

Central Banks as Development Actors: Rethinking Independence in Low-Income Economies

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Abstract

The conventional wisdom that central bank independence (CBI) is associated with price stability and development, based on the experiences of rich countries, is challenged in the context of low-income developing countries. Although inflation rates decrease with an increase in central bank independence in theory, the levels of development remain flat with the increase in central bank independence in practice. This paper attempts to examine the impact of central bank independence on development in terms of inflation, growth, unemployment, and poverty in the context of 25 low-income developing countries from 2010-2024. The findings of the paper, based on the random effects panel method, reveal that the level of central bank independence is not statistically significant in the context of inflation (coefficient = -12.59, $p > 0.05$) and growth (coefficient = -2.92, $p > 0.05$); however, the level of central bank independence is found to have a positive and statistically significant impact on poverty (coefficient 8.11, $p < 0.05$). This indicates that the formal aspect of independence in law does not capture essential developmental goals and, in fact, could even distract from them. On the other hand, actual independence, or practice, in the form of effective and stable governors, does have a significant effect in reducing inflation (coefficient = -3.89, $p < 0.05$) and increasing growth (coefficient = 2.22, $p < 0.05$), emphasizing that actual practice matters more than formal independence. Neither form of independence, in fact, reveals any significant direct effect on unemployment. Openness, on the other hand, does have positive effects on both inflation and growth, implying that price movements are transmitted and that openness is beneficial for growth. Institutional quality, once again, remains insignificant in all the estimations, suggesting that the effectiveness of institutions in these countries still remains at levels too low to directly impact their development. The paper concludes the conventional CBI paradigm needs to be reframed in the context of low-income countries. The ability of an independent central bank to stabilize an economy seems to be attainable only in conjunction with development strategy that includes effective job and poverty reduction goals. The argument of the study is that policymakers in low-income economies should focus their efforts on the achievement of true operational independence of the central banks by strengthening the protections of the central bank governors and the establishment of transparent systems of accountability. On the other hand, the study recommends the extension of the objectives of the central banks to embrace developmental objectives and the improvement of coordination between the central banks and the government to ensure the achievement of price stability.

Keywords: central bank independence, de jure independence, de facto independence, low income economies, inflation, economic growth, unemployment, poverty

JEL Codes: E58, O23, O11, I32, E31

1. Introduction

The conventional functions of central banks in the world economy have been shifted dramatically. In the early 1990s, economists and international organisations, in particular, the International Monetary Fund (IMF) established a very robust agreement that central banks must be legally and operationally independent (Hamia, 2024). The reason behind this change was that stagflation and high inflation of the 1970s and 1980s were considered impediments to economic performance. The dominant theory held that monetary policy and politics should be separated to enable the central banks to give a credible promise of low inflation, which will result in the creation of a stable macroeconomic environment that will facilitate private investment and long-term growth (Qanas & Sawyer, 2023). Although the developed nations have embraced central bank independence (CBI) by inflation targeting, the case in the developing nations is not the same. The need to stabilise and develop economies and their fast-growing population compels governments to work on employment and well-being. In most of the low-income economies, such as the average annual inflation dropped far below 20 in the early 1990s to single-digit or low-single-digit levels in the 2010s, although the growth in per capita GDP remained modest and highly fluctuating over the same span (Carare, De Resende, Levin & Zhang, 2022).

The institutional framework of monetary governance in the developing world has also changed considerably in the last 30 years. There exists a clear meeting point at the principles of CBI, which are encouraged by the international financial institutions as the foundation of sound macro-management (Anwar, 2023). This is based on the theory of time inconsistency of Kydland and Prescott (1977), which argued that the key to price stability is that monetary authorities must be insulated against short-term political pressures. This implies logically that the independent central banks are able to make the low inflation promise to minimise uncertainty, to encourage long-term private investment, and to promote long-run growth. This has, in practice, resulted in extensive legal changes in low-income economies, with most central banks making formal commitments to price stability and restricting direct central bank financing of government since the mid-1990s (Cukierman, 2008; Hamia, 2024).

The rates of inflation in low-income economies have significantly declined, and the situation is no longer in the range of double-digits in the 1980s and 1990s, but in the range of single-digits today (Ha, Ivanova, Ohnsorge & Unsal, 2019; Clarke & Nelson, 2020). However, this macroeconomic stabilisation has not been reflected into similar development gains. In most of the low-income countries, economic growth has been fluctuating without being good enough to create jobs required to support the increasing youth population. Averages of real GDP growth in an average low-income economy have been around 4-5 percent per year over the last decade, much lower than the 7 percent standard of growth that is necessary to reduce poverty, and unemployment and underemployment rates, particularly among the young population, are frequently above 25-30 percent. The inequality situation remains unchanged and the decline of poverty has decelerated following back-to-back global shocks (United Nations Conference on Trade and Development, 2023). The population in extreme poverty in the low-income countries is also headstrong, and even after gaining the ground in terms of inflation, the number of people living below the international poverty line has still remained in the hundreds of millions. This severe discrepancy between monetary stabilization and developmental stagnation constitutes a deep puzzle at development economics' foundation.

Inadequate independence of the central banks leads to incomplete reforms implementation, low institutional capacity, or the lack of fiscal discipline (Marshall & Rochon, 2025). The CBI paradigm is based on assumptions itself, which are not true in the context of low income countries. The CBI assumes that there are well-developed financial markets capable of passing policy information; that the private sector is largely sensitive to inflation expectations but not structural factors; and that monetary and fiscal policy are completely independent. Such conditions are uncommon in the low income economies that have shallow financial systems, a prevailing agricultural sector, and little access to the international capital markets (Anand, 2018). Evidently, in many low-income economies, the ratio of private-sector credit to GDP is not more than 30 per cent in contrast with ratios of over 80–100 per cent in developed economies, and a large proportion of the population is engaged in informal or subsistence businesses with minimal connection to formal financial intermediaries (World Bank, 2026).

