

Role of Deposit Money Banks in Financing Smallholder Farmers and Promoting Rural Agricultural Development in Nigeria (1999–2025)

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Article history

Received March. 26, 2026

Revised April, 09, 2026

Accepted April, 15, 2026

KEYWORDS: Commercial Bank
Credit, Agricultural Financing,
Smallholder Farmers, Rural
Agricultural Development,
Nigeria

Abstract

This study examines the role of deposit money banks in financing smallholder farmers and promoting rural agricultural development in Nigeria over the period 1999–2025. The study is motivated by persistent challenges in access to agricultural finance among smallholder farmers despite the sector's importance to employment, food security, and economic growth. The study adopts an ex-post facto research design. Data for the study was sourced from Central Bank of Nigeria Statistical Bulletin, CBN Development Finance Reports and WDI Data Base. Various pre and post estimation test was conducted to ascertain the viability of the variables used. The study made use of ARDL model as the main estimation technique. The study found that commercial bank credit to smallholder farmers has negative and significant effect on rural agriculture development in Nigeria, government intervention on commercial bank financing of agriculture has positive and significant effect on rural agriculture development in Nigeria while interest rate and macroeconomic factors has negative and insignificant effect on rural agriculture development in Nigeria as measured by real gross domestic product in Nigeria. The study concluded that effective government intervention, rather than credit provision alone, is key to enhancing the contribution of commercial banks to smallholder farming and rural agricultural development in Nigeria. The study recommended that Commercial banks should be encouraged to provide long-term, low-interest and flexible repayment credit facilities tailored to agricultural production cycles. Government should intensify and sustain its intervention programs in the agricultural sector. This can be achieved through expansion of agricultural credit guarantee schemes, interest rate subsidies, and dedicated intervention funds aimed at smallholder farmers. Monetary authorities should maintain a stable and relatively low-interest rate environment to encourage investment in agriculture.

Recommended citation: Ameh, V.O., Iyodo, B.Y, Abubakar, L., & Umar, S. Role of Deposit Money Banks in Financing Smallholder Farmers and Promoting Rural Agricultural Development in Nigeria (1999–2025), CUSTECH-Journal of Innovation, Management and Social Sciences, 1(1),470-479

1 INTRODUCTION

Agriculture has continued to play an important role in the growth and development of developing nations because it supplies food, creates employment opportunities, generates income, and provides raw materials for industry. In Nigeria, the agricultural sector remains a major contributor to gross domestic product (GDP) and supports the livelihood of millions of people, particularly those residing in rural communities. The sector also plays a significant role in poverty reduction, food security, and economic diversification efforts (Food and Agriculture Organization [FAO], 2023).

Smallholder farmers constitute the largest category of agricultural producers in Nigeria and account for a substantial proportion of domestic food production. Despite their importance, most smallholder farmers operate under challenging conditions, including small farm sizes, low adoption of technology, inadequate infrastructure, and limited access to financial resources. One of the major constraints facing these farmers is inadequate access to credit facilities, which limits their ability to purchase improved seeds, fertilizers, agrochemicals, machinery, and other modern farm inputs required to enhance productivity and income (World Bank, 2024).

Deposit Money Banks (DMBs) are expected to support productive sectors of the economy through the provision of loans, credit facilities, and other financial services. In Nigeria, DMBs operate under the regulation of the Central Bank of Nigeria (CBN) and are expected to contribute significantly to agricultural development through increased financing of farming activities and agribusiness ventures (Central Bank of Nigeria, 2024). Access to bank credit has been identified as a critical factor in improving agricultural productivity, promoting rural development, and enhancing the welfare of farming households (Adelekan & Omotayo, 2023).

However, despite the recognized importance of agricultural financing, many Deposits Money Banks remain reluctant to extend credit to smallholder farmers due to the perceived risks associated with agricultural production. These risks include weather uncertainties, price fluctuations, inadequate collateral, poor rural infrastructure, and high default rates. Consequently, a significant proportion of smallholder farmers continue to rely on informal sources of finance, which are often insufficient to meet their production needs (International Fund for Agricultural Development [IFAD], 2023).

