FINANCIAL INCLUSION AND ITS EFFECT ON THE GROWTH OF THE NIGERIAN ECONOMY.

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ABSTRACT

Financial Inclusion implies as a strategy has become a policy issue around the globe including Nigeria, and it has been perceived as a transmission mechanism for poverty eradication and a means of pursuing inclusive Economic Growth. This study examined the comparative study which is focused on the financial inclusion and its effect on the growth of the Nigerian economy. In reference to the theoretical framework, the finance-growth theory was adopted as the under-pinning theory that this study is based on. The data extracted from secondary sources for econometric analysis covered the period between 1990 and 2023 while the Vector Autoregressive Model was used as the method of analysis; which is based on the stationarity test results where the variables were stationary at level, 1st and 2nd difference. The variables used are; Inflation, Domestic credit provided by financial sector, Poverty head count ratio at $2.15 a day (2017 PPP), Unemployment and Urban population growth (annual %) which the domestic credit provided by financial sector stands as the dependent variable. According to the apriori expected outcome, the dependent variable DOMC is affected by INFL, POV, UNEM, URB but based on the result from stationarity test, the dependent variable was isolated from the VAR analysis to determine the causality test relationship between the independent variables and the lag value relationship between the variables. This study focuses on other regression results like the VAR stability condition, residual diagnostics and autocorrelation test to determine how important the study towards the forecasting for the growth of the economy. Due to the fact that inflation is determined by the activity of poverty rate, urban rate of the population, it is recommended that for economy to improve, more emphasis should be on these listed areas for a better understanding and policies.

Keywords: *Financial inclusion, poverty rate, urban population, inflation, unemployment.*

Introduction

In the past, economists have not viewed the role of the financial inclusion as key towards the growth of the economy until recent times when the financial sector and the need to expand its activity became quite necessary (Akpan & Uford, 2023); which is connected to some factors. Some evident researchers consider that the operation of the financial sector purely responds to the need for economic growth, as seen by the adjustment to varying demands from the real sector (Levine

R, 2006). Some of the factors that affects financial inclusion in recent times includes; poverty rate, inflation and unemployment as revealed in this study although, financial markets and institutions help to relieve the effects of information and transaction costs that check direct pooling and investment of the savings of the society (Charles & Uford, 2023). In the work of Sanusi (2011), financial system is believed to have been acknowledged to play an important part in the economic growth of a country, it also plays a crucial part in the allocations of savings and financial resources for the growth of the industrial sector and for domestic purposes; affords arrangements for monetary administration and the base for managing liquidity in the system. The financial system is a situation which banks acts as the main component that offers links for diverse and different sectors of the economy and makes a high level of expertise, specialization, economies of scale and an environment set for the execution of policies that enhances growth like non-inflationary growth, exchange rate stability and balance of payments equilibrium (Sanusi, 2011); implying that this is firmly a function of an all-inclusive financial system. The introduction of the concept financial inclusion, was introduced in the early 2000s which is traced to researches from scholars of the need to include financial inclusion as key economic growth indicator that is why financial inclusion as a motivation is designed at ensuring adults have access to financial resources, for the purpose of resolving challenges at costs that are not exploitative and some of this financial resource includes; loans, payments, credits and savings (Onaolapo, 2015). The main objective of this article is to determine the effect of financial inclusion on the growth of the Nigerian economy within the year 1990- 2003.

Furthermore, lack of access to financial services, credit facilities, insurance coverage, and investment opportunities inhibits economic growth and efforts to reduce poverty. Not only is financial inclusion essential for society, but it is also a prerequisite for economic stability. The incorporation of financial inclusion as one of the core objectives of the Nigerian Financial System Strategy 2020 (FSS 2020) was one of the most important steps in this direction. The FSS 2020 is a comprehensive and strategic road map and framework for transforming the Nigerian financial sector into a development catalyst that will enable Nigeria to become one of the twenty largest economies by 2020. According to Sharma (2016), the general view concerning financial inclusion is noted to gain a high level of reputation currently due to the fact that great important economic achievement and growth is realized through it.

Financial inclusion is defined as the providing of financial resource at a cost that enhances easy for business to aid the poor regions/ rural center of society (bearing in mind that so many adults do not have access to financial resources form financial settings due to many factors) (Horgan, Fagge, & Ukeje, 2015). According to the World Bank (2015), when people gain access to quality financial resources from financial set-ups (ethically), through transactions, payments, savings and credit availability, is referred to as financial inclusion. Due to the knowledge from the World Bank publication in 2022, two billion individuals do not have access to organized financial services that is why this study is pertinent in adding to the existing literature that will lead to a robust action towards economic growth through financial inclusion. Therefore, financial inclusion tries to increase the rural population the chance for development by granting them access to fundamental financial services.

Financial inclusion is achieved when adult Nigerians have simple access to a wide range of formal financial services that satisfy their needs and are offered at a reasonable price (Uford, 2017),

according to the Nigerian Financial Inclusion Strategy (NFIS 2018). According to Abbas and Atanda (2019), a review of the majority of scholarly submissions reveals that the goal of financial inclusion is to boost economic growth by improving the well-being of the economy of those at the bottom and disadvantaged end of the economic pyramid so to say and those who are not into the habit of banking by making financial services that are affordable available to them. According to the National Financial Inclusion Strategy Report (2012), when individuals that are keen and are need of financial goods have access to a different range of products designed especially for them and offered at costs that are competitive, inclusive growth is achieved as a result. Via the monetary authorities, good number of ideas and initiatives have been implemented in Nigerian (Community and microfinance banks, electronic banking products, electronic payment systems, and cashless policies have all been developed - ATMs, POS, and mobile banking - are just a few of these policies and programs) in order to improve financial inclusion in the rural population.

The variables that are used in this study include; Inflation which is the measure of the consumer price index that reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, say a year; whereas domestic credit provided by financial sector is the credit to various sectors on a gross basis, with the exception of credit to the central government (WDI, 2023). The other variables used are; poverty head count ratio which is the percentage of the population living on less than $2.15 a day at 2017 purchasing power adjusted prices. Unemployment as another variable implies the share of the labour force that is without work but available for and seeking employment; whereas urban population growth refers to people living in urban areas (WDI, 2023). Rajan & Zingales (2003), explains that financial inclusion in the financial sector initiates a conducive circumstance which propels economic growth whether is viewed from empirical and theoretical point of view. Although Nigeria has one of the largest economies in Africa, little attention has been paid to financial inclusion, which only a small portion of the adult population is included. Nigeria's Central Bank (CBN) has undergone numerous reforms in an effort to become a key economic driver by 2020 (NBS, 2022).

Review of related literature

Financial inclusion is said to be a process that assures the ease of access, availability and usage of the formal financial system by all members of an economy. According to Martinez (2011), financial access as an imperative policy tool engaged by the government in a belligerent and stimulating growth based on its aptitude to facilitate efficient allocation of productive resources which in turn reduce the cost of capital. This process as it is also known as an inclusive financing system can meaningfully improve the day-to-day management of finances, as well as diminish the growth of informal sources of credit, which are often found inefficient (Martinez, 2011). This study on financial inclusion involves, the relationship between domestic credit provided by the financial sector, inflation, poverty rate, unemployment rate and urban population growth. According to Aina S. (2014), financial inclusion is a strategy for discouraging savings, loans, and the holding of cash in the unofficial economy outside of the financial system.

Financial inclusion refers to the entire system, programs, and plan that ensures more individuals who have access to formal financial services but do not use them, as well as those who did not, are brought into the formal financial systems to assure their continuous and consistent use of formal financial services over a very long period of time. According to El Said, Emara, and Pearlman

(2020), financial inclusion refers to consumers' and enterprises' access to and usage of financial products and services. Financial inclusion is defined by Akhil (2016) as providing financial services to the poor at affordable costs. Economic growth, development, and financial inclusion are all entwined and intertwined. Based on these definitions this study sees financial inclusion as the process of ensuring that regulated, mainstream financial institutions provide the necessary financial products and services for all segments of society, especially the most vulnerable low-income groups, at a price that is fair and transparent. Hence, an inclusive financial system is now generally known as a policy importance in many countries with creativities coming from the financial regulators, the government and the banking industry (Uford, Mfon & Charles, 2023)
.
Legislative dealings have also been initiated in some countries leading to such monitoring frameworks in countries like United States, France, United Kingdom, South Africa etc. Countless of these regulatory frameworks were planned as a way for improving the economic welfare of low-income groups to aid some purchases and for establish small businesses, artisans having access to wider financial services with the capacity to increase or stabilize income and thus build resilience against economic shocks. A well-functioning financial system propels economic growth, builds a platform for financial intermediation by providing savings, credit, payment, and risk management products to people with a wide range of needs. Financially inclusive systems permit an easy broad-based access to financial services by making custom-built financial products obtainable at a reasonable price without rigorous documentation, mostly to the poor or other vulnerable groups within the economy. Onaolapo (2015), asserted that without financially inclusive systems, the poor would rely on their inadequate savings for future investments and micro or small businesses will not be capable of pursuing favourable growth prospects because they will have to depend on their meagre earnings, which is the cause of the persistent income disparity and encumbrance to the economic growth of most developing countries (Onaolapo, 2015).

For over a decade, the Nigerian economy experienced stable growth with an average growth rate of Gross Domestic Product (GDP) at 7%. The economy was also rebased in 2014 and became the biggest economy in Africa, contributing 41% to the West African sub region's GDP and contributing 14% to the continent's GDP ahead of South Africa and Egypt (Lonel, 2016). Regardless of all the resources, Nigeria is confronted with an uneven dispersal of income, which has widened the inequity between the rich and the poor. More than half of the country's affluence is encumbered by only 10% of the population (Awe, and Olawumi, 2012). In 2012, 67.1% of the Nigerian populace was said to be living below the poverty level even with increasing growth in GDP (NBS, 2012). Ironically, economic analysts have defined the rise in GDP as "exclusive" because it did not transform into somewhat tangible socio-economic improvement in terms of employment opportunity, poverty reduction and improvement in the general living conditions of the people. Consequently, with the above consideration, the governments of Nigeria and other emerging economies have made financial inclusion their core concern. This is validated by the nascent strategic approach to financial inclusion, attached with regulatory improvements and new funding mechanisms, as pronounced by the Federal Government of Nigeria in 2011. The Financial Inclusion Strategy is considered significant in accomplishing Central Bank of Nigeria's (CBN's) goals such as safeguarding external reserves and protecting the international value of the Naira. These goals among others which are attached to achieving economic growth are assumed to be realistic, as financial inclusion brings about better access to finance for micro small and medium scale enterprises, leading to increased productivity, greater nonoil export and subsequently

stabilize demand for the Naira. Hence, investigating its outcome on economic growth in Nigeria will enhance research and knowledge.

Financial Inclusion can also be defined as a practice or situation which permits easy access to, or convenient use of formal financial systems by all members of the economy. It refers to a development where all citizens of a country do not have distress in opening bank accounts, can afford to access credit; and can easily, conveniently and consistently use financial system products and facilities without difficulty. It is the process which ensures that a person's monetary inflow is maximized (Nguena and Abimbola, 2013). According to the Centre for Financial Inclusion, Financial Inclusion is seen as "a state in which all who can use financial facilities have access to a complete set of quality services, provided at cheap prices, in a fitting method, and with dignity for the customers. Furthermore, it signifies a state where financial services are provided by a variety of providers, mostly private sector operators, and reach everyone who can use them, including the poor, disabled, rural, and other excluded populations" (Centre for Financial Inclusion, 2010). The problem of financial exclusion has consequently been a foremost economic challenge which has received the attention of various governments over the past decades. Sarah Alade the then Central Bank of Nigeria's Deputy Governor on Economic Policy spoke at the inauguration of the National Financial Inclusion Steering Committee in 2015, noted that the exclusion rate for women was 42.7 percent about 21.4 million compared with the rate of men, which stood at 35.8 percent representing 15.6 million. The rate among those in the age bracket of 18 and 25 years was 47.8 percent (14.0 million), while rural dwellers had exclusion rate of 47.8 percent (28.6 million); (Alade, S, 2015).

Over the years, the government and monetary authorities introduced different policies aimed at deepening financial inclusion in the economy. These policies went from many institutional involvements such as the formation of Community and Microfinance banks to particular policies and programmes calculated to expedite access of the financially excluded people to formal financial services. The Private Banks also engaged in improvements and activities aimed at attracting more people into the Financial Inclusion process, though their levels of involvement have always been influenced by the extent of their profitability (CBN, National Financial Inclusion Strategy, 2012). Although, Inflation is an important factor to examine when considering the extent to which financial inclusion can promote inclusive economic growth. Inflation is defined as an overall rise in the cost of goods and services across an economy. As the general price level rises, each unit of currency may buy fewer goods and services, implying that inflation is associated with a loss of money's purchasing power. The Consumer Price Index (CPI), a weighted average of prices for various items, is used to calculate inflation.

