THE NEOBANKS: FINANCIAL INCLUSION AND DIGITAL INNOVATION

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Abstract: *Neobanks, digital-only banking institutions, are revolutionizing the financial industry by improving access to banking, lowering costs, and advancing technology. They are particularly important for enhancing financial inclusion by providing easy-to-use banking services to unbanked and underbanked populations, especially in less-developed economies. Unlike traditional banks, neobanks utilize cutting-edge technologies like artificial intelligence, blockchain, and data analytics to offer affordable and accessible services. Their focus on digital platforms allows them to reduce operational costs and reach customers who have been excluded from traditional banking systems. This paper examines the impact of neobanks on financial inclusion through an econometric model, analyzing neobank penetration across 34 countries. The findings show that neobanks not only challenge traditional banking methods but also drive significant improvements in financial inclusion. The research highlights that neobanks have a greater positive impact in countries with supportive regulatory environments and high levels of innovation. Despite facing challenges such as regulatory hurdles, profitability concerns, and increased competition from established banks, neobanks are well-positioned to support the global push for more inclusive financial services. Their continued growth and technological advancements make them key players in reshaping financial access and contributing to the digital economy's evolution.*

Keywords: *neobanks, digital banking, financial inclusion.*

JEL Classification: *G21, O33, L86.*

INTRODUCTION

In recent years, the global financial landscape has undergone a profound transformation driven by the rapid evolution of digital technologies. Traditional banks, once considered the cornerstone of financial systems, are now facing unprecedented competition from new, agile players - neobanks. These financial institutions are entirely digital and operate without physical branches, relying on modern technological solutions such as artificial intelligence (AI), blockchain, and advanced data analytics to offer an unique, seamless banking experience.

The rise of neobanks represents not only an evolution in the banking industry but also a real paradigm shift in how financial services are designed, delivered, and consumed. Since neobanks can significantly reduce operational costs, they can offer a lot more competitive financial product. These institutions are inherently designed for a digitally connected world, offering seamless experiences via mobile apps and online platforms that prioritize user-friendly interfaces and real-time solutions. For example, customers can create an account within minutes, receive personalized financial recommendations, or send cross-border payments with just a click of a button, without much of the bureaucratic processes of traditional banks (Vives, 2019).

Aside from redefining customer expectations, neobanks are also playing a very important role in improving financial inclusion, one of the key global challenges. Financial inclusion refers to

providing affordable and accessible financial services to underserved populations, particularly in developing regions where millions of people still lack access to formal banking. According to the World Bank, more than 1.4 billion adults are still unbanked globally, with most living in low-income economies (Demirgüç-Kunt, et al., 2021). In countries like Chile, Mexico and Brazil, neobanks are bridging the gap by offering digital accounts, microloans, and financial education to those traditionally excluded from the financial system (Abbott, et al., 2021)

Despite their rapid growth and the evident advantages they bring, neobanks face significant challenges. Regulatory barriers in different countries, concerns over data security, and the reliance on digital literacy are all issues that need to be addressed for neobanks to fully realize their potential (Zetsche, et al., 2019). Furthermore, traditional banks are not standing idly by; many are embracing digital transformation, partnering with fintech firms, or launching their own digital arms to compete with neobanks. While this is so, neo-banks have given way to an emerging trend towards digitizing financial services in general through consumer behavior changes and further integration with technology in everyday life.

LITERATURE REVIEW

Neo-banking, consequently, has been attracting widespread attention in both academic and industry circles because of their potentially transformative role in financial services. The literature is highly elaborative on the potential of neobanks to drive financial inclusion. Gomber et al. (2017) indicate that neobanks are instrumental for reaching underserved populations, especially in regions with poor traditional banking infrastructure. By eliminating the need for physical branches, neobanks can offer services to individuals who have traditionally been excluded because of geographic, economic, or social barriers.

A key driver of neobanks' success is their technological agility. As Sanayolu, et al. (2024) point out, neobanks' ability to rapidly adopt and integrate new technologies allows them to respond more swiftly and effectively to evolving consumer demands than traditional banks. Operating within a digitally native ecosystem, neobanks rely heavily on mobile banking apps and other advanced digital tools. In this regard, countries with higher levels of technological development are more likely to exhibit stronger financial innovation, thus supporting the creation and diffusion of advanced financial technologies that will support the growth of neobanks.

A country's level of economic freedom plays a significant role in determining the success of neobanks, as highlighted by the positive relationship found in our model. Studies have noted that regulatory efficiency, protection of property rights, and openness to markets are some of the factors that create an enabling environment where financial services can thrive. According to Gurrea-Martínez & Remolina (2020), neobanks are usually set up in less regulated environments, enabling them to innovate and expand more rapidly in countries with higher economic freedom. This finding is supported by Gordiienko, et al. (2024) who discuss how regulatory developments in regions such as the European Union, including policies promoting open banking and third-party access to customer data-have facilitated the rise of neobanks.

However, the literature also identifies risks that arise from an associated increase in regulatory. Panzarino & Hatami (2021) note that while regulatory frameworks like PSD2 have enabled neobanks to thrive in markets like the EU, various issues with compliance procedures entailing anti-money laundering (AML) and know-your-customer (KYC) regulations can be particularly resource-intensive for smaller, digital-only institutions. This is relevant in countries with high levels of economic freedom but where the regulatory environment is still evolving to accommodate digital banking.

Another critical area of focus in the literature is the socio-economic factors affecting financial inclusion. There is consistent evidence that unemployment negatively affects financial inclusion. According to Mehry & Marwa (2021), in regions with high unemployment, individuals often

experience financial instability, which reduces their ability to access formal financial services. This creates barriers to utilization of banking products, credit, and savings opportunities. Although neobanks is a cheaper alternative and could potentially improve financial access, they face difficulties in overcoming the general economic instability associated with high unemployment rates. Neobanks may struggle to fully engage individuals in such environments, because financial insecurity often limits the demand for financial services, even when they are more affordable and accessible.

Demographic variables, such as age distribution, are also strong determinants of financial behavior. Evidence from research shows that older populations may be resistant to adopting new technologies, including digital banking channels, which may explain why there is generally lower financial inclusion among older populations. According to Mswelli and Mawella (2021) older individuals tend to rely more on traditional banking services and may show more resistance to the adoption of neobanks or other digital banking alternatives. Especially for countries with high median ages, this predisposition toward traditional banking services could become one of the barriers to adopting new, technology-based financial services.

Despite their rapid growth, neobanks also have many challenges that may bar their path to growing over the long term. Among them are data security and protection issues related to consumers. Indeed, George (2023) argues that due to the dependency on digital platforms, neobanks are more prone to cyberattacks, showing the need for strong data protection. Moreover, while there is a marked improvement in digital literacy, particularly among high-income countries, significant challenges still prevail across regions with limited internet connectivity or among groups of people that have lesser tech-savviness.

A review of existing literature shows that the future success of neobanks will depend not only on their mastery of innovation and cost cutting but also on their ability to navigate regulatory challenges and build customer trust. (Kadyan, et al., 2022) Further investment in the digital infrastructure is needed, especially in emerging economies, in which neