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ECONOMIC FREEDOM AND ECONOMIC MISERY IN NIGERIA: EVIDENCE FROM A FOURIER QUANTILE ARDL APPROACH

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Abstract

The paper analyses the relationship between economic freedom and economic misery in Nigeria based on an annual time series of economic data as of 1980-2024. Fourier Quantile Autoregressive Distributed Lag FQARDL was used. Long-run quantile process estimates and short-run impact coefficients of the entire range of variables are statistically non-significant at the lower and upper quantiles of the misery distribution; but generally, are directionally consistent with a priori expectations. The impulse response analysis however reveals that a positive shock to economic freedom creates a negative and sustained cumulative reaction in economic misery. The impact is more intense at the lower quantile showing that economic misery becomes mitigated more efficiently in times of relative macroeconomic stability. These results imply that even though economic freedom can alleviate misery in Nigeria, it is limited by poor institutions, inconsistencies in policy, and structural inflexibility. The paper thus suggests that economic liberalisation, coupled with good institutional reforms, effective monetary policy, and more diversified foreign investment policy should be adopted to enable full transmissions of the welfare gains of economic freedom to the Nigerian households.

Keywords: Economic Freedom, Economic Misery, Fourier ARDL, Quantile Regression, Nigeria

JEL Classification Codes: E24, E31, O43, P16, C22

1.0 Introduction

The economic wellbeing takes a key place in the development discourse especially in resource endowed but institutionally weak economies like Nigeria (Olaniyi-Quadri, 2026). In the range of composite measures of economic welfare, the Misery Index, which is simply the arithmetic sum of both inflation and unemployment rate, has found considerable popularity in both academia and policy making as a simple but potent

measure of the extent of economic suffering that the typical citizen is subjected to. There are few macroeconomic issues as continuously destructive to the well-being of laymen as the concomitant high inflation and high unemployment levels a combination that, when put together, constitutes what is known as economic misery among economists. Nigeria has been experiencing both since the majority of its post-independent history. The removal of petrol subsidies, a drastic naira depreciation of almost 96 percent since the exchange rate unification, and increased food prices have increased inflation by 18.8 percent in 2022 to 24.5 percent in 2023 (African Development Bank, 2024). Coupled with the already existing unemployment rate, the misery index in Nigeria has risen to 38.3 percent in the second quarter of 2024, compared to 26.7 percent in the second quarter of 2023, which makes the country one of the most economically destitute countries in sub-Saharan Africa (Akinlo, 2024; Gakuru & Yang, 2026)

One of the simplest determinants of macroeconomic performance and economic well-being has been advanced as being the economic freedom that is widely conceived as the extent to which individuals and firms are free to make economic choices without government pressure or inhibition. The Heritage Foundation, one of the most popular ratings of economic freedom in the world, in its 2025 Index, leaves the impression of an endemically deficient country as it ranks Nigeria with a score of 53.4 out of 100 on its Index, giving the impression of a largely unfree country and the 127th position among the 184 nations worldwide. The average economic freedom score in Nigeria was 54 index points between 1995 and 2025, with the highest score of 59 in 2018 and the lowest score of 47 in 1995 and this shows that there is a tendency to a relatively slow and disjointed liberalisation process in Nigeria, which did not lead to a steady and lasting improvement in economic freedom (Olaifa, 2025)

According to the classic and neoliberal economic perspective, economic freedom would reduce economic misery through the price stability of good monetary policy and market competition, the economic growth of deregulation and the expansion of the private sector, and investment stimulated by good property rights and free markets (Ignjatović & Filipović, 2022). Whether or not this theoretical prediction is empirically true in the instance of Nigeria, given the particular structural characteristics and institutional situation of the nation, is an open and empirically important question.

The empirical evidence on economic freedom and welfare achievement though increasing in size is deficient in two crucial aspects when used to apply to Nigeria. To begin with, the majority of the available literature is based on traditional linear time series models - such as standard ARDL and vector autoregressive models - which presuppose structural change, in case it exists, to be discontinuous at a single known break point (Sirbu et al., 2023; Olaifa, 2025; Şeker, 2025; Uzoechina et al., 2026). This supposition cannot be validated in a nation such as Nigeria where structural transitions, which occur multiple times, gradually, and concurrently, have resulted due to oil price shocks, regime changes, exchange rate policy shifts, and post-pandemic macroeconomic dislocations between 1995 and 2022. Second and, more importantly, traditional mean-based estimators are based on the assumption that the relationship that exists between economic freedom and economic misery is the same in all states of the economy an assumption that obscures potentially relevant heterogeneity.

The given research considers both of these limitations by incorporating the Fourier Quantile Autoregressive Distributed Lag (FQARDL) framework which integrates two methodological innovations. To begin with, Fourier trigonometric terms are added to the ARDL framework in order to shrink smooth and gradual structural breaks of unknown number and location. Second, it incorporates quantile regression into the framework, where the impact of economic freedom on the misery index can be different in the lower, median and upper quantile of the misery distribution, which reflects the heterogeneous transmission of economic freedom reforms across different macroeconomic states.

Aside from the introduction, the rest of the paper is as follows: section 2 examines the conceptual and theoretical framework applicable and conducts a review of the empirical literature. Section 3 shows the methodology. In Section 4, the empirical findings are discussed to include the unit root tests, the quantile cointegration, the long-run and the short-run estimations of the quantile, impulse response functions, and persistence profiles. Section 5 presents the conclusion, policy implications and recommendations.

2.0 Literature Review

2.1 Conceptual Clarifications

Economic freedom is the ability of the people and companies to manage their labour, capital and their property without the interference of the state (Guzel & Aktaas, 2026). The idea has its origins in the classical liberal tradition of Adam

Smith, but is nowadays embodied in the Heritage Foundation Index of Economic Freedom under four pillars rule of law, the size of government, regulatory efficiency and open markets rated on a scale of 0-100. In theory, increased economic freedom decreases economic misery in several ways: property rights increase the transaction costs and encourage investment, monetary freedom curbs inflation, labour market freedom decreases unemployment, and trade freedom enhances the distribution of resources and competitive prices. Economic misery on the other hand, is a composite measure of macroeconomic hardship introduced by Arthur Okun in the 1960s, which is simply the sum of the rate of inflation and the rate of unemployment (Gakuru & Yang, 2025; Shahabadi & Davarikish, 2025). Inflation diminishes the purchasing power of real households and unemployment denies people both income and economic involvement. The presence of the two conditions at the same time as is constantly witnessed in Nigeria has particularly deplorable effects on welfare.

2.2 Theoretical Framework

The Classical Liberal Theory of Economic Freedom is the major intellectual point of the given research, with its intellectual foundations in the works of Adam Smith (1776) The Wealth of Nations and the further elaboration and development of its ideas by Friedrich Hayek (1944) and Milton Friedman (1962). The fundamental premise of this theory is that with individuals and firms free to make economic decisions, not coercively interfered with by the state, i.e. open markets, secure property rights, rule of law, good monetary policy, and minimal regulatory burden, the economy will naturally be stable in price and in productive employment, the two phenomena whose combination results in economic misery. The argument of the invisible hand formulated by Smith proved that decentralised market decisions under the influence of price signals in a competitive market yield outcomes which are collectively efficient and welfare enhancing. Hayek elaborated the point by showing that the price system is a singularly effective means of gathering and disseminating dispersed economic information, and that government intervention of any kind, be it price controls, over-regulation or fiscal domination, distorts these signals, creates resource allocation inefficiency, and eventually leads to the inflation and unemployment that increases the misery index. Friedman (1962) even provided evidence to demonstrate that economic freedom and individual welfare are not just related but cannot be separated: the repression of market freedom by expanding the government inevitably creates

macroeconomic instability, which is most severely felt by the common family. In the Nigerian case, this theory would foresee that the culpable causes of the chronic economic misery of the country are structural, and includes persistent inhibitions against economic freedom which are expressed in weak property rights, excessively regulated business environment, currency turmoil, and limited trade openness, and that reforms that enhance economic freedom would over time reduce both inflation and unemployment in tandem.

2.3 Empirical Review

Guzel and Aktas (2026) analyzed the effects of economic freedom on unemployment among 1529 youth in 27 European Union countries in 2002-2022. The augmented Mean Group (AMG) estimation techniques were employed in analysing the data collected. The results indicated that youth unemployment rates were heavily influenced by economic freedom negatively, thus the larger the economic freedom the lesser the youth disengagement, and the results were also strong among the subgroups of age and other measures, and economic growth and inflation had strong effects as well.

Shahabadi and Davarikish (2025) investigated the relationship between economic fragility and the misery index in a set of countries that were fragile alert between 2007 and 2022. The Generalized Method of Moments estimation technique was used. Economic fragility was measured by recession and poverty, unbalanced development, migration and brain drain and population pressure. The results indicated that economic fragility increases misery in the selected countries and was significant. However, the impact of population pressure supported the effect, thus suggesting that economic fragility aggravates the economic well-being by augmenting inflation and unemployment.

In their study, Okunlola and Akinlo (2025) investigated the relationship between economic freedom and the quality of life in Africa given the presence of political risk factors between the years 1985 and 2016. Generalised Method of Moments (GMM) estimation technique was used to carry out the analysis of the study. The result showed that the economic freedom had a great positive impact on the quality of life, and political risk factors (civil liberties, political rights and conflict) moderated this impact negatively, which worsened the quality of life.

Sirbu et al., (2023) also analysed how economic freedom affect the life satisfaction of elderly people in Europe using the European Health, Ageing and

Retirement Survey data and the Economic Freedom of the World database. The researchers used an ordered logit regression model to determine the influence of the sub-indicators of economic freedom on subjective happiness. Their result showed a significant and positive impact of institutional quality especially the effectiveness of the system of law and property rights and good monetary policy on life satisfaction among older adults.

Grafland (2020) studied the connection between well-being and economic freedom across countries, but the study was conducted at the three or more dimensions of well-being as measured by the OECD Better Life Index. The research used a cross-country analysis method, and included cultural aspects, especially long-term orientation, as a moderating factor in the difference in well-being. It was found that economic freedom improves the various aspects of well-being such as income, community, health, life satisfaction, safety and work-life balance, and cultural orientation reinforces the strength of the correlation.

3.0 Materials and Method

The time series data used in the study is annual and covers the time between 1980 and 2024 with reference to Nigeria. The variables of use are unemployment, total (as a proportion of total labour force) (national estimate), inflation, consumer price (annual percentage), domestic credit to private sector (% of GDP), foreign direct investment, net inflow (% of GDP) and GDP per capita (current US dollar). The Economic Misery Index is constructed by adding inflation and unemployment rate .All the data are sourced from the World Bank, World Development Indicator except economic freedom that is sourced from https://efotw.org/economic-freedom/dataset?geozone=world&page=dataset&min-year=2&max-year=0&filter=0.

3.1 Model Specification

Following the theoretical framework established in the preceding section, the baseline functional relationship for this study is specified as:

$$EMI_t = f(EFR_t, CPS_t, PKY_t, FDI_t) \quad (3.1)$$

Where EMI is the Economic Misery Index, EFR is the Economic Freedom Index, FDI is Foreign Direct Investment net inflows as a percentage of GDP, PKY is GDP per capita (in current USD), and CPS is Credit to the Private Sector as a percentage of GDP. All variables except EFR are transformed in their logarithmic form to reduce heteroscedasticity and normalise their distributions. The log-linear form of equation (3.1) is expressed as:

$$ln(EMI)_t = \beta_0 + \beta_1 EFR_t + \beta_2 ln(CPS)_t + \beta_3 ln(PKY)_t + \beta_4 ln(FDI)_t + \varepsilon_t \quad (3.2)$$

Where β_0 = constant, β_1 to β_4 represents the coefficient of the long run to be estimated, and ε_t is the stochastic error term.

Fourier ARDL Bound Testing

The standard ARDL bounds testing approach of Pesaran et al. (2001) is augmented with Fourier terms to account for smooth and gradual structural breaks of unknown number and location. Following Enders and Jones (2016), the Fourier approximation replaces the assumption of an abrupt single structural break with a flexible trigonometric function that captures gradual shifts in the deterministic components of the model. The Fourier ARDL unrestricted error correction model (UECM) is specified as:

$$\Delta ln(EMT)_t = \beta_0 + \beta_1 t + \beta_2 sin\left(\frac{2\pi kt}{T}\right) + \beta_3 cos\left(\frac{2\pi kt}{T}\right) + \gamma_1 ln(EMI)_{t-1} + \gamma_2 EFR_{t-1} + \gamma_3 (CPS)_{t-1} + \gamma_4 ln(CPS)_{t-1} + \gamma_5 ln(PKY)_{t-1} + \gamma_6 \ln(FDI)_{t-1} + \sum_{k=1}^{p} \varphi_1 \Delta ln(EMI)_{t-1} + \sum_{k=0}^{q} \omega_1 EFR_{t-1} + \sum_{k=0}^{q} \delta_1 ln(CPS)_{t-1} + \sum_{k=0}^{q} \vartheta_1 ln(PKY)_{t-1} + \sum_{k=0}^{q} \theta_1 ln(FDI)_{t-1} + u_t \quad (3.3)$$

Here Δ stands for the operator of the first difference, k represents the optimal Fourier frequency selected by minimising the residual sum of squares (or AIC/BIC) over integer values k = 1, 2, 3, T is the number of observations, $sin\left(\frac{2\pi kt}{T}\right)$ and $cos\left(\frac{2\pi kt}{T}\right)$ are the Fourier trigonometric terms that capture gradual structural change, p stands for the selected lag length derived from the Akaike Info Criteria (AIC), and u_t represent white noise error term. $\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = 0$ is the null hypothesis tested using the Fourier F-statistic against the critical values tabulated by Enders and Jones (2016). Rejection of the null confirms cointegration among the variables.

Fourier Quantile ARDL Approach

While the Fourier ARDL in equation (3.3) captures the average long-run and short-run dynamics, it assumes homogeneity of the relationship across the entire distribution of EMI. To relax this assumption and allow the effects of the regressors to vary across different quantiles of the misery distribution, this study employs the Fourier Quantile ARDL (FQARDL) framework, which integrates quantile regression into the Fourier ARDL structure. Following Cho, Kim, and Shin (2015) and subsequent applications of quantile ARDL, the FQARDL model is expressed as:

$$Q_{TOI}\left(\frac{\tau}{\Omega_{t-1}}\right) = \alpha(\tau) + \beta(\tau)EFR_t + \gamma(\tau)ln(CPS)_t + \delta(\tau)ln(PKY)_t + \theta(\tau)ln(FDI)_t + \lambda_1(\tau)sin\left(\frac{2\pi kt}{T}\right) + \lambda_2(\tau)cos\left(\frac{2\pi kt}{T}\right) + \varepsilon_t(\tau) \quad (3.4)$$

Where $Q_{TOI}\left(\frac{\tau}{\Omega_{t-1}}\right)$ denotes the τ-th conditional quantile of $\ln(EMT)_t$ given the information set Ωt_{-1}, $\tau \in (0,1)$ is the quantile index, $\alpha(\tau)$ is the quantile-varying intercept, $\beta(\tau)$, $\gamma(\tau), \delta(\tau)$, and $\theta(\tau)$ are the quantile-varying long-run coefficients for *EFR, CPS, PKY* and *FDI* respectively, $\lambda_1(\tau)$ and $\lambda_2(\tau)$ are the quantile-varying Fourier coefficients capturing smooth structural change at each quantile, and $\varepsilon_t(\tau)$ is the quantile-specific error term. The quantile coefficients are estimated by minimising the asymmetric loss function:

$$min \sum t\rho\tau \left[ln(EMI)_t - Q_{TOI}\left(\frac{\tau}{\Omega_{t-1}}\right)\right] \quad (3.5)$$

Where $\rho\tau(u) = u(\tau - {}^{T}(u < 0))$ is the standard quantile check function and ${}^{T}(\cdot)$ is the indicator function. Three quantiles are considered in the empirical analysis: the lower quantile (τ = 0.25), the median quantile (τ = 0.50), and the upper quantile (τ = 0.75), representing low-misery, moderate-misery, and high-misery states of the Nigerian economy respectively.

Impulse Response Function

To trace the dynamic cumulative response of EMI to unit shocks in each regressor across the quantile distribution, the study computes the Fourier Quantile ARDL Impulse Response Functions (IRFs). Following the dynamic multiplier framework of Cho et al. (2015), the cumulative impulse response at horizon h for quantile τ is given by:

$$\mu^h h(\tau) = \sum_{b=0}^{hh}\left[\frac{\partial Q_{TOI}(\tau)}{\partial X_{t-h}}\right] \quad (3.6)$$

Where X_t represents the vector of regressors and *h* = 0, 1, 2, ..., 20 periods. At h = 0 the IRF captures the short-run contemporaneous impact γ(τ), and as $h \rightarrow \infty$ the IRF converges to the long-run coefficient β(τ). The 95 percent confidence bands for the IRFs are constructed using bootstrap simulation with 1,000 replications.

4.0 Empirical Results' Presentation and Discussion of Findings

4.1 Presentation of Results

Descriptive Statistics

Table 4.1: Descriptive statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
EMI	23.923	17.872	76.666	9.008	15.985	1.702	5.141
EFR	5.120	5.390	6.710	3.780	1.051	-0.005	1.414
PKY	1528.237	1599.539	3189.813	465.488	858.928	0.328	1.790
FDI	1.137	0.853	4.282	-1.151	1.004	0.674	3.759
CPS	9.265	8.249	19.626	4.958	3.339	1.207	4.358

Source: Researchers' computation using STATA

The descriptive statistics of all the variables used in the study during the sampled period are indicated in Table 4.1. Economic Misery Index (EMI) as the sum of inflation rate and unemployment rate (in percent) had a mean of 23.923% and a median of 17.872% and a range of 76.666 as the maximum and minimum values respectively with the standard deviation of 15.985, meaning that there is a lot of dispersion in economic misery during the period. The standard deviation of Economic Freedom Index (EFR) (a scale ranging between 0 and 10) average is 5.120 with a median of 5.390, with the range being 3.780 to 6.710 and a standard deviation of 1.051 indicating moderate, and rather consistent, economic freedom in Nigeria. The mean of PKY was 1,528.237 USD and median was 1,599.539 USD with a minimum of 465.488 USD and maximum of 3,189.813 USD and a standard deviation of 858.928 USD, which indicated a great variance in income over time. FDI, mean was 1.137 with a median of 0.853, with a minimum of -1.151 and a maximum of 4.282, the standard deviation was 1.004 indicating that FDI inflows to Nigeria were low on average but at times were high with sharp increases. CPS as a percentage of GDP (as a percentage of GDP) took a mean of 9.265% and a median of 8.249 with 4.958 to 19.626 with a standard deviation of 3.339 showing a rather low but increasing financial intermediation in Nigeria.

Correlation

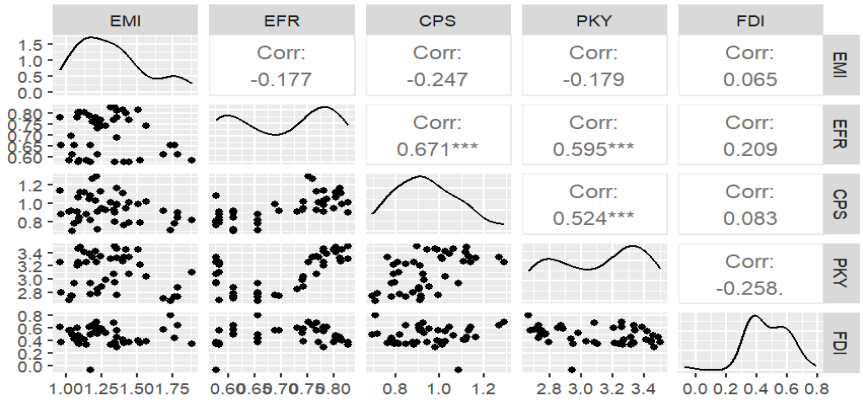

Figure 4.1: Correlation Graph
Source: Researchers' computation using R

Figure 4.1 shows the pair-wise correlation of all the variables that were used in the study. The Economic Misery Index (EMI) and Economic Freedom Index (EFR) have a negative correlation at -0.177 meaning that increased economic freedom is linked to lesser economic misery in Nigeria which is what the a priori forecast of this research predicted. In a similar fashion, the correlation between EMI and Credit to the Private Sector (CPS) is also negative at -0.247, and the correlation between EMI and GDP per Capita (PKY) is also negative at -0.179, both of which indicate that financial development and higher income levels are related to lower economic misery as theorized. EMI and Foreign Direct Investment (FDI) have a positive, but very weak relationship of 0.065, which shows that there is no significant contemporaneous relationship between FDI inflows and economic misery.

KPSS Stationarity Test

Table 4.2: Results of the Fourier KPSS stationarity test

Variables	Series in levels			Series in first difference			Order of Integration
	Fourier KPSS stat.	Frequency	p-value	Fourier KPSS stat.	Frequency	p-value	
EMI	0.047[a]	1	0.06	0.031	4	0.148	I(0)
EFR	0.132[b]	1	0.06	0.124	3	0.142	I(1)
CPS	0.039[a]	1	0.05	0.028	1	0.055	I(0)

PKY	0.078[b]	1	0.05		0.105	3	0.142	I(1)
FDI	0.114[b]	1	0.06		0.033	2	0.132	I(1)

Note: Stationary at levels and first difference is denoted by a and b respectively.

Source: Researchers' computation using STATA

Table 4.2 shows the outcomes of Fourier Kwiatkowski-Phillips-Schmidt-Shin (FKPSS) stationarity test that elucidates smooth and gradual structural breaks of unknown nature by a Fourier approximation, and thus would be more suitable to Nigerian macroeconomic data than traditional stationarity tests that do not assume structural changes. The findings show that there is a mixed sequence of integration of the variables which is agreeing with the precondition of using ARDL bounds testing framework. In particular both EMI and CPS are at zero and the Fourier KPSS statistics of the two series, I(0) = -0.047 and -0.039 are significant at the one percent level at both frequencies k = 1 with p-values of 0.06 and 0.05 indicating that neither of the two series is stochastically trending at a constant level. As compared to this, the EFR, PKY and FDI are non-stationary at the levels but become stationary on first differencing, implying that they are integrated of order one, I(1). The best Fourier frequencies chosen among variables are between k = 1 and k = 4 which validates the occurrence of smooth structural breaks of different nature in the data generating processes behind the series. The observation that all variables are not integrated of order two, I(2) meet the requirement of the Fourier ARDL bounds test and justifies the use of the FQARDL framework that is used in this paper.