The research question that is answered in this paper is as follows: how much central bank independence affects development results, namely inflation, economic growth, and employment, in low-income economies? Its overall thesis is that the traditional paradigm of CBI, which is aimed at developed economies, fails to provide the promised developmental payoffs in low-income settings. Though formal independence can apparently assist in attaining price stability in some circumstances, it is not correlated to growth or employment after controlled structural considerations. Evidence has shown that in countries with low income, better results on standard CBI indices are

strongly related to lower and less volatile inflation but not per capita growth and employment after controlling for structural variables (Neyapti, 2012; Zervoyianni & Anastasiou, 2014; Garriga & Rodriguez, 2019).

The paper provides a contribution to the literature in three dimensions. Firstly, it offers extensive empirical data regarding the connection between CBI and various developmental outcomes in the low-income countries, shifting the argument of research beyond the classical preoccupation with inflation and analyses growth and employment. Second, it separates de jure and de facto aspects of independence and whether the law or the practice has more influence on the developmental outcomes. Third, it uses a strict econometric model with panel models and dynamic panel estimators to overcome endogeneity and persistence problems faced by previous studies. The analysis takes advantage of the cross-country and cross-country variation in CBI indices and macroeconomic variables: inflation, real GDP growth, unemployment, private credit, and trade openness using a panel of low-income economies for a period 2015–2025.

The paper goes on as follows. Section 2 conducts a literature review of theoretical and empirical data on CBI and its applicability to the low-income contexts. The data and econometric strategy are outlined in section 3. Section 4 provides the results on the empirical side. The findings and their implications are discussed in Section 5, and the paper ends with policy recommendations in Section 6.

2. Literature Review

2.1 *The Theoretical Foundations of Central Bank Independence*

The research is based on three theories, which are Time-Inconsistency Theory, Public Choice Theory, and Delegation and Credibility Theory. These theories describe why the central banks cannot be politicised. They claim that institutional independence is the key to price stability and development of macroeconomic credibility, particularly in low-income economies.

2.1.1 Time-Inconsistency Theory

The time-inconsistency theory was first described by Kydland and Prescott (1977) and applied to monetary policy by Barro and Gordon (1983). The time-inconsistency theory indicates that a dynamic dilemma exists on behalf of policymakers. When they pronounce the low-inflation commitments, they can later change their paths to increase employment or minimise debt. This temptation is foreseen by rational private actors, who increase the inflation expectations, which will result in a higher equilibrium inflation that will not enhance output or employment. The theory supports the delegation of monetary policy to an autonomous central bank which is committed to price stability and not attaining political advantages in the short run. Having considered the postulation, the major weakness is on the assumption that time-inconsistency issue is universal. The situation could be less serious in economies where the financial market is shallow and the forward-looking prospects are weak (Mishra, Montiel and Spilimbergo, 2022). The theory applicable to the low-income economies in which historically, inflationary finance created the scepticism of the population. Institutional delegation helps provide credibility to bring down inflation expectations and also establish a stable private investment environment.

2.1.2 Public Choice Theory

The Public Choice Theory is widely known by Buchanan and Wagner (1977), holds that democratic politics is inherently biased towards deficit finance and monetary growth. Politicians who are motivated by the need to be re-elected tend to favour the short-term stimulus and coerce the pressure on central banks to favour fiscal expansions, particularly prior to the elections. The theory is relevant to the inflationary bias in cases where monetary policy is still under political influence: expansionary monetary policy is more popular, and higher inflation costs are not incurred but are distributed to the population. Nevertheless, the theory is weak in the context of developing countries. This is because it presupposes a degree of political competition and democratic accountability which most low-income economies do not have and underestimates external pressures – such as IMF programmes and pressures in the international capital markets – which hold monetary policy accountable (Maxfield, 1997). The theory bears a lot of relevance in low-income economies as research has revealed that there are systematic associations between elections and money expansions. It is in these spheres that central bank independence has been encouraged as the way to protect the monetary policy against forces related to politics (Bodea & Hicks, 2023).

2.1.3 Delegation and Credibility Theory

The Delegation and Credibility Theory, operationalised by Rogoff (1985) and elaborated by Cukierman (1992), states that over the long run, the macroeconomic performance is high when the monetary authority is vested in an independent central bank that is conservative and less sensitive to short-term output fluctuations than elected officials.

The main concept is based on the idea that credibility, which is the hope that the promises made in the policy will be kept, is the economic asset. Credibility will decrease uncertainty, decrease expectations of inflation, and decrease the cost of output of disinflation. The theory clearly associates institutional design, in particular, legal arrangements that provide central bank independence, with the credibility of monetary promises and, finally, monetary performance. It provides a definite, falsifiable causal mechanism: independence causes credibility, credibility causes a decline in inflation expectations, and a decline in inflation expectations causes a decline in actual inflation without long-run output sacrifices. The central bank reforms globally since the 1990s have been based on this framework. However, the theory does not take into account institutional preconditions of effective delegation, including effective legal frameworks, open policymaking, and responsive governance, which can be absent in low-income countries (Garriga and Rodríguez, 2024). The theory is important regarding its understanding of why the independence of the law cannot provide the expected result in cases where the institutional setting is fragile, and it is necessary to analyse not only the *de jure* but also the *de facto* facts of central banks activity.

2.2 Measuring Central Bank Independence

The empirical literature has found two broad measures of central bank independence. The former is concerned with the *de jure* independence – the legal apparatus that rules the central bank. Researchers note the laws governing a number of dimensions in which the appointment or firing of governors is determined, the independence of the bank in policy-making, and limiting the bank to lending to the government. The oldest index is the classic Cukierman, Webb, and Neyapti (CWN) index, which was introduced in 1992; however, more recent indices have broadened its scope. The updated data provided by Garriga (2016) is based on 182 countries, and it is organised into 1970-2012, adding information on sixteen dimensions of legislation. It has become a reference index in modern CBI research.