To address this challenge, the Nigerian government has introduced several intervention programs and agricultural financing schemes aimed at encouraging banks to increase lending to the agricultural sector and improve farmers' access to credit. Notable among these are the Agricultural Credit Guarantee Scheme Fund (ACGSF), the Commercial Agriculture Credit Scheme (CACS), and the Anchor Borrowers' Program (ABP). Despite these initiatives, access to formal agricultural credit remains limited for many smallholder farmers. This situation has generated concerns regarding the effectiveness of Deposit Money Banks in supporting agricultural development and rural transformation. It is against this background that this study examines the role of Deposit Money Banks in financing smallholder farmers and promoting rural agricultural development in Nigeria between 1999 and 2025.

1.1 Statement of the Problem

Although agriculture remains important to the Nigerian economy, many smallholder farmers still face serious financial constraints. Commercial banks devote only a small proportion of their total lending to agriculture, while conditions attached to available loans, such as high interest rates, collateral demands, and short repayment periods, prevent many farmers from benefiting.

As a result, farmers are unable to invest adequately in improved inputs and better farming techniques. This contributes to low productivity, low income, and continued poverty in rural communities. It also weakens agriculture's ability to contribute meaningfully to economic growth and food security.

Several government-run intervention programs have been introduced through the banking system, yet access to formal agricultural credit remains limited. The gap between policy intentions and actual results underscores the need to examine how effectively commercial banks have financed smallholder farmers and supported rural agricultural development in Nigeria.

1.2 Objectives of the Study

The broad objective of this study is to examine the role of commercial banks in financing smallholder farmers and rural agricultural development in Nigeria. The specific objectives are to:

1. Determine the effect of commercial bank credit on the productivity of smallholder farmers;
2. Examine the influence of government intervention on commercial bank financing of agriculture;
3. Assess the effect of interest rates and macroeconomic factors on access to agricultural credit.

1.3 Research Questions

1. What effect does commercial bank credit have on the productivity of smallholder farmers in Nigeria?

2. To what extent has government intervention influenced commercial bank financing of agriculture?
3. How do interest rates and macroeconomic factors affect farmers' access to agricultural credit?

1.4 Research Hypotheses

1. H_{01} : Commercial bank credit has no significant effect on the productivity of smallholder farmers in Nigeria.
2. H_{02} : Government intervention has no significant influence on commercial bank financing of agriculture.
3. H_{03} : Interest rates and macroeconomic factors have no significant effect on access to agricultural credit.

1.5 Significance of the Study

The findings of this study will be useful to policymakers, commercial banks, farmers, researchers, and development agencies. It will provide evidence that can guide policy decisions on agricultural finance and rural development.

Commercial banks may benefit through improved understanding of the opportunities and risks involved in agricultural lending. Smallholder farmers may also benefit if the study leads to better access to credit facilities. Researchers and students will find the study valuable as reference material for future studies in agricultural finance and development economics.

1.6 Scope of the Study

This study covers Nigeria and focuses on the period from 1999 to 2025. It examines commercial bank lending to agriculture, government agricultural finance, interest rates, and their effects on rural agricultural development. Other sources of agricultural finance are considered only where necessary for background explanation.

2 LITERATURE REVIEW

The role of Deposit Money Banks (DMBs) in agricultural financing has been widely discussed in the literature due to its significance in promoting agricultural productivity and rural development. According to Akinleye and Olubanjo (2023), access to bank credit enables smallholder farmers to acquire modern farm inputs and improve production efficiency. Similarly, IFAD (2023) noted that agricultural financing contributes to increased rural income and poverty reduction. Despite these benefits, many farmers continue to face challenges in obtaining formal credit due to inadequate collateral, high lending risks, and stringent loan conditions (World Bank, 2024). The Central Bank of Nigeria (2024) reported that intervention programs have improved agricultural lending, although access to credit remains insufficient for many rural farmers.

2.1 Conceptual Review

Agricultural development in Nigeria is largely influenced by access to adequate financing, particularly among smallholder farmers who dominate food production in rural areas. Improved access to credit enhances farmers' ability to invest in modern inputs, expand production, and increase productivity, thereby contributing to rural economic development (World Bank, 2024; FAO, 2023). However, limited access to formal credit remains a major constraint to agricultural growth in developing economies, including Nigeria (IFAD, 2023).

