



Impact of Financial Sector Development on Misery Economic Index in Nigeria: A VAR Approach

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KEYWORDS Misery economic index, Financial sector development, Market capitalization, Money supply, Unrestricted VAR.

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ABSTRACT: Financial sector development is to address myriad of macroeconomic challenges, thus the study explore the impact of financial sector development on misery economic index in Nigeria from 1980 -2023, The specific objectives are to examine the intertwine impact of financial sector development and misery economic index, in addition to shocks and forecast errors of the variables on each other. Annual time series data used, findings revealed that each variable captured in the unrestricted VAR model exert varying degree of contemporaneous effect on each other. The result also shows the presence of shocks over time in cholesky one standard deviation and varying degrees of forecast. Errors. Based on the findings the study recommends for well-coordinated financial sector reforms that will cursion the surge in inflation and unemployment.

INTRODUCTION

In Nigeria's financial Economy's context, large portion of Nigeria population remains unbanked, which impedes savings investment and consumption. According to the world bank's Global Index Database, approximately 36% of Nigerian adults (compare to 67% Global Index) had access to formal financial services in 2021 (World Banks 2022). This lack of financial inclusion limits the financial system's ability to mobilize domestic savings, restrict investment opportunities and hinders economic growth. financial inclusion while simultaneously posing regulatory threats. Understanding how these technological trends influence macroeconomic performance will form an essential part of this study.

In addition, Credit to the private sector as measured by the percentage of GDP has not moved in tandem with economic performance. According to the Central Bank of Nigeria (CBN), credit to the private sector stood at around 10% of GDP in the 1980's but stagnated around that level for two decades questioning the efficiency of financial intermediation but however, increases from 10.2% in 1980 to about 21.3% by 2021 (NBS 2022). In spite this expansion, it has not translated uniformly into macroeconomic advances due to its inconsistency in GDP growth rate which ranges from a peak of 15.33% in 2002 to a low of -1.62% in 2016 and leap up to 2.53% in 2020.

However, the phenomenon of high inflation presents another significant challenge. Over the years, Nigeria has experienced fluctuating inflation rates, often acerbated by external shocks. The looming inflation has deleterious effects on purchasing power, savings and overall macroeconomic performance. Despite relative improvements in the financial sector, inflation has remained high, often outpacing growth in disposable income. As reported by the National Bureau of statistic (NBS), inflation rates in Nigeria have fluctuated dramatically, reaching an all times high of 28.92% in 2023 (NBS 2024). This inflationary pressure erodes purchasing power and poses significant hurdles for business and consumers alike, raising questions about the performance capacity of financial Institution in channeling funds affectively for Economic Development and performance.

The issue of unemployment also persists, with the youth unemployment rate reported to be significantly high, hovering around 33% in 2021 (World Bank 2022). This demographic, which constitutes a significant proportion of the population remains largely under-served by the financial sector. Subsequently, despite the sector's growth, the Economy is not necessary creating pathways for sustainable employment, leading to increased social discontent and Economic instability.

Additionally, infrastructural deficits remains a significant impediment to both sectoral growth and Economic performance. The fail state of infrastructure in Nigeria – encompassing energy, transportation and communication – continues to hinders productivity and lifestyle quality. This impedes business access to financial product and services, reducing their growth potential, which in turn reflects on the overall Economy's performance.

Furthermore, the Nigeria Economy's heavy reliance on oil revenues presents a structural imbalance that affects financial sector development. Price volatility in international oil market can lead to severe economic consequences impeding the financial stability needed to drive sustainable Economic performance.

Finally, challenges relating to governance and regulation efficiently continues to plague the financial sector. Issues of corruption and regulatory capture have raised concerns about the effective functioning and trust worthiness of financial institution. Studies have shown that inconsistent regulatory environment can stifle innovation and adversely affect the allocation of financial resources, thereby compromising Economic Performance (Hassan, 2019). As noted by the International Monetary Fund (IMF) Nigeria's Policy framework has often been reactive rather than proactive, failing to address systematic vulnerabilities effectively (IMF 2021).

1.2 Objectives

The main objective of this study shall be to examine the impact of financial sector development on macroeconomic performance in Nigeria from 1980 -2023.

Other specific objectives are: to investigate the impact of credit to private sector, market capitalization and broad money supply on misery economic index in Nigeria and to examine the shocks and variance decomposition of misery economic index and selected indicators of financial sector development in Nigeria

LITERATURE REVIEW

2.1. Conceptual classification

Financial sector development

The concept of financial sector development encompasses a wide spectrum of elements characterizing the growth and efficiency of financial markets and institutions. According to Levine (2012) financial development refers to the improvements in quantity, quality and efficiency of financial intermediary services. Levine (2002) underscores the profound significance of financial development in augmenting economic growth and lifting living standards.

