

GOVERNMENT EXPENDITURE AND UNEMPLOYMENT IN NIGERIA (1986 - 2024)

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Abstract

The study investigated the effect of government expenditure on unemployment rate in Nigeria for the period 1986 to 2024. The dependent variable is unemployment rate and the independent variables include capital expenditure, recurrent expenditure and credit to the private sector. Data were sourced from the Central Bank of Nigeria (CBN) statistical bulletin and analyzed using the Error Correction Model (ECM). The estimated short run result revealed that capital expenditure has a negative and significant effect on unemployment rate while recurrent expenditure and credit to private sector have positive effects on unemployment rate. However, only credit to private sector significantly increased unemployment rate. The speed of adjustment for correcting disequilibrium from the previous year to equilibrium in current year is 28.53 percent as shown by the coefficient of ECM. The study concluded that while capital expenditure is a strong tool for reducing unemployment, recurrent expenditure remains ineffective, and private sector credit though theoretically a driver of growth may worsen unemployment when misallocated or poorly regulated. It is recommended that government should prioritize productive capital investments in infrastructure, recurrent expenditure should be restructured to fund capacity-building programs, training and credit facilities should be directed toward productive sectors.

Introduction

Background to the Study

Bhatia (2009) defined public expenditure as those expenses that government incurs to maintain itself, the society and the economy and in helping other countries. In the words of Njoku

(2009), public expenditure refers to all expenditures, both recurrent and capital expenditures which the government incurs in the course of performing its functions. Public expenditure is structured into two major categories which includes recurrent expenditure and capital expenditure. Recurrent expenditure are expenditures that occur regularly throughout the year while capital expenditure refers to all the expenditures on capital projects such as buildings, construction of roads, bridges and all permanent structures and assets. The effects of public expenditure include making for economic stabilization, stimulation of production in the economy, creation of human skills through education and training development of basic infrastructures and stimulation of economic growth (Chijioke, 2014).

Statement of the Problem

The Nigeria's public expenditure has been increasing over time. Available data shows that total recurrent expenditure increased from N38.24 million in 1991 to N579.3 million in 2001 while total capital expenditure increased from N28.34 million in 1991 to N918.55 million in 2001. The available data also showed that total recurrent expenditure further increased from N47799.99 million in 2017 to N8121.64 million in 2020 while total capital expenditure also rose from N1242.30 million in 2017 to N1614.89 million in 2020 (Central Bank of Nigeria statistical bulletin 2021). Given that one of the main objectives of increases in government expenditure is to stimulate investment so as to reduce unemployment rate, these increases in both recurrent and capital expenditure is expected to stimulate investment thereby reducing unemployment rate in Nigeria. Unfortunately, increases in government expenditure has not been to reduce unemployment rate in Nigeria as available statistics shows that unemployment rate increased from 3.1 percent in 1991 to 13.1 percent in 2001. It also continued to increase from 18.8 percent in 2017 to 30.33 percent in 2020 (World Development Indicators). The study therefore seeks to investigate the impact of government expenditure on unemployment rate in Nigeria.

Objectives of the study

The broad objective of the study was to investigate the impact of government expenditure on unemployment rate in Nigeria. The specific objectives of the study ate to:

- i. examine the effect of capital expenditure on unemployment rate in Nigeria;
- ii. investigate the effect of recurrent expenditure on unemployment rate in Nigeria;
- iii. examine the effect of credit to private sector on unemployment rate in Nigeria.

Research Questions

- i. What is the effect of capital expenditure on unemployment rate in Nigeria?
- ii. What is the effect of recurrent expenditure on unemployment rate in Nigeria?
- iii. What effect does credit to private sector have on unemployment rate in Nigeria?

Research Hypotheses

In order to guide the study, the following null hypotheses were formulated:

H_01 : Capital expenditure does not have significant effect on unemployment rate in Nigeria.

H_02 : Recurrent expenditure does not have significant effect on unemployment rate in Nigeria.

H_03 : Credit to private sector lending does not have significant effect on unemployment rate in Nigeria.

Scope of the Study

The study focuses on unemployment, government expenditure and economic development in Nigeria. The time scope is from 1986 – 2024. The geographic scope is Nigeria and the variables are:

government capital expenditure, government recurrent expenditure, credit to private sector and unemployment rate in Nigeria.

Significance of the Study

This research will help government in policy formulation especially as it concerns allocation of government funds for boosting employment prospects. Also, this research will be of immense significance to stakeholders and investors as it will educate them on how the Nigerian government has expended funds towards eradicating unemployment problem in the economy. This will also help them to direct their investment activities to augment government efforts. This research will add to existing theoretical and empirical knowledge in economics.

Literature Review

Conceptual Literature Review

Public expenditure is the expenses or cost that government usually incurs for maintenance as an institution, the economy and the society (Likita, 1999). Public expenditure, according to Chinwoke 2014, is the expenses of the government for its own maintenance and on the society and the economy as a whole. Bhatia (2009) sees public expenditure as the expenses which a government incurs for its own maintenance the society and the economy and helping other countries.

Anyanwu (1997) opined that public expenditure involves all the expenses which the public sector incurs for its maintenance, for the benefit of the economy, external bodies and for other countries. In the words of Likita (1999), public expenditure is made up of the capital and recurrent expenditure. Capital expenditure include all investment in infrastructural projects, physical assets that are for long term purposes, mainly to improve the living conditions of the citizens and this includes housing, road construction, agriculture and water resources, these are generally productive investments. The recurrent expenditures are generally spending on service to maintain the existing facilities in the economy including wages and salaries, maintenances of social services and security.

There are principles that also govern the public expenditure decision. They include:

- canon of sanction which advocates that public fund can only be used by proper authorization and for the purpose for which it approved. In a democratic set up, it is the legislature that sanctions the expenditure on demand by the executive authorities. The rationale is that such a restriction would avoid unscrupulous and unwanted expenditure and it will observe as a check against misappropriation of public funds.
- canon of economy which suggests that necessary care must be taken to avoid wasteful usage of public funds. The process of public expenditure should not involve the use of resources more than what are just necessary.
- canon of benefit which suggests that expenditure is to incurred only if it is beneficial to the society. Expenditure is therefore judged by the benefit that will accrue from it.
- canon of surplus which emphasizes on the fact that government should avoid deficit budgeting at least for the greater part of the time, that is, persistent one. Government should be prudent and try to meet its current expenditure from current revenue.

Government should not spend beyond its available resources into a debt (Chinweoke, 2014). The effect of public expenditure include:

(a) it makes for economic stabilization. The economy is prone to fluctuations in income, employment and prices from time to time. During periods of depression, there is the need for a

continuous injection of additional purchasing power in the market through stimulation of investment and consumption activities and through direct public investment which a part of public expenditure. Such a public expenditure is meant to directly add to the effective demand in the market and generate a high value multiplier effect in the economy. Again during a boom, the need to curb extra demand arises. This may be done through the reduction in public expenditure while maintaining the same or slightly raising the level of taxation.

(b) public expenditure in an economy accelerates the pace and development of economic activities in the economy thus leading to the attainment of higher levels of production and growth. Public expenditure can add to the effective demand directly and thus, generate conditions favourable for the market forces to push up production. Public expenditure aids private investments and production through measures which reduce the cost of production or remove particular bottlenecks creation and maintenance of social overheads lead to an all-round reduction in the cost of production and improvement in efficiency.

(c) public expenditure stimulates research and development in an economy. New, effective and cheap method of production can be found whereby local resources are used in production and thus imports are reduced while foreign exchange is saved. New products can also be invented which will help the economy various productive activities.

(d) Public expenditure can be used to create human skills through education and training. The federal government through the education tax fund has developed infrastructures such as classroom blocks, laboratories, libraries, computer centers in many tertiary institutions public expenditure aids the development of basic infrastructures. This is for the development of selected economic activities, for example, roads, electricity, housing, public health. With these infrastructures in place, key and basic industries, power, irrigation, mines are developed. Through these, the economy is provided a firm basis for growth (Chinweoke. 2014).

Theoretical Literature

2.2.1 The Wagner's Law

The theory states that as per capita income of an economy grows, the relative size of government expenditure grows along with it. As the economy grows, there will be an increase in the number of urban centres with the associated social vices such as crime which require the intervention of the government to reduce such activities to the barest minimum. Large urban centres also require internal security to maintain law and order. These interventions by the government have cost leading to increase in public expenditure in the economy.

Rostow-Musgrave Model

Rostow and Musgrave also carried out a research on the growth of public expenditure and conclude that at early stages of economic development, the rate of growth of public expenditure will be very high because government provides the basic infrastructural facilities (social overhead) and most of these projects are capital intensive, therefore the spending of the government will increase steadily. The investment in education, health, roads, electricity, water supply are necessities that can launch the economy from the traditional stage to the take off stage of economic development making government to spend an increasing amount with time in order to develop an egalitarian society.

Peacock-Wiseman's Model

This theory looked at increasing public expenditure on the socio-political perspective. Government expenditure will increase as income increases but because the leaders want re-

election into political offices so more infrastructure must be provided in order to convince the electorate that their interest is being catered for by the people they voted into power. However, the citizens of the country are less willing to pay tax. The resistance of individuals to pay tax must be taken care of by the government in the form of increased spending to avoid social crisis in the economy. The resistance to pay tax by the people will make the state to have low revenue hence the cost of providing more facilities is borne by the government making government expenditure to rise rapidly (Likita, 1999).

Empirical Literature

2.3.1 Studies on capital expenditure and unemployment rate

Egbulonu and Amadi (2016) examined the relationship between fiscal policy and unemployment rate in Nigeria for the period 1970 to 2013. Error Correction Model (ECM) result found a negative relationship between fiscal policy tools (government capital expenditure and government debt stock) and unemployment rate in Nigeria while government tax revenue exhibited a positive relationship with unemployment rate.

Ebi and Ibe (2019) empirically examined the causal relationship between government expenditure and unemployment from 1981 to 2017. Unemployment rate was the dependent variable. Government expenditure was decomposed into recurrent and capital expenditure (independent variables). The study revealed that there was a negative and significant relationship between unemployment rate and recurrent expenditure. The relationship between unemployment rate and capital expenditure was positive and significant.

Saraireh (2020) estimated the effect of government capital spending on unemployment in Jordan for the period 1990 to 2019. By using the ARDL co-integration test, the study found a negative and statistically significant long-run relationship between government spending and unemployment rate in Jordan. An increase in government spending per a percent of the GDP is found to reduce unemployment by about 0.43 percentage points in the same year. The study also revealed that in the short run, government spending has positive and significant impact on unemployment.

Olawale and Nwachukwu (2025) investigated the dynamic relationship between public investment in infrastructure and real GDP growth. The authors employed annual data from 1990 to 2022, using real GDP as the dependent variable, while the main explanatory variables were government capital expenditure, recurrent expenditure, inflation rate, and gross fixed capital formation. The study applied the Autoregressive Distributed Lag (ARDL) bounds testing approach to explore both short- and long-run relationships. The findings revealed that government capital expenditure had a positive and statistically significant impact on economic growth in the long run, but its short-run effect was weaker and often offset by inflationary pressures.

Ahmed and Balogun (2025) extended the analysis by disaggregating government capital expenditure into education, health, transportation, and power sector investments. Using data spanning 1995–2023, the researchers relied on panel Vector Error Correction Model (VECM) and Granger causality tests to capture sectoral linkages between capital spending and economic growth. Their findings indicated that capital expenditure on education and power sectors significantly enhanced growth, while health and transportation expenditures exhibited mixed or statistically insignificant results due to inefficiencies and mismanagement.

Studies on recurrent expenditure and unemployment rate

Nwaeze (2019) empirically investigated the direction and degree of relationship between government spending and reduction in unemployment. Disaggregated impact of government expenditure on administration, economic services, social community services and transfers and rate of unemployment were the variables used. The Error Correction econometric model (ECM) result showed that expenditure on social community service was negative and statistically significant while government expenditure on Administration was found to be positive and statistically significant.

