INVESTMENT IN FINANCIAL TECHNOLOGY (FINTECH) AND GROWTH PERFORMANCE IN NIGERIA AND THE US: A COMPARATIVE ANALYSIS.

By

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ABSTRACT

Studies exploring investment in financial technology (FinTech) and economic growth nexus in Nigeria and the US made a comparison that utilised indirect measures of FinTech along with bundle financial inclusion indicators, disregarding the discrete index's effect. This study aims to expand the FinTech frontier by utilizing the direct measures of FinTech such as investment in technology. The data ranges from 2017 to 2022 and the ordinary least square method was employed. The findings will likely reveal several vital insights: and the findings revealed that financial technology investment has a positive significance on economic growth in both Nigeria and the US. The study further shows that fintech investment in economic growth in the USA is more than that of Nigeria. The study recommends that improved Support for Fintech Innovations. The study also recommends Placing a Focus on Education and Training.

KEYWORDS: Financial Technology, Economic Growth, Policy

INTRODUCTION

Solow's (1956) neoclassical growth theory emphasizes the significant impact of financial technology on macroeconomic policy, citing political will, technical innovation, and saving rate as key drivers of progress. The rapid advancement of technology, particularly in the financial sector, plays a crucial role in maintaining stability in the modern economic landscape. The concept of "Base of the Pyramid (BoP)" underscores the importance of providing financial services to underbanked and unbanked populations, primarily in rural areas, to foster economic inclusion (Udoh et al., 2016). Fintech, encompassing retail digital financial platforms and Internet finance, represents the integration of technology into traditional financial operations, including transfers, insurance, payment and settlement, and peer-to-peer lending (Appiah-Otoo & Song, 2021; Shim & Shin, 2016). Despite significant strides made by banks and microfinance institutions, an estimated 2.5 billion people globally remain financially excluded (Hannig & Jansen, 2010). In Nigeria, where approximately 38.3 million individuals live in poverty or are unemployed, efforts to address financial exclusion have gained momentum (World Bank, 2020). The Central Bank of Nigeria (CBN) has implemented strategies to promote financial inclusion, resulting in a notable increase in access to financial services and products from 21.6% in 2010 to 70% in 2020 (Demirguc-Kunt et al., 2018; Udo, 2023). However, challenges such as inactive account ownership persist, reflecting ongoing barriers to full financial inclusion (Bara et al., 2016; Bourne et al., 2010). The Nigerian Inter-Bank Settlement System reports a significant rise in active accounts with banks and mobile money service providers, highlighting progress in enhancing financial access (NIBSS, 2022). The integration of financial technology, or Fintech, into Nigeria's financial

ecosystem, is recognized as a pivotal driver of financial inclusion and economic growth (Cizo et al., 2020). Fintech innovations, propelled by digitalization, have revolutionized financial markets, challenging traditional banking models and expanding access to financial services (Błach and Klimontowicz, 2021). Moreover, blockchain technology and cryptocurrencies are reshaping the financial landscape, posing new opportunities and challenges for regulators (Global FinTech Report, 2017). The evolution of Fintech reflects a broader trend of digital transformation across industries, emphasizing the interconnectedness of modern financial systems and the increasing reliance on innovative technologies (Global FinTech Report, 2017). From its inception in 1866 with the advent of the transatlantic cable to the rise of internet banking in the late 20th century, Fintech has continually evolved, shaping the trajectory of financial services and influencing economic development globally.

A review of previous studies shows and to the best of the researcher's knowledge, Studies in this area are scanty as this study aims to contribute to the literature and stands to benefit policy makers in both Nigeria and USA. It is against this background that this study investigates the impact of Investment in financial technology (Fintech) and growth performance in Nigeria and the US; a comparative analysis.

LITERATURE REVIEW
CONCEPTUAL REVIEW

The fintech industry in Nigeria has experienced a remarkable transformation in recent years, unlike anything seen in the past decade. Fintech companies are offering cutting-edge solutions, including credit extension, consumer financing alternatives, flexible savings plans, investment product marketing, and streamlined loan payment processing. Several factors, such as a younger population, increased smartphone usage, and legislative changes, have fueled the rapid expansion of the fintech sector in Africa, particularly in Nigeria.

