International Journal of
Economics
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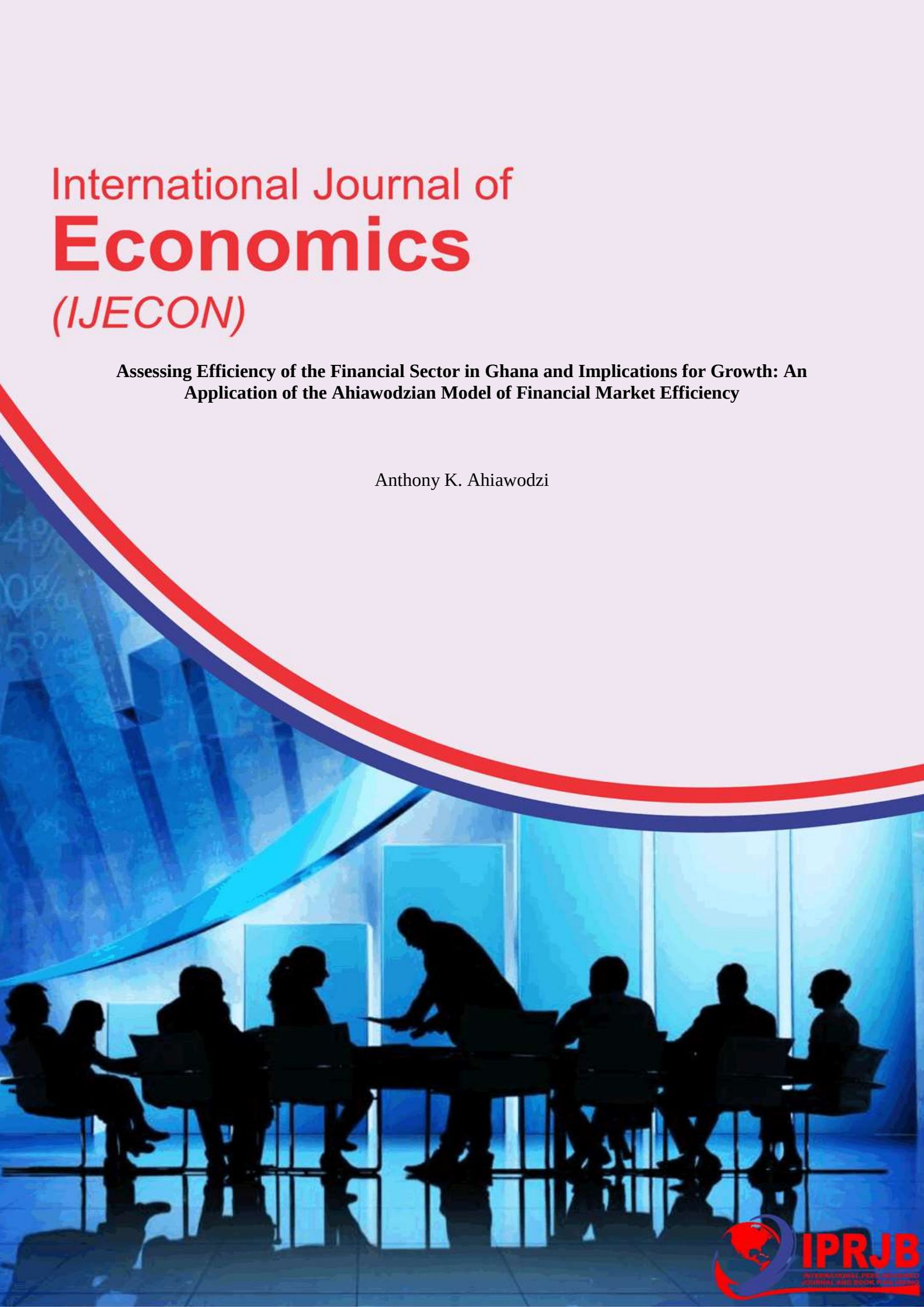

IPRJB

International Journal of Economics
ISSN 2518-8437 (Online)
Vol.10, Issue 2, No.3. pp 59 - 82, 2025

www.iprjb.org

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Article History

Received 4th July 2025

Received in Revised Form 13th August 2025

Accepted 3rd September 2025

How to cite in APA format:

Ahiawodzi, A. (2025). Assessing Efficiency of the Financial Sector in Ghana and Implications for Growth: An Application of the Ahiawodzian Model of Financial Market Efficiency. *International Journal of Economics*, *10*(2), 59–82. https://doi.org/10.47604/ijecon.3488

Abstract

Purpose: The importance of efficiency of the financial sector in promoting economic growth and development, particularly in developing economies, has been well documented in the economic literature. For example, the McKinnon (1973) and Shaw (1973) theories explicitly state this, with emphasis on developing economies. Therefore, the study set out to empirically assess the efficiency of the financial sector in Ghana from 1988 to 2023, and examine the implications for growth of the Ghanaian economy.

Methodology: The study applied a statistical model developed by the author in 2012 known as, the Ahiawodzian Model of Financial Market Efficiency to the financial sector of Ghana from 1988 to 2023. The key variables of the model are the interest rate and inflation rate. The time series properties of the variables of a regression model specified to estimate the long-run real interest rate were carried out. These were the stationarity and cointegration tests to see if the two key variables of the interest rate and inflation rate were non-stationary and cointegrated. The Ordinary Least Squares method was used to estimate the regression model.

Findings: The empirical results of the study revealed that the Ghanaian financial sector was inefficient during period 1988 to 2023, even during the financial reform period. The inefficiency level was as high as 51.45%. Thus, the prevailing high level of the financial sector inefficiency in Ghana during the period adversely affected private savings, private investments and economic growth of the country.

Unique Contribution to Theory, Practice and Policy: The study therefore recommends to the Ghanaian financial authorities among others; control of the prevailing high inflation rates, effective use of the monetary policy, effective use of the fiscal policy (expenditure rationalisation and revenue mobilisation), reduction of the prevailing high interest rates, reduction of the persistent depreciation of the Cedi in order to reduce the high level of financial sector inefficiency in Ghana, in order to promote economic growth in the country.

Keywords: *Financial Sector Efficiency, Economic Growth, Ahiawodzian Model, Interest Rate, Inflation Rate*

JEL Classification Codes: *E44, E52, E62*

International Journal of Economics
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INTRODUCTION

The importance of efficiency of the financial sector in promoting economic growth and development, particularly in developing economies, has been well documented in the economic literature. When economies grow significantly, the citizens are able to enjoy more goods and services, and their standard of living improves, all other things being equal.

The financial sector of an economy is the sector of the economy that comprises formal and informal financial institutions and units of various sizes. It is the sector that provides financial resources or services to the real sector to produce goods and services in the economy. The two sectors complement each other in an economy. Thus, they are like the two sides of the same coin.

We can identify two categories (types) of units in the financial sector. These categories are the surplus unit and the deficit unit.

The surplus unit comprises those households, firms, and governments who have idle or surplus funds and willing to make them available to those who need them. These are savers.

The deficit unit comprises those households, firms, and governments who are looking for funds to borrow and invest in the various activities in the economy. These are borrowers.

The above thus brings to existence the financial sector market in the economy. In short, financial market is an arrangement that brings together surplus and deficit units to do business. Financial markets perform an essential economic function of channeling funds from households, firms and governments that have saved surplus funds by spending less than their income directly, to those that have a shortage of funds because they wish to spend more than their income. The most important borrowers are businesses and the government.

Each of the financial market types determines a large number of interest rates. But interest rates in one financial market quickly spill over to another, so all the interest rates move up and down together. It is normally assumed that just one big financial market embraces the entire economy.

The interest rate is thus, an average of all the interest rates in the different types of financial markets.

The interest rate is a reward or rate of return on funds of savers, and a cost to the borrowers. It is also the rental price of capital for the borrowers or investors.

As long as the financial market functions efficiently, the whole financial sector also functions efficiently. An efficient functioning of the financial sector is important for all countries, as we have noted. Thus, many developing countries have embarked on financial sector reforms, especially in the 1980s to ensure improvement in the efficient functioning of the financial sector.

The Ghanaian financial sector like the real sector of the economy suffered from the distorted macroeconomic policies that prevailed in the 1970s and 1980s and productive investment, and deteriorated immensely. Cheap credit was directed to the favoured borrowers, mostly the public sector itself at the expense of economic efficiency. As a result, financial intermediation (the main function of the financial system) in the economy declined as people abandoned banking system deposits that yielded negative real interest rates of return (Ahiawodzi 2012).

Throughout the period 1970s and early 1980s, the economy was characterised by high level of price distortion, declining real output, rapid monetary expansion, continual budget deficits,

high rate of inflation and persistent balance of payments deficits. For the five years period ending in 1983, Ghana's real GDP fell by 13.5 percent and per capita GDP also fell by over 22 percent. Inflation measured by the consumer price index rose at an annual average of 65 percent per annum (ISSER 1991).

Credit and interest rates were controlled. The Central Bank (Bank of Ghana) set both the lending and deposit rates based on the Bank of Ghana discount rate. The rates were rarely adjusted apparently to stimulate investment in accordance with Keynesian and Neoclassical theories of of investment, and possibly to reduce the cost of interest rate payment to the and the private sector by the government. Since the inflation rates were generally very high, reaching 116.5 percent in 1977 and 122.8 percent in 1983. These resulted in persistent high negative real deposit and lending interest rates. For example, the real deposit rate was -109.o in 1977 and -113.0 in 1983. Financial deepening of the economy which was as high as 29.11 percent in 1976 declined significantly 11.31 percent in 1983, and increased marginally 14.21 percent in 1987.

Consequently, the financial resources flowed into inflation hedges and holding of foreign currency and assets (high level of capital flight). Money and capital markets failed to allocate financial resources efficiently.

In order to address the distressed orb distorted Ghanaian financial system at the time, the financial sector adjustment programme (FINSAP) was launched in 1988 as we shall see. I was meant to reverse the gross inefficiencies in the financial system. During the FINSAP period too, there has been ups and downs in the financial sector of Ghana between 2001 and 2023 culminating in the banking sector crisis in 2016 that necessitated the restructuring of the banking sector in Ghana.

As to whether the financial sector really improved significantly under the FINSAP up to 2023 is still a debate, and necessitates a financial sector efficiency analysis of embarked upon by the current study.

Problem Statement

The efficiency of the financial sector in promoting economic growth and development as we have note is very important in the developed and developing economies, especially the developing ones including Ghana. If this is the case, then there is the need to measure the level of efficiency of the financial sector appropriately and accurately. This would be more useful to the Financial and monetary policy Authorities.

In the economic literature, one can hardly find any robust measures of the financial sector efficiency. The conventional and traditional measures are the real interest rate and financial deepening indicators which are essentially ratios as follows:

a) Narrow money supply -to-GDP (M1/GDP)
b) Broad money supply or total liquidity-to-GDP (M2+/GDP)
c) Currency in circulation-to-GDP (Cu/GDP)
d) Currency in circulation-to-broad money (Cu/M2+)
e) Private sector credit-to-GDP (PSC/GDP)

(see ISSER 2023)

The shortcomings of the use of the above measure and ratios are that they:

- Are point measures as opposed to interval measures with the corresponding level of confidence.
- Never give us the extent of efficiency of the financial sector
- Reveal symptoms rather than extent of financial sector efficiency
- Simply measure the financial sector relative to the economy, and literally point to a positive relationship between financial deepening and economic growth.

It is in view of the demerits of the above traditional measures of efficiency of the financial sector,

this study unlike others, has employed the Ahiawodzian Model of Financial Market Efficiency (AMFME) to assess the efficiency of the financial sector in Ghana. This AMFME is considered a better empirical and statistical measure or assessment of efficiency of the financial sector.

Objectives of the Study

The objectives of this study are to:

1. Empirically find out whether the financial sector of Ghana is efficient or not during the period 1988 to 2023.

2. Determine the levels of efficiency and inefficiency of the financial sector in Ghana during the period

3. Explore the implications for growth of the Ghanaian economy during the period.

4. Make recommendations to the financial authorities in Ghana.

Hypothesis

From the above objectives, the main hypothesis investigated in this study is stated as follows:

Ho: The financial sector of Ghana was not efficient during the period 1988 to 2023

Ha: The financial sector of Ghana was efficient during the period 1988 to 2023

Significance of the Study

The study is significant first to the Ghanaian financial authorities, such as Bank of Ghana and hence the government of Ghana, the banking and other financial institutions (in Ghana or outside) in making their financial decisions.

The study also contributes empirically to literature on the topic, and so beneficial to other researchers in the field.

LITERATURE REVIEW

Theoretical Literature

The Repressionist School

Until 1970s, the main stream financial sector policy in developing countries was characterised by direct credit controls, administered interest rates, high reserve requirements, and state ownership of most of the financial institutions. The Financial sector reforms mainly derive their theoretical basis from the works of McKinnon (1973) and Shaw (1973), which stressed that financial sector policy in developing countries had led to financial repression, hence the repressionist school. They argued for the liberalisation of the financial sector, as a good policy response to enhance its role in mobilising and raising the level of savings, investment and eventually economic growth in developing countries (Fry 1998).

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The Neostructuralist School

The Neostructuralist school was formulated in in the early 1980s. Prominent economist in this school include Van Wijnbergen (1982, 983a,1983b), Tayor (19830, Kohsaka (1984), and Buffie (1984) and Buffie (1984), who launched an attack on the Mckinnon-Shaw (1973) school of thought for failing to recognize the negative impact of the high real interest rates on costs. They maintain that increasing the interest rates would lead to cost-push inflation, and become counterproductive. According to them, the nominal interest rate which is determined in the curb or informal market, adjusts to equate demand for and supply of money and credit. Income then adjusts to equilibriate the demand for and supply in the goods market. Thus, the relevant interest rate in the in Neostructuralist models is the curb market rate (Fry 1995).

Market Failure or Imperfect Information School

This is a slightly different kind of school from the Neostructuralist theory, which runs counter to the Mackinnon-Shaw (1973) model. The Market Failure or Imperfection school spear-headed by Stiglitz in the early 1980s, emphasizes market failures as a principal cause of poor financial markets (Stiglitz and Weiss, 1981; Stiglitz, 1989; Stiglitz, 1994). It goes to emphasise the high transactions costs due to imperfect information and difficult contract enforcement lie at the root no these market failures, inhibiting the ability of interest rates to achieve market equilibrium. There is therefore the need for governmental intervention for a smooth running of the financial market.

Thus, Stiglitz (1994) suggests that “there exist forms of government intervention that will not only make the markets function better but will also improve the performance of the economy”

The Heterodox School

The Heterodox School offers a critical perspective on financial liberalisation, often highlighting its potential for instability and crises, unlike the mainstream view that emphasizes its positive impact on growth and efficiency. They emphasize the role of financialisation and its potential to exacerbate inequalities and lead to economic instability.

The main proponents of the heterodox school of financial liberalization are not typically categorized under a single, unified "school" in the same way as mainstream economics. However, several prominent economists and thinkers have contributed to heterodox perspectives on financial liberalization, often with varying degrees of emphasis and focus. The key figures include among others Wade (1990), Minsky (1993), and Arestis and Phelps (2017).

It must be pointed out that, irrespective of the theoretical school that one belongs to, the financial sector still remains an important complementary sector to the real sector of the economy in promoting economic growth. There is therefore the need to promote efficiency of the financial sector for the needed savings, investment and economic growth to enhance the welfare of the citizens. This channel (see figure 2.1) is then the basis or tenet of the Ahiawodzian Model of Financial Market Efficiency. Thus, “efficiency” in this study means allocative efficiency and cost efficiency.

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Figure 1: The Channel of Efficiency of the Financial Sector

Source: The Author

Empirical Review

A series of papers on the benefits of financial sector reform have been undertaken. Fry (1998) argued that financial liberalisation and financial deepening enable interest rates and exchange rates to reflect their relative scarcities, stimulate savings and lead to efficient discrimination between alternative investments.

Cho and Khatkhate (1989), World Bank (1989) and Fischer (1993) all argue that reform of the financial sector could improve the level of financial savings, and by widening the range of available savings instruments could create the likelihood of higher real returns for savings. The resulting deeper financial markets would reduce the risks of holding financial securities and make them more liquid, leading to higher savings mobilisation and investment.

Further empirical studies on various developing countries have also emphasised that an important sector that contributes towards economic growth and development is the financial sector (See for instance, (Tchamyou, 2020), (Asongu & Odhiambo, 2019a), (Ndebbio, 2004), and (Levine 2004)). They argue that the development of the financial sector enhances efficient mobilisation of savings in the economy. This enables the flow of funds in the sector which drives investment and consumption, thereby increasing employment, lifting individuals out of poverty, and thus improving economic performance.

Specifically, with respect to Ghana, we note the following among others:

Ahiawodzi (2012) evaluated effect of the financial liberalisation policy on the level financial market efficiency in Ghana from 1988 to 2010. He used his model; the "Deviations Model", which he later renamed in 2013, the "Ahiawodzian Model of Financial Market Efficiency (AMFME)" for the assessment. The results of the study revealed that the financial liberalisation policy did not succeed in correcting the financial market inefficiency or distortion in the country between 1988 and 2010, even though there has been a fair improvement as compared to the pre-reform period. The study therefore emphasised the need to intensify efforts to significantly reduce the inflation rate for a corresponding reduction in the interest rate, in order to minimise or eliminate the level of financial market inefficiency, which is necessary for efficient mobilisation and allocation of financial resources in the country.

In the same year, Owusu and Ohiambo (2012), also examined the role of financial liberalisation policies in Ghana, and found that financial liberalisation policies have had positive effects in Ghana. However, the study also found out that the same financial liberalisation policies have brought with them a number of interrelated problems that should be addressed by the country. These included the large interest rate spread, an increase in foreign currency deposits, constant depreciation of the domestic currency, a drastic increase in imports, and the reduction of credits to the productive sectors of the economy, as well as the problem of high lending rates which have discouraged investment in the productive sectors of the economy.

Mahawiya, Kwarteng, and Abdulai (2023), undertook a study which sought to determine the effects of inflation and impact of trade openness on financial sector development in Ghana. The study adopted dynamic model with the use of Ordinary Least Squares (OLS) technique as an estimator for the period 1980-2020. The results revealed that inflation rate has a negative effect on the financial sector development in Ghana. The study further showed that openness in both trade and financial liberalisation revealed significant direct effect on the development of the financial sector, but their effects were insignificant. The study therefore recommended restrictive monetary and fiscal policies to reduce inflationary pressures in the economy, as well as high trade openness.

In this current study, the same AMFME which is a more suitable model for assessing the efficiency of the financial sector, is again applied to the Ghanaian financial sector. Unlike the Ahiawodzi (2012) study which was from 1988 to 2010, this study has extended the period from 1988 to 2023. Perhaps by then, there could have been a more positive financial sector development in Ghana to eliminate the inefficiency of the sector.

THE FINANCIAL SECTOR OF GHANA

Classification

Ghana's financial sector can be classified into three main categories i.e., banking, insurance and capital markets (investment companies).

The Banking Sector of Ghana

The financial sector of Ghana is dominated by the banking sector. The banking sector comprises the Central Bank (Bank of Ghana) and a number of other banks, including commercial banks, development banks, merchant banks and a plethora of rural and community banks.

(a) The Bank of Ghana

The Bank of Ghana, which is the Central Bank, has the responsibility for implementation of monetary policies, as well regulating and supervising the lower banks. The primary objective of the Bank of Ghana is to pursue sound monetary policies aimed at price stability and creating an enabling environment for sustainable economic growth. Price stability, in this context, is defined as a medium-term inflation target of 8±2 percent. This implies that headline inflation should be aligned within the medium-term target band for the economy to grow at its full potential without excessive inflation pressures. Other tasks for the Bank of Ghana include promoting and maintaining a sound financial sector with efficient payment systems through effective regulation and supervision. This is important for intermediation since risks associated with financial markets are also considered in the monetary policy formulation process (Bank of Ghana, 2024).

b) Lower Banks

Commercial Banks

The Commercial banks are banks that provide services like loans, certificates of deposits, savings bank accounts, bank overdrafts, and so on, to its customers. These institutions make money by lending loans to individuals and earning interest on loans.

Commercial banks primarily focus on providing comprehensive financial services to a broad range of customers while aiming for profitability. Examples of commercial banks in Ghana

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are; Ghana Commercial Bank, Standard Chartered Bank, Absa Bank Zenith Bank and Bank of Africa.

Development Banks

A Development Bank is a financial institution designed to provide medium and long-term capital for productive investment, often accompanied by technical assistance. Development banks, unlike Commercial Banks, concentrate on fostering economic development by providing long-term financing for projects and sectors that contribute to societal progress. Examples of Development banks in Ghana are; Agricultural Development Bank, National Investment Bank, The Trust Bank and Prudential Bank.

Merchant Banks

A Merchant bank is a financial institution that conducts underwriting, loan services, financial advising, and fundraising services for large corporations and high-net-worth individuals.

Examples of Merchant banks in Ghana are; Universal Merchant Bank, Ecobank, First Atlantic Merchant Bank and Cal Bank[1]

Rural and Community Banks

These are Unit or Community banks that provide financial services (accepting deposits and granting loans) to the communities where they are sited. They bring banking services to the door steps of the people in the communities. In 2023, there were 147 Rural and Community Banks in the financial sector of Ghana.

Other Financial Institutions

Other financial institutions in Ghana are; Foreign Exchange Beraux, Microfinance Institutions and Finance Houses.

In 2023, the Ghanaian financial sector comprised 397 Foreign Exchange Bereaux, 132 Deposit taking Microfinance Institutions and 9 Finance Houses among others as shown in Table 3.1.

Table 1: Number of Registered Financial Institutions in Ghana as of 2023 by Type

Foreign Exchange Bereaux	-	397
Rural and Community Banks	-	147
Deposit taking Microfinance Institutions	-	132
Payment Service Providers	-	46
Microcredit Institutions	-	29
Savings and Loans	-	26
Banks	-	23
Financial NGOs	-	12
Finance Houses	-	11
Payment Offices	-	4
Credit Bereaux	-	3

Source: Sasu 2024

[1] In 2023, the financial sector of Ghana comprised in all 23 commercial banks, Development banks and Merchant banks.

Insurance Companies

These are contractual savings institutions. They comprise Life and Non-Life Insurance Companies.

In 2023, there was a total of 44 Insurance Companies in Ghana made up of 18 Life and 26 Non-Life Insurance companies.

Examples of Life Insurance Companies in Ghana are, Glico Life Insurance, Old Mutual Life Insurance, Metropolitan Life Insurance, Star Life Insurance, Quality Life Assurance, Sic Life Insurance. While examples of Non-Life Insurance Companies in Ghana are; State Insurance Company, Provident Insurance Company, Enterprise Insurance, Vanguard Assurance, Prime Insurance and Donewell Insurance.

Investment Intermediaries and Capital Markets

These are financial institutions that provide long-term capital to investors. They include Finance companies, mutual funds, and capital market funds such as the Ghana Stock Exchange.

The Financial Sector Reforms in Ghana

Recognising the significant positive role played by the financial sector in economic growth and development, developing countries in the 1980s, as part of the World Bank supported Structural Adjustment Programmes (SAP) in Ghana in 1983, made financial sector reforms an integral part of the programmes as follows:

- The main financial sector reforms started in Ghana in 1988. This was the Financial Sector Adjustment Programme (FINSAP) driven by the World Bank.
- The Financial Sector Strategic Plan (FINSSIP) which was largely home grown, was from 2001 to 2008.
- After the FINSSIP, Ghana still continued to consciously embark on the improvement of the efficiency of the financial sector (Bawumia, 2010).

Ghana's financial sector liberalisation policies sought to deepen intermediation to support economic growth and integrate the domestic economy with global financial markets. As a result, a number of key reforms were introduced which resulted in the entry of several new banks with the expectation of stimulating competition and innovation, especially in financial products and services, and drive financial inclusion to promote economic growth (Bawumia 2010).

The key elements of the financial sector reforms in Ghana are summarised as follows:

- Strengthening of the Central Bank to operate very well
- Relaxing of credit controls (minimum and maximum) by the Central Bank
- Interest rates deregulation or liberalisation – some competition in the banking sector
- Formation of the Consolidated Discount House
- Central Government began the weekly auction of Treasury bills
- Banking system reforms – sound supervision of the banks
- Improvement in managerial efficiency of banks
- Non-performing assets of distressed banks were transferred to a newly constituted body known as the Non-Performing Assets Recovery Trust (NPART)
- Revision of the minimum capital adequacy ratio of Banks
- More non-bank financial institutions licensed by the Bank of Ghana to operate

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- The bank of Ghana continues to support and open more Rural Banks
- Opening of a capital market – the Ghana Stock Exchange (GSE) Company in 1990 with11companies
- Passing of the Securities Industry Law in 1993
- Introduction of the Universal Banking in 2003

Various governments in Ghana since 1988 have pledged their full support for the financial sector reforms in the country. As to whether significant beneficial effects are being registered in the sector is a matter of concern.

SPECIFICATION OF THE AHIAWODZIAN MODEL OF FINANCIAL MARKET EFFICIENCY

Concept, Statement and Explanation of the Ahiawodzian Model of Financial Market Efficiency

Concept

The Ahiawodzian model of financial market efficiency (AMFME) of 2013 (originally called the Deviations Model in 2012), is based on the concept of market equilibrium analysis, with a focus on the financial market as shown in the Figure 2.

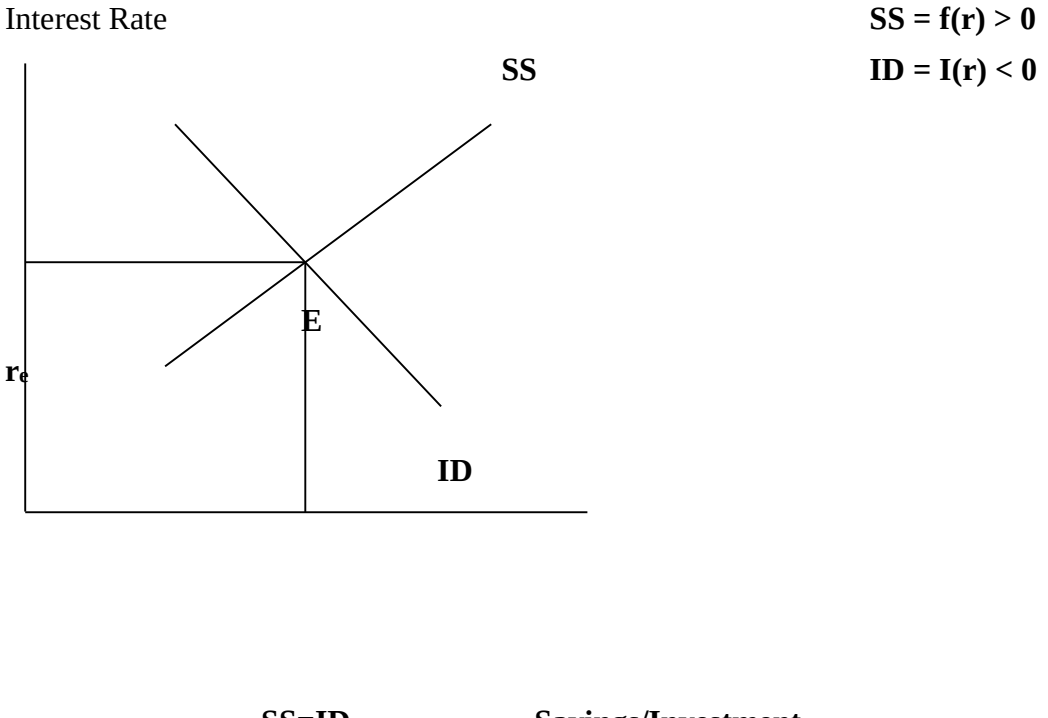

Figure 2: Financial Market Equilibrium

SS = Savings Supply Curve

ID = Investment Demand Curve

The financial market is in equilibrium when savings is equal to investment demand

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The Model makes a comparison between the observed nominal interest rates and those that would prevail in an efficiently (perfectly) functioning financial market (these are equilibrium nominal interest rates).

Statement

Verbal Statement

The AMFME is simply stated verbally as:

The Sum of Deviations of the Observed Nominal Interest Rate from the Equilibrium Nominal Interest Rate is Either Positive, Negative or Zero, during a period of time.

Symbolic Statement

Symbolically, we state the AMFME model as follows:

$$AMFME = \sum_{t=1}^{n}(NIR_t - ENIR_t) \quad \leq / > 0 \qquad (1)$$

Where:

AMFME = Ahiawodzian Model of Financial Market Efficiency

NIR = Nominal interest rate (observed or actual)

ENIR = Equilibrium nominal interest rate

$t = 1,2,3 \ldots n$

n = number of observations within a period

Graphical Illustration

The AMFME is graphically illustrated as in Figure 3.

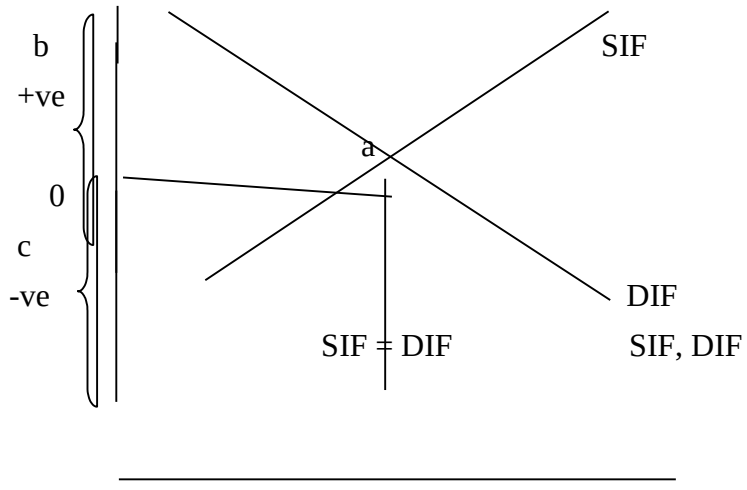

Figure 3: Graphical Illustration of the AMFME

Source: Ahiawodzi 2012 and 2013

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SIF = Supply of investible funds

DIF = Demand for investible funds

a = Equilibrium point

o = Zero deviation (no distortion)

b = Positive deviations (upward distortion)

c = Negative deviations (downward distortion)

Explanation

The AMFME requires that the various equilibrium nominal interest rates during a period would be estimated**.** The deviations of the observed or actual nominal interest rates from the equilibrium ones would then be compared for a decision to be taken.

The decision is based on the **sign** and the **magnitude** of the result.

The deviations may assume any of the following forms:

(i) all deviations being positive,

(ii) all deviations being negative, and

(iii) deviations made up of both positive and negative values

It is the **sum of all deviations** that is meaningful for the analysis. The sum of all deviations of the observed nominal interest rates from the equilibrium nominal interest rates can either be **positive, negative or zero.**

There is an upward distortion of the financial market if the sum of the deviations is positive, meaning that the prevailing interest rates are above the market equilibrium rates in aggregate.

The model points to a downward distortion of the financial market if the sum of the deviations is negative, meaning the prevailing interest rates have fallen below the market equilibrium rates on the average.

A situation, in which the sum of the deviations is zero on the average, indicates an absence of distortion in the financial market, meaning an optimal functioning of the financial market, and hence the financial sector.

Estimation of the Equilibrium Nominal Interest Rate

Specification of a Regression Model

An important requirement of the AMFME is estimation of the equilibrium nominal interest rate. Based on the Fisherian (1907) theoretical formulation of the interest rate and the work of Khan and Edwards (1985), we estimate the equilibrium nominal interest rate as follows:

By the Fisherian Identity, the nominal interest rate is specified as follows:

$$NIR_t = RIR_t + RF_t^e \qquad (2)$$

Where:

NIR = Nominal interest rate

RIR = Real interest rate or short-run real interest rate (SRRIR)

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RF^e = Expected inflation rate

The real interest rate *(RIR)* according to Khan and Edwards (1985) may be stated as:

$$RIR_t = LRRIR - h(SRMB_t - DRMB_t) + e_{1t} \quad (3)$$

Where:

LRRIR = Long-run real interest rate

SRMB = Supply of real money balances

DRMB = Demand for real money balances

h = Speed of adjustment between zero and one

Combining specifications (2) and (3), we have:

$$NIR_t = LRRIR - h(SRMB_t - DRMB_t) + RF_t^e + e_{1t} \quad (4)$$

In the long-run, when the money market (financial market) is in equilibrium and demand and supply of real money balances are equal, the excess supply of real money balances $(SRMB_t - DRMB_t)$ is zero, and equation (4) collapses to:

$$NIR_t = LRRIR + RF_t^e + e_{1t} \quad (5)$$

The long-run real interest rate (LRRIR) is a constant, Khan and Edwards (1985) Dornbusch and Fisher 1994).

In order to estimate the constant long-run real interest rate *(LRRIR), we* linearise specification (5) by introducing a parameter B_1 as a coefficient of the expected rate of inflation as follows:

$$NIR_t = LRRIR + \beta_1 RF_t^e + e_{1t} \quad (6)$$

Assuming rational expectations whereby the expected rate of inflation (RF^e) is equal to the actual rate of inflation *(RF*), equation (6) is then written as,

$$NIR_t = LRRIR + \beta_1 RFt + e_{1t} \quad (7)$$

Equation (7) is a behavioural simple regression model estimable, whose estimated constant term is equivalent to the Long-run Real Interest Rate.

Similarly, if $B1 = 1$ in a perfectly functioning financial market, equation (7) becomes:

$$\boldsymbol{ENIR_t = LRRIR + RFt} \quad \textbf{(8)}$$

Which is the Equilibrium nominal interest rate at any point in time.

We derive the final form of the AMFME, by substituting equation (8) into equation (1) as follows:

$$\textbf{AMFME} = \sum_{t=1}^{n}[(\boldsymbol{NIR_t - (LRRIR + RFt)}] \quad \leq/> 0 \quad \textbf{(9)}$$

The variables are as defined earlier.

Times Series Properties

Stationarity Test

The Augmented Dickey-Fuller (1979) technique was used in checking the stationarity status of the two main variables in the model. This was necessary to see if the variables were trended or not.

Cointegration Test

Similarly, for the cointegration status of the variables, the residual-based approach for testing cointegration by using the Augmented Dickey-Fuller test as recommended by Engle and Granger (1987) was employed.

Estimation and Evaluation Techniques

The Ordinary Least Squares (OLS) technique was used in estimating the regression model specified at the levels or long-run equilibrium level.

In order to have a firm basis for conclusion, the AMFME has to be subjected to a statistical test of significance, of which the Chi-square test of goodness of fit is the most appropriate here (see Ahiawodzi 2010).

Sources of Data

The data used for the study were got from the following sources:

- The State of the Economy of Ghana, published by ISSER (various issues)
- The Bank of Ghana Bulletin (various issues)
- Quarterly Digest of Statistics published by the Statistical Service of Ghana (various) issues

The above are the main reliable sources of data on Ghana.

FINDINGS

Stationarity and Cointegration Tests Results

These tests have been performed and the results are as shown in Table 2.

Table 2: Stationarity Test (Augmented Dickey-Fuller 1981 Test) 1988 to 2023

Variable	Lag length	LM statistic	Test statistic	Critical value	Order of Integration
NIR	1	0.0824(.774)	-4.2681	-3.7921	I(1)
RF	1	0.1031(.748)	-4.990	-3.1004	I(1)

Cointegration Statistic: -5.9445 (-4.1109)

Table 2 shows that the two main variables; nominal interest rate and the inflation rate are stationary and cointegrated. There is a long-run equilibrium relationship between them.

Estimation of the Long-run Real Interest Rate

The estimated result is shown in Table 3.

Table 3: Ordinary Least Squares Results of Nominal Interest Function, 1988 to 2023

Dependent Variable is NIR

Regressor	Coefficient	Standard Error	T-Ratio (probability
CONSTANT	**13.72**	1.926	7.120(.000)
RF	0.407	0.082	4.952 (.000)
R-Squared	0.419		
F-Statistic	24.530		(.000)
Cointegration Statistic	-5.9445(-4.1109)		

From Table 3 above, the value of the regression constant term is **13.72**, which is our estimated long-run real interest rate (LRRIR) for the period 1988 to 2023.

At this point, we do computation for the AMFME in Table 5.3 as follows:

AMFME = $\sum_{t=1}^{n}[(\boldsymbol{NIR_t} - (\boldsymbol{LRRIR} + \boldsymbol{RFt})]$ $\leq/> \mathbf{0}$

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Table 4: Computation of the Equilibrium Nominal Interest Rate and Deviations and the Chi-Square Statistic.

1 YEAR	2 NIR	3 LRRIR	4 RF	5 ENIR	6 NIR-ENIR	7 (NIR-ENIR)2/ENIR
1988	21.04	13.72	31.40	45.12	-24.08	12.85
1989	23.13	13.72	25.20	38.92	-15.59	6.24
1990	24.65	13.72	37.10	50.82	-26.17	13.48
1991	26.41	13.72	18.00	31.74	-5.31	0.89
1992	22.66	13.72	10.10	23.82	-1.16	0.06
1993	29.07	13.72	25.00	38.70	-9.65	2.41
1994	29.08	13.72	24.90	38.62	-9.54	2.36
1995	32.37	13.72	59.50	73.22	-40.85	22.79
1996	36.89	13.72	46.60	60.32	-23.43	9.10
1997	38.25	13.72	27.80	41.52	-3.27	0.26
1998	30.90	13.72	14.60	28.32	2.58	0.24
1999	26.81	13.72	12.43	26.15	0.46	0.01
2000	37.1	13.72	25.60	39.32	-2.22	0.12
2001	30.99	13.72	32.9	46.62	-15.63	5.24
2002	24.87	13.72	14.80	28.52	-3.65	0.47
2003	22.60	13.72	26.70	40.42	-17.82	7.86
2004	19.55	13.72	12.60	26.32	-6.77	1.74
2005	16.88	13.72	15.50	29.22	-12.34	5.21
2006	16.13	13.72	10.90	24.62	-8.49	2.93
2007	16.00	13.72	10.60	24.32	-8.32	2.85
2008	17.31	13.72	16.50	30.22	-12.91	5.52
2009	24.50	13.72	19.25	32.97	-8.47	2.18
2010	21.70	13.72	14.20	27.92	-6.22	1.39
2011	12.58	13.72	8.83	22.55	-9.97	4.41
2012	14.49	13.72	11.88	25.60	-11.11	4.82
2013	14.60	13.72	13.50	27.22	-12.62	5.85
2014	15.94	13.72	15.45	29.17	-13.23	6.00
2015	15.53	13.72	17.13	30.85	-15.32	7.60
2016	16.74	13.72	17.45	31.17	-14.23	6.50
2017	16.60	13.72	12.37	26.09	-9.49	3.45
2018	14.34	13.72	7.81	21.53	-7.19	2.40
2019	14.21	13.72	7.14	20.86	-6.35	1.93
2020	13.41	13.72	10.4	24.12	-10.71	4.76
2021	13. 22	13.72	9.97	23.69	-10.47	4.63
2022	16.73	13.72	31.26	44.98	-28.25	17.74
2023	24.95	13.72	37.53	51.25	-26.30	13.50
TOTAL	**792.23**			**1631.82**	**-434.09**	**176.99**

Source: Author's Computations

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Objective One

To empirically find out whether the financial sector of Ghana is efficient or not during the period 1988 to 2023.

From Table 4, the computed value of the AMFME is - 434.09 which is negatively signed.

The negative sign suggests a suboptimal or an inefficient functioning of the financial sector in Ghana during the period 1988 to 2023.

In order to have a firm basis for above conclusion, we subject the result to a statistical test of significance by using the Chi-square Test of Goodness of Fit. Recall then our stated main hypothesis for the study which is derive from objective one.

The Null and Alternative Hypotheses

H_o: The financial sector of Ghana was not efficient during the period 1988 to 2023

H_a: The financial sector of Ghana was efficient during the period 1988 to 2023

From Table 4 the computed Chi-Square Test Statistic (Xc) is,

$\chi 2 = 176.99$ (Computed).

Decision Rule

1. If the computed Chi-square statistic is greater than the critical value at $\alpha = 0.01$, accept the null hypothesis

2. If the computed Chi-square statistic is less than the critical value at $\alpha = 0.01$, accept the alternative hypothesis.

Degrees of Freedom (DOF), Significance Level and Test Statistics

DOF = (n-1) = 36-1 = 35

$\alpha = 0.01$

$\chi 2 = 50.89$ (Critical Value)

$\chi 2 = 176.99$ (Computed)

Decision

Since the computed Chi-Square statistic of **176.99** is greater than the critical value of **50.89** we fail to reject the null hypothesis. That is we accept the null hypothesis and reject the alternative hypothesis.

This means, **the financial sector of Ghana was indeed not efficient during the period 1988 to 2023 at an $\alpha = 0.01$. That is the financial sector of Ghana was inefficient during the period.**

Objective Two

To determine the levels of efficiency and inefficiency of the financial sector in Ghana

The Inefficiency Level during the Period

The inefficiency level of the Ghanaian Financial sector during the period 1988 to 2023 was.

100% – [(792.23/1631.82)]100

100% – (0.4854885956)100

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100% - 48.55% = **51.45%**

The Efficiency Level

The efficiency level of the Ghanaian financial sector from 1988 to 2023 was:

100% – 51.45% = 48.55%

Implications of the Findings

We have established the fact that the financial sector of Ghana is still inefficient. We now address our third objective, on implications of the findings as follows:

Mobilisation of Domestic Financial Resources is Inadequate

1. The financial sector of Ghana is not able to mobilise enough financial resources.
2. The savings interest rate is generally very low; was 7.63% in 2021 and remained so in 2022.

The corresponding real rates were: -4.97% and -46.47% respectively.

Generally, the real interest rates are negative in Ghana as shown in Table 5.

Table 5: Real Interest Rates, 2021 and 2022

Instrument	Nominal Rates		Real Rates	
	2021	2022	2021	2022
Inflation Rate	12.60	54.10		
Savings Rate	7.63	7.63	-4.97	-46.47
Lending Rate	20.04	35.58	7.44	-18.52
91-day	12.49	35.48	-0.11	-18.62
182-day	13.19	36.23	0.59	-17.87
1 – year	16.46	36.06	3.86	-18.04
2- year fixed	19.75	21.50	7.15	-32.60
3-year fixed	19.00	29.85	6.40	-24.25

Source: ISSER 2023

3. There is low rate of savings in Ghana. The average private savings in Ghana is about 8.5% from 2001 to 2022.
4. The spread between the savings and lending rates is too high: For example in 2022 while the savings rate was 7.63% the lending rate was 35.58%, giving a spread of 27.95%.
5. There is lack of enough credit for private investors in Ghana
6. There appears to be lack of public confidence in the financial sector, more especially the banking system
7. A good number of people in Ghana prefer to keep their idle funds outside the banking system; in their homes, inflation hedges and so on. The Currency in Circulation (Cu) as percentage of GDP has risen from about 10% in 2010 to about 18% in 2023.

Cost of Doing Business in Ghana is too High

1. The lending interest rate in Ghana is too high; for example, it was 30% to 50% in Ghana 2023 (Citi News Room (CNR) May 21, 2024).
2. The consistent depreciation of the Ghanaian cedi contributes to the prevailing high inflation in Ghana.

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3. Many Ghanaians appear to be hedging in foreign currency and real assets.

Private Domestic Investment in Ghana is Inadequate

1. Domestic credit to the private sector is not enough. Credit to the private sector /GDP has averaged 29% from 2010 to 2023. This is not enough to stimulate any meaningful private investment in the country. Ghana needs between 35% to 40%.

2. There is financial crowding-out of the private sector in Ghana.

3. The level of private investment in Ghana is low and inadequate. It has averaged about 15.5% between 2000 to 2023.

Growth of Output in Ghana is Inadequate

The prevailing high inefficient level of the financial sector in Ghana does not adequately promote economic growth in the country. This is as result of the low savings and investment rates warranted by inefficient financial sector as we have seen. The real growth rates shown in Table 6 are low. One would expect a real Gross Domestic Product (GDP) growth rate of at least 8.0%.

Table 6: Real GDP and Per Capita GDP Growth Rates from 2015 to 2022

	2015	2016	2017	2018	2019	2020	2021	2022
Real GDP Growth	2.1	3.4	8.1	6.2	6.5	0.5	5.1	3.1
Average								**4.4**
Real Per Capita GDP Growth	-0.1	1.1	5.8	4.0	4.3	-1.5	3.3	1.0
Average								**2.2**

Source: ISSER 2023

Recommendations

The study makes the following recommendations to the Ghanian Financial Authorities in line with our stated fourth objective as follows:

Control of the Prevailing High Inflation Rates in Ghana

In the AMFME, the main factor responsible for the inefficiency of the financial sector in Ghana is the prevailing high inflation rate.

Therefore, the government through the Bank of Ghana must do everything possible to control and bring down the prevailing high inflation rates in the country. The inflation rates have averaged 16.29% between 2001 and 2023 in Ghana as calculated from Table 5.3.

These inflation-control measures among others must involve:

(a) Effective Use of Monetary Policy

(i) Manipulation of the Bank of Ghana Monetary Rate

The Inflation Targeting Approach adopted by the Bank of Ghana through the manipulation of the Monetary Policy Rate (MPR) by the Monetary Policy Committee (MPC) that meets bi-monthly must be judiciously continued. It is even debatable if changes in the MPR do have any significant impact on the Commercial Bank interest rates.

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(ii) Effective Control of Money Supply

The excessive supply of money in the system must be checked, especially expansion of the monetary base (printing of money) in order to accommodate high budget deficits over the years should be curbed. For as rightly emphasised by the Monetarist School led by Milton Friedman, inflation is necessarily a monetary phenomenon.

(iii) Enhanced Credibility and Soundness of the Central Bank

The Central Bank, the Bank of Ghana itself must step up the conduct of its activities creditably, to enable it effectively exercise its supervisory and regulatory roles of the lower banks.

(b) Effective Use of Fiscal Policy

(i) There is the need for expenditure rationalisation and mobilisation of revenue by the financial authorities in order to reduce the prevailing high budget deficits. The budget deficits have averaged – 8.5% from 2012 to 2022 (see Table 7)

Table 7: Fiscal Indicators of Ghana, 2012 – 2022 (% of GDP)

Year	Domestic Revenue	Domestic Expenditure	Domestic Primary Balance	Over All Budget Balance
2012	21.6	23.8	-2.2	-12.1
2013	21.5	22.3	-0.8	-10.8
2014	21.3	18.0	3.2	-9.7
2015	22.6	19.2	3.4	-7.3
2016	19.4	16.7	2.7	-7.9
2017	19.4	15.2	4.2	-5.9
2018	15.5	13.2	2.3	-3.9
2019	15.0	13.2	1.8	-4.8
2020	14.1	17.4	-5.2	-11.5
2021	15.2	23.9	-1.9	-9.2
2022	15.7	24.0	-3.2	-10.7
Average	**18.3**	**18.8**	**0.9**	**-8.5**

Source: ISSER 2023

(ii) Reduction of taxes on essential inputs for the private sector to enable it operate efficiently. For example, reducing taxes on tractors, combine harvesters, and clinker will help the agriculture and the construction industry.

Reduction of the Prevailing High Lending Interest Rates

(i) The Government of Ghana must do well to reduce the high level of lending interest rates in order to reduce cost of doing business in Ghana significantly.

The high lending rates also make loan repayment difficult for the borrowers. This invariably leads to increasing magnitude of the non-performing loans (NPL) on the balance sheets of the banks. Most of the Banks therefore face loss of huge capital, and would have to be re-capitalised.

As of February 2024, NPLs stood at an alarming 25%; meaning a quarter of loans granted by banks are likely not to be recovered in full (Reported by City News Room (CNR), May 21, 2024)).

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The signs of the inefficiently functioning financial sector of Ghana appear to be obvious.

It is commendable the Government of Ghana has established: The Ghana Financial Sector Stability Fund (GFSF) in August 2023 to provide solvency support to banks, pension funds, insurance companies fund managers and collective investment schemes, resulting from the severe Domestic Debt Exchange Programme (DDEP).

Similarly, the World Bank in a Press Release in Washington on May 30, 2024, has offered support to strengthen the financial sector of Ghana. The Bank has approved a $250 million International Development Association (IDA) credit for a five-year Ghana Financial Stability Project**.** The project would support Ghana's Financial Sector Strengthening Strategy (FSSS) by contributing to financial stability, through the recapitalisation of viable Banks and Specialized Deposit-taking Institutions (SDIs) impacted by Ghana's Domestic Debt Exchange Programme (DDEP).

The World bank has noted: "The financial system is critical to the functioning of the Ghanaian economy, providing critical services to households, firms, government, and supporting economic growth".

(ii) Charging of realistic interest rates to stimulate savings. Banks must charge realistic interest rates, especially the savings rates to promote savings mobilisation in the country. For example, in 2021 the savings interest was as low as 7.63% and remained same 7.63% in 2022.

(iii) Restoration of Public Confidence in the Financial Sector

There is the need to restore public confidence in the financial sector, more especially the banking sector in order to mobilise more idle funds to make available for the private investors at reduced interest rates. It appears the banking sector clean-up exercise adopted in Ghana in August 2017, even though necessary was hurriedly done.

(3) Reduction of the Persistent Depreciation of the Cedi

The kind of currency depreciation being experienced in Ghana is too high. This affects the cost of importing essential inputs from outside. The result is high cost of production and passed on to consumers in form of high prices. This also fuels the inflation spiral (imported inflation) with its adverse consequence on the efficiency of the financial sector.

(4) Prioritisation of Development of the Agricultural Sector

The fact still remains that the agricultural sector is very much important to the Ghanaian economy. Ghana has a comparative advantage in developing the agricultural sector, and must be made to produce tremendously.

It is ironical that with the vast lands and agricultural resources in Ghana, the country cannot produce enough basic crops such as cereals, onion, tomatoes, cassava, yam and so on to feed . The country keeps on importing most of these crops.

The scarcity of food leads to the high cost of food items thereby increasing the inflation rate.

The Ghana Statistical Service rightly tells us that the highest component of the Consumer Price Index (CPI) is food, about 50% in the headline inflation.

This way, the agricultural sector's contribution to GDP can be increased as well.

Curbing Adverse Effects of Non-economic Factors

Non-economic factors also affect the efficiency of the financial sector, rendering it less functional.

These include among others:

(a) Lack of Patriotism

Ghanaians need to be more patriotic as Ghanaians. Whatever we do, we must place Ghana first.

(b) Lack of Discipline and Morality

Ghanaians need to be disciplined; more especially as public officers, and protect loss of the financial and material resources of the nation.

(c) Prevalence of High level of Waste in the Ghanaian System

There is the need to eliminate waste in the system, and to embrace the culture of maintenance seriously. For as it is said "A stich in time saves nine".

Conclusion

In this study, we have noted that the Ghanian financial sector is still inefficient (inefficient level of 51.45%). As a result, it is not able to mobilise enough financial resources for prospective investors to use for productive investment. There is prevalent of high inflation rates, high borrowing interest rates, making cost of doing business in Ghana very high. The ultimate result is a slowdown of the growth of the Ghanaian economy.

It is hereby emphasised that the immense complementary role of the financial sector to the real sector of economy, cannot be underestimated. Thus, the Ghanaian Financial Authorities must rise up to the challenge for a sustained growth and development the country.

Implications of the Study

The implications of the study are that:

Inefficient financial sectors that prevail in economies, especially developing economies do not promote allocative efficiency as well as cost efficiency. In this regard, the scarce financial resources are not efficiently allocated in the financial markets, leading to high cost of doing business, low level of savings, low investment and low economic growth levels, as we have seen in the Ghanaian case during the period 1988 to 2023.

The study also brings to the fore, the appropriate measure of efficiency in the financial sector, of which the Ahiawodzian Model of Financial Market Efficiency, has been demonstrated as a better measure or evaluation model.

The study thus, contributes empirically to the economic literature and in practical terms, and to economic policy. For, it is an important main recommendation of the study that, economies whose financial sectors are distressed would have to initiate appropriate financial reforms to derive the needed economic growth benefits.

REFERENCES

Arestis, P & Phelps, P. (2023). Local Financial institutions and income inequality: Evidence from Brazil's Credit Cooperative Movement, *Development and Change, International Institute of Social Studies*, vol. 54(4), pages 739-779, July.

Ahiawodzi, A. K. (2013). *Monetary Economics*. Accra: Sahabia Publications.

Ahiawodzi, A. K. (2012). The Effect of Financial Liberalization Policy on Financial Market Efficiency in Ghana: An Empirical Study. *International Research Journal of Finance and Economics*, Issue 95, pp. 80 - 96.

Ahiawodzi, A. K. (2010). *Business Statistics.* Accra: Sahabia Publications.

Asongu, S. & N. Oldhiambo N. (2019a). Challenges of Doing Business in Africa: A Systematic Review. *Journal of African Business*. 20, pp. 259-268.

Bank of Ghana. (2024). *Quarterly Economic Bulletin (Various Issues)*. Accra: Bank of Ghana.

Bawumia, M. (2010). *Monetary Policy and Financial Sector Reform in Africa: Ghana's Experience:* Accra: Combert Impressions Ghana Ltd.

Buffie, E. F.,(1984), Financial repression, the new Structuralists, and stabilisation policy in Semi-Industrialised economies, Journal of Development Economics 14, pp. 305-322.

City News Room. (2024). *Citi FM (May*): Accra.

Dickey, D. A. & Fuller, W. A. (1979). Distribution of estimators for autoregressive time series with a unit root. *Journal of American Statistical Association,* 74 (366), 427 – 431.

Dornbusch, R. & Fischer, S. (1994). *Macroeconomics.* New York: McGraw-Hill, Inc

Engle, R.F. & Granger, C.W.J. (1987). Cointegration and Error Correction: Representation, Estimation and Testing. *Econometrica*, 55; 251 – 257.

Fisher, I. (1907). *The Rate of Interest,* New York: Macmillan Ltd.

Fischer, S. (1993). The Role of Macroeconomic Factors in Growth. *Journal of Monetary Economics,* 32, pp. 485 – 512.

Fry, M. (1998). *Money, Interest and Banking in Economic Development. Baltimore*: The Johns Hopkins University Press.

ISSER, (2023). *The State of the Ghanaian Economy in 2023.* Accra: University of Ghana

Khan, M. & Edwards, S. (1985). Interest Rate Determination in Developing Countries: A Conceptual Framework, *Staff Papers.* Washington: IMF, 32, pp. 377- 403

Levine, R. (2004). Finance and Growth: Theory and Evidence, *Working Paper* 10766, Massachusetts: NBER.

Kohsaka, A., (1984). The high-interest rate policy under financial repression. *Developing Economics* 22.

Mahawiya, S. Kwarteng, S. O & Abdulai, A. M. (2023). Financial Sector in Ghana: The Role of Openness, *International Journal of Economics, Commerce and Management*, 11(7).

McKinnon, R., (1973). *Money and Capital in Economic Development*. Washington: Brookings Institution.

Minsky, H (1993). Financial instability hypothesis, in Arestis and Sawyer, *Handbook of Radical Political Economy*

Ndebbio J.E.U (2004). *The Impact of Financial Deepening on Growth: A Study of Selected Sub-Saharan Countries.* NDIC, Quarterly, 1.

Owusu, E. L. & Ohiambo, N. M. (2012), The Dynamics of Financial Liberalisation in Ghana. *International Business & Economics Research Journal*, 11(8)

Sasu, D. D. (2024). *Ghana: Registered Financial Institutions by Type*. Accra: Statista

Shaw, E. S. (1973). *Financial Deepening in Economic Development*. New York: Oxford

Stiglittz, J., E. (1989). Financial markets and development. *Oxford Review of Economic Policy*, 5

Stiglittz, J., E. (1994). The role of the state in financial markets, in *Proceedings of the World Bank Annual Bank Conference in Development Economics,* Edited by Bruno, M. and Pleskori, P, Washington: The World bank, pp. 19-52.

Stiglittz, J., E and Weiss, A. (1981). Credit rationing in markets with imperfect information, *American Economic Review* 71, pp. 19 – 52

Tchamyou, V.S. (2020). *Financial Access, Governance and the Persistence of Inequality in Africa: Mechanisms and Policy Instruments, Working Papers 20/07*, European Xtramile Centre of African Studies (EXCAS).

Van Wijnbergen, S., (1982). Stagflation effects of monetary stabilization policies: A quantitatitve analysis of South Korea, *Journal of Development Economics* 10, pp. 133-169.

Van Wijnbergen, S., (1983a). Interest rate management in LDCs, *Journal of Monetary Economics*, 12, pp. 433 – 452

Van Wijnbergen, S., (198b). Credit policy, inflation and growth in a financially repressed economy, Journal of Development Economics, 13, pp. 45 -65.

Wade, R (1990). Governing the market: Economic theory and the role of government in East Asian Industrialisation. Princeton University Press: Princeton

World Bank. (1989). *World Development Report 1989, The International Bank for Reconstruction and Development.* Washington: The World Bank