveals that the following economic indicators may impact the performance of the capital market. These economic indicators consist of the interest rate, the inflation rate, the, and the exchange rate. Above variables are consisted with as independent variables of which will influence the market capitalization and bond trading value. Thus, a summary of the conceptual framework follows:
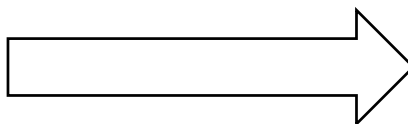
Independent variables   **Dependent variables**

Macro-Economic Variables

- Exchange Rate
- Inflation rate

Capital Market development

- Market Capitalization

2.4.1. Review of the Variables

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CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

The researcher adopted quantitative research design because it involves systematic empirical investigation of observable phenomena via statistical or numerical data. To identify the causative link between the variables under investigation, a causal research design was used. According to Kothari (2004), causal research is used to investigate the influence of one variable on another, and this study, which tried to demonstrate the relationship between macroeconomic conditions and stock market performance, is compatible with this definition.

3.5.1 Model Specification

The model of stock market returns used in the research was the Arbitrage Pricing Theory model. Below is the model for stock and bond market performance and macroeconomic factors. Stock prices equal f (macroeconomic factors)

$BTD= \lambda o++\lambda 2ER+\lambda 3IF+\lambda 5IR+Et$

$MC = \lambda o++\lambda 2ER+\lambda 3IF++\lambda 5IR+Et$

Where:

R=Expected performance of an asset

 BTD=Bond traded Value

 ER=Exchange rate

 IF= Inflation

 IR= Interest rate

 λs= measures the reward of bearing risk

associated   with   economic   factor

fluctuations.

 Et = Error term

TABLE 1: SYNOPSIS OF VARIABLES

Variables	Anticipated indicator	Proxy
Market Capitalization	Positive	Stock Return
Bond Trading Value	Positive	Bond Turnover
Exchange Rate	Negative	National currency per USD
Inflation Rate	Negative	CPI at country Level
Interest Rate	Positive	Interbank Lending Rate

3.6.1 Test for Unit Root

This is the initial stage in analyzing time series data. This entails verifying the stationarity of

time series data to prevent incurring type I or type II mistakes, which may lead to erroneous

conclusions throughout the decision-making process. A stationary time series is one in which

the mean, standard deviation, and auto covariance remain constant for each given lag. (2008)

Chris Brooks.

Using the Augmented Dickey Fuller Test, the unit root of all variables will be determined. The

alternative to the null hypothesis will be the lack of unit root. If the ADF value above the critical

values, the null hypothesis is rejected and stationarity of the variable is concluded; otherwise,

there is no stationarity. The ADF test consists of the following equation, using exchange rate

(ER) as an example:

$$\Delta ER = \alpha 1 + \lambda ERt - 1 + a2t + \sum_{i=1}^{k} aiERt - 1 + Et$$

Where: α1 is intercept, t is linear time trend, k is the number of lagged first differences, and ε_t is error term. If γ is different from zero, then the null hypothesis will be rejected otherwise it will be accepted.

3.6.2 Test for Cointegration

For testing cointegration, there are two models: the Engel and Granger (1987) model and the Johansen and Joselius (1990) model. The model of Engle and Granger represents two step error correction processes, whereas Johansen's method permits testing cointegration in the system in a single step and does not require errors to be carried from the first to second step, resulting in more efficient estimators of cointegrating vectors. Importantly, the Johansen technique permits bypassing the obligatory assumption of endogeneity or exogeneity of model variables. Therefore, the researcher will utilize the Johansen Cointegration test technique to examine the presence of a long-term link (motion) between variables in a non-stationary series. Before testing for cointegration, the sequence of integration of the separate time series must be determined. A variable Xt is integrated of order d (1d) if, after being differentiated d times, it becomes stationary for the first time (Hjalmarsson and sterholm, 2007). Cointegration also suggests that 1(1) can be estimated using OLS and yield accurate results.