Between 2014 and 2019, Nigeria's fintech industry attracted over $600 million in funding, contributing to the global investment in fintech firms reaching $216.8 billion in 2019. However, financing for the industry has seen a decline beyond 2020. In 2023, the global fintech industry faced numerous challenges, including declining values, uncertain foreign exchange markets, high interest and inflation rates, and unstable global economies. Despite these challenges, significant partnerships and collaborations have emerged in the fintech sector, resulting in buyouts, spinoffs, mergers and acquisitions, and other firm reorganizations.

These strategic initiatives have been driven by various factors, including investor-driven corporate governance standards, regulatory requirements, tax efficiency considerations, and the need to navigate financing constraints while enhancing profitability and reducing costs. Reorganizations have also been prompted by increased cash burn rates and unmet financial growth expectations.

Despite the current slowdown in investment, the fintech sector is poised to continue its transformation over the next decade. Fintech companies are leveraging joint ventures, strategic alliances, and innovative organizational restructuring to reinvent themselves and tap into new opportunities. Despite short-term challenges, there remains optimism for the long-term expansion of financial services through fintech innovation.

RECENT FINTECH ACQUISITIONS IN NIGERIA.

According to Statistics, Fintech Companies Are more likely to be purchased than companies in other industries, and throughout the last three to five years, Africa has experienced a significant number of startup acquisitions. Nigeria has had notable startup acquisitions; the Paystack/Stripe acquisition9 established the standard in 2020. Several purchases were made in 2023; three of them are mentioned in this article:

- Blockfinex acquires Fluidcoins10, a Nigerian business running a cryptocurrency payment gateway. Blockfinex, a cryptocurrency exchange, has its headquarters in the United Arab Emirates. It was arranged as an acquisition, with Blockfinex assuming the original personnel of Fluidcoin in order to carry on improving and expanding the platform.
- Payforce12 was acquired by Fairmoney, a fintech business based in Nigeria that offers loans to individual customers via its digital lending platform. Payforce provides services for merchant payments. The agreement sought to increase financial inclusion in Nigeria and the provision of loans and other credit products.
- Autochek's acquisition of Autotager13: The majority of Egyptian automobile technology business Autotager was acquired by Nigerian auto financing technology supplier Autocheck. The deal's primary objective was to profit from Egypt's thriving car industry and auto lending programs.

THEORETICAL REVIEW
DIFFUSION OF INNOVATION THEORY

The diffusion of innovations theory, conceptualized by E.M. Rogers in 1962, delves into user attributes, reasons behind, and methods by which individuals in a social system embrace new ideas (Rogers, 2015). Over time, this theory has gained increasing traction in financial literature, emerging as a key area of research alongside financial innovation dissemination (Khraisha & Arthur, 2018). Notably, Tufano's (2016) study on financial innovation diffusion underscores the significance of replicating successful technologies offered by banks to spread innovation effectively.

Research highlights the rapid proliferation of financial innovations, particularly in securities, attributed largely to their patentability (Cavanna, 1992). The theory posits that unique application techniques drive innovation dissemination, with individuals adopting new ideas or products at varying speeds. Rogers' contributions have greatly enriched our understanding of innovation dynamics, shedding light on how fintech's acceptance across diverse financial services can reach optimal growth levels (Medlin, 2017).

According to the theory, innovations hold the potential to proliferate and benefit society at large, including the banking industry, clients, lenders, regulators, and society as a whole (Rogers, 2015). Thus, the symbiotic relationship between FinTech and national development, as evidenced by this research, aligns with the principles of innovation diffusion theory. It underscores how the spread of financial innovations contributes to overall societal advancement and economic growth.

MODERNIZATION THEORY

The concept of modernization has long been intertwined with nation-building efforts, especially in the aftermath of World War II, when scholars like Agbo (2005)

turned to modernization theory to understand societal progress. As colonies in the Third World fought for independence, Western nations took an interest in modernizing these newly independent countries, hoping to showcase the benefits of adopting Western strategies (Webster, 2018). David McClelland's research in the 1960s aimed to uncover why nations differed in social and technological advancement, laying the groundwork for modernization theory.

According to proponents of modernization theory, societal development hinges on various factors, including the expansion of domestic and international trade, institutionalization of economic institutions to raise capital, advancements in education, infrastructure development, and the promotion of investment and high-tech manufacturing firms (Herkenrath & Bornschier, 2018). However, critics argue that modernization theory overlooks the role of privately developed knowledge and technology in a nation's prosperity and competitiveness. In this context, fintech emerges as a crucial element in a country's development trajectory. It aligns with the principles of modernization theory by facilitating the transfer of precise, context-free technology and knowledge. Yet, it's essential to acknowledge that the development of fintech often occurs within private sectors, highlighting the complex interplay between public policies and private innovations in driving national progress.

EMPIRICALEVIEW

lshater et al. (2022) conducted a thorough review of prominent publications on Islamic finance technology, highlighting topics such as artificial intelligence, blockchain, bitcoin, and NLP-based Islamic finance models. They also discussed the challenges faced by Islamic finance and banking post-COVID-19. Hudaefi (2020) examined Indonesia's Islamic financial lending technology, illustrating its role in supporting localized sustainable development objectives by providing financial accessibility to small and microbusinesses and agriculture. Suryono et al. (2020) identified various research areas in fintech, including market aggregators, cryptocurrency, blockchain technologies, payments research, risk management, investment, and finance, emphasizing the importance of defining fintech structures and business models unique to each nation's culture. Hu et al. (2019) offered a detailed analysis of factors influencing consumers' opinions on fintech services, while Bittini et al. (2022) investigated services provided by Spanish fintech companies to B2C businesses and end-users.

Dospinescu et al. (2021) explored factors impacting Romanian consumers' satisfaction with fintech use, and M. Grabowski (2022) focused on elucidating two virtual account models in use in the EU. Moreira-Santos et al. (2022) examined the effects of organizational and technological contexts on fintech adoption among Portuguese firms. Bao and Roubaud (2022) discussed non-fungible tokens as new developments in the banking industry.

Moreover, various authors have studied the impact of fintech on financial development across countries, including Chien et al. (2020), Sinha and Shastri (2021), Aduba et al. (2022), Tran and Huynh (2022), and others. Studies have shown the significant role of financial technology in enhancing financial accessibility and integration, particularly in developing nations and emerging market economies. The positive relationship between information and communication technology (ICT) usage

and financial development has been highlighted, suggesting the potential of ICT to accelerate financial growth, as seen in ASEAN nations (Tran and Huynh, 2022).

In light of these findings, our study aims to investigate the impact of financial technology, or FinTech, on the financial growth of European Union member states, exploring its effects on the depth, effectiveness, scope, and accessibility of financial markets and institutions. We hypothesize a linear correlation between the depth, availability, and efficacy of financial markets and institutions in EU member states and the growth of FinTech in 2020.

METHODOLOGY

This study uses Ordinary's least square. The functional model of the study is patterned after the model of Tran and Huynh (2022).

In this research, regression will be utilised to estimate the data. The Least Squares Method will be applied specifically.

Here is a description of the functional connection between the study variables:

$$GDPgr_t = \alpha_0 + \alpha_1 FINTECINV_t + \alpha_2 INF_t + \mu \qquad\qquad 1$$