Theoretical Framework

The finance-growth theory is adopted as the underpinning theory that this study focuses on this is so because the Finance-Growth nexus believes that financial development creates a dynamic productive environment for growth through 'supply leading' or 'demand-following' effect. This theory also recognizes the lack of access to finance as a critical factor responsible for persistent income inequality as well as slow growth. Hence, access to a safe, easy and affordable source of finance is acknowledged as a precondition for quickening growth and reducing income disparities and poverty, which create equal opportunities, enables economically and socially excluded people to integrate better into the economy and actively contribute to the development and shield themselves against economic shocks. (Serrao, Sequeira, and Hans 2012).

One of the major challenges facing Financial Inclusion in Nigeria is the very low financial literacy rate particularly among the rural dwellers making banking and other financial services challenging for the operators. In addition, information and telecommunication knowledge is still low in the country, making access to financial services difficult. Inadequacy and inappropriateness of awareness campaign sometimes inhibit the level understanding of financial transactions and the ability of the illiterate to take advantage of the possibilities in financial services. Critical to awareness is the difference in the language of the target population and the language of education and therefore reduces the effectiveness of communication. An uninformed population cannot effectively use financial services (Migap et al, 2015).

Empirical Review

Soyemi et al. (2020) conducted a study in Nigeria on financial inclusion as a means of achieving sustainable development. Time series data on the human development index, the number of bank branches, demand deposits from rural areas, and loans to rural areas between 2001 and 2016 were used in the study. The long-run fully modified least squares result revealed that there is a positive and substantial link between bank branches and the human development index. As a result, over the study period, bank branches were growing, which helped to improve financial inclusion in the nation. Although the short-run error correction model's findings indicated that bank branches have a negative and insignificant connection with the human development index in both lag 1 and lag 2, This indicates that reducing bank branches and spending more on personal healthcare deplete resources that could have been utilized for savings, increasing the rate of financial inclusion in the nation. Additionally, it has contributed to the reduction of poverty and the redistribution of money. Onaolapo (2015), in his study, examined the effects of financial inclusion on the economic growth of Nigeria (1982- 2012).

Financial intermediation through improved bank branch networks, loans to rural areas, and loans to small-scale enterprises resulted in about 50% relatedness between variables on either side of the equation. Okoye A and Adetiloye O. (2020) Using time series data from 1986 to 2015, investigated financial inclusion as a cure-all for balanced economic development. Results showed that private sector credit has not considerably impacted gross domestic product, but through rural loan distribution, it has decreased the poverty rate. The study suggested that monetary authorities should tighten the financial institution regulatory framework to ensure effective and efficient resource utilization. Literature Gap Studies on the likelihood that an inclusive financial system supports or influences economic growth in Nigeria are rare and have not been thoroughly examined. Previous studies tended to focus solely on financial inclusion, whereas this study examines key variables and introduces new control variables to further break down financial inclusion. This is the driving factor behind this study, which attempts to close the research gap in this area while also complementing previous studies.

Financial inclusion is a diverse concept with multiple definitions based on a country's socioeconomic development level (Akileng, Lawino, and Nzibonera, 2018). Some studies examine the absence of access to the formal financial system (i.e., financial exclusion) as a result of social exclusion. In the earliest attempt to define financial exclusion, Leyshon and Thrift (1995) defined it as mechanisms that prevented people from disadvantaged backgrounds from accessing the financial system. Models of financial economics investigated how market frictions influenced the

creation of financial contracts, markets, and intermediaries, which in turn affected managerial incentives, business operations, and resource allocation (Boyd & Prescott, 1986).

Data Sources and Models Specification

This paper tested the null hypothesis of no causal relationship between the independent variables used as a mean of achieving the objective of the study. Therefore, several models were established to show the relationship that exists between the variables. All the models are constructed based on the number of independent variables available due to the vector autoregressive method of analysing the data used which is sourced from World Bank Data base.

The first model investigated the causal relationship between unemployment and the other independent variables (urban population, poverty and inflation) used, while the second model focuses on the causal relationship between urban population and the other independent variables (unem, pov and infl). The third model focuses on the causal relationship between poverty and the other variables (unem, infl and urb); lastly the model that is focused is the inflation to determine the causal relationship between other variables like the unemployment, poverty and urban population.