The second method assesses *de facto* independence by considering the frequency at which the governors of central banks change. When a governor is replaced with a new face on a regular basis, it is an indication that the political actors continue to control the bank in spite of the provisions of the laws to give it autonomy. Dreher, Sturm, and de Haan (2021) revised and expanded the turnover data, demonstrating that the turnover rates have a systematic dependence on the political and institutional factors. Countries where there exist poor rule of law, changes of governments and other political parties and low levels of democratic accountability tend to have high turnover.

In less developed economies, the issue of *de jure* versus *de facto* independence is of significance. Garriga and Rodríguez (2024) have discovered that superiority of the legal provisions on autonomy in practice is common when the political pressures are high and institutional constraints are low. We can offer formal independence in signalling creditworthiness to foreign investors and disregard or revoke the same legal guarantees on another occasion when domestic political interests change (Maxfield, 1997; Boylan, 1998). Hence, the empirical research of CBI should take into consideration both legal and practical aspects.

2.3 Empirical Review

Using panel data analysis, which adjusts endogeneity, Garriga and Rodríguez (2023) examined the impact of legal central bank independence on inflation volatility in developing countries. The study used data between the years 1980 and 2014 in 96 developing nations. The findings indicated that central bank independence has a direct relationship with reduced inflation volatility, especially in more democratic systems. Nevertheless, the paper did not decompose impacts on per capita growth of the GDP or poverty headcount ratios, and it did not look at the particular transmission shortcomings and developmental requirements of the low-income economies.

Gyeke-Dako et al. (2022) applied the system GMM estimator to the data of 1970-2012 to test the impact of the *de jure* and *de facto* central bank independence on the inflation and poverty of 44 sub-Saharan African countries. They discovered that both forms of independence contributed to the inflation control and that inflation had a more significant poverty-reducing impact that was more intense in the event of less central bank independence. Though the study has a comprehensive picture of the African contexts, it lends only to the inflation-poverty relationship without considering the per capita growth dynamics and hybrid *de jure-de facto* indicators, which would make the paper less generalisable to the low-income economies that are not part of the region.

Rabhi (2024) applied a dynamic GMM panel estimator to 2000-2018 data to investigate the effect of *de jure* and *de facto* central bank independence on the ratio of inflation and poverty heads in up to 35 developing nations. It is found that *de jure* independence has a strong negative impact on inflation, whereas *de facto* independence, indicated by low turnover of governors, has a significant positive impact on poverty by interacting with inflation. Nevertheless, the research does not find any statistically significant effect on growth performance, and the mixed sample of developing countries does not discontinue the structural limitations within the poorest IDA-classified economies.

In studying the relationship between central bank independence, income inequality, and poverty across many countries over an extended time, Sturm et al. (2025) utilised fixed-effects panel estimation supported by robustness tests (quantile regressions). The study did not find any significant relationship between the independence of the central bank and the Gini coefficient or the independence of the central bank and the poverty gap. Although the research involves inequality and poverty indicators, the research does not stratify the results according to income level or determine the interaction with per capita growth and exchange rate regimes, making it hard to apply it directly to low-income economies.

To determine the extent to which the independence of the central bank moderates the relationship between inflation, income inequality, and poverty, Tiberto (2025) performed a panel study on 46 countries between 1980 and 2022. The findings suggested that the greater the independence, the more the low-income households are insulated against the inflation shocks, which produce redistributive impacts depending on the degree of independence. The study does not, however, concentrate exclusively on the low-income context, excludes per capita GDP growth as a major development indicator, and, thus, does not provide much insight into the role of central banks in the development of the poorest economies.

Messono (2025) employed the panel estimation techniques to study the relationship between central bank independence and the economic vulnerability of African nations. The paper discovered that an autonomous central bank significantly reduces the level of economic vulnerability by facilitating more effective monetary-policy responses to shocks. However, the study is not a complete investigation of both short- and long-run causality with respect to growth and poverty, and its findings apply to the African scenario, which does not take into consideration the heterogeneity of low-income economies and central banks as overt development agents.

Bakouan, Da, and Sawadogo (2026) provided data on 2006-2023 and conducted instrumental-variable two-stage least squares and smoothing instrumental-variable quantile regression to test the hypothesis that the independence of central banks has an impact on inflation volatility in the WAEMU region. Outcomes discovered that the higher the independence, the less inflation volatility, where, out of these components, governor and board autonomy, financial independence, and lending restrictions came out to be the most important. Although the study is pertinent, it is confined to the WAEMU monetary union and the supranational central bank, hence limited to the West African low-income (francophone) countries, and it cannot be extended to the low-income economies outside the union.

Having considered various literatures there exist gaps which this paper aims at addressing. First, the majority of the research concentrates on either inflation or distributional performance, whereas few examine all of the development outcomes, such as growth and employment, in one empirical study. Second, numerous studies fail to explicitly distinguish between de jure and de facto independence, and it is thus difficult to establish which dimension is relevant to what consequences. Fourth, there are not many papers that specifically address low-income economies in which theoretical support of CBI is the poorest and empirical evidence is the shallowest.

3. Methodology

The paper adopted an ex-post facto design, as it was based on the pre-existing data in the World Bank and World Development Indicators, the Central Bank Legislation Database of the IMF and the Worldwide Governance Indicators. The data used was from 2010-2024, the time when the wave of central-bank reforms in developing countries was rising globally; the 2008 financial crisis was followed by a post-pandemic surge of inflation that questioned the credibility of an independent central bank. Money governance during this period saw many countries that experienced low income levels embracing inflation targeting and expanding the autonomy of central banks. Based on this, the paper used top twenty-five (25) low-income countries as defined by the World Bank (2025). The list of the countries used in the paper is found in APPENDIX I. The following functional model sums the study of the central-bank independence effect on the developmental outcomes of low-income economies:

$$DEV = f(CBIL, CBIT, TRAO, INSQ) \quad (1)$$

Based on model (1), the estimated equation can be written as:

$$DEV_{it} = \beta_0 + \beta_1 CBIL_{it} + \beta_2 CBIT_{it} + \beta_3 TRAO_{it} + \beta_4 INSQ_{it} + \varepsilon_{it} \quad (2)$$