$GDPgr$ = Economic growth performances at time t,

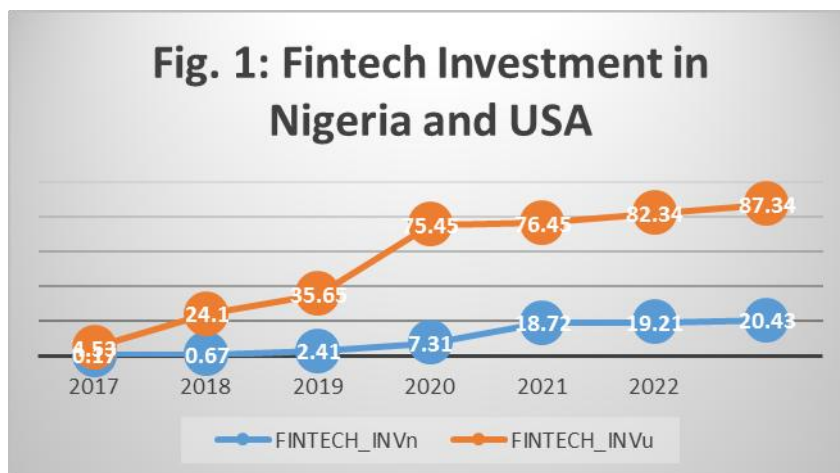$FINTECINV_t$ = Financial technology investement at time t,

INF_t = Inflation at time t.

α_0 = Constant, α_1-α_2 = Slopes of the independent variables.

μ = Error term.

DESCRIPTIVE STATISTICS

A comparison of the fintech investment in USA and Nigeria over the periods 2017 to 2022.

Source: EViews 12

The figures represent fintech investments in millions of dollars for Nigeria and the USA over the years 2017 to 2023.Comparing the two countries' fintech investments: In 2017, the USA had significantly higher fintech investments compared to Nigeria, with $4.53 million invested in the USA compared to only $0.17 million in Nigeria. The disparity continued in 2018, with the USA's fintech investment surging to $24.1 million, while Nigeria's investment increased to $0.67 million. However, from 2019 onwards, Nigeria experienced substantial growth in fintech investment. In 2019, Nigeria's investment increased to $2.41 million, while the USA saw a slightly higher investment of $35.65 million.The trend continued in subsequent years, with Nigeria's fintech investment growing significantly faster than that of the USA. In 2020, Nigeria's investment soared to $7.31 million, while the USA's investment was $75.45 million.

In 2021, Nigeria's fintech investment further increased to $18.72 million, while the USA's investment remained relatively stable at $76.45 million.

Interestingly, in 2022 and 2023, Nigeria's fintech investment surpassed that of the USA, with $19.21 million and $20.43 million, respectively, compared to $82.34 million and $87.34 million for the USA.

Overall, the data shows a significant growth trajectory for fintech investments in both countries, with Nigeria experiencing rapid growth and gradually catching up to the USA in terms of investment amounts by the years 2022 and 2023.

A comparison between the growth performance in USA and Nigeria over the periods from 2017 to 2022.

Fig. 2: Economic Growth in Nigeria and USA

Source: EViews 12

Figure 2 shows economic growth where economic growth for the US is performing better than that of Nigeria between the period 2017 and 2022.

REGRESSION RESULTS

Table 2: Impact of Fintech investment on growth performance for the case of Nigeria

Dependent Variable: GDPGRN
Method: Least Squares
Sample: 2017 2023
Included observations: 7

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FINTECH_INVN	0.087896	0.017886	4.91423	0.0085
INFN	0.137184	0.313614	0.437429	0.6844
C	-1.020439	4.093749	-0.249268	0.8154

R-squared	0.707574	Mean dependent var	2.037636
Adjusted R-squared	0.711361	S.D. dependent var	2.044420
S.E. of regression	1.927227	Akaike info criterion	4.447569
Sum squared resid	14.85682	Schwarz criterion	4.424387
Log likelihood	-12.56649	Hannan-Quinn criter.	4.161051
F-statistic	1.375948	Durbin-Watson stat	2.750735
Prob(F-statistic)	0.350969		

Fintech Investment (FINTECH_INVN):

The coefficient for fintech investment is positive (0.087896), indicating that there is a positive relationship between fintech investment and GDP growth in Nigeria. For every one-unit increase in fintech investment, the GDP growth rate increases by approximately 0.088 percentage points. The t-statistic is 4.91423, which is significant at conventional levels (p-value = 0.0085). This suggests that the positive impact of fintech investment on GDP growth is statistically significant and unlikely to be due to random chance.