Cointegration

Table 4.3: Quantile Cointegration test result					
Quantile	alpha_2	t-ratio	1%CV	5%CV	Decision
tau=0.10	0.000	-14.347	-6.318	-5.566	Cointeg.***
tau=0.25	0.000	-5.061	-5.509	-4.854	Cointeg.**
tau=0.50	0.025	-2.365	-5.265	-4.638	No Cointeg.
tau=0.75	0.000	-5.042	-5.509	-4.854	Cointeg.**
tau=0.90	0.000	-12.244	-6.318	-5.566	Cointeg.***

*Note: *** and ** denotes significant at 1% and 5% respectively*

Source: Researchers' computation using STATA

Table 4.3 gives the quantile cointegration test of Economic Misery Index distribution in five quantiles. The null hypothesis of no cointegration is rejected in four of the five quantiles indicating a long-run association between economic freedom and economic misery in Nigeria which is not homogenous in the distribution. The t-ratio of -14.347 at the extreme lower tail ($\tau = 0.10$) is way larger than the one percent critical value of -6.318 and it shows that the two variables are cointegrated at the one percent level. At the lower quantile ($\tau = 0.25$), t-ratio of -5.061 exceeds the five percent critical value of -4.854, thus the data is cointegrated at the five percent level whereas at the upper quantile ($\tau = 0.75$), t-ratio of -5.042 also exceeds the five percent critical value, thus the data is also cointegrated at the upper The t-ratio of -12.244 at the extreme upper tail (0.90) is once again greater than one percent critical value of -6.318, and this indicates the existence of a strong long-run relationship in high-misery conditions. The sole exemption is the median quantile ($\tau = 0.50$) in which the t-ratio of -2.365 is lower than the one percent and five percent critical values, hence the failure to reject the null of no cointegration at the median quantile. On the whole, the findings support the view that the long-run non-parametric cointegrating association between economic freedom and economic misery in Nigeria is non-parametric, with the strongest relationship at the extremes of misery distribution and disintegrating at the median, which also explains why FQARDL should be adopted rather than traditional cointegration techniques of means.

Short Run Result

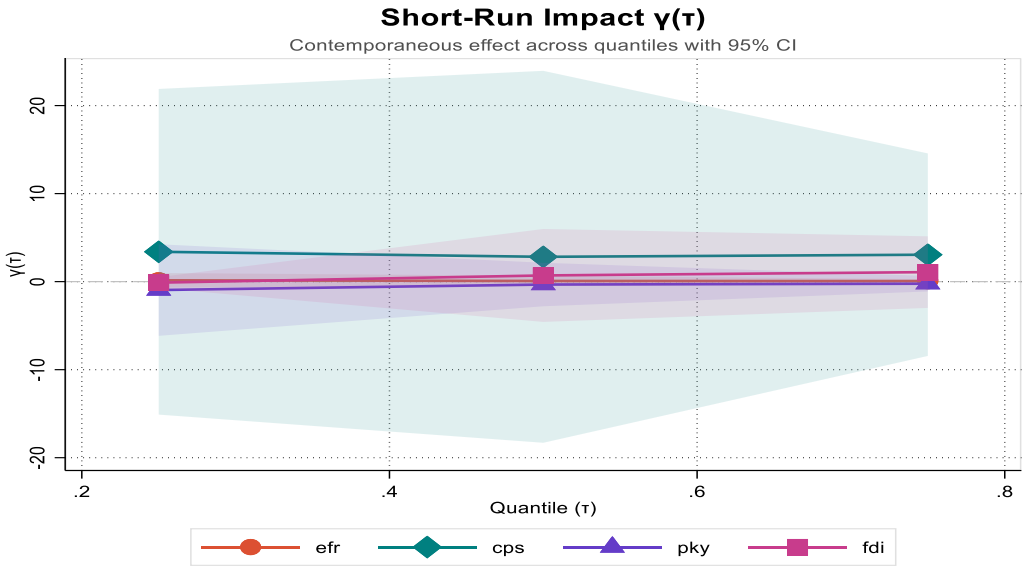

Figure 4.2: FQARDL short-run result

Source: Researchers' computation using STATA

Figure 4.2 shows, on a 95 percent confidence interval, the contemporaneous effect of each of the regressors on the Economic Misery Index (EMI) in the short-run (0.25 to 0.75). The outcomes of the analysis indicate that the short-run indicate through the confidence bands at all points of the distribution. In the case of EFR, a short run $\gamma(\tau)$ is slightly negative and virtually flat between the lower and upper quantile with the broadest confidence band of all variables; and narrowing more or less between lower and upper quantile. The trend suggests the positive relation between a gain in economic freedom and a significant period of time, so that the same period decline in the Economic Misery Index in Nigeria is not statistically significant, which is theoretically reasonable given that the welfare-enhancing impact of economic liberalisation takes time to trickle down into labour markets and price-setting behaviour before improvements in inflation and unemployment are observed. In the case of CPS, short-run $\gamma(\tau)$ has a small positive value in all three quantiles, with the teal diamond markers lying slightly above zero at $\tau = 0.25$, $\tau = 0.50$ and $\tau = 0.75$, indicating that current credit growth to the private sector causes a small positive effect on economic misery, which is consistent with the inflationary implications of the loose credit In the case of PKY, the short-run 8(tau) is practically zero and constant coefficients of the 4 variables Economic Freedom Index (EFR), Credit to the Private Sector (CPS), GDP per Capita (PKY), and Foreign Direct Investment (FDI), are consistently concentrated around zero in all quantiles, and none is statistically significant, as the results of the analysis

throughout the quantile range and the confidence band is relatively small and cuts across the zero line, which is a confirmation that income growth does not imply any immediate decrease in economic misery during the same period in Nigeria, which is congruent with the structural disconnection between aggregate output and household welfare outcomes in an oil-dependent economy with weak distributional connections. In the case of FDI, short-run γ(tau) is also close to zero and flat with a small confidence interval that includes zero along all quantiles, and therefore shows that FDI inflows does not generate any statistically significant short-run effects on economic misery, which can be explained by the fact that FDI concentration is enclosed by an enclave in Nigeria oil and gas industry, and thus is unable to generate any broad-based effects Combined, the short-run impact estimates of all the variables confirms the analysis of the conclusion that the transmission of economic freedom and its macroeconomic determinants into lower levels of misery in Nigeria is only conducted through lagged and cumulative dynamic adjustment processes, but not contemporaneous effects