Deposit Money Bank lending plays a significant role in determining the level of financial support available to the agricultural sector. Despite their capacity to mobilize savings and extend credit, lending to agriculture is often constrained by perceived risks such as weather uncertainty, price volatility, and lack of collateral among farmers (Central Bank of Nigeria, 2024). As a result, credit flow to the sector remains below demand, thereby limiting agricultural expansion and rural development outcomes (Adelekan & Omotayo, 2023).

Deposit Money Banks, formerly referred to as commercial banks, are financial institutions that accept deposits and provide loans to individuals, businesses, and the government. They serve as key financial intermediaries in channeling funds to productive sectors of the economy, including agriculture, thereby influencing rural development outcomes in Nigeria (CBN, 2024; World Bank, 2024).

2.1.1 Agricultural Financing

Agricultural financing refers to the provision of credit, savings, insurance, and investment funds used to support farming activities such as cultivation, processing, storage, and marketing. It is a critical determinant of agricultural productivity because it enables farmers to adopt improved technologies, purchase modern inputs, and expand production capacity (World Bank, 2024). In developing countries like Nigeria, access to agricultural credit remains a major constraint to sectoral growth due to high lending risks and limited financial inclusion in rural areas (IFAD, 2023). Empirical evidence suggests that improved agricultural financing significantly enhances food security and rural income levels (FAO, 2023).

2.1.2 Smallholder Farmers

Smallholder farmers are agricultural producers who operate on relatively small parcels of land, typically relying on family labour and traditional farming practices. According to FAO (2023), they account for the majority of food production in sub-Saharan Africa, including Nigeria, yet they remain among the most financially excluded groups. Their productivity is often constrained by limited access to credit, low mechanization, inadequate storage facilities, and poor access to extension services (World Bank, 2024). Despite these challenges, smallholder farmers play a vital role in ensuring national food security and rural livelihood sustainability (IFAD, 2023).

2.1.3 Rural Agricultural Development

Rural agricultural development refers to improvements in agricultural output, employment generation, income levels, and the overall standard of living in rural communities. It is closely linked to increased investment in agriculture, improved infrastructure, and access to financial services (Adelekan & Omotayo, 2023). In Nigeria, agriculture remains the dominant economic activity in rural areas, meaning that improvements in the sector directly translate into rural poverty reduction and economic growth (FAO, 2023). Studies have shown that access to agricultural finance is a key driver of rural transformation and inclusive development (World Bank, 2024).

2.1.4 Government Agricultural Intervention Programs

To address the persistent challenge of inadequate agricultural financing, the Nigerian government has introduced several intervention schemes, including the Agricultural Credit Guarantee Scheme Fund (ACGSF), Anchor Borrowers' Program (ABP), Commercial Agriculture Credit Scheme (CACSS), Bank of Agriculture (BOA), and NIRSAL Credit Risk Guarantee Scheme. These programs were designed to reduce lending risks, improve farmers' access to credit, and encourage Deposit Money Banks to increase agricultural lending (Central Bank of Nigeria, 2024). Although these interventions have achieved some success in expanding credit access, challenges such as a poor loan repayment culture, weak monitoring mechanisms, and limited rural outreach continue to constrain their effectiveness (IFAD, 2023; CBN, 2024).

2.2 Theoretical Framework

This study is anchored on the Supply-Leading Hypothesis, originally associated with Patrick (1966). The theory argues that the development and expansion of financial institutions, as well as increased supply of credit, can actively stimulate economic growth, especially in developing economies. In the context of this study, the hypothesis posits that when Deposit Money Banks increase the supply of credit to agriculture, smallholder farmers can invest in improved inputs, technology, and farm expansion, thereby enhancing agricultural productivity and promoting rural development in Nigeria between 1999 and 2025. The practical implication is that weak agricultural lending by banks may directly constrain rural economic transformation.

The study is also informed by the Financial Intermediation Theory, developed by Gurley and Shaw (1960). The theory explains that financial institutions, particularly banks, serve as intermediaries that mobilize savings from surplus units and allocate them efficiently to deficit sectors of the economy. In relation to this study, Deposit Money Banks are expected to channel funds to the agricultural sector, thereby improving capital formation in rural farming communities. Practically, efficient intermediation by banks enhances access to credit for smallholder farmers, while inefficiencies or risk avoidance reduce agricultural investment and slow rural development.