In this specification, 'DEV' refers to developmental outcomes of three indicators: INFL, the percentage rate of change of the consumer price index annually; GROW: the annual rate of change of real GDP (constant 2015 US\$); UNEMP

male: the percentage of unemployment in the labour force (ILO estimate): POVR represents poverty rate. The empirical models are expressed as:

$$\text{INFL}_{it} = \beta_0 + \beta_1 \text{CBIL}_{it} + \beta_2 \text{CBIT}_{it} + \beta_3 \text{TRAO}_{it} + \beta_4 \text{INSQ}_{it} + \varepsilon_{it} \quad (3)$$

$$\text{GROW}_{it} = \beta_0 + \beta_1 \text{CBIL}_{it} + \beta_2 \text{CBIT}_{it} + \beta_3 \text{TRAO}_{it} + \beta_4 \text{INSQ}_{it} + \varepsilon_{it} \quad (4)$$

$$\text{UNEM}_{it} = \beta_0 + \beta_1 \text{CBIL}_{it} + \beta_2 \text{CBIT}_{it} + \beta_3 \text{TRAO}_{it} + \beta_4 \text{INSQ}_{it} + \varepsilon_{it} \quad (5)$$

$$\text{POVR}_{it} = \beta_0 + \beta_1 \text{CBIL}_{it} + \beta_2 \text{CBIT}_{it} + \beta_3 \text{TRAO}_{it} + \beta_4 \text{INSQ}_{it} + \varepsilon_{it} \quad (6)$$

The independent variables are CBIL which means the de jure central-bank independence index; CBIT is the de facto central bank independence, operationalised as the change in the central-bank governor per year in five-year intervals. The effect of these variables is controlled by TRAO which represents openness to trade through exports and imports as a ratio of GDP; and INSQ, institutional quality through government effectiveness. Where, $\beta_1 - \beta_4$ are parameter estimates, " ε " is the residual, and 'i' and 't' are the country and time dimensions. To have credible results of the study without the issue of spurious regressions, the paper strictly adhered to the estimation steps which protect against the violation of panel-regression assumptions.

4. Results and Discussions

Table 1. Descriptive Results

Variable	Mean	Std. Dev.	Min	Max
Inflation	13.29707	35.90868	-6.69	380
Real GDP Growth Rate	3.116301	6.275564	-46.08	14.74
Unemployment	5.963812	4.454704	.57	17.6
Poverty	54.1339	17.60961	10.1	85.3
De Jure Central Bank Independence	.7406627	.1055131	.4665	.8815
De facto Central Bank Independence	.0595238	.2370733	0	1
Trade Openness	52.64875	16.07102	2	130.33
Institutional Quality	-1.258706	.5521189	-2.440229	.3883626

Source: Author's Computation from STATA (2026)

Table 1 statistics indicate that the economies that have low income levels are not ready to tackle their macroeconomic and structural problems. Its average inflation rate stands at 13.30, and its standard deviation is an astounding 35.91, so the difference among the countries is also very disparate, with a maximum of 380 and an average rate of 13.30. There are those economies that operate on relatively stable prices and those that are showing extreme levels of inflation, which is an indication of severe fiscal or monetary issues. The standard deviation of real GDP growth is 6.28 ± 3.12 , which is quite high, and also the minimum of -46.08 is considered to be a highly volatile growth environment, which is a cause of concern among central banks. Unemployment is, on average, 5.96 per cent, which is moderately distributed, and poverty is also high, with a mean population of 54.13 people. The quality in the institutions is poor, with the mean score of -1.26 demonstrating it. The independence of central banks is another obvious paradox: on the one hand, the average legal independence (de jure) is 0.74, indicating the existence of strong statutes, but on the other hand, the average operational independence (de facto) is 0.06, indicating the existence of a

gap between law and practice. This loophole supports the thesis that legal independence is not a sufficient condition of real autonomy and good policy. The degree of trade openness is diverse, and it proves that these economies are differentiated to enter the global market.

Table 2. Shapiro-Wilk Test Result

Variable	W	V	z	Prob>z
Inflation	0.31722	142.884	11.636	0.00000
Real GDP Growth Rate	0.71140	64.929	9.825	0.00000
Unemployment	0.87855	30.582	8.101	0.00000
Poverty	0.96726	1.319	0.584	0.27967
De Jure Central Bank Independence	0.89174	19.772	6.946	0.00000
De facto Central Bank Independence	0.88765	20.519	7.032	0.00000
Trade Openness	0.96328	7.359	4.670	0.00000
Institutional Quality	0.98247	4.272	3.433	0.00030

Source: Author's Computation from STATA (2026)

Table 2 shows the Shapiro-Wilk normality test. Many of the variable outcomes reject the normality with the p-values of less than 0.05 against inflation, real GDP growth, unemployment, and both indicators of central bank independence, trade openness and institutional quality. The W-statistic of inflation equals 0.317, and the one of the real GDP growth is 0.711, which is extremely low and, therefore, critical skewness and kurtosis. These non-normalities are indicators of the structural discontinuities, crises, and inequalities in development in low-income environments. It is only poverty that rejects the null with a p-value of 0.28, indicating that the level of deprivation among the sample remains relatively unchanged and is quite high. Since this is inherently non-normal, it is appropriate to employ robust estimation methods to ensure inference of the developmental role of central banks.