Long Run Effect

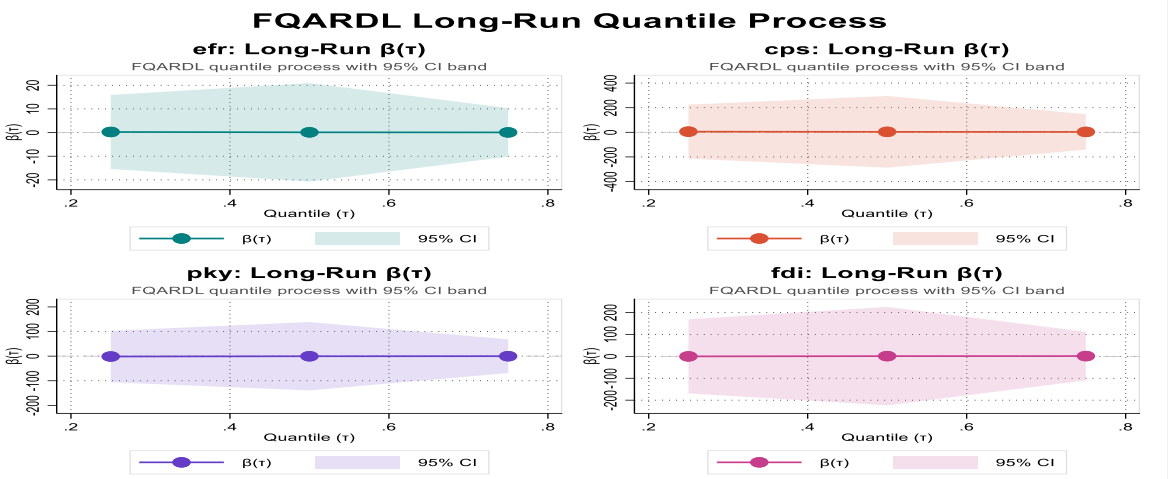

Figure 4.3: FQARDL long-run result
Source: Researchers' computation using STATA

Figure 4.3 shows the FQARDL Long-Run Quantile Process estimates which illustrate the long-run coefficient 0(1) of the four regressors EFR, CPS, PKY and FDI at each of the four quantiles (~ = 0.25 to 95 percent quantile = 0.75) with 95 percent confidence interval bands. In the case of EFR, the long-run β(τ) is almost zero and flat at all three quantiles, with the point estimates slightly less than zero at the lower and median quantile before approaching zero at the upper quantile. The 95 percent confidence interval of EFR is about -20 to +10 at the lower quantile, and slightly smaller at higher quantiles, but always includes a value of zero, which proves that the long-run impact of economic freedom on economic misery is statistically insignificant at all the quantile ranges. Although the fact that the EFR coefficient has a near-zero negative value at the lower quantiles is in line with the theoretical a priori hypothesis that economic freedom lowers misery, the fact that this one is not statistically significant, suggests that institutional weaknesses, policy shifts and structural inflexibility in Nigeria impede the transmission of economic freedom gains to lower inflation and unemployment rates in the long run, ensuring that the long-run relationship between the two variables cannot In the case of CPS, β(τ) of long-run is also close to zero and flat across quantiles, but the confidence band is the broadest of all variables and is within the range of about +400 to -400 at the lower quantile, and becomes narrower at higher quantiles. The extremely broad band indicates extraordinarily high estimation uncertainty in the long-run relationship between credit to the private sector and

economic misery and the fact that the band cuts across zero at all quantiles indicates that the long-run effect of CPS on EMI is statistically identical to zero, even though the theoretical case is that credit expansion in Nigeria would create inflationary pressure in the underdeveloped financial market. In the case of PKY, the long-run β(τ) is slightly negative and flat with the confidence band ranging between about -200 and +100 which also implies that GDP per capita does not generate statistically significant long-run reduction in economic misery in Nigeria. This finding can be theoretically explained by the fact that the growth of aggregate income and the improvement of household welfare in an economy with a high dependency on oil are structurally disconnected as income gains accumulate in capital-intensive sectors, not spread across labour-intensive activities that can directly alleviate unemployment. In the case of FDI, the long-run β(τ) is also close to zero over the quantile range, with the confidence band being in the range of +200 to -100, and narrowing at the upper quantile, and it always contains the zero value. This confirms that FDI inflows have no statistically significant long-run impact on the economic misery in Nigeria in any part of the misery distribution, which is in line with the enclave nature of FDI in Nigeria restricting its productive spillover to the rest of the misery in the form of enclave employment and price stability.