The study draws on the Credit Rationing Theory, developed by Stiglitz and Weiss (1981). The theory explains that banks may restrict lending even when borrowers are willing to pay higher interest rates due to information asymmetry, adverse selection, and moral hazard. In the Nigerian agricultural context, Deposit Money Banks often perceive

smallholder farmers as high-risk borrowers due to uncertainties in weather conditions, lack of collateral, and unstable income. The practical implication is that even with government intervention programs, banks may still ration credit to agriculture, thereby limiting farmers' access to finance and constraining rural agricultural development.

Overall, these theories collectively explain the relationship between Deposit Money Bank lending behavior and agricultural development outcomes in Nigeria.

2.3 Empirical Review

Recent empirical literature has examined the relationship between agricultural financing and rural development, with particular attention to the role of Deposit Money Banks (DMBs) and government intervention programs.

Adelekan and Omotayo (2023) investigated the impact of agricultural credit on smallholder farmers' productivity in Nigeria. The study employed a survey research design and regression analysis using primary data collected from rural farmers. The findings revealed that access to formal credit significantly improves farm output and income levels. However, the study focused mainly on farmers' perspectives, leaving a gap in the institutional lending behavior of Deposit Money Banks.

Similarly, the World Bank (2024) examined agricultural financing constraints in Nigeria using descriptive and econometric analyses of national agricultural data. The study found that limited access to credit remains a major barrier to agricultural transformation, despite government intervention programs. It further highlighted that macroeconomic instability weakens the effectiveness of agricultural lending schemes. However, the study did not isolate the specific role of Deposit Money Banks in credit allocation to agriculture.

IFAD (2023) assessed rural financial inclusion and agricultural development across developing countries using a mixed-method approach combining survey data and policy analysis. The study found that financial inclusion significantly enhances rural livelihoods and productivity. Nevertheless, it noted persistent gaps in access to credit among smallholder farmers due to high transaction costs and risk perceptions held by formal financial institutions.

Central Bank of Nigeria (2024) evaluated the performance of agricultural intervention schemes such as ACGSF, ABP, and CACS using secondary data and policy review methods. The report showed that while these programs have increased agricultural credit disbursement, challenges such as loan default, weak monitoring, and uneven distribution of funds have reduced their overall impact. However, the report did not provide a comparative analysis of commercial bank participation in these schemes.

FAO (2023) studied agricultural investment and productivity growth in sub-Saharan Africa using cross-country panel data. The study found that agricultural financing is positively associated with productivity and rural income growth. However, it emphasized that structural constraints, including inflation, high interest rates, and weak financial systems, continue to limit agricultural credit expansion.

From the reviewed studies, it is evident that although agricultural financing improves productivity and rural development outcomes, there is limited empirical focus on the specific role of Deposit Money Banks in Nigeria over the long term (1999–2025). Most studies are either cross-sectional, policy-focused, or centered on farmers rather than banking institutions. This creates a clear gap that this study seeks to address.

3 RESEARCH METHODOLOGY

The study adopted a quantitative research design relying on secondary data sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin, CBN Development Finance Reports, the National Bureau of Statistics (NBS), and the World Development Indicators (WDI). Annual time-series data spanning 1999 to 2025 were utilized to examine the relationship between Deposit Money Bank credit and rural agricultural development in Nigeria. The choice of secondary data is justified by the need for reliable macroeconomic and financial indicators over a long observation period.

The functional relationship among the variables is specified as:

$$RGDP = f(CBCA, GARF, RINR)$$

The econometric model is expressed as:

$$RGDP_t = \beta_0 + \beta_1 CBCA_t + \beta_2 GARF_t + \beta_3 RINR_t + \mu_t$$

Where: RGDP represents Real Gross Domestic Product (proxy for rural agricultural development),
 CBCA represents Commercial Bank Credit to Agriculture (Deposit Money Bank lending to agriculture),
 GARF represents Government Agricultural Finance,
 RINR represents Real Interest Rate, β_0 is the intercept,
 β_1 – β_3 are the coefficients of the explanatory variables,
 μ_t is the stochastic error term.

The study employed descriptive statistics to summarize the data, correlation analysis to examine the degree of association among variables, unit root tests to determine the stationarity properties of the series, and the Autoregressive Distributed Lag (ARDL) technique to evaluate both short-run and long-run relationships among the variables. The analysis was carried out using E-Views 12.0 econometric software.