Table 3. Heteroskedasticity Results

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity			
Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance
Variables: fitted values of Inflation	Variables: fitted values of Real GDP Growth Rate	Variables: fitted values of Unemployment	Variables: fitted values of Poverty Rate
chi2(1) = 24.82	chi2(1) = 40.72	chi2(1) = 17.33	chi2(1) = 0.57
Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.4498

Source: Author's Computation from STATA (2026)

Table 3 indicates that the constant-variance null ($p = 0.0000$) is strongly rejected by inflation, real GDP growth, and unemployment models, which proves the heteroskedasticity, which frequently appears with panel data where units have varying error variances. In low-income countries, the parameters that contribute to inflation are generally much more unstable than in comparatively stable economies, so heteroskedastic robust standard errors was adopted to achieve efficient coefficients and correct hypothesis tests. Conversely, the null ($p = 0.4498$) of the poverty model is not rejected, which implies homoscedasticity. This can be attributed to the fact that poverty is less volatile than macroeconomic fluctuations.

Table 4. Variance Inflation Factor Results

Variable	VIF	1/VIF
De Jure Central Bank Independence	1.77	0.564298
De facto Central Bank Independence	1.02	0.982965
Trade Openness	1.18	0.847667
Institutional Quality	1.56	0.642703
Mean VIF	1.38	

Source: Author's Computation from STATA (2026)

The analysis of variance inflation factor (VIF) is shown in Table 4. The problem of multicollinearity is absent: all the VIF values are well below the standard value of 5. The greatest VIF is 1.77 of de jure central bank independence, and the average VIF of the model is 1.38. The fact that the independent variables, in particular the two measures of central bank independence, exhibit low collinearity proves that they are a way of capturing two different dimensions of the economy and the institution. As a result, a confident interpretation of the estimated implications of a legal and practical independence on the outcome variables (inflation, growth, and poverty) is possible, and an analysis of the impact of framework versus practice on shaping the central bank in the development role can be made.

Table 5. Autocorrelation Results

Breusch-Godfrey Serial Correlation LM Test:											
Ho: Residual are Independent			Ho: Residual are Independent			Ho: Residual are Independent			Ho: Residual are Independent		
Model One: Inflation			Model Two: of Real GDP Growth Rate			Model Three: Unemployment			Model Four: Poverty Rate		
F-Statistic = 54.71314			F-Statistic = 3.999155			F-Statistic = 321.6493			F-Statistic = 40.6364		
Prob. F = 0.0000			Prob. F = 0.0199			Prob. F = 0.0000			Prob. F = 0.0000		

Source: Author's Computation from STATA (2026)

Table 5 displays the Breusch-Godfrey LM tests. The findings are good indications of autocorrelation in all the four models. The null hypothesis of independent residuals is disregarded at the traditional levels of significance of the models of inflation, unemployment, and poverty ($p = 0.0000$) and the model of growth ($p = 0.0199$). Serial correlation implies that error terms are correlated with the lagged error terms, which is a common occurrence in panel data when there is often a lagged effect of macroeconomic shocks. To illustrate, inflation shock in a given period can influence the level of prices in future periods. This autocorrelation is ignored, which biases the standard errors and results in inefficient coefficient estimates thus solving the problem of serial correlation in the models. The awareness of this problem underlies the modelling approach implied by the Hausman test: incorporate the panel-corrected standard errors or a suitable covariance structure to reflect the dynamic interdependence of the timelike dimension of the inference that the dynamic role of central banks is sound.

Table 6. Fisher-Type Results

Variable	Statistic	P-value	Comment
Inflation	79.5303	0.0008	Stationary
Real GDP Growth Rate	200.6070	0.0000	Stationary
Unemployment	138.0023	0.0000	Stationary
Poverty	29.4645	0.0463	Stationary
De Jure Central Bank Independence	88.2237	0.0263	Stationary
De facto Central Bank Independence	75.1254	0.0001	Stationary
Trade Openness	67.6553	0.0041	Stationary
Institutional Quality	90.7002	0.0004	Stationary

Source: Author's Computation from STATA (2026)

Table 6 indicates the unit-root tests of the Fisher type. All the variables studied are stationary. All the test statistics are significant at 5%. The null of non-stationarity is comfortably rejected by variables like real GDP growth ($p = 0.0000$) and unemployment ($p = 0.0000$). This observation is important in the panel regression analysis since it eliminates stochastic trends that may lead to a spurious outcome. Both the de jure ($p = 0.0263$) and de facto ($p = 0.0001$) central bank independence are stationary; that is, their values vary in every country, but their dynamics over time revert towards a long-run mean. This is indicative of adamant institutional and legal structures that, even though they can be reformed, do not wander endlessly. The fact that all series are stationary proves that the panel models are capturing real co-movements in variables and not shared random trends and enhances the confidence of central banks' stabilising and developmental role analysis.

Table 7. Hausman Test Results

Ho: Random effects are consistent and efficient	Ho: Random effects are consistent and efficient	Ho: Random effects are consistent and efficient	Ho: Random effects are consistent and efficient
Model One: Inflation	Model Two: of Real GDP Growth Rate	Model Three: Unemployment	Model Four: Poverty Rate
Chi2 (4) = 7.28	Chi2 (4) = 1.03	Chi2 (4) = 6.91	Chi2 (4) = 0.91
Prob>chi2 = 0.1219	Prob>chi2 = 0.9053	Prob>chi2 = 0.1407	Prob>chi2 = 0.9230

Source: Author's Computation from STATA (2026)

Table 7 presents the Hausman specification tests, which clearly provide support of the random-effects estimator to all four models. The p-values of each of the dependent variables, which are the inflation ($p = 0.1219$), the real GDP growth ($p = 0.9053$), the unemployment ($p = 0.1407$) and the poverty ($p = 0.9230$), are higher than the 5% mark. Thus, the null of the identity of fixed-effect and random-effect coefficients cannot be rejected. This is theoretically significant. It demonstrates that the central bank independence and other covariates affect the macroeconomic achievements more than unobserved and time-invariant country features. Such stable factors as institutional structures can be included in the random-effects model, and time-varying policy decisions as observed in de facto independence can still be captured. The Hausman test therefore causes adoption of the more effective random-effects framework in investigating these intricate associations.