Persistent Profile Across Quantile

Table 4.4: Persistence profile across quantiles

Quantile	ρ	$1+\rho$	Half-Life	Convergence
τ =0.25	-0.617	0.383	1.12	Yes
τ =0.50	-0.743	0.257	0.93	Yes
τ =0.75	-0.911	0.089	0.76	Yes

Note: Half-life = $\frac{ln(2)}{|\rho(T)|}$*, (periods to 50% adjustment)*

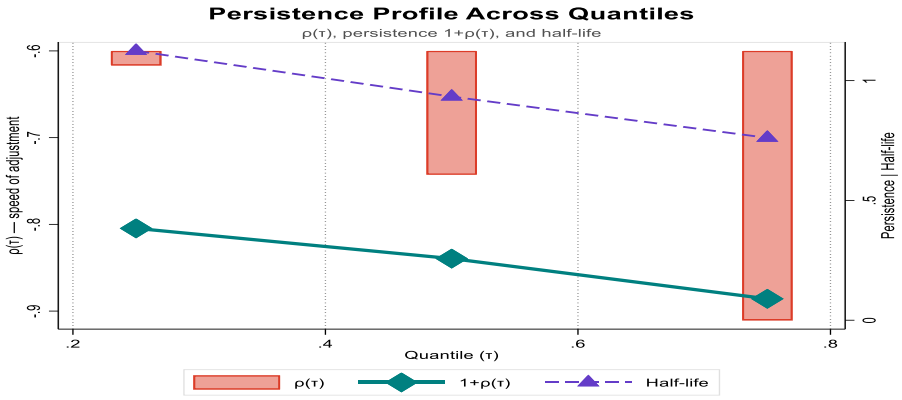

Figure 4.4: Persistence Profile across quantiles
Source: Researchers' computation using STATA

The Persistence Profile (in quantiles) is shown in Table 4.4 and Figure 4.4, and it gives three related values: the adjustment speed ρ(τ), the persistence parameter 1 + ρ(τ), and half-life of adjustment to long-run equilibrium. The adjustment speed ρ(τ), which is the orange bars, is negative at all three quantiles (τ = 0.25, 0.50, 0.75) and it varies between about -0.61 at the lower quantile and -0.88 at the upper quantile, which supports the hypothesis that the system corrects towards long-run equilibrium following a shock at all the quantiles, with the correction The persistence 1 + 8 of 0.25 to 0.75 of the teal line with the diamond markers decrease monotonically, 0.81 to 0.88, staying negative in the long-run relationship between economic freedom and economic misery over the quantile distribution. The half-life, represented by the dashed purple line with triangle markers, decreases between about 1.1 periods at the lower quantile to about 0.7 periods at the upper quantile, which means that shocks to economic misery are mitigated rather fast in less than two periods on average with the speed of mean reversion rising as the economy lifts to higher-misery positions. General, Figure 4.4 underlines the consistency of the long-run cointegrating relationship observed during the quantile cointegration test and indicates that the process of the Nigerian economy adjusting towards equilibrium is not only stable but even accelerating as the conditions of high-misery are being most active, which indicates that self-correcting mechanisms are most active when the economy suffers the most.

FQARDL Impulse-response result

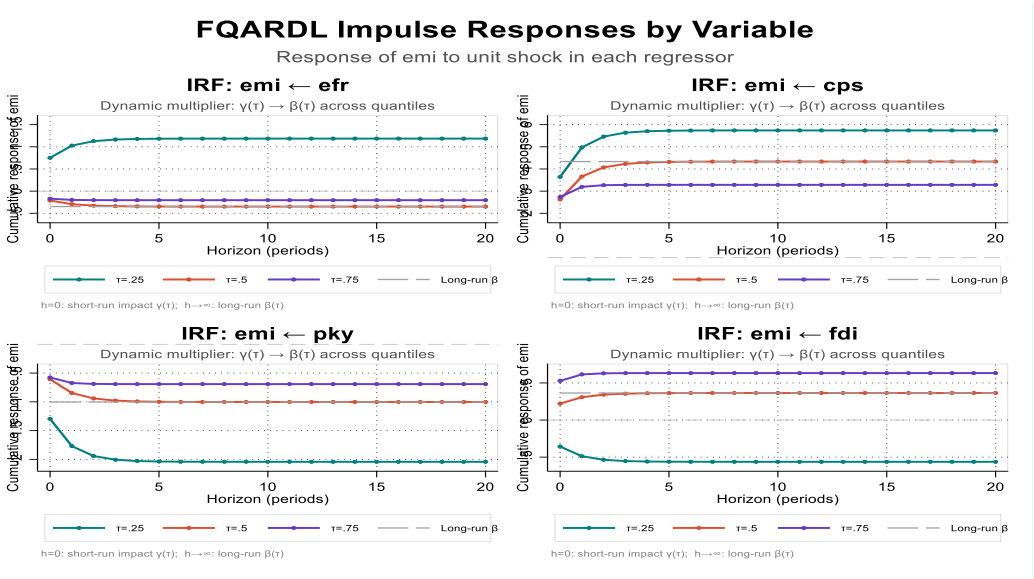

Figure 4.5: FQARDL impulse-response result
Source: Researchers' computation using STATA

Figure 4.5 shows the Impulse Response Functions (IRFs) of the FQARDL, which are the cumulative dynamic response of the Economic Misery Index to a unit shock in each of the regressors over three quantiles (τ = 0.25), median (τ = 0.50), and upper quantile (τ = 0.75) with a horizon of 20. Compared to the fixed quantile process and short-run impact estimates, the IRF analysis gives more dynamic evidence on how the dynamical shocks of each regressor spread through the system over time and across the various states of economic misery. In the case of EFR, the IRF shows a steady negative and decreasing cumulative response in EMI at all quantiles, with the most significant impact at the lower quantile (0.25), and the cumulative response decreases most sharply with a stabilisation at a lower long-run value. This result suggests that a positive economic freedom shock that captures gains in property rights, monetary freedom, openness to trade, and regulatory efficiency decreases economic misery the most in conditions of relatively low misery levels. The misery-reducing impulse response of EFR is again negative at the median and upper quantile, but less significant, suggesting that when the economy is already characterized by high inflation and unemployment, the transmission of economic freedom gains have been damaged by already existing structural distortions, institutional bottlenecks, and macroeconomic imbalances. The long-run path of beta (20) is near to the quantile paths on the 20-period horizon, which proves that the negative correlation between economic