3.6.3 Causality Test

Granger (1969) suggested a technique based on time-series data for determining causation. Granger causality demonstrates whether the previous values of a variable, say V, can predict the present or future values of a variable, T. Granger causality test is used to determine the direction of causation. It is also used to test for exogeneity and allows the researcher to decide whether to estimate the model using a single or simultaneous equation. As Gall (1989), Salemi (1982), and Geweke et al. (1983) demonstrate, the Granger causality test was chosen for this study due to its positive response to both large and small samples. It is hypothesized in this research that macroeconomic factors influence stock and bond market performance. Additionally, the performance of the stock and bond market might have an influence on one of

the macroeconomic indicators, indicating a bidirectional causal relationship. If the research estimates the model and discovers a statistically significant correlation between macroeconomic factors and stock market performance, it must undertake a causality test to determine the direction of causation. The researcher will conduct a paired granger causality test of macroeconomic factor, stock and bond market performance to determine whether macroeconomic variables affect stock market performance or if there is bi-directional causation.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION OF THE RESULTS

4.2 Unit Route Test

We performed a unit root test for all variables to examine stationarities and the same was done using Augmented dickey Fuller. We first tested the unit root test at level $I(0)$ and then at first difference $I(1)$ The Result indicated that all variables were non stationeries at level and then at first difference the result showed that all variables were stationaries indicating that all trends were removed after level $I(1)$. Below is the test result per variables.

TABLE 2: TEST FOR UNIT ROUTE

Null Hypothesis: D(CPI) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.995382	0.0001
Test critical values:	1% level	-3.531592	
	5% level	-2.905519	
	10% level	-2.590262	

*MacKinnon (1996) one-sided p-values.

- o CPI is at I (1)
- o CPI is stationary because ADF calculated/-4.995382/ is greater than ADF critical

/-2.905519/ at 5% of significance level, at First difference and the p value is 0.0001 which is less than 5%.

Null Hypothesis: D(EXC) has a unit root
Exogenous: Constant
Lag Length: 3 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.233445	0.0225
Test critical values:	1% level	-3.536587	
	5% level	-2.907660	
	10% level	-2.591396	

*MacKinnon (1996) one-sided p-values.

- o Exchange rate is at I (1)

- o Exchange rate is stationary because ADF calculated/-3.233445/ is greater than ADF critical/-2.907660/ at 5% of significance level, at First difference and the p value is 0.0225 which is less than 5%.

Null Hypothesis: D(INT) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-9.177046	0.0000
Test critical values:	1% level	-3.533204	
	5% level	-2.906210	
	10% level	-2.590628	

*MacKinnon (1996) one-sided p-values.

- o Interest rate is at I (1)

- o Interest is stationary because ADF calculated/-9.177046/ is greater than ADF critical /-2.906210/ at 5% of significance level, at First difference and the p value is 0.0000 which is less than 5%.

Null Hypothesis: BTV has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.064193	0.0001
Test critical values:	1% level	-3.530030	
	5% level	-2.904848	
	10% level	-2.589907	

*MacKinnon (1996) one-sided p-values.

- o Bond Trading value is at I (1)

- o Bond trading value is stationary because ADF calculated/-5.064193/ is greater than ADF critical/-2.904848/ at 5% of significance level, at First difference and the p value is 0.0001 which is less than 5%.

Null Hypothesis: D(LMCAP) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-9.728376	0.0000
Test critical values:	1% level	-3.533204	
	5% level	-2.906210	
	10% level	-2.590628	

*MacKinnon (1996) one-sided p-values.

- o Market Capitalization is at I (1)

- o Market Capitalization is stationary because ADF calculated/-9.728376/ is greater than ADF critical/-2.906210/ at 5% of significance level, at First difference and the p value is 0.0000 which is less than 5%.

4.3 Cointegration Test

We performed a cointegration test to analyses long run relation between independent variables and dependent variables. We did use Johansen system Cointegration to test the two models. They hypothesis for this test was as below:

Ho: There is no Cointegration

H1: There is Cointegration

The decision criteria were as below:

If trace value is greater than its critical value: we reject which shows, there is cointegration

If max eigenvalue is greater than its critical: We reject Ho which shows, there is cointegration

Table 3: Result for Cointegration Test

Date: 10/11/22   Time: 10:39
Sample (adjusted): 2017M04 2022M09
Included observations: 66 after adjustments
Trend assumption: Linear deterministic trend
Series: LBTV LCPI LEXC LINT
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.450059	59.04854	47.85613	0.0032
At most 1	0.179769	19.58428	29.79707	0.4515
At most 2	0.092344	6.505087	15.49471	0.6358
At most 3	0.001671	0.110366	3.841465	0.7397

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.450059	39.46427	27.58434	0.0010
At most 1	0.179769	13.07919	21.13162	0.4450
At most 2	0.092344	6.394720	14.26460	0.5631
At most 3	0.001671	0.110366	3.841465	0.7397

1 Cointegrating Equation(s):	Log likelihood	644.1225

Normalized cointegrating coefficients (standard error in parentheses)

LBTV	LCPI	LEXC	LINT
1.000000	-4.621296	-0.830696	16.47939
	(3.27444)	(3.60708)	(5.30278)

The result indicated that both trace statistic and at maximum eigne value were found to be higher than its critical value with the probability value being at 0.0032 and 0.0010 respectively and less than 5%. The researcher rejected the null hypothesis and confirming the existence of cointegration indicating long run relationship between bond trading value and other independent variables such as Inflation rate, interest rate and exchange rate. The model was also looked at normalized cointegration coefficients, and we found that both inflation rate and exchange rate have positive relationship with bond trading value in the long run while Interest rate has negative relationship with Bond trading value in the long run.