Table 8. Random Effect Results

VARIABLES	(1) Inflation	(2) Real GDP Growth Rate	(3) Unemployment	(4) Poverty
De Jure Central Bank Independence	-12.58829 (13.84584)	-2.919357 (3.914217)	1.533359 (1.652699)	8.113052** (1.599179)
De facto Central Bank Independence	-3.891584** (1.370972)	2.220793** (.8224237)	-.1147591 (.1983776)	-14.68146 (27.0723)
Trade Openness	.1726285** (.0558898)	.1555487** (.0591239)	-.0283331 (.0173186)	.4851925 (.346188)
Institutional Quality	2.930193 (1.788322)	2.175742 (1.268072)	-1.600887 (1.266392)	-8.134632 (9.484222)
Constant	9.337868 (8.674875)	.0850962 (3.92834)	4.504039** (1.748108)	30.96081 (25.77371)
Wald chi2(4)	45.63	15.14	12.39	563.07
Prob > chi2	0.0000	0.0044	0.0146	0.0000
R-squared	0.0732	0.1550	0.2062	0.2580

Robust standard errors in parentheses

** p<0.05

Source: Author's Computation (2026)

The findings in Table 8 reveal that the constant term of the inflation model is equal to 9.337868, and the p-value of the constant is much higher than the traditional levels of significance. This implies that in low-income economies, the baseline inflation rate is positive, but this cannot be differentiated with no explanatory variables. The joint statistical significance of explanatory variables is confirmed by the Wald chi-square statistic of 45.63, which has a probability value of 0.0000. Therefore, the model is a strong one in explaining the process of inflation. The value of R-squared (0.0732), however, shows that the variables only describe a variation of about 7.3 per cent in inflation across the sample.

The coefficient of the de jure central bank in the inflation model is negative (coef. = -12.58829) though not statistically significant ($p > 0.05$). This implies that the legal statements that give central banks autonomy do not, in and of themselves, have a noticeable effect on the inflationary performance in low-income economies. This finding is consistent with Garriga and Rodríguez (2024), who warned that legal independence cannot bring its stated advantages when institutions are weak and enforcing institutions are weak. This was also found by Rabhi (2024), who concluded that a negative effect of de jure independence on inflation was significant only when the overall institutional environment was favourable. The fact that the present study is meaningless can be attributed to the structural limitations of the low-income economies like the shallow financial market and the prevalence of informal economic activity that make it difficult to transmit policy signals. This is in contrast with Garriga and Rodriguez (2023), who utilised panel data of 96 developing countries in the period between 1980 and 2014 and found that legal central bank independence was directly associated with a lower rate of inflation volatility, particularly in more democratic regimes. The differing results could be attributed to the fact that the current study is based on low-income economies in contrast to the expanded scope of the sample of middle-income countries with more developed financial markets and with more developed institutional structures.

The de facto central bank independence coefficient in the model of inflation is negative and statistically significant at the 5% level (coef. = -3.891584, $p < 0.05$). This conclusion is theoretically significant. It implies that the concern with price stability is not simply about the legal provision in the document but the actual functioning of a central bank's autonomy that is indicated by a low turnover of the governors and authentic immunity to political influence. The result confirms the delegation and credibility theory developed by Rogoff (1985) and subsequently developed by Cukierman (1992), which holds that it is a credible commitment to price stability that assists independent central banks to contain

inflation and not formal rules. This was also affirmed by Gyeke-Dako et al. (2022), which revealed that the two types of independence were equally useful in controlling inflation, although in a way that was more pronounced where the provisions that were outlined by the law were supported by the reality of operations. Based on an instrumental-variable estimation covering the WAEMU region between 2006 and 2023, Bakouan, Da and Sawadogo (2026) found that the autonomy of governors and lending restrictions were the strongest elements of central bank autonomy in mitigating the volatility of inflation. In this way, the current research supports the opinion that in low-income economies, practice is more important than promise. It is also noted that autonomous central banks can also play a significant role in economic vulnerability reduction by allowing more effective responses to shocks by monetary policy (Messono 2025).

The coefficient of trade openness is positive and significant in the inflation model (coef. = -0.1726285, $p > 0.05$). This implies that the more people integrate into the global economy, the higher the inflation. Although this might appear counterintuitive, it probably indicates the way external price shocks are passed on, mostly of food and fuel, to domestic economies. Poor nations, in particular, are at risk, as their export baskets are not usually diversified, and they depend on imported goods to supply their basic needs. Carare, De Resende, Levin, and Zhang (2022) recorded the increased vulnerability of low-income economies to the world volatility of prices. The coefficient of institutional quality is positive but not very significant (coef. = 2.930193, $p > 0.05$). This is a little bit surprising since the stronger institutions should be supposed to anchor the inflation expectations. The triviality can be an indicator of the comparatively low scores on institutional quality in the sample and widespread governance problems that might require a point of reference before impacting price stability. Garriga and Rodriguez (2024) noted that the effective delegation of monetary authority requires institutional preconditions.

Considering the growth model, the constant is 0.0850962, which is not significant, and it means that the growth rate in the absence of the explanatory variables is practically zero in the sample. The Wald chi-square value of 15.14, which is significant at the 1 per cent level ($p = 0.0044$), ensures that the joint effect of the regressors is significant. The value of 0.1550 on the R-squared indicates that the model can explain 15.50 per cent of the variation in the growth rates – a small but significant proportion of variables, considering the numerous variables and terms-of-trade shocks to climatic variability that take place to drive economic performance in low-income environments.

The de jure central bank independence coefficient stands at -2.919357, and it has no significant effect. This is a dissent to the traditional wisdom that legal independence is the driver of growth because it provides a stable macroeconomic environment in which the private sector can invest, which is based on experience in advanced economies. The mechanism of transmission seems to fail in low-income settings. The finding is consistent with Rabhi (2024), who established no statistically significant impact of central bank independence on growth in his dynamic GMM panel (2000-2018). It also resonates with the views of Neyapti (2012) and Zervoyianni and Anastasiou (2014), who stated that the advantages of Central Bank Independence (CBI) require complementary institutional and structural factors that, in many poorest economies, are not present. Therefore, the paper supports the notion that the canonical CBI model, which is based on the experience of developed countries, should not be implemented in the context of low-income countries unconditionally. This is the opposite of time-inconsistency theory as defined by Kydland and Prescott (1977) and Barro and Gordon (1983), which presupposes universal benefits of independence.