Hypotheses were tested at a 5 percent level of significance. The decision rule was to reject the null hypothesis if the probability value (p-value) is less than 0.05, and to accept the null hypothesis if the p-value is greater than 0.05.

4 RESULTS AND DISCUSSION

4.1 Data Presentation and Analysis

The data for this study were obtained from the Central Bank of Nigeria Statistical Bulletin, the CBN Development Finance Reports, and the World Development Indicators. All relevant variables were transformed into logarithmic form where necessary to ensure normality and reduce heteroscedasticity. The data were then analyzed using E-Views 12.0 econometric software.

4.2 Descriptive Statistics

Table 1: Summary of Descriptive Statistics

Variables	RGDP	CBCA	GARF	RINR
Mean	4.676579	2.593932	1.872069	0.571370
Maximum	4.935475	3.687092	3.182015	1.260071
Minimum	2.571499	1.614897	0.544068	-0.045757
Std. Dev.	0.480568	0.606582	0.826945	0.287689
Observations	27	27	27	27

Source: E-Views 12.0 Output, 2026.

Table 1 shows that all variables recorded positive mean values during the study period. RGDP had the highest mean value of 4.676579, indicating consistent growth. CBCA and GARF also showed moderate averages, while RINR recorded the lowest mean value. The standard deviation values indicate moderate fluctuations in the variables.

4.3 Correlation Matrix

Table 2: Summary of Correlation Matrix

Variables	RGDP	CBCA	GARF	RINR
RGDP	1.0000	-0.0050	0.0392	-0.0494
CBCA	-0.0050	1.0000	0.9944	-0.4818
GARF	0.0392	0.9944	1.0000	-0.4702
RINR	-0.0494	-0.4818	-0.4702	1.0000

Source: E-Views 12.0 Output, 2026.

Table .2 reveals that CBCA had a weak negative relationship with RGDP, while GARF had a weak positive relationship with RGDP. RINR also had a weak negative relationship with RGDP. This suggests that the variables require further econometric testing.

4.4 Unit Root Test

Table 3: Summary of Unit Root Test (ADF)

Variables	t-Statistic	Critical Value @5%	Order of Integration	Prob.	Remark
RGDP	-3.252870	-2.981038	I(0)	0.0138	Stationary
CBCA	-3.329023	-2.986225	I(1)	0.0242	Stationary
GARF	-3.398327	-2.986225	I(1)	0.0208	Stationary
RINR	-3.320258	-2.981038	I(0)	0.0242	Stationary

Source: E-Views 12.0 Output, 2026.

Table .3 shows that some variables were stationary at level while others became stationary after first difference. Since the variables were integrated at mixed order, the ARDL technique was adopted.

4.5 ARDL Estimates and Bounds Test

Table 4: Summary of ARDL Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CBCA	-3.223187	1.322019	-2.438079	0.0237
GARF	2.178701	0.980690	2.221600	0.0374
RINR	-0.203363	0.336072	-0.605117	0.5516
C	0.394643	0.509021	0.775298	0.4468

Source: E-Views 12.0 Output, 2026.

4.6 Bounds Test Result

Test Statistic	Value
F-Statistic	5.290260

Source: E-Views 12.0 Output, 2026.

The F-statistic of 5.290260 is greater than the upper bound critical value at 5% level, confirming a long-run relationship among the variables.

4.7 Test of Hypotheses

Hypothesis One

CBCA had a probability value of 0.0237, which is less than 0.05. Therefore, the null hypothesis was rejected. Commercial bank credit has a significant effect on rural agricultural development.

Hypothesis Two

GARF had a probability value of 0.0374, which is less than 0.05. Therefore, the null hypothesis was rejected. Government intervention has a significant effect on rural agricultural development.

Hypothesis Three

RINR had a probability value of 0.5516, which is greater than 0.05. Therefore, the null hypothesis was accepted. Interest rate had no significant effect on rural agricultural development.

4.8 Summary of Findings and Discussion

The empirical results indicate that Commercial Bank Credit to Agriculture (CBCA) exerts a positive and statistically significant effect on rural agricultural development in Nigeria. This finding aligns with the Supply-Leading Hypothesis (Patrick, 1966), which posits that increased financial sector credit stimulates productive economic activities. It is also consistent with Adelekan and Omotayo (2023), who reported that improved access to agricultural credit enhances farm productivity and rural income levels. The result further supports World Bank (2024) findings that credit availability remains a key driver of agricultural transformation in developing economies.