$$\lambda_t^{unem} = a_1 + \sum_{K=1}^{K=2} b_{11}\lambda_{t-K}^{unem} + \sum_{M=1}^{M=2} b_{12}U_{t-m}^{urb} + \sum_{P=1}^{P=2} b_{13}r_{t-p}^{pov} + \sum_{q=1}^{q=2} b_{14}V_{t-q}^{infl} + U_t$$

$$\lambda_t^{urb} = a_1 + \sum_{K=1}^{K=2} b_{11}\lambda_{t-K}^{urb} + \sum_{M=1}^{M=2} b_{12}U_{t-m}^{unem} + \sum_{P=1}^{P=2} b_{13}r_{t-p}^{pov} + \sum_{q=1}^{q=2} b_{14}V_{t-q}^{infl} + U_t$$

$$\lambda_t^{pov} = a_1 + \sum_{K=1}^{K=2} b_{11}\lambda_{t-K}^{pov} + \sum_{M=1}^{M=2} b_{12}U_{t-m}^{urb} + \sum_{P=1}^{P=2} b_{13}r_{t-p}^{unem} + \sum_{q=1}^{q=2} b_{14}V_{t-q}^{infl} + U_t$$

$$\lambda_t^{infl} = a_1 + \sum_{K=1}^{K=2} b_{11}\lambda_{t-K}^{infl} + \sum_{M=1}^{M=2} b_{12}U_{t-m}^{urb} + \sum_{P=1}^{P=2} b_{13}r_{t-p}^{pov} + \sum_{q=1}^{q=2} b_{14}V_{t-q}^{unem} + U_t$$

Where, ‘infl’ is Inflation, consumer prices (annual %): Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used; ‘unem’ represents Unemployment, total (% of total labor force) (national estimate), which refers to Unemployment- share of the labor force that is without work but available for and seeking employment; pov refers to Poverty head count ratio at $2.15 a day (2017 PPP) (% of population) that is Poverty headcount ratio at $2.15 a day which is the percentage of the population living on less than $2.15 a day at 2017 purchasing power adjusted

prices; "urb" is the Urban population growth (annual %): which refers to people living in urban areas as defined by national statistical offices, It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects; lastly, DOMC is the domestic credit provided by the financial sector (% of GDP) which is explained as credit provided by the financial sector including all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The financial sector includes monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies.

Data Presentation and Analysis

The secondary data used for this study was sourced from the world bank data base 2024, which was analysed and the following results were obtained. The result from table I at the appendix revealed that, all the variables are not stationary at level; some were stationary @ 1^{st} difference while other are @ 2^{nd} difference i.e. the null hypothesis that the variables are not stationary cannot be rejected given the asymptotic critical values which where greater than the calculated values of ADF, this necessitated the use of the 1^{st} and 2^{nd} order values. After all the variables have been transformed to their first difference for some variables and 2^{nd} order for the rest all the variables became stationary. This led to the usage of the VAR model for the analysis of the data.

The table two at the appendix below which is the vector autoregressive model is a model that explains the relationship (causal relationships) between the variables used in the study and it shows that INFL at lag 1 has a positive significant effect on itself, with a coefficient of 0.72, however, other variables like URB has a significant effect on the INFL while POV and UNEM do not have a significant effect on INFL. Whereas POV at lag 1 and 2 are positive significant effect on itself while inflation has effect a positive effect on the poverty rate although all the variables are not significant in explaining the variations that will be experienced in POV. At lag 1, unem is positively related with itself though not significant; while INFL and URB has a positive relationship with UNEM but POV has a negative and non-significant influence on UNEM. The only positive relationship that exists between the dependent variable URB at this time, is on its self and UNEM at lag 1 which also reveals no significant relationship. At lag 2, UNEM, POV and INFL are all positively related to URB with no significant relationship with all other variables. The coefficients witnessed overall is more positive than negative coefficient values.

Table two on the appendix below reveals the lag structure of the model, which was determined using several criteria with the insights as follows; the log likelihood ratio (logl) chose no lag as the optimal lag length but the final prediction error (FPE) selected lag 2 as the optimal lag length which implies that this lag length minimizes forecast errors. The Akaike information criteria (AIC) and the Hannan Quinn Criterion (HQ) also preferred the 2 as the optimal length but the Schwarz criterion (SC) prefers lag 1. This suggests that including lag 1 and 2 is sufficient for the VAR model.

Table three on the appendix reveals the VAR stability condition that entails the VAR system used are stable and so used for its appropriateness during analysis and forecasting. The diagram so shows that the model satisfies the stability condition due to the fact that all inverse roots lie with

the unit circle. In table 4 on the appendix which shows the VAR Residual Correlation LM Tests is for the test for autocorrelation, the LM results, for all lags tested (up to lag 4), the p-values are greater than 0.05, meaning that we fail to reject the null hypothesis; which indicates that the residuals do not exhibit serial correlation. The lack of serial correlation thus suggests that the VAR model is correctly specified and that the results are reliable for interpretation and forecasting for planning.