Table 4 Result for Cointegration test at the second model

Date: 10/11/22   Time: 10:38
Sample (adjusted): 2017M03 2022M09
Included observations: 67 after adjustments
Trend assumption: Linear deterministic trend
Series: LMCAP LINT LEXC LCPI
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.386240	57.36769	47.85613	0.0050
At most 1	0.223010	24.66150	29.79707	0.1739
At most 2	0.108915	7.755562	15.49471	0.4919
At most 3	0.000439	0.029444	3.841465	0.8637

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.386240	32.70619	27.58434	0.0100
At most 1	0.223010	16.90594	21.13162	0.1765
At most 2	0.108915	7.726119	14.26460	0.4072
At most 3	0.000439	0.029444	3.841465	0.8637

1 Cointegrating Equation(s):	Log likelihood	723.4504

Normalized cointegrating coefficients (standard error in parentheses)

LMCAP	LINT	LEXC	LCPI	@TREND(18)
1.000000	-13.58104	-94.65841	2.684015	0.316194
	(5.42000)	(19.3638)	(3.79216)	(0.06425)

We also performed cointegration on the second model using a similar approach and decision criteria. The result indicated that both trace statistic and maximum eigen value were found to be higher than its critical value with the probability value being 0.0050 and 0.0100 respectively and less than 5%. The researcher rejected the null hypothesis and confirming the existence of cointegration indicating long run relationship between market capitalization and other independent variables such as Inflation rate, interest rate and exchange rate. The model was also looked at normalized cointegration coefficients, and we found that both Interest rate and Exchange rate have positive relationship with market capitalization in the long run while Inflation has a negative relationship with market capitalization.

4.4 Test for Error Correction Model

To estimate the equilibrium relationship that determines both short-run and long-run behavior the researcher performed an error correction model (ECM) for two models. First. the Researcher examined stationarity of the two models using Augmented dickey by ensuring all Models are stationary at level $I(0)$. Hence estimating the ECM.

Table 5: Error Correction model result

Dependent Variable: D(LBTV)
Method: Least Squares
Date: 10/11/22   Time: 11:30
Sample (adjusted): 2017M02 2022M09
Included observations: 68 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.411688	0.306888	-1.341492	0.1846
D(LCPI)	3.729896	9.280059	0.401926	0.6891
D(LINT)	4.384523	4.010893	1.093154	0.2785
D(EXC)	0.149444	0.094230	1.585961	0.1178
ECT2(-1)	-0.969875	0.126151	-7.688215	0.0000

Dependent Variable: D(LMCAP)
Method: Least Squares
Date: 10/11/22   Time: 11:18
Sample (adjusted): 2017M02 2022M09
Included observations: 68 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.015948	0.086422	0.184543	0.8542
D(LINT)	-0.761455	1.114073	-0.683487	0.4968
D(LEXC)	-0.815013	24.39712	-0.033406	0.9735
D(LCPI)	-1.981473	2.610736	-0.758971	0.4507
ECT(-1)	-1.052766	0.126575	-8.317353	0.0000

The result for the first model revealed that Error correction term in short run is statistically significant with p value being 0.000 which is less than 5%. and coefficient of error correction term (ECT2) is 0.96 which shows the speed of adjustment toward the equilibrium hence any shock in the short run will adjusted at speed of 96% on monthly basis. On the other second model, the result revealed that the error correction term in short run is statistically significant

with p value being 0.0000 which is less than 5% and its coefficient of error correction term (ECT) is 1.05 of which shows the speed of adjustment speed of adjustment toward the equilibrium hence any shock in the short run will adjusted at speed of 100% on monthly basis. However, both models revealed that the shock in the short run will not have significant effect in the long run since both will be adjusted almost at 100%.

4.5 Test for Granger Causality Test

The researcher performed the casual test between variables using Granger causality test as to get whether variables are bidirectional causality, unidirectional or no causality in short run. In this test all variables were tested as independent variables. The decision criteria were based on below

Ho: X does not granger cause Y and if p value is greater than 0.05, Accept its means, no Casual relationship. If p Value is less than 0.05, Reject Ho. Its means there is casual relationship.