Inflation (INFN):

The coefficient for inflation is also positive (0.137184), but the t-statistic is 0.437429, with a p-value of 0.6844. This implies that the relationship between inflation and GDP growth in this model is not statistically significant. The effect of inflation on GDP growth is uncertain and does not provide strong evidence of an impact within this model.

Table 3: Impact of Fintech investment on growth performance for the case USA

Dependent Variable: GDGU
Method: Least Squares
Sample: 2017 2023
Included observations: 7

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FINTECH_INVU	0.042790	0.013110	3.263920	0.0071
INFU	0.670618	0.492511	1.361630	0.2450
C	1.898280	2.079692	0.912770	0.4130
R-squared	0.718456	Mean dependent var		2.244212
Adjusted R-squared	0.722316	S.D. dependent var		2.587353
S.E. of regression	2.616063	Akaike info criterion		5.058745
Sum squared resid	27.37515	Schwarz criterion		5.035564
Log likelihood	-14.70561	Hannan-Quinn criter.		4.772228
F-statistic	0.934513	Durbin-Watson stat		3.282400
Prob(F-statistic)	0.464502			

In the context of the United States from 2017 to 2023, the analysis of the impact of fintech investment on GDP growth demonstrates noteworthy results. The coefficient for fintech investment (FINTECH_INVU) is 0.042790, suggesting a positive association between increases in fintech investment and the GDP growth rate. Specifically, for every unit increase in fintech investment, there is a corresponding 0.043 percentage point increase in GDP growth. This relationship is statistically significant, as indicated by a t-statistic of 3.263920 and a p-value of 0.0071, affirming the influential role of fintech investment in enhancing economic growth in the U.S. The model explains a substantial portion of the variance in GDP growth, with an R-squared value of 0.718456, indicating that approximately 71.85% of the changes in GDP growth can be accounted for by the variables in the model.

However, the inflation variable (INFU) in the model, although it has a substantial positive coefficient of 0.670618, does not reach statistical significance, as reflected by a t-statistic of 1.361630 and a p-value of 0.2450. This suggests that inflation has not had a significant impact on GDP growth within the studied period. The constant term (C) also does not show statistical significance, with a t-statistic of 0.912770 and a p-value of 0.4130, indicating that it does not have a considerable effect on the GDP growth rate. Overall, the analysis highlights the positive and significant role of fintech investment in promoting economic growth in the United States, underscoring its importance as a strategic economic driver, while the impact of inflation remains statistically indeterminate in this model.

Post Estimation Test

Table 4: Breusch-Godfrey Serial Correlation LM Test for model 1

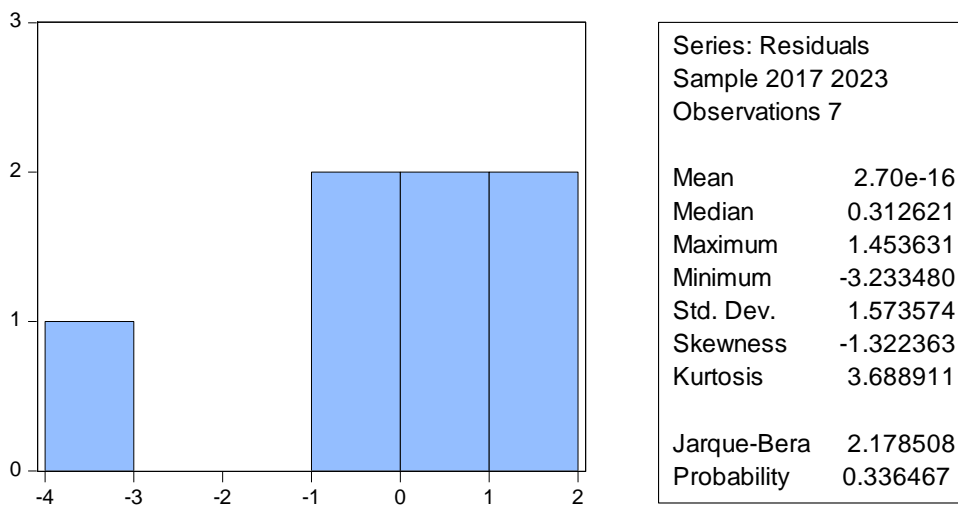|			
F-statistic	0.657406	Prob. F(2,2)	0.6034
Obs*R-squared	2.776533	Prob. Chi-Square(2)	0.2495