Table 5 shows the causality test results of the regression; when INFL is used as the dependent variable, the result shows that POV and UNEM does not cause the reaction of INFL due to the fact that the P-value is greater than the 5% significance level but URB is significantly related with INFL indicating the causal relationship between the them. Similarly, using POV as the dependent variable in this case, INFL, UNEM and URB are all not significant in explaining the variation or changes that exists in the rate of poverty therefore UNEM, URB and INFL do not granger cause POV. In the case of UNEM as the dependent variable, the other variables are still not significant in explaining the reaction of the unemployment rate whether positively or negatively. Lastly urban population is only explained by the POV and not by UNEM and INFL due to the significant nature of the P-value.

Conclusion

The study used the Vector Autoregressive model data analysis method to determine the influence of financial inclusion on the Nigerian economy within the years this study focuses on; which is from 1990-2023. The stationary test result was the pre-estimation test result (the variables were stationary at I(1) and I(2)) that gave the direction to the method of data analysis that was used. This led to the use of the VAR model that initiated the knowledge of the lag values of the variables that helps inform how significant they are in explaining changes that occur in the model or other independent variables. Result from the analysis reveals a positive significant relationship between INFL and itself; the lag 1 value entails that the inflationary trend is affected positively by the previous activities that fosters the increases of the value of goods and services but the UNEM has a positive relationship to the INFL, POV and URB has negative relationship with INFL but URB has a significant relationship with INFL although is a significant in explaining the variation experienced in the INFL. Through the inverse root of AR characteristics polynomial, the variables that are used and the findings for this study are appropriate for the purpose of prediction and forecast because the roots are all within the boundary. It was also noticed that no serial correlation problem exists in the model.

It's therefore pertinent to note that in the study of financial inclusion, the level of inflation should be considered as an important factor cause previous inflation on goods and services can hamper the desire of individuals dealing with financial institutions. Most often than not, the lower the income from citizens as a result of inflationary trend, the lesser the desire to save and get encouraged in banking services. Importance has to be placed on the rate of unemployment, urban population and the level of poverty as revealed from the result gotten; so the most important variable that should be focused on in the attempt to improve the level of financial inclusion is the urban population, inflation rate and the level of unemployment which in some way significantly affects itself or other variables.

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Appendix

Table 1

Data Presentation

Variables	ADF @ Level (T-Stats/ Critical Value)	ADF @ 1st and 2nd Difference (T-Stats/ Critical Value)	Order of Integration
Urban Population growth	-2.548773/ -2.954021	-8.647771/ -2.957110	I(1)
Unemployment	-2.775977/ -2.957110	-5.883804/ -2.960411	I(2)
Inflation	-2.178388/ -2.954021	-4.645182/ -2.957110	I(1)
Poverty head count	-2.625379/ -2.957110	-6.909645/ -2957110	I(1)
Domestic Credit	-1.495992/ -2.954021	-5.831284/ -2.960411	I(1)