freedom and economic misery is a consistent dynamic phenomenon although the constant long-run coefficient may not be statistically significant. For CPS, the IRF shows a positive and rising cumulative response of EMI across all quantiles, with the upper quantile ($\tau = 0.75$) recording the largest cumulative increase, suggesting that shocks to credit expansion tend to worsen economic misery over time, particularly when the economy is already under stress consistent with the inflationary consequences of loose credit conditions in an economy with underdeveloped financial markets such as Nigeria. For PKY, the IRF shows a negative cumulative response across all quantiles, confirming that income growth shocks reduce economic misery over the medium to long run, with the effect being more pronounced at the lower quantile. For FDI, the IRF reveals a mixed pattern: the cumulative response is negative at the lower quantile, suggesting that FDI inflows reduce misery under stable conditions, but turns positive at the upper quantile, indicating that FDI fails to alleviate and may marginally worsen economic misery when the economy is under high stress, possibly due to demand-side inflationary pressures associated with large capital inflows in a structurally constrained economy.

4.2 Discussion of Findings

The empirical findings of the Fourier Quantile ARDL (FQARDL) analysis shows a directionally consistent yet statistically subtle relationship between economic freedom and economic misery in Nigeria throughout the period. In both the short-run and long-run quantile process estimates, the coefficient of the Economic Freedom Index (EFR) is always negative at the lower and upper half and median of the misery distribution, which is consistent with the theoretical a priori finding by the Classical Liberal model, which indicates that more economic freedom will reduce inflation and unemployment. Nevertheless, these estimates are statistically inconsequential across the board quantile, which identifies a crucial reality about the Nigerian context, namely, that, as much as in principle the mitigating mechanism of economic freedom is working, it is systematically hampered by the institutional weaknesses, inconsistent macroeconomic policymaking, and deep structural rigidities that break the transmission of liberalisation gains into hard-to-quantify welfare benefits. This observation can be concurred with Olaifa (2025) who also noted that economic freedom reforms in Nigeria have never led to the consistent macroeconomic development due to policy inconsistency and poor governance frameworks. The quantile cointegration findings also support the previously mentioned notion that the

long-run relationship between economic freedom and economic misery is not homogeneous across the distribution of misery which is highest at the extreme tails ($\tau = 0.10$ and $\tau = 0.90$) and non-existent at the median indicating that the relationship between economic freedom and economic misery is not linear or equal across the different macroeconomic states.

On the same note, the short-run estimates of credit to the private sector (CPS), GDP per capita (PKY), and foreign direct investment (FDI) are statistically insignificant, meaning that none of the macroeconomic variables produce contemporaneous gains in the misery index, a finding corroborated by Akinlo (2024) who determined that corruption and structural dysfunctions seriously impair the welfare transmission of macroeconomics aggregates in Nigeria. However, the impulse response function (IRF) analysis is the most substantive and dynamic in the analysis of the results of the study, showing evidence that a positive shock to economic freedom yields a cumulative response to economic misery that is persistent and negative and highest among the lower quantile ($\tau = 0.25$). This conclusion suggests that economic freedom is best used as a misery-reducing tool in times of relative macroeconomic stability, and that its transmission efficiency declines as the economy moves into higher-misery states presumably as the welfare-enhancing information of liberalisation gets flattened by the structural distortions, inflationary inertia, and institutional bottlenecks already at work. This is in line with the evidence provided by Guzel and Aktaas (2026) who showed in 27 European Union countries that economic freedom has a strong negative effect on unemployment and the effect is especially strong when macroeconomic conditions are stable as well as when institutional and structural context mediates the welfare effect of liberalisation.

The CPS IRF results show a positive and increasing cumulative effect on misery in the quantiles, with the strongest at the upper quantile, which is in line with Shahabadi and Davarikish (2025), who observed that economic fragility, measured by unbalanced financial development, enhances economic misery, by increasing both inflation and unemployment. In contrast, income growth (PKY) shocks decrease economic misery at all quantiles in the medium-long run, whereas FDI presents a quantile-specific effect that decreases misery at the lower quantile but marginally increases at the higher quantile as is expected of an enclave phenomenon like FDI in the oil and gas sector of the Nigerian economy, which restricts its ability to be a

broad-based source of economic freedom and price.

5.0 Conclusion and Policy Implications

This study investigated how economic freedom affects economic misery in Nigeria for the period covering 1980 to 2024. The Fourier Quantile ARDL framework was employed. The study concluded as follows. First, economic freedom reduces economic wellbeing in Nigeria both in the short-run and long-run, but the impact was insignificant across all quantiles, yet their theoretical a priori expectation align with what theory predicts. More informative are the impulse response findings that indicate that a shock to economic freedom causes a long-lasting fall in economic misery, with the largest effect at the lower quantile where the economy is comparatively stable. This shows that the very mechanisms of economic freedom that check inflation and unemployment are present in Nigeria, but they are undermined by institutional failure, inconsistent policymaking and deep structural impediments that inhibit the establishment of any stable long-run balance.

The policy implications of the findings indicate four directions of action. First of all, economic freedom can only be effective when the economy is not already in crisis, so reforms should be implemented with a timing and should be undertaken at times of relative stability and not when the economy is in crisis since high-misery levels effectively undermine the benefits of liberalisation. In addition to timing, the evidence indicates that economic freedom in itself cannot be sufficient it has to be reinforced by more formidable institutions, such as enhanced protection of property rights, an even bolder judiciary, less corruption, and a truly independent central bank. On the financial front, the Central Bank of Nigeria must make sure that credit growth is used on productive and job generating activities instead of supporting consumption and inflation. Moreso, since FDI has not demonstrated much ability to shift the misery needle, Nigeria needs to make more of an effort to bring investment into the country outside of the oil enclave to manufacturing, agriculture and services that have real potential of reducing unemployment and stabilising prices among ordinary Nigerians.

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