Similarly, Arestis and Demetrades (2017) posit that financial sector development embodies the notion of a financial system that is able to provide more services, better quality services and services to a large number of people and firms, particularly small and medium sized enterprises. This proposition highlights the inclusive nature of a developed financial sector that reached out to diverse elements of the society. Additionally, world Bank (2012) provide a comprehensive definition stating financial sector development involves the establishments, reformation and regulatory improvement of financial institutions and market to ensure stability, efficiency and accessibility. This definition lays emphasis on the stability and accessibility of services as crucial bench mark of development.

facilitating price determination and liquidity provision (Levine 2015). Schumpeter (1911) was an early proponent of the idea that a well-functioning financial market are instrumental in innovation and economic development. The financial infrastructure however includes the legal and regulatory frame work that guarantee the integrity, transparency and reliability of financial transactions.

Quantifying financial sector development involves a series of economic indicators that reflect different aspects of financial maturity. On this note, Levine (2012) categorically identifies several indicators that are associated with financial sector development and they includes but not limited to:

MACRO ECONOMIC PEFORMANCE

Macroeconomic performance constitutes the overall assessment of how an economy operates encompassing a myriad of factor that indicates economic health and efficiency.

Iortyer (2024) defines macroeconomic performance as the study of an economy's behaviour based on certain indicators which comprise of GDP, unemployment rates, inflation rates, balance of payments. (Chen, 2021) argued that these indicators serve as pivotal elements for shaping policies and forecasting future economic conditions.

Theoretical review

The supply leading hypothesis.

It posits that the financial sector reforms and development spurs economic growth by offering enhanced services, mobilizing savings and allocating capital more efficiently. This mobilizationon resources make funds readily available for potential investors to utilize the opportunity for investment. The supply leading theory was amplified by; Schumpeter (1911), Goldsmith (1960), McKinnon and Shaw (1973),

The Greenwood and Jovanovich

The theory is grounded in a dynamic general equilibrium model where financial intermediation affects both capital accumulation and technological innovation. The critical notions within the model can be delineated through a series of equations which defined the interplay between financial development and Economic advancement.

The Greenwood – Jovanovich model leads to the conclusion that financial intermediaries has a dual effect on growth; it enhances both the rate of capital accumulation and the pace of technological innovation, thus prompting a virtuous cycles of economic development.

This research fits into this category where financial sector development precedes and promote economic growth. Studies by Odedokun (2016) and provides empirical evidence showing the positive impact of financial development on economic growth. substantiated that financial development plays a key role in accelerating Economic growth in Nigeria context. Hold as much water in the context of Nigeria economy, as the financial sector often appears to be a step ahead, innovating and expanding its services without direct impetus from economic growth.

2.2. Empirical Review

Levine (2012) posit that a well functioning financial systems exert a positive impact on economic growth through several channels; this include enhancing information about investments, reducing transaction costs, and diversifying risk and that yet, the precise nature of this relationship can be case-specific. Hao and Kin (2021) examined the impact of financial development on economic growth in south east Asian economies, utilizing a VECM approach, the authors discovered that improvements in banking systems and capital depth significantly foster GDP growth in both short and long run. Their findings accentuated the crucial role played by systemic financial reforms in propelling economic expansion.

Smith and Robertson (2023) utilizes the vector auto regressive (VAR) to dissect the time series relationship between financial sector development indicators such as bank branch penetration, stock market capitalization and the macroeconomic outcome including GDP and inflations. By employing this methodology, the authors delineate the dynamic bidirectional interaction overtime. Their findings suggest a significant positive casual flow form financial sector development to economic growth particularly in emerging economies.

Jones and Kutan (2022) focuses on the implication of financial sector development on inflation control. Employing a VAR model, the study uncovers that countries with well developed financial sectors experience more effective monetary transmission mechanisms, leading to better control of inflation rates.

Singh, Jain and Yadav (2019) utilized the VECM to demonstrate the financial inclusion indicators. Access to banking services for instance – contribute positively to macroeconomic performance in term of GDP growth and employment levels. It confirms the contention that not merely the depth but also the reach of the financial sector is instrumental for comprehensive economic development.

Kareem and Yakubu (2024) analyzed the effect of financial inclusion on poverty and economic growth in Nigeria from 1985 to 2023. Employing the Generalized Method of Moments (GMM), the study used variables such as the number of bank branches per capita, mobile money penetration, and poverty rates. The findings suggested that financial inclusion significantly reduces poverty and supports GDP growth, particularly in rural areas. The study advocated for policies promoting digital financial services to enhance economic performance.