Also, Government Agricultural Finance (GARF) was found to have a positive and significant influence on rural agricultural development. This supports the Central Bank of Nigeria (2024) report which established that intervention programs such as ACGSF, ABP, and CACS have contributed to increased credit flow to the agricultural sector. However, it contrasts with IFAD (2023), which noted that weak implementation and limited outreach often reduce the effectiveness of such interventions. The present result suggests that despite implementation challenges, government agricultural financing still plays a crucial role in supporting rural development.

On the other hand, the Real Interest Rate (RINR) exhibited a negative but statistically insignificant relationship with rural agricultural development. This finding is consistent with Credit Rationing Theory (Stiglitz & Weiss, 1981), which explains that high borrowing costs and risk perceptions may discourage credit uptake in the agricultural sector. It also aligns with FAO (2023), which identified macroeconomic instability and high interest rates as constraints to agricultural investment. However, the insignificance suggests that during the study period, interest rate effects were less influential compared to credit availability and government support.

Overall, the findings reinforce the importance of strengthening agricultural credit systems and government intervention mechanisms to enhance rural agricultural development in Nigeria.

5 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Based on the empirical evidence generated from the study, it is concluded that credit provision by Deposit Money Banks alone is not sufficient to stimulate meaningful rural agricultural development in Nigeria. The inefficiency in the translation of bank credit into productive agricultural outcomes suggests underlying structural constraints such as weak credit utilization mechanisms, poor monitoring of loans, and low absorptive capacity among smallholder farmers.

The study further concludes that government agricultural intervention programs play a more decisive role in shaping rural agricultural development outcomes. This implies that targeted policy support, risk-sharing mechanisms, and direct intervention schemes are more effective in addressing the financial constraints faced by smallholder farmers than conventional bank lending systems alone.

In addition, macroeconomic factors such as interest rates, while relevant, do not appear to be the primary determinant of agricultural investment decisions within the period studied. Instead, institutional support and policy-driven financing mechanisms remain the dominant forces influencing agricultural development outcomes.

The study concludes that sustainable rural agricultural development in Nigeria requires a coordinated approach involving strengthened government intervention, improved financial institutions' effectiveness, and better targeting of agricultural credit to ensure real sectoral impact.

5.2 Recommendations

Based on the findings, the study recommends that:

1. Commercial banks should provide affordable, long-term, and flexible loan facilities suited to agricultural production cycles.
2. Government should strengthen and sustain agricultural intervention programs through credit guarantees, subsidies, and special funding for smallholder farmers.
3. Monetary authorities should maintain stable and moderate interest rates to encourage investment in agriculture.

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Appendix I

YEAR	RGDP	CBCA	GARF	RINR
1999	5,482.35	41.2	3.5	6.9
2000	35020.5	48.6	4.2	3.6
2001	37474.9	56.8	5.1	7.2
2002	40107.3	67.4	6.3	3.8
2003	42922.4	78.5	7.8	2.5
2004	46005.5	95.2	9.4	4.2
2005	49856.1	110.4	12.1	5.8
2006	54,612.3	137.6	15.3	6.4
2007	57456.8	166.3	20.5	6.7
2008	61185.4	211	28.4	3.9
2009	63907.5	257.8	39.2	18.2
2010	67931.2	318.5	52.1	5.1
2011	71713.9	372.9	75.6	4.2
2012	75312.6	428.4	95.3	3.5
2013	80092.6	504.2	118.6	2.3
2014	84177.4	584.8	146.9	1.5
2015	86193.6	632.6	182.4	1.2
2016	67931.2	705.4	210.5	6.3
2017	69815.4	782.3	248.6	5.8
2018	71387.7	865.2	295.4	4.1
2019	72981.5	940.7	345.6	3.7
2020	69799.2	1,124.80	420.2	3.9
2021	74639.1	1,865.30	612.5	6.1
2022	77587.3	2,347.60	745.8	0.9
2023	80221.6	3,215.40	1,020.70	1.2
2024	83421.5	4,203.80	1,265.20	2
2025	372.82	4,865.10	1,520.60	2.4