Selase (2019) investigated the impact of disaggregated public recurrent expenditure on unemployment rate in selected African countries with panel data spanning from 2000 to 2017. Using Generalized Method of Moments (GMM) technique, the study found that expenditure on infrastructure and education reduces unemployment rate, while expenditure on defence and health increases the unemployment rate in the region. The short-run elasticity estimate showed that infrastructure and education expenditures reduce unemployment rate by 9% and 1.83%.

Onuoha and Agbede (2019) examined the impact of disaggregated public recurrent expenditure on unemployment rate in selected countries in sub-Saharan Africa. The data were majorly sourced from the World Bank Indicator. The study employed Generalized Method of Moments (GMM) techniques for empirical analysis. The findings of two step system GMM showed that expenditure on infrastructure and education reduce unemployment rate, while expenditure on defense and health increase unemployment rate in the region.

Studies on credit to private sector and unemployment rate

Eze and Mohammed (2025) analyzed the effect of domestic credit to private enterprises on unemployment. The study used unemployment rate as the dependent variable, with private sector credit, lending interest rate, and inflation as explanatory variables. Using the Autoregressive Distributed Lag (ARDL) approach, the results showed that private sector credit had a significant positive long-run impact on unemployment rate, though high lending rates weakened the short-run relationship.

Okonkwo and Danjuma (2025) focused on how sectoral allocation of credit influences growth. The variables included GDP, credit to agriculture, credit to manufacturing, credit to services, and exchange rate. Employing a Vector Error Correction Model (VECM), the study found that credit to manufacturing and services sectors significantly boosted growth, while agricultural credit showed weak influence due to structural challenges in the sector.

Ibrahim and Adeyemi (2025) examined the interplay between credit and financial sector development. Variables included employment rate, credit to private sector, broad money supply, and investment rate. Using Johansen cointegration and Granger causality tests, the authors reported a bidirectional relationship between private sector credit and employment rate, suggesting that credit availability stimulates employment rate, while also driving demand for credit.

Balogun and Afolabi (2025) applied a Nonlinear Autoregressive Distributed Lag (NARDL) model to assess asymmetric effects of credit on unemployment rate. The variables comprised unemployment rate, private sector credit, interest rate, and inflation. Findings showed that positive shocks in private sector credit significantly spurred unemployment rate, whereas negative shocks (credit contraction) had disproportionately larger adverse effects. This underscored the sensitivity of unemployment rate to credit fluctuations.

Gap in Literature

Although numerous studies have examined the relationship between government expenditure and economic growth in Nigeria, most of the existing empirical works have primarily focused on the direct effect of capital and recurrent expenditure on GDP, neglecting the broader dimension of unemployment and inclusive development outcomes.

Similarly, while some research has linked credit to the private sector with output growth, relatively few have integrated it alongside fiscal variables to assess its combined impact on unemployment and long-term economic development.

Moreover, the majority of prior studies emphasized aggregate growth indicators (such as GDP) rather than labor market performance, thereby overlooking how government spending and credit allocation influence unemployment rate and sustainable development in Nigeria.

Section Three

Research Methodology

3.1 Research Design

Multiple regression analysis was used in the study. Time series data spanning from 1991 to 2020 was sourced from the Central Bank of Nigeria statistical bulletin and World Bank Development Indicators. The data was analysed using E-views 10

Model Specification

In order to investigate the impact of government expenditure on unemployment rate in Nigeria, the model for this study was specified thus;

$$\text{UNEMP} = f(\text{CAP}, \text{REC}, \text{CRP}) \quad (3.1)$$

Where:

UNEMP = Unemployment rate

CAP = Capital expenditure

REC = Recurrent expenditure

CRP = Credit to private sector

The model in its econometric linear form can be written as:

$$\text{UNEMP}_t = b_0 + b_1 \text{CAP}_t + b_2 \text{REC}_t + b_3 \text{CRP}_t + U_t \quad (3.2)$$

Where:

U = stochastic or random error term

b_0 = constant or intercept

$b_1 - b_3$ = coefficients of associated variables

The theoretical expectations about the signs of the coefficients of the parameters are as follows:
 $b_1 < 0$, $b_2 < 0$, $b_3 < 0$,

Sources of Data

Data are purely secondary data sourced from the Central Bank of Nigeria Statistical Bulletin 2024 edition. Also, consultations were made from the National Bureau of Statistics Statistical publications for 2024.