Umeh and Adebajo (2024) investigated the relationship between financial intermediation and economic growth in Nigeria over the period 1990 to 2023. The study employed a Vector Error Correction Model (VECM) to examine variables such as bank credit, money supply, and GDP growth. The results indicated that financial intermediation significantly drives economic growth in the long run, though short-term effects are dampened by inefficient credit allocation. The study suggested policies aimed at improving the efficiency of financial intermediation to enhance economic performance.

Johnson and Eze (2023) examined the impact of financial sector reforms on macroeconomic performance in Nigeria from 1981 to 2022. Using the Dynamic Ordinary Least Squares (DOLS) method, the study analyzed variables such as interest rate liberalization, domestic credit to the private sector, and GDP growth. The findings revealed that financial reforms have a significant positive impact on economic growth in the long run but are limited by weak institutional frameworks in the short term. The study emphasized the need for structural reforms to complement financial sector policies for sustained economic growth.

Abubakar and Yusuf (2023) analyzed the role of financial inclusion in stabilizing macroeconomic indicators in Nigeria between 2000 and 2022. Employing the Autoregressive Distributed Lag (ARDL) approach, the study focused on variables such as access to credit, savings accounts per capita, and inflation rates. The findings showed that financial inclusion reduces inflation volatility and supports GDP growth, particularly in underbanked rural areas. The study recommended scaling up digital financial services and increasing financial literacy to improve macroeconomic stability.

Ahmed and Bello (2023) investigated the role of financial deepening in reducing macroeconomic instabilities in Nigeria from 1980 to 2021. Using the Structural Vector Autoregressive (SVAR) model, the study focused on variables such as money supply, credit to

GDP ratio, and inflation rates. The findings showed that financial deepening significantly reduces macroeconomic instability and promotes steady economic growth. The study emphasized the importance of regulatory frameworks to encourage financial deepening.

Ogundele and Fashola (2023) assessed the influence of financial technology (FinTech) innovations on economic growth in Nigeria over the period 2010 to 2023. The study utilized a Panel Data Analysis framework, incorporating variables such as digital payment volumes, mobile banking penetration, and GDP growth. The results showed that FinTech innovations significantly enhance economic growth by increasing financial access and reducing transaction costs. The study recommended encouraging FinTech adoption through supportive regulatory frameworks and infrastructure development to sustain economic progress.

Chen (2023) examined the impact of financial market development on economic growth in China from 1995 to 2022. Using the ARDL bounds testing approach, the study analyzed variables such as stock market capitalization, private sector credit, and GDP growth. The findings revealed that financial market development significantly drives long-term economic growth in China. However, in the short run, rapid credit expansion poses risks to financial stability. The study recommended policies to balance financial development with prudent risk management practices.

Khan and Ahmed (2023) explored the effect of financial development on poverty reduction in Pakistan from 1990 to 2022. The study used the Generalized Method of Moments (GMM) to analyze variables such as credit to SMEs, financial inclusion indices, and poverty rates. The results showed that financial development reduces poverty and accelerates economic growth, with financial inclusion playing a critical mediating role. The study recommended expanding microfinance programs and implementing policies to deepen financial access in underserved areas.

Okonkwo and Bello (2022) examined the effects of financial globalization on macroeconomic performance in Nigeria from 1985 to 2021. Using the Generalized Method of Moments (GMM), the study analyzed variables such as foreign portfolio investments, exchange rates, and GDP growth. The findings revealed that financial globalization positively impacts economic growth through capital inflows but increases exchange rate volatility in the short term. The study suggested implementing policies to manage exchange rate risks and attract sustainable foreign investments.

Adetunji and Olabode (2022) examined the relationship between financial sector development and macroeconomic performance in Sub-Saharan Africa from 1995 to 2020. Employing the Panel ARDL method, the study analyzed variables such as domestic credit to the private sector, interest rate spread, and GDP growth. The findings revealed that financial sector development positively impacts economic growth in the long run, while in the short run, excessive interest rate spreads hinder growth. The study recommended enhanced credit access policies to foster long-term macroeconomic stability.

Singh, Jain an Yaav (2022) investigated the role of financial inclusion in improving macroeconomic stability in India from 2000 to 2021. The study employed a Vector AutoRegression (VAR) model to examine variables such as mobile banking adoption, rural credit access, and inflation volatility. The findings indicated that financial inclusion reduces inflation volatility and enhances GDP growth, particularly in rural regions. The study recommended scaling up financial literacy programs and improving digital infrastructure to promote inclusive economic development.

Ndiaye and Diallo (2022) investigated the relationship between financial sector depth and economic resilience in Senegal from 1990 to 2020. Using the Structural Vector Autoregression (SVAR) model, the study examined variables such as domestic credit to the private sector, financial access indices, and GDP volatility. The findings indicated that a deeper financial sector reduces economic volatility and enhances resilience to external shocks. The study emphasized the importance of strengthening financial sector institutions and fostering regional financial integration for sustainable economic growth.