The coefficient of de facto central bank independence is positive and significant (2.220793, $p < 0.05$). The theoretical emphasis of this finding is that operational independence, as indicated by the stability of governors and true independence of politics, does lead to growth. The process does conform to the delegation and credibility theory: credible commitment to stability lowers uncertainty, reduces the risk premium on investment, and promotes capital formation in the privatised sector which supports growth. This positive contrast to the de facto outcome suggests that in those cases when central banks do get their way, they are in a position to be useful in promoting growth even in difficult low-income conditions. This finding echoes the work of Messono (2025), who demonstrated that autonomous central banks make African countries much less vulnerable economically by allowing them more responsive policy in terms of monetary policy responses to shocks, thereby establishing growth-friendly environments. This is also supported by Gyeke-Dako et al. (2022), who state that the independent operation contributed to macroeconomic stability, which is a precondition of long-term growth even though they focus predominantly on inflation and poverty.

Trade openness once more shows a significant and positive coefficient (0.1555487, $p < 0.05$). This goes in line with the traditional anticipation that opening up to international markets makes it easy to transfer technology, achieve economies of scale and reach bigger markets that are conducive to growth. The result is consistent with the body of literature on openness based on its growth-promoting effects, but it should be viewed with the understanding that these gains come with the condition that these policies and institutions have to be complemented domestically. Institutional quality is also non-significant (2.175742, $p = -0.05$), which is indicative of the relatively low governance effectiveness

in the sample levels, which might not be effective in creating growth-promoting effects that are observed in more advanced institutional environments. This finding is consistent with Sturm et al. (2025), who, in their fixed-effects panel model, discovered that institutional quality, among other variables, did not have a significant direct impact on growth but found indirect mechanisms by which governance could impact growth.

The constant in the unemployment model is 4.504039 and statistically significant at the 5 per cent level ($p = 0.05$). This implies that there is a level of unemployment of approximately 4.5 per cent in the absence of explanatory variables. The Wald chi-square is 12.39, which is significant at the 5 per cent level ($p = 0.0146$), which indicates that the model has joint explanatory power. Having an R-squared of 0.2062, the variables used elucidate around 20.6 per cent of the alteration in the unemployment rates in the sample. This implies that the results of monetary governance set-ups affect labour-market performance, but significant variation is attributable to structural factors outside of this study.

In the unemployment model, neither of the indicators of central bank independence is significant. The value of the coefficient of *de jure* independence is positive (coef = 1.533359) but insignificant ($p > 0.05$). The *de facto* independence coefficient is negative (coef = -0.1147591) as well as insignificant. The implication of these findings is that the independence of the central bank, be it in concept or practice, does not directly influence unemployment rates in low-income economies. This is consistent with the theoretical assumptions presented above: the processes by which CBI could potentially impact employment are secondary and conditional and occur primarily by way of macroeconomic stabilisation and not a policy lever. With large informal sectors that dominate labour markets, subsistence agriculture, and structural underemployment being characteristic of low-income settings, the connexion between monetary governance and employment is presumably poor in such contexts. Anand (2018) confirms this suggestion, saying that the transmission channels that the canonical CBI literature assumes would be missing in low-income economies since monetary policy signals are blocked by the structural properties of the labour market.

These coefficients are insignificant, which is consistent with the results of Sturm et al. (2025). Their panel study, which is fixed-effects and spans a long time and a large number of countries, did not find any significant association between central bank independence and distributional results, including inequality or poverty, which are directly related to employment. This was also resonated by Tiberto (2025), who added that the redistributive effects of CBI are determined by how independent a country is and also by the channels through which the inflation shocks are distributed to various population groups. The fact that there is no direct effect on unemployment in this paper does not disqualify the idea of indirect effects occurring via growth and investment channels, which might take more time to occur and may be obscured by the short period covered by the study.

The coefficient of trade openness is negative (coef. = -0.0283331) and approaches, though does not attain, the conventional level of statistical significance ($p < 0.05$). This is an indication of the dualistic and unclear association between commerce and the workforce in poor countries. The increased exports have the ability to generate employment, and the competition brought by imports may drive out of business this sector that cannot withstand the competition of other companies that are growing internationally. The duality of the trade and development theory is not a recent observation, as it has always been noted that results hinge on comparative advantage and labour market flexibility. The quality of the institution is also not relevant (coef = -1.600887, $p > 0.05$). This result can be due to the imbalanced and ineffective institutions of governance throughout the sample, which cannot be expected to have a systematic effect on the labour market results without additional structural transformation. According to Garriga and Rodriguez (2024), institutional quality tends to work indirectly and might have to experience threshold effects before it can be observed in the results of labour markets.

The poverty model has the highest overall fit of the models considered. It has a 0.2580 R-squared and the Wald chi-square = 563.07, significant at the 1-percentile ($p = 0.0000$). The constant value is 30.96081, which is not significant ($p > 0.05$). It indicates that the unexplained level of poverty is not well estimated. The high explanatory power of the model suggests that monetary governance and institutional implications related to it have higher effects on the poverty outcomes as compared to inflation and growth. It can show how the macroeconomic instability impacts the poorest households strongly, as they do not have the opportunity to protect themselves against price shocks and economic volatility.