The results from the Breusch-Godfrey Serial Correlation LM Test for model 1 indicate that there is no significant serial correlation in the residuals of the model. The F-statistic of 0.657406 with a probability of 0.6034, along with the Obs*R-squared value of 2.776533 with a chi-square probability of 0.2495, both support this conclusion. Since both probabilities are well above the conventional significance level (e.g., 0.05), we fail to reject the null hypothesis of no serial correlation. This suggests that the model's errors are independent across time, affirming the reliability of the regression results in capturing the dynamics without autocorrelation issues.

Figure 3: Stability test for model 1
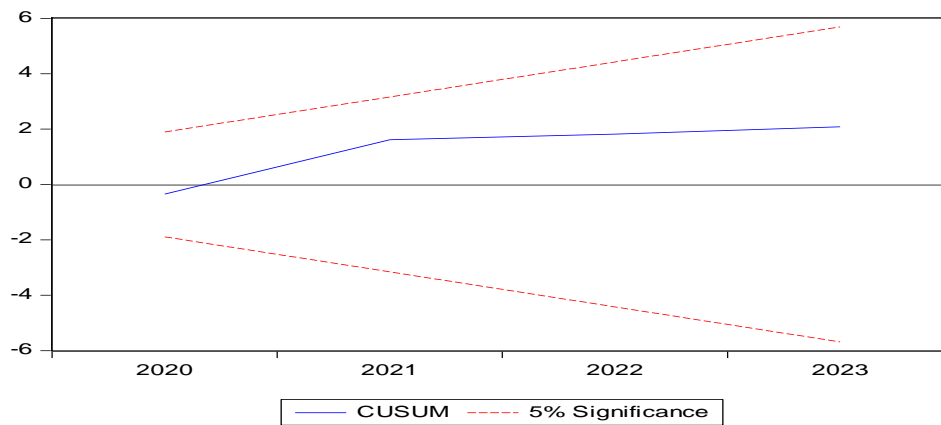
The figure shows the model is stable as the curve lies within 5% level.

Figure 4: Normality test for model 1

Series: Residuals
Sample 2017 2023
Observations 7

|	
Mean	2.70e-16
Median	0.312621
Maximum	1.453631
Minimum	-3.233480
Std. Dev.	1.573574
Skewness	-1.322363
Kurtosis	3.688911
Jarque-Bera	2.178508
Probability	0.336467

The normality test shows the model of the study is normal given that the probability results is not significant.

Table 5: Breusch-Godfrey Serial Correlation LM Test: for model 2

| F-statistic	25.72917	Prob. F(2,2)	0.1374
Obs*R-squared	6.738114	Prob. Chi-Square(2)	0.3344

The Breusch-Godfrey Serial Correlation LM Test for model 2 suggests that serial correlation is not a significant issue in the residuals. The F-statistic value of 25.72917 with a probability of 0.1374, and the Obs*R-squared value of 6.738114 with a Chi-Square probability of 0.3344 both exceed the commonly used significance thresholds (e.g., 0.05), indicating a failure to reject the null hypothesis of no serial correlation. This implies that the residuals from the model are independent across time periods, supporting the validity of the regression analysis. Hence, the test results show that the model's predictive reliability is not compromised by autocorrelation among the error terms.

Figure 5: Stability for model 2
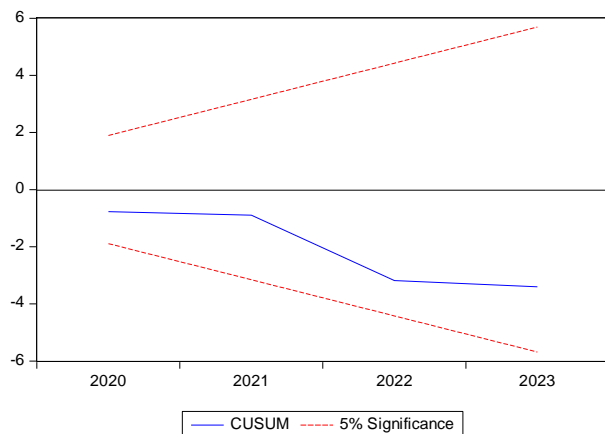
The result also confirms that the model is stable and it lies within 5% boundaries.