We used ad hoc selection of lags as its more appropriate than other methods in Granger causalities, Jones (1989)

Pairwise Granger Causality Tests
Date: 10/11/22   Time: 00:32
Sample: 1 69
Lags: 5

Null Hypothesis:	Obs	F-Statistic	Prob.
EXC does not Granger Cause MCAP	64	2.99016	0.0189
MCAP does not Granger Cause EXC		0.10278	0.9912

At lag 5, the first null hypothesis was rejected since p value is less than 5% while the second null hypothesis   was Accepted. We concluded by confirming unidirectional causality that run from Exchange rate to Market capitalization in short run.

Pairwise Granger Causality Tests
Date: 10/11/22   Time: 00:30
Sample: 1 69
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
INT does not Granger Cause MCAP	68	4.33224	0.0413
MCAP does not Granger Cause INT		4.78312	0.0323

Pairwise Granger Causality Tests
Date: 10/11/22   Time: 18:15
Sample: 1 69
Lags: 3

Null Hypothesis:	Obs	F-Statistic	Prob.
LCPI does not Granger Cause LBTV	66	4.79688	0.0047
LBTV does not Granger Cause LCPI		0.51723	0.6720

The first null hypothesis was rejected since p value is less than 5% while the second null
hypothesis was accepted as its high than 0.05. We conclude by confirming unidirectional
causality that run from Inflation rate to bond trading value in short run.

5.2 Summary of the major findings

The main objective of this study was to analyse the effect of the macroeconomic variables influencing capital market development in the emerging market taking into consideration Rwanda Stock Exchange as the case study. The data were analyzed using EViews 12. The Skewness for Market capitalization was long left tail while its Kurtosis was leptokurtic as its above 51.6 and above than three indicating more variables fall above the mean. Interest rate was long left tail but at normal skewness as its was equal to zero. however, its Kurtosis is platykurtic since 2.48 is less than 3 indicating variables under interest rate fall below the mean value. This is the same case with bond trading value. Exchange rate and inflation rate are both normal skewness and long right tail or positive skewness. However, its Kurtosis is platykurtic. Lastly, interest rate, exchange rate, inflation rate and bond trading value were found to be normally distributed since their p value were above 0.05%.

We moved ahead and test the unit root test for all variables to examine stationarities and the same was done using Augmented dickey Fuller. The Result indicated that all variables were stationary at first difference with P value that is less than 5%. we started testing research hypothesis by testing cointegration for the two models.

On the first model, the cointegration test revealed that there is a long rum relationship between bond trading value inflation rate, exchange rate and interest rate. However, we found positive long run relationship between bond trading value, exchange rate and inflation rate. with above result, we reject both null hypothesis that was indicating that there is no effect between exchange rate, inflation rate and bond market index. This result was also confirmed by Koketso Molefhi, (2021) and Githinji (2013) through their studies on effect on macroeconomic variables on the bond market in Botswanda and Kenya. However, Nkwede (2017), contradicted with the identified result. On the other hand, we identified negative long run relationship between interest rate and Bond trading value. Hence, we reject the null hypothesis that was indicating that there is no effect between interest rate and bond market index.

On the Second Model, the cointegration test revealed that there is a long rum relationship between market capitalization, inflation rate, exchange rate and interest rate. However, we found Positive long run relationship between market capitalization, Interest rate and Exchange rate while Inflation rate had negative relationship. with above result, we to reject both null hypothesis that was indicating that there is no effect between exchange rate, inflation rate, Interest, and Bond Market.

To estimate the equilibrium relationship that determines both short-run and long-run behavior the researcher performed an error correction model (ECM) for two models. First. the Researcher examined stationarity of the two models using Augmented dickey by ensuring all Models are stationary at level I (0). Hence estimating the ECM. The result for the first model related to the bond market, revealed that error correction term in short run is statistically significant at 5% and coefficient of error correction term is 0.96 which shows the speed of adjustment toward the equilibrium hence any shock in the short run will be adjusted at speed of 96% on monthly basis. On the second model related to market capitalization the result revealed that the error correction term in short run is as well statistically significant at 5%. However, both models revealed that the shock in the short run will not have significant effect in the long run since both will be adjusted almost at 100%.