Source: Authors Computation

Table 2

VAR Result

Vector Autoregression Estimates
Date: 10/07/24 Time: 06:55
Sample (adjusted): 1992 2023
Included observations: 32 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	INFL	POV	UNEM	URB
INFL(-1)	0.725848	-0.015415	0.060006	-0.004396
	(0.17723)	(0.02860)	(0.03731)	(0.00326)
	[4.09547]	[-0.53906]	[1.60836]	[-1.34635]
INFL(-2)	-0.348792	0.000539	-0.046574	-0.001011
	(0.14836)	(0.02394)	(0.03123)	(0.00273)
	[-2.35102]	[0.02250]	[-1.49131]	[-0.36997]
POV(-1)	0.244254	0.491242	0.190026	-0.005696
	(1.18942)	(0.19191)	(0.25038)	(0.02191)
	[0.20536]	[2.55972]	[0.75895]	[-0.25996]
POV(-2)	0.605775	0.414336	-0.177152	0.019648
	(1.18827)	(0.19173)	(0.25014)	(0.02189)
	[0.50979]	[2.16107]	[-0.70821]	[0.89760]
UNEM(-1)	1.507439	-0.115500	1.445465	0.002171
	(0.77717)	(0.12540)	(0.16360)	(0.01432)
	[1.93966]	[-0.92108]	[8.83543]	[0.15165]
UNEM(-2)	-1.615191	0.147033	-0.580483	-0.005874
	(0.79923)	(0.12896)	(0.16824)	(0.01472)
	[-2.02093]	[1.14018]	[-3.45025]	[-0.39900]
URB(-1)	-17.58549	-1.253508	0.316143	1.048567
	(6.87107)	(1.10865)	(1.44640)	(0.12658)
	[-2.55935]	[-1.13067]	[0.21857]	[8.28414]
URB(-2)	8.540794	1.097690	0.671929	-0.194398
	(6.47101)	(1.04410)	(1.36219)	(0.11921)
	[1.31985]	[1.05133]	[0.49327]	[-1.63078]
C	44.43580	0.430740	-2.477822	0.652935
	(26.5447)	(4.28298)	(5.58783)	(0.48899)
	[1.67400]	[0.10057]	[-0.44343]	[1.33527]
R-squared	0.789552	0.956846	0.912594	0.880969
Adj. R-squared	0.716353	0.941835	0.882192	0.839567
Sum sq. resids	1723.518	44.86970	76.37431	0.584877
S.E. equation	8.656532	1.396731	1.822257	0.159466
F-statistic	10.78636	63.74630	30.01737	21.27843
Log likelihood	-109.1882	-50.81446	-59.32460	18.62739
Akaike AIC	7.386764	3.738404	4.270288	-0.601712
Schwarz SC	7.799002	4.150642	4.682526	-0.189474
Mean dependent	18.78382	9.481250	16.76809	4.425581
S.D. dependent	16.25381	5.791397	5.309107	0.398127

Determinant resid covariance (dof adj.)	8.945590
Determinant resid covariance	2.387374
Log likelihood	-195.5472
Akaike information criterion	14.47170
Schwarz criterion	16.12066
Number of coefficients	36

Source: Author's computation

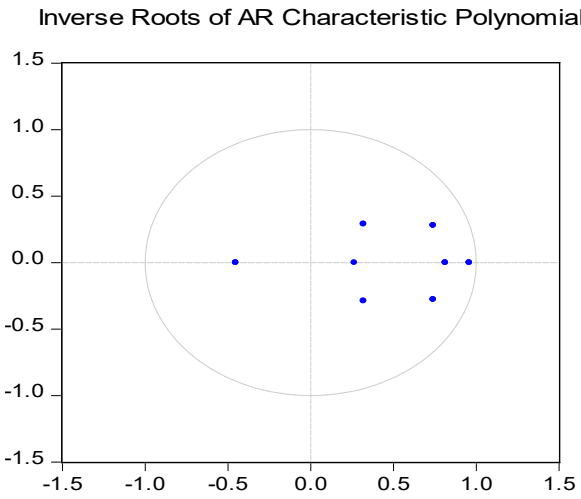
Table 3
Lag Structure

VAR Lag Order Selection Criteria
Endogenous variables: INFL POV UNEM URB
Exogenous variables: C
Date: 10/07/24 Time: 06:58
Sample: 1990 2023
Included observations: 32

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-337.7662	NA	22224.72	21.36039	21.54360	21.42112
1	-220.5715	197.7661	40.22682	15.03572	15.95180*	15.33937
2	-195.5472	35.97236*	24.10707*	14.47170*	16.12066	15.01828*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 4
VAR Stability Condition



Residual Diagnostics (correlogram)

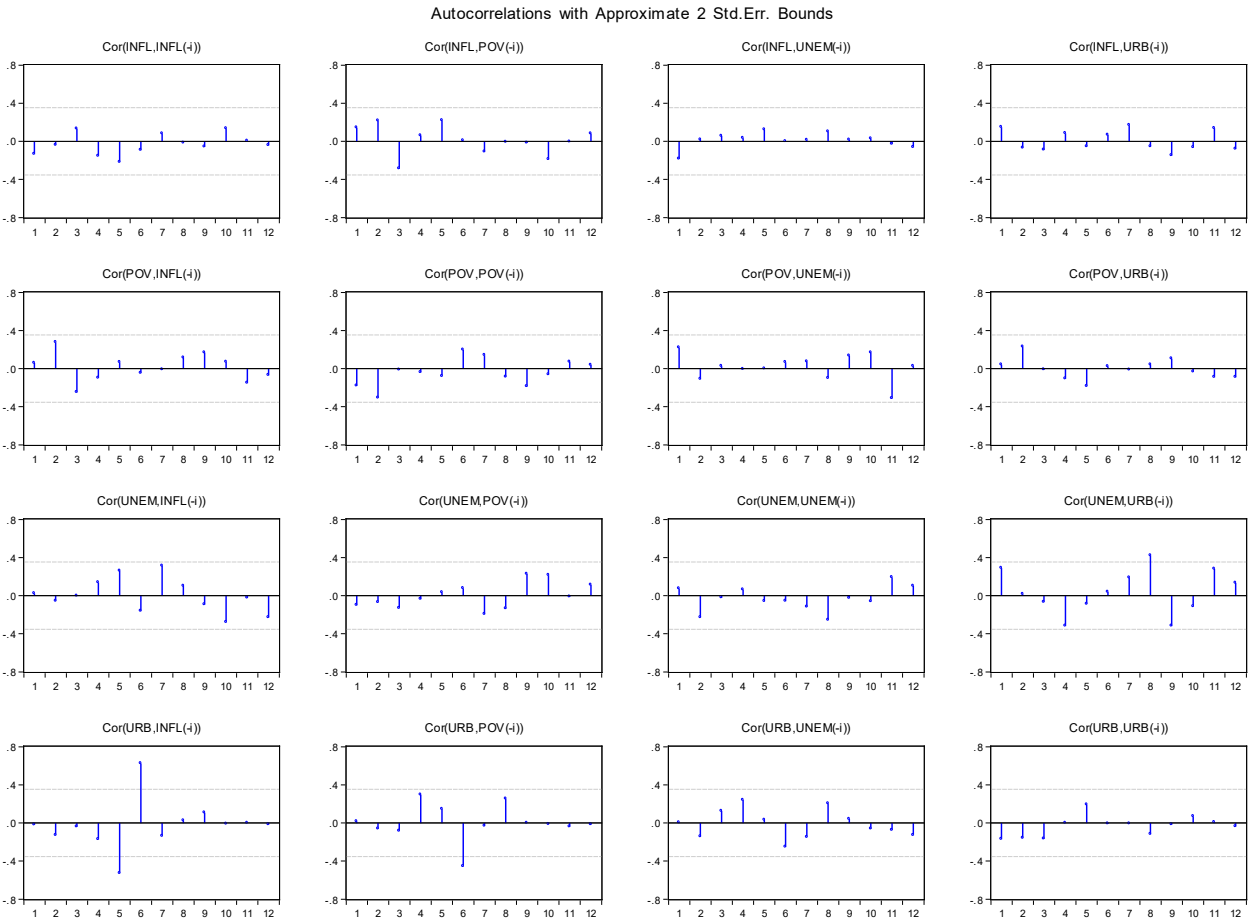


Table 5
Test for Autocorrelation

VAR Residual Serial Correlation LM Tests
Date: 10/07/24 Time: 07:01
Sample: 1990 2023
Included observations: 32

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	15.83904	16	0.4643	1.001061	(16, 49.5)	0.4712
2	16.87827	16	0.3935	1.077072	(16, 49.5)	0.4006
3	9.932017	16	0.8702	0.594583	(16, 49.5)	0.8728
4	10.14790	16	0.8588	0.608702	(16, 49.5)	0.8616

Null hypothesis: No serial correlatio

n at lags
1 to h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	15.83904	16	0.4643	1.001061	(16, 49.5)	0.4712
2	38.41671	32	0.2015	1.261045	(32, 45.8)	0.2324
3	69.21061	48	0.0241	1.678717	(48, 32.9)	0.0601
4	131.6270	64	0.0000	3.847393	(64, 17.9)	0.0013

*Edgeworth expansion corrected likelihood ratio statistic.

Table 6
Granger Causality Test

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 10/07/24 Time: 07:14
Sample: 1990 2023
Included observations: 32

Dependent variable: INFL

Excluded	Chi-sq	df	Prob.
POV	6.907911	2	0.0316
UNEM	4.180325	2	0.1237
URB	6.961204	2	0.0308
All	20.74226	6	0.0020

Dependent variable: POV

Excluded	Chi-sq	df	Prob.
INFL	0.396291	2	0.8203
UNEM	1.341868	2	0.5112
URB	1.414273	2	0.4931
All	4.225795	6	0.6461

Dependent variable: UNEM

Excluded	Chi-sq	df	Prob.
INFL	3.120980	2	0.2100
POV	0.582974	2	0.7472
URB	0.854663	2	0.6522
All	4.088192	6	0.6647

Dependent variable: URB

Excluded	Chi-sq	df	Prob.

INFL	3.557730	2	0.1688
POV	5.814195	2	0.0546
UNEM	0.357662	2	0.8362
All	8.043398	6	0.2349