Figure 6: Normality Test
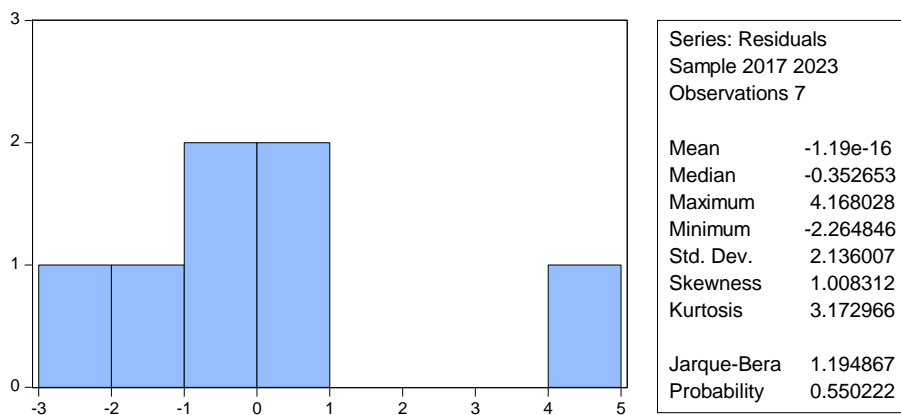
The model has been confirmed to be normal given that the probality is non-significant.

COMPARISON OF THE IMPACT OF INVESTMENT IN FINTECH ON GROWTH PERFORMANCE BETWEEN NIGERIA AND THE US.

Comparing the impact of fintech investment on economic growth in the USA and Nigeria reveals distinct outcomes. In Nigeria, fintech investment significantly influences GDP growth, evidenced by a coefficient of 0.087896 with a low p-value (0.0085), indicating a robust positive effect on economic growth. In contrast, in the USA, while fintech investment still positively impacts GDP growth, the effect is smaller, with a coefficient of 0.042790 and a similarly significant p-value (0.0071). These findings suggest that fintech investments contribute more substantially to economic growth in Nigeria than in the USA, potentially due to differing levels of market maturity and the initial economic conditions in each country. Nigeria, as a developing economy, might be experiencing more transformative impacts from fintech innovations, whereas the more mature economic environment of the USA shows a more tempered response to similar investments.

CONCLUSION AND RECOMMENDATION

The study's conclusions, which mostly focus on Nigeria, provide strong proof that fintech investments have a major impact on GDP growth in both Nigeria and the US. The findings demonstrate that fintech has revolutionary potential across a range of economic contexts: in affluent nations like the USA, it increases economic efficiency; in developing nations like Nigeria, it offers substantial development opportunities. These results suggest that fintech is both a catalyst for economic development and a crucial component of modern economic strategy. Enhancing fintech ecosystems might thus be a crucial strategy for sustaining and advancing economic growth in the future. The statistical significance of the results in both countries suggests that fintech investment is a stable tool for economic expansion and that, in order for it to reach its full potential, additional attention from public and private sector authorities is required.

Boost Support for Fintech Innovations: Given the positive impacts of fintech investments on GDP growth in both Nigeria and the US, governments and legislators need to consider enacting legislation that promote the expansion of fintech. Reducing regulatory barriers, providing incentives to businesses, and investing in digital infrastructure are some tactics to encourage more investment and development in the fintech sector.

Place a Focus on Education and Training: Increasing financial technology education and training should be a conscious effort if one wants to maximize returns on fintech investments. This means incorporating fintech studies into academic curricula, supporting vocational training programs, and encouraging partnerships between fintech companies and educational institutions in order to produce a workforce that is informed about the latest financial innovations.

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