The researcher performed the casual test between variables using Granger causality test as to get whether variables are bidirectional causality, unidirectional causality, or no causality in short run. we concluded by confirming bidirectional causality that run from both interest and market capitalization rate in the in short run, unidirectional causality that run from market capitalization to inflation, unidirectional causality that run from market capitalization to Inflation, bio-directional causality that run from exchange rate to bond trading value and bond trading value to exchange rate, unidirectional causality that run from interest rate to bond trading value in short run and unidirectional causality that run from Inflation rate to bond trading value in short run. With above result, we reject all the null hypothesis that were indicating that there is no effect between exchange rate, inflation rate, interest rate and stock market and Bond Market hence we accept the alternative hypothesis indicating that there is an effect between exchange rate, inflation rate, interest rate and Stock Market.

5.3 Conclusion

This research's primary purpose was to analyze the variables effecting the development of capital markets in developing markets, using the Rwanda stock exchange as a case study. with macroeconomic factors such as exchange rate, interest rate and inflation rate. All the macroeconomic variables used in the study namely, interest rate, exchange rate, CPI (Inflation rate) have been found to have a relationship with the stock market and bond market either in long run relationship or a causal relation. This makes it clear that there is, in fact, a relationship between stock market and these macroeconomic factors and that the macroeconomic factors play a great role in the development of capital market. The statistical evidence revealed that both inflation rate and exchange rate have positive relationship with bond market in the long run while interest rate has negative relationship with market in the long run. we also found that both Interest rate and exchange rate have positive relationship with market capitalization in the long run while inflation rate has negative relationship with market capitalization. Additionally, we found unidirectional and bidirectional causality between variables.

According to the literature reviewed, there was a lack of studies in developing economies and there were limited studies concerning the nature of the relationship between macroeconomic variables, bond market and stock market index in Rwanda stock exchange. By shedding light on this unexplored area, the results have contributed theoretically to literature. The results have proven that the relationship between macroeconomic variables, bond market and stock market differ from one economy to another even in economies with a lot of similarities. This will help investors predict the direction of the market and focus only on the significant variables and their impact on different economies. For example, knowing that inflation has a long run impact on capital market in Rwanda and no significant impact in Tunisia will help give portfolio managers insights to manage their portfolio better.

The economic implication is that exchange rate, interest rate and inflation rate volatility have not been well predicted by investors and the entire public in such a manner that everyone anticipates them and prepares against their effects. evidence provides support for the semi strong efficient market hypothesis which states that all publicly available information affects share prices. In other words, the semi strong efficient market hypothesis is not yet effective in Rwanda.

This is largely on the stock market where stock return reduces when interest rate and inflation rise and this might be due to several reason such as luck of information, financial education

from individual investors etc. However, investors in the bond market predict well the outcome of inflation and exchange rate and this could be led by the reason that most investors in this market are corporate entities hence they have access to information with qualified financial advisors.

5.4. Recommendations

Government policies regarding these factors should consider this association, which will eventually lead to a more stable capital market. Moreover, investors as well as governments should take into consideration that the stock market and bond market fluctuation have an impact on the macroeconomic variables. As indicated by the results, the stock market and bond market in Rwanda can be used to explain changes in inflation, exchange rate and inflation rate. Secondly there is need for continuous financial education of the entire public as this is an area that could play an important role in the capital market development.

Additionally, the government should create a conducive environment which encourages investments to thrive well hence thereafter increasing the number of listed companies in the stock market exchange. Inflation should be kept low and stable overtime to avoid its pressure on share prices which may end up fluctuating hence affecting the returns of the shareholders. This can be done through regulating money supply by the BNR to eliminate excess demand of goods and services which shoots up the prices hence bringing disparity in consumption and welfare of public. Exchange rate should be kept stable and predictable overtime.

This can be done through discouraging excessive importation of goods and services and setting up new industries and supporting the existing ones to perform well. This will encourage consumption of locally made products, expansion of companies and industries and ultimately increased number of listed companies in the Rwanda stock exchange. Lastly, the lending rate should be monitored and decreased through key repo rate as to encourage commercial banks to have more credit to lend to the customers at a cheaper rate, hence encouraging investments. With the loans, investors can invest in the securities market to get returns and hence the number of shares of companies at RSE will increase overtime. This ultimately results to better performance of security markets with more innovative product and diversification at Rwanda stock Exchange.

5.5 Suggestion for Further Studies

The study analyzed the macroeconomic variables and stock market performance in Rwanda. More research can be done on other factors such as microeconomic factors, social and cultural factors amongst others and performance of stock markets and bond market in Rwanda. Moreover, the study did not exhaust all the macroeconomic factors. More research can be done on the effects of other macro factors such as trade balance, fiscal policies on stock market and bond market performance. Again, due to limited data, further researchers could also study on pricing of bonds and stock and product diversification in the Rwanda stock exchange.

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