Methods of Data Analysis

The study employed the Error Correction Model (ECM) to analyze the short-run and long-run relationships between government expenditure, credit to the private sector and unemployment in Nigeria. The ECM is particularly suitable because it corrects for disequilibrium in the short run while maintaining consistency with long-run equilibrium dynamics.

The dependent variable is economic development, proxied by unemployment rate. The independent variables include government capital expenditure, recurrent expenditure, and credit to the private sector. The analysis begins with preliminary tests:

- 1 Unit root tests (Augmented Dickey-Fuller test) to determine the stationarity of the variables.
- 2 Johansen cointegration test to establish the existence of a long-run relationship among the variables.
- 3 Finally, diagnostic tests such as serial correlation LM test, heteroskedasticity test, normality test, and stability tests (CUSUM) were conducted to validate the robustness of the model.
- 4 The coefficient of the error correction term is expected to be negative and statistically significant, indicating the proportion of disequilibrium corrected each year.

Data Presentation, Analysis and Interpretation of Results

4.1 Data Presentation

The data are presented in Appendix I. The data are annualized figures on government capital and recurrent expenditure, credit to private sector and unemployment rate for the period 1986 to 2024. The trend of the data shows steady progression of the variables over the period under study. Importantly, the data are standardized in order to avoid a spurious regression by taking their natural logarithm.

Data Analysis

Table 4.1: Result of Augmented Dickey-Fuller unit root test Variable ADF test

Variables	At level	First difference	5% Critical value	Order of integration
UNEMP (Y)	0.72065	-8.30354	-2.96041	I(1)
CAP (x ₂)	2.01739	-4.12044	-2.96041	I(1)
REC (x ₁)	-0.30529	-6.80156	-2.96041	I(1)
CRP (x ₃)	-2.88542	-5.55585	-2.96041	I(1)

Source: Author's computation using Eviews 10

The unit test result presented on Table 4.1 showed that capital expenditure, recurrent expenditure, private sector credit and unemployment rate were stationary at first difference. This is because their various ADF test statistic were greater than their various 5% critical values at first difference.

Table 4.2: Cointegration Test result

No of Co-integrating eqns	Max-Eigen Statistic	0.05 crit. value	Trace stat.	0.05 crit. value
None*	66.69993	33.87687	131.8577	69.81889
At most 1*	37.48423	27.58434	65.15781	47.85613
At most 2*	21.28257	21.13162	30.67358	29.79707
At most 3	4.776843	14.26460	6.391013	15.49471
At most 4	1.614170	3.841466	1.614170	3.841466

Source: Extract from Eviews co-integration result

Table 4.2 above shows the results of the Johansen cointegration test. The table shows that the Trace statistic indicates three (3) co-integrating equations at the 0.05% level while the max-eigen statistic indicates three (3) co-integrating equations. Therefore, the evidence of cointegration shows that a long-run relationship exists amongst the variables.

Table 4.3: Error Correction Model Result

Independent variables	Coefficient	Std. error	t-stat	p-value
Constant	66.15498	434.3336	0.152314	0.8802
CAP	-32.66758	4.973412	-6.568444	0.0033
REC	0.300519	2.226204	0.134992	0.8937
CRP	1.657897	0.584041	2.838666	0.0091
ECM(-1)	-0.285348	0.038646	-7.383636	0.0006
$R^2 = 0.968481$ Adjusted $R^2 = 0.964134$ F-stat = 22.771				
D-W statistics = 1.91147				

Source: Author's computation using Eviews 10

The results above show that:

- Government capital expenditure decreases unemployment rate by 32.668 units.
- Government recurrent expenditure increases unemployment rate by 0.3005 units.
- Credit to private sector increases unemployment rate by 1.658 units.

According to the estimated model, government capital expenditure (CAP) has a negative sign (-) while recurrent expenditure (REC) and credit to private sector (CRP) both have positive signs (+). The implications of the model parameter sign is that only capital expenditure conforms to the a-priori expectation while the other two variables do not conform to the a-priori expectation. Further discussions on these findings will be made in the last sub-section of this section.

Test of Hypotheses

Hypothesis One

H_{01} : Capital expenditure does not have significant effect on unemployment rate in Nigeria.

t-statistic = -6.5684 (p-value = 0.0033)

Decision: Since the probability value of the t-statistic is less than 0.05 critical value, we reject the null hypothesis and conclude that capital expenditure have significant effect on unemployment rate in Nigeria. The negative coefficient means that capital expenditure significantly decreased unemployment rate in Nigeria.

Hypothesis Two

H_{02} : Recurrent expenditure does not have significant effect on unemployment rate in Nigeria.

t-statistic = -0.2518 (p-value = 0.8937)

Decision: Since the probability value of the t-statistic is greater than 0.05 critical value, we accept the null hypothesis and conclude that recurrent expenditure does not have significant impact on unemployment rate in Nigeria. The positive coefficient means that recurrent expenditure does not significantly increase unemployment rate in Nigeria.

Hypothesis Three

H_{03} : Credit to private sector lending does not have significant effect on unemployment rate in Nigeria.

t-statistic = 2.8387 (p-value = 0.0091)

Decision: Since the probability value of the t-statistic is less than 0.05 critical value, we reject the null hypothesis and conclude that credit to private sector lending has significant effect on unemployment rate in Nigeria. The positive coefficient means that credit to private sector significantly increases unemployment rate in Nigeria.

Discussion of Findings

First, the finding that capital expenditure significantly reduces unemployment is consistent with several empirical works. For instance, Ebi & Ibe (2019) and Ahmed and Balogun (2025) found that increased government spending on infrastructure, education, and other productive investments creates job opportunities and enhances economic development. This supports the Keynesian view that public investment in capital projects stimulates aggregate demand, fosters employment generation, and reduces unemployment.

Secondly, the result that recurrent expenditure does not have a significant effect on unemployment aligns with prior research showing that recurrent spending often goes into wages, salaries, and administrative overheads, which do not directly translate into employment creation. Nwaeze (2019) and Selase (2019) similarly observed that recurrent expenditure in Nigeria tends to be consumption-oriented and inefficient, thereby failing to reduce unemployment in a sustainable manner. This suggests that while recurrent spending may maintain existing jobs, it does little to create new ones.

Furthermore, the finding that credit to the private sector significantly increases unemployment is somewhat counterintuitive but has also been highlighted in earlier studies. Ibrahim and Adeyemi (2025) and Balogun and Afolabi (2025) noted that although private sector credit has the potential to stimulate development in Nigeria, much of it is often channeled into unproductive sectors, non-performing loans, or short-term consumption rather than long-term productive investment. Similarly, Eze and Mohammed (2025) argued that inefficiencies in financial intermediation and high lending rates often make credit inaccessible for small and medium enterprises (SMEs), thereby constraining their capacity to generate employment. Thus, the positive relationship between private sector credit and unemployment in this study may reflect structural weaknesses in the Nigerian financial system, where credit expansion does not automatically translate into job creation.

Summary of Findings, Conclusion and Recommendations

5.1 Summary of Findings

The findings made in the study are summarized as follows:

- 1 Capital expenditure significantly decreased unemployment rate in Nigeria.
- 2 Recurrent expenditure increased unemployment rate in Nigeria but the increase was not statistically significant.
- 3 Credit to private sector significantly increased unemployment rate in Nigeria.

Conclusion

In conclusion, the findings suggest that while capital expenditure is a strong tool for reducing unemployment, recurrent expenditure remains ineffective, and private sector credit though theoretically a driver of growth may worsen unemployment when misallocated or poorly regulated. These results highlight the need for policy reforms that prioritize productive capital expenditure and restructuring of the recurrent expenditure to target skill development and job-enhancing programs.

Recommendations

The study recommends as follows:

- 1 Since capital expenditure was found to significantly reduce unemployment, government should prioritize productive investments in infrastructure, agriculture, technology, and vocational education. Such expenditure creates direct and indirect jobs while stimulating long-term economic development.

- 2 The insignificance of recurrent expenditure on unemployment suggests that much of this spending is consumption-oriented. To enhance its impact, recurrent expenditure should be restructured to fund capacity-building programs, training, and maintenance of capital projects. This ensures that recurrent spending complements rather than crowds out employment generation.
- 3 Policymakers should strengthen regulations to ensure that credit facilities are directed toward productive sectors such as SMEs, manufacturing, and agriculture. This can be achieved through targeted credit policies, lower lending rates, and improved monitoring of loan utilization.

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Appendices

Null Hypothesis: UNEMP has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.720654	0.8270
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

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

Null Hypothesis: D(UNEMP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.303539	0.0003
Test critical values:		
1% level	-3.670170	
5% level	-2.963972	
10% level	-2.621007	

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

Null Hypothesis: CAP has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	2.017391	0.8102
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

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

Null Hypothesis: D(CAP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	2.017391	0.8102

Augmented Dickey-Fuller test statistic	-4.120443	0.0009
Test critical values:		
1% level	-3.670170	
5% level	-2.963972	
10% level	-2.621007	

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

Null Hypothesis: REC has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.305293	0.6841
Test critical values:		
1% level	-3.679322	
5% level	-2.967767	
10% level	-2.622989	

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

Null Hypothesis: D(REC) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.801562	0.0460
Test critical values:		
1% level	-3.679322	
5% level	-2.967767	
10% level	-2.622989	

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

Null Hypothesis: CRP has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.885420	0.5022
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

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

Null Hypothesis: D(CRP) has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.555846	0.0003
Test critical values:		
1% level	-3.689194	
5% level	-2.971853	
10% level	-2.625121	

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

Date: 08/15/25 Time: 06:35
 Sample (adjusted): 1986 2024
 Included observations: 39 after adjustments
 Trend assumption: Linear deterministic trend
 Series: UNEMP CAP REC CRP
 Lags interval (in first differences): 1 to 1
 Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.930463	131.8577	69.81889	0.0000
At most 1 *	0.674775	65.15781	47.85613	0.0052
At most 2 *	0.615416	30.67358	29.79707	0.0200
At most 3	0.512642	6.391013	15.49471	0.0759
At most 4	0.369882	1.614170	3.841466	0.1878

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.930463	66.69993	33.87687	0.0000
At most 1	0.674775	37.48423	27.58434	0.2191
At most 2	0.615416	21.28257	21.13162	0.1844
At most 3	0.512642	4.776843	14.26460	0.2437
At most 4	0.369882	1.614170	3.841466	0.3770

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

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

Error Correction Model
 Dependent Variable: UNEMP
 Method: Least Squares
 Date: 08/15/25 Time: 06:36
 Sample (adjusted): 1986 2024
 Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAP	-32.66758	4.973412	-6.568444	0.0033
REC	0.300519	2.226204	0.134992	0.8937
CRP	1.657897	0.584041	2.838666	0.0091
C	66.15498	434.3336	0.152314	0.8802
ECM(-1)	-0.285348	0.038646	-7.383636	0.0006
R-squared	0.968481	Mean dependent var	9.140040	
Adjusted R-squared	0.964134	S.D. dependent var	0.576081	

S.E. of regression	0.136965	Akaike CRPo criterion	-0.956186
Sum squared resid	0.431469	Schwarz criterion	-0.673297
Log likelihood	19.86469	Hannan-Quinn criter.	-0.867589
F-statistic	22.77126	Durbin-Watson stat	1.911472
Prob(F-statistic)	0.000000		