The *de jure* central bank independence coefficient is significant at the level of 5 per cent (coef = 8.113052, $p = 0.05$). This finding is intriguing and provocative in theory. It means that legal safeguarding of central bank independence in low-income economies is correlated with poverty. It is possible that one reason could be that an inflation-orientated mandate which prevails in independent central banks can lead attention and resources away from the development objectives where structural poverty dominates. This opinion is similar to those of Anand (2018) and Marshall and Rochon (2025), who assert that central banks that are largely price-orientated are inappropriate in the context of an

economy in which the bank needs to fulfil the role of a development agent, which implies a strategic credit provider and public investment financing. The other condition that is not mutually exclusive is that the positive coefficient represents reverse causality or omitted-variable bias. The deep structural poverty of countries may therefore take formal independence of the central bank as an indication of creditworthiness to external financiers and donors, as Maxfield (1997) and Boylan (1998) opine. The legal independence is a response to external pressure and poverty, rather than its cause, in my opinion.

This finding is contrary to Gyeke-Dako et al. (2022), who discovered that inflation decreased poverty better in the case of low central bank independence. Nevertheless, their analysis was on the inflation-poverty relationship and not the direct CBI-poverty relationship; hence, this makes it hard to draw a straight line of comparison. The outcome is also not similar to Tiberto (2025), who theorised that the greater the independence, the better protection low-income households have against inflation shocks, which generates redistributive benefits to the poor. The difference is probably due to the fact that we focused on low-income economies when the previous research relied on larger samples, which tend to mask heterogeneity across development stages. Even so, Sturm et al. (2025) indirectly support this: their multi-country investigation did not show any important CBI-poverty correlation, and the correlation might be context-dependent and threshold-sensitive.

The de facto central bank independence indicates it has a negative coefficient (coef = -14.68146), which is not significant ($p = 0.05$) in spite of the large size of its economy. It could be because there is not a significant difference in de facto independence in the sample or because operational autonomy, as useful in stabilising prices, does not directly alleviate poverty without complementary policies, e.g., increasing credit access, promoting smallholder agriculture, and enhancing social safety nets. The result is in line with that of Sturm et al. (2025), who have discovered no meaningful CBI-poverty relationship in a cross-country analysis, as well as that of Tiberto (2025), who emphasised the conditionality of redistributive effects. The large coefficient may indicate that the operational independence may reduce poverty provided that it is supported by proper policy frameworks and institutional conditions.

The coefficient of trade openness is positive and does not have a statistically significant value (coef = 0.4851925, $p > 0.05$). This means that, without other conditions, integration into global markets does not alleviate poverty in the low-income environment, which is confirmed by most of the development literature that emphasises the need for complementary policies in the distribution of trade benefits. This finding aligns with the United Nations Conference on Trade and Development (2023), which observed that the liberalisation of trade does not normally reduce poverty in low-income countries due to the constraints linked with the supply side, lack of diversification, and low participation of poor households in sectors that have been liberalised. The coefficient between institutional quality and its result is negative but insignificant (coef = -8.134632, $p > 0.05$). This could indicate that overall governance performance is poor in the sample; it can hardly affect poverty without significant structural transformations. The theoretical background is given by Garriga and Rodriguez (2024): they consider that quality in institutions can influence poverty indirectly and must be subjected to threshold effects before manifesting itself.

5. Conclusion and Recommendations

The paper demonstrates that the de facto independence of central banks, in the form of stability of governors and actual independence in their operations, is an effective route to reducing inflation and stimulating growth in low-income economies. Nevertheless, legal independence does not have much impact on most of the models, and formal autonomy is associated with increasing poverty levels. This is an indication that institutional design is not sufficient to guarantee gains in development. Sustainable development demands a policy framework not just limited by strict monetary policies: it should enhance the operational independence of central banks and protect against politics, entrench monetary policy in more general development strategies to focus on jobs and poverty reduction, and combine independence with reforms addressing the special features of low-income environments. The study recommends that:

Authentic independence of operation should therefore be given priority by policymakers in the low-income economies. This includes ensuring the independence of the governors of central banks, ensuring that governance is not subject to political influence and reducing fiscal dominance. Lawmakers need to enact laws which do not just provide legal independence on paper; they need to develop operational mechanisms by which this form of autonomy can be made operational, i.e., transparent appointment rules, clear-cut dismissal rules, and good accountability and checking mechanisms so that independence does not turn into unbridled power. The low-income nations must incorporate central banks within overall development plans that are explicit to job creation and poverty alleviation because they should realise that price stability would not convert development. This implies that the mandates of central banks should be broadened to reflect developmental ends, enhance coordination with the fiscal authorities and build the institutional capacity of central banks to react efficiently to structural low-income economy realities, most prominently

the high level of informality in the economy, weak financial markets and vulnerability to external shocks. Financial inclusion should also be spearheaded by central banks; stability brought to the underserved population should be a priority, and proper control is exercised to ensure that access to stability is not restricted. It is only when monetary governance is linked to a comprehensive development agenda that low-income economies will be able to reap the full benefit of independent central banks as actual development actors.

6. Limitations of the Study and Direction for Further Research

The study includes only 25 low-income countries, which could make it difficult to understand institutional and economic differences across countries that may affect the question of central bank independence. Furthermore, the concept of de facto central bank independence was assessed based on the turnover of central bankers, which does not necessarily reflect other aspects of independence, and the indices used for development measured only indices such as inflation, economic growth, unemployment and poverty. Future research should focus on individual country experiences, use more comprehensive measures of central bank independence and development, and use more sophisticated econometric tools to gain deeper knowledge into the roles of central banks as actors in the development process in different institutional and economic environments.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Obtained.

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The Publication Ethics Committee of the Sciedu Press.

The journal and publisher adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

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Data sharing statement

No additional data are available.

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Appendix

1. Afghanistan
2. Burkina Faso
3. Burundi
4. Central African Republic
5. Chad
6. Congo, Dem. Rep.
7. Eritrea
8. Gambia, The
9. Guinea-Bissau
10. Korea, Dem. People's Rep.
11. Liberia
12. Madagascar
13. Malawi
14. Mali
15. Mozambique
16. Niger
17. Rwanda
18. Sierra Leone
19. Somalia
20. South Sudan
21. Sudan
22. Syrian Arab Republic
23. Togo
24. Uganda
25. Yemen, Rep.