Oluwole and Hassan (2020) examined the influence of capital market development on Nigeria's economic growth from 1980 to 2018. Employing the ARDL bounds testing approach, the study analyzed variables such as market capitalization, all-share index, and GDP growth rate. The findings revealed that while capital market development positively affects economic growth in the long run, its short-term effects are limited due to liquidity constraints and investor confidence issues. The study recommended policy measures to enhance market efficiency and attract foreign investments.

Chinonso and Adeyemi (2021) explored the impact of banking reforms on macroeconomic outcomes in Nigeria over the period 1990 to 2020. Employing an Error Correction Model (ECM), the study analyzed variables such as GDP growth, inflation, and investment levels. The findings indicated that banking reforms positively influenced economic growth and capital formation but had a negligible impact on controlling inflation. The study recommended improved synergy between monetary and banking policies to enhance macroeconomic outcomes.

Gonzalez and Martinez (2021) analyzed the influence of financial liberalization on economic growth in Mexico from 1980 to 2020. Employing the Cointegration and Error Correction Model (ECM), the study focused on variables such as foreign direct investment inflows, interest rate deregulation, and GDP growth. The findings revealed that financial liberalization positively impacts economic growth in the long run but exacerbates income inequality in the short term. The study advocated for targeted social policies to mitigate the adverse distributional effects of liberalization.

Delis and Tosifidi (2019) employ a two stage OLS method to determine the impact of banking sector development on economic growth in the Euro Zone. The result confirms that bank based financial improvements has a positive influence on macroeconomic indicators, particularly in climates of financial stability and robust regulatory frameworks.

Barisitz and Hake (2021) underscore the importance of financial sector progress in fostering macroeconomic resilience utilizing the two-stage OLS method to address the potential endogeneity problem resulted from other factors influencing both financial and economic development. The findings suggest a positive correlation between the maturity of financial institution and markets and economic stability across European economies.

Mercedo and Park (2018) showed that financial sector development is a significant determinant of economic stability in Asian economies where deeper financial systems have contributed to sustainable economic growth, even after controlling for various macroeconomic variables using a two-staged OLS approach.

Okoduwa (2017) demonstrate a strong long term relationship between financial sector development and economic growth in Nigeria, with credit to the private sector (CPS) being particularly impactful. The study suggested that policies aimed at increasing financial access could significantly promote economic growth.

Ajibade (2024) corroborated the existence of a longrun equilibrium relationship between financial development and economic growth in Nigeria implicating credit channels, stock market development and insurance sector growth as vital intermediaries that translate the fruits of financial sophistication into tangible economic gains and development that contributes positive to Nigeria's economic growth. The study provides an alternative model of evaluating the multidimensional concept on macroeconomic performance.

Onifade (2020) applied a cointegration and error correction modelling technique to investigate the impact of financial intermediation on employment growth in Nigeria. Their study focused on different dimensions of financial intermediation including deposit money banks, asset and microcredit advances, accounting for their effects on total employment. The finding indicated that the financial intermediation significantly and positively impacts employment in Nigeria.

Oladeji and Abimbola (2022) conducted dynamic ordinary least squares (DOLS) and fully modifies ordinary least squares (FMOLS) modelling to investigate the relationship between the financial sector in supporting significant employment gains. Their study showed mixed result and suggested that the employment benefit of financial sector development might not be as robust in all employment sectors calling for more focused policies.

Iheanacho (2018) investigated the relationship between financial development and growth by utilising a cointegrating auto regressive distributed Lag (ARDL) approach and found a negative relationship between financial sector development and economic growth in Nigeria.

In the same vein, Maduka and Onwuka (2019) examining the relationship between financial sector development and economic growth using Nigeria time series data covering the period 1970-2008. The study utilizes the vector error correction model (VECM) and reveal that financial market structure has a negative but significant impact on economic growth.

Akintola (2020) investigate the impact of financial sector development and economic growth in Nigeria using a quarterly data between 2000Q1 to 2010Q4. Their study utilises the auto distributed Lag (ARDL) models and further introduce exchange rate spread in the discussion of their analysis. The result indicates that while financial Deepings, banking system liquidity and all share index had positive and significant impact on the growth of real output in the long-run, the behaviour of exchange rate spread was consistent with falling levels of real economic growth. They concluded that the leading drivers of economic growth through financial sector development in Nigeria are the money and capital market.

include the inflation rate, real interest rate and openness of economy as control variables in the model.

Akinlana and Adebisi (2021) utilized time series data to access the contribution of financial technology (Fintech), through the impact of mobile money services to the Nigerian GDP. The researchers adopted the Autoregressive distributed Lag model (ARDL) to analyse the long-run and short-run dynamics between mobile money adoption and economic performances. The findings indicated a positive association with mobile money services contributing to an increase in GDP in both time frame.

2.3. Theoretical Frame Work

Among these theories, for better explanation of the subject matter; Nigeria financial sector and macro-economic performance trajectory the supply leading hypothesis is the anchor theory for the study. The country's economic landscape has witnessed significant transformations spurred by financial sector reform including bank consolidations and the introduction of cashless policy measures. It is on this note that this research will be anchored and premised on the supply side hypothesis theory which postulates that the financial sector development stimulates economic growth specifically the Greenwood and Jovanovich(1990) paradigm. The premise upon the fact that our emphasis is on the Nigeria economic performance and their advocacy of a robust and strong legal and regulatory framework in curtailing unnecessary speculations and the advocacy for financial technology and innovations in the financial market which is evident in the Nigerian Economy where the CBN through the MPC issues the monetary rate as well as policy decisions to all the financial institutions.

METHODOLOGY

3.1 Model Specification

The model is specified based on the leading supply hypothesis and adopted with modification Onifade, S.O, (2020) anchored on the leading supply hypothesis. Thus the model is specified as:

$$MEI = f(fSD) \quad 1$$

Where, MEI is Misery economic index and the dependent while the independent variable (fSD), the financial sector development disaggregated into credit to private sector (CPS) market capitalization (MKC), and broad money supply (M2). The linear equations is specified thus:

$$MEI_t = \alpha_0 + \alpha_{11}CPS_t + MKC_t + M2_t + \mu_t \quad 2$$

The unrestricted VAR form of the model

The novelty of unrestricted VAR is to capture the effect or shocks (innovations) transmission between dynamic interactive effects of financial sector reforms and misery economic index using the impulse response function (IRFs) and variance decomposition (VDC)

: Misery-Economic Index – Financial sector development (MEI-FSD) Model

VAR form

$$\begin{bmatrix} MEI_t \\ CPS_t \\ MKC_t \\ M2_t \end{bmatrix} = \begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \end{bmatrix} + \sum_{k=0}^n \begin{bmatrix} \psi_{11} & \beta_{12} & \beta_{13} & \beta_{14} \\ \psi_{21} & \beta_{22} & \beta_{23} & \beta_{24} \\ \psi_{31} & \beta_{32} & \beta_{33} & \beta_{34} \\ \psi_{41} & \beta_{42} & \beta_{43} & \beta_{44} \end{bmatrix} \begin{bmatrix} MSI_{t-1} \\ CPS_{t-1} \\ MKC_{t-1} \\ M2_{t-1} \end{bmatrix} + \begin{bmatrix} \varpi_1 \\ \varpi_2 \\ \varpi_3 \\ \varpi_4 \end{bmatrix} \quad 3$$

Where:

$\delta_1, \delta_2, \delta_3$ and δ_4 are the vectors of constants; $\psi_{11} \dots \psi_{44}$ are the coefficient of variables of the model while ϖ_1 to ϖ_4 are the vectors of error terms for the VAR financial sector development – misery economic index. where the variables were adopted as measurement of financial development are. Broad Money Supply (M2) . Credit to private sector (CPS) , and Market Capitalization Index (MKC).

RESULT PRESENTATION AND DISCUSSION

Unit root test (ADF) result

Table 1

Variables	Level t-Statistic	Prob*	Order of Integration	1 st Difference t-Statistic	Prob*	Order of Integration
MSI	-1.978750	0.2945	I(0)	-4.752034	0.0005	I(1)
CPS	-1.318823	0.6106	I(0)	-3.152152	0.0315	I(1)
MKC	-0.027819	0.9497	I(0)	-3.395053	0.0177	I(1)
M2	-0.791197	0.8096	I(0)	-10.75323	0.0000	I(1)

Source: Author's computation, using E-views 10.0; Prob* of Variable stationary @ 5%

The unit root test result reveals that all the variables are stationary at first difference denoted by I(1)

Table 2. Presentation of Result of Johansen Unrestricted VAR Cointegration Rank Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.540320	53.56632	47.85613	0.0132
At most 1	0.264913	23.25455	29.79707	0.2338
At most 2	0.150169	11.25166	15.49471	0.1965
At most 3 *	0.118197	4.905690	3.841466	0.0268

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's Computation, 2024

Table 3: Result of Unrestricted Vector Auto-Regression (UVAR) Test for Research Question Four

Variables	MSI	CPS	MKC	M2	Variables	MSI	CPS	MKC	M2
MSI	-	-	-	-	MSI(-1)	0.02600	0.02771	0.83193	0.24410
(-1)	0.648975	0.01454	0.00499	0.20448	1)	8	1	1	2
	(0.21322)	(0.1868	(0.4272	(0.2213	5)	(0.0854	(0.0748	(0.1712	(0.0887
	[3.04374]	4)	3)	2)					
		[-	[	[		0.30435	0.37007	4.85872	2.75200
		0.07787]	0.01168]	0.92394]					
					MSI(-2)	0.03106	0.03596	0.25139	0.20539
	0.008451	0.07157	0.18167	0.03541	2)	1	9	8	0
	(0.11636)	(0.1019	(0.2331	(0.1207	5)	(0.0826	(0.0724	(0.1656	(0.0857
	[0.07263]	7)	6)	9)					
		[	[	[		0.37583	0.49664	1.51806	2.39415
		0.70195]	0.77917]	0.29323]					
					CPS(-1)	0.02748	0.04820	0.32259	0.63060
	-0.014212	0.48607	0.69811	0.07123	M2(-1)	2	0	2	7
	(0.19462)	(0.1705	(0.3899	(0.2020	7)	(0.1514	(0.1327	(0.3035	(0.1572
	[-0.07302]	4)	6)	1)					
		[	[-	[		0.18144	0.36314	1.06290	4.01087
		2.85018]	1.79024]	0.35261]					
					MSI(-2)	0.01590	0.22449	0.13388	0.23049
	0.048014	0.09882	0.33548	0.17463	M2(-2)	0	6	5	8
	(0.19376)	(0.1697	(0.3882	(0.2011	6)	(0.1518	(0.1330	(0.3042	(0.1576
	[0.24780]	9)	4)	2)					
		[	[	[-		0.10470	1.68695	0.43999	1.46223
		0.58204]	0.86410]	0.86831]					
					C	2.07313	0.04912	3.37699	
	9.804582	4	3	1		(4.6114	(10.544	(5.4623	
	(5.26237)	2)	4)	4)		[[-	[
	[1.86315]	0.44956]	0.00466]	0.61823]					
					Adj. R-squared	0.26228	0.35751	0.58003	0.42742
		0.48930	0.66618	0.54487	Sum sq. resids	0.74059	0.64898	1.48395	0.76873
	0.413609	13.0565	68.2654	18.3195	equation	3	3	2	5
	17.00283	4	8	8	Log likelihood	39.6475	34.3657	67.4480	41.1393
		3.71267	7.73304	4.63921	Schwarz SC	2.81237	2.54828	4.20240	2.88696
	2.733222	4	8	4					
	2.16828	2	8						
	2.432378	7	2	8					

					S.D.				
Mean	15.8140	17.8944	16.5449	depende	0.86225	0.80965	2.28987	1.01592	
depended	31.12551	8	3	1	nt	3	5	6	6

Determinant resid covariance (dof adj.):

0.278367

Determinant resid covariance: 0.100421

Schwarz criterion: 12.37312

Log likelihood: -181.0625

Akaike information criterion: 10.85313

Note: VAR Lag Order Selection Criteria is 1

Source: Author's Composition, 2024.

Table 3. presents the contemporaneous effect of each variable on another that enables to capture the dynamic interactions within the system. From the result of VAR unrestricted coefficients MSI in lag one and two has a positive coefficient (0.648975) with itself, estate m (CPS) and (MKC), but negative with (M2) at values of 0.004990, 0.204484 and -0.014549 respectively. This implies that misery economic index responds positively to increase in credit to private sector and improved capital market behaviour. From the result it shows that there a mixed dynamic interactive effects which are attributed to the effects of residuals from the series. To this effect, it becomes imperative to account for residual correlation matrix as reported in the table 3:

Table 4: Result of Residual Correlation Matrix

	MEI	CPS	MKC	M2
MEI	1	-0.0429	0.0686	0.0176
CPS	-0.0429	1	-0.2166	0.1450
MKC	0.0686	-0.2166	1	0.0068
M2	0.0176	0.1450	0.0068	1

Source: Author's Composition, 2025.

Table 4 present the result of residual correlation matrix analysis. From the results, the errors in MEI and CPS are negatively correlated, but between MEI, MK and M2 there is positive correlation.

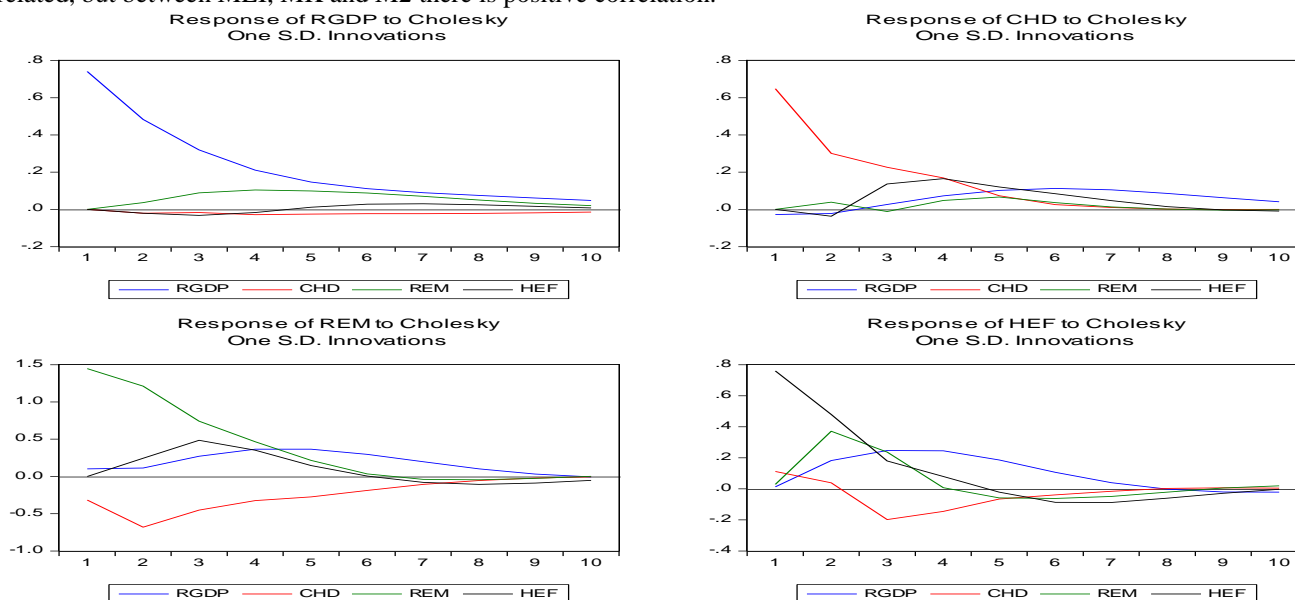


Figure 1: Graphs of Impulse Response Function

Figure 1. provides an impulse response function (IRF) of the reaction of a dynamic system This means that the response from CPS, MKC and M2 has one standard deviation (SD) shock (innovation) initially has no noticeable impact on MEI in periods but the responses gradually increase till when it hits its steady state value.

The IRF further shows the response of variables (CPS, MEI, M2 and MKC) to a shock over time in the Cholesky one standard deviation innovation. This is expressed in a vector moving-average (VMA) showing how shocks from all the variables affects each other with in the period.

Table 5: Result of VAR Variance Decomposition on RGDP, CHD, REM and HEF

Variance Decomposition of RGDP						Variance Decomposition of CHD					
P	S.E	MEI	CPS	MKC	M2	P	S.E	MEI	CPS	MKC	M2
1	0.74059	100.00	0.0000	0.0000		1	0.6489	0.1843	99.815	0.0000	
3	0	0	0	0	0.00000	83	68	63	00	0.000000	
2	0.88559	99.717	0.0538	0.1727		2	0.7176	0.2459	99.203	0.2903	
1	8	5	7	0.05560		94	98	24	49	0.260414	
3	0.94643	98.720	0.0790	1.0379		3	0.7654	0.3327	95.967	0.2779	
7	6	6	7	0.16233		49	82	29	50	3.421979	
4	0.97585	97.533	0.1565	2.1277		4	0.8059	1.1226	90.967	0.6121	
8	0	7	7	0.18270		17	19	68	76	7.297524	
5	0.99220	96.545	0.2156	3.0472		5	0.8272	2.5838	87.136	1.2229	
2	3	5	9	0.19180		01	43	82	29	9.056405	
6	1.00291	95.722	0.2616	3.7500		6	0.8402	4.3043	84.542	1.3766	
6	3	9	9	0.26602		56	94	40	64	9.776548	
7	1.01012	95.151	0.3096	4.1862		7	0.8483	5.7702	82.949	1.3751	
5	9	5	9	0.35218		53	26	88	60	9.904731	
8	1.01468	94.840	0.3519	4.3967		8	0.8528	6.7255	82.080	1.3610	
4	9	9	3	0.41042		37	34	44	93	9.832935	
9	1.01736	94.704	0.3823	4.4785		9	0.8551	7.2219	81.641	1.3554	
4	8	5	6	0.434321		29	61	09	14	9.781533	
10	1.01883	94.655	0.4012	4.5043		1	0.8561	7.4342	81.443	1.3529	
4	5	5	9	0.43883		0	65	73	71	9.769094	
T		967.592		27.7018		T	8.01798	35.9259	885.748	9.22465	
Q	9.60411	1	2.21206	6	2.494201	Q	4	8	18	8	69.101163
Variance Decomposition of REM						Variance Decomposition of HEF					
P	S.E	MEI	CPS	MKC	M2	P	S.E	MEI	CPS	MKC	M2
1	1.48395	0.4711	4.5744	94.954		1	0.7687	0.0309	2.1284	0.1425	
2	89	36	38	0.000000		35	61	80	97	97.69796	
2	2.05127	0.5460	13.399	84.626		2	0.9966	3.3840	1.4227	13.961	
1	81	95	06	1.427911		88	61	58	84	81.23134	
3	2.29597	1.8357	14.559	77.990		3	1.0871	8.0063	4.5094	16.472	
9	40	47	18	5.614612		86	89	10	96	71.01124	
4	2.41918	3.9382	14.906	73.969		4	1.1267	12.186	5.8521	15.341	
7	24	94	35	7.185484		32	39	28	61	66.61987	
5	2.47557	5.9340	15.464	71.391		5	1.1455	14.430	5.9926	15.098	
4	10	61	64	7.209740		91	46	21	07	64.47885	
6	2.50058	7.2265	15.718	69.988		6	1.1561	15.023	5.9976	15.107	
6	08	55	33	7.066607		74	41	14	49	63.87149	
7	2.51218	7.7782	15.752	69.367		7	1.1613	15.010	5.9618	15.151	
3	69	39	85	7.101495		35	27	76	59	63.87627	
8	2.51751	7.9087	15.731	69.107		8	1.1630	14.965	5.9446	15.139	
3	90	75	26	7.252200		65	93	83	07	63.95031	
9	2.51951	7.9122	15.714	69.007		9	1.1636	14.981	5.9426	15.127	
1	51	20	55	7.365997		15	50	97	06	63.94875	
10	2.52007	7.9094	15.707	68.976		1	1.1639	15.003	5.9406	15.146	
2	22	55	87	7.406159		0	78	87	61	08	63.90939
T	23.29582	51.4604	141.529	749.379	57.63020	T	10.9331	113.479	49.6928	136.688	
Q	8	84	85	47	5	Q	0	79	77	37	700.59547

S.E = Standard Error. MEI = Misery economic index CPS= Credit to customers. MKC = Market capitalization M2 = Broad money supply P = Period. TQ = Total Quarters

Source: Author's Computation, 2025.

Table 5 presents the result of the variance decomposition otherwise known as forecast error. Variance decompositions reveal the effect of one endogenous variable on other endogenous variables within a given single system of equation. From the result, about 9.60 of a forecast error in MEI can be explained by CPS, MKC and M2 after ten quarters.

On the other hand, 8.02 forecast errors in CPS can be explained by MSI, MKC and M2; 23.30 forecast error in M2 can be attributed to MEI, MKC and CPS and 10.93 forecast error in MKC can be explained by MSI, CPS and M2 within the same single system of model. The result indicates that the amount of information each of the variables contributes to the other variables in the auto-regression are 9.60, 8.02, 23.30 and 10.93 for MEI, CPS, MKC and M2 respectively.

Table 6 Results of Post Estimation Tests

VAR Residual Normality Tests								VAR Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares)	
Component	Variable	Skewness		Kurtosis		Jarque-Bera		Chi-sg	Prob.
		Value	Prob.	Value	Prob.	Value	Prob.		
1	MEI	-	0.000	25.7173	0.000	985.314	0.000	220.7661	0.0010
		4.333317	0	5	0	5	0		
2	CPS	0.73994	0.056	7.00430	0.000	30.3741	0.000		
		2	1	1	0	4	0		
3	MKC	-	0.110	5.14916	0.005	10.2512	0.005		
		0.618833	1	5	5	1	9		
4	M2	0.35057	0.365	3.58485	0.450	1.38946	0.499		
		8	4	9	2	7	2		

Source: Author's Computation, 2025

The results of post estimation test reported in table 4.25 details the VAR residual normality and VAR residual heteroskedasticity tests conducted on misery economic index, credit to private sector, market capitalization and broad money supply is found to be significant given the probability values of skewness, kurtosis and Jarque-Bera because their values are less than 0.05 level of significance.

On the other hand, the VAR residual heteroskedasticity test reveals that probability value of the test is significant – suggesting that the assumption of homoscedasticity is retained. These results reveal that all the variables are found to be significant at one point or another. This implies that the residual of the variables are adjudged to be normally distributed;

SUMMARY AND RECOMMENDATION

The empirical investigation of financial sector development on misery economic index, by adopting the unrestricted VAR approach revealed different level of intertwine dynamic impact of the variables. Extending investigation to shocks and impulse responses, the result shows also the existence of different levels of shocks of one variable to another amongs the variables in the VAR system. On the basis of the findings, the study recommends for a more holistic and coordinated approach towards financial sector development especially in the monetary sector. In addition, expansionary monetary policy development should be the central focus to improve the misery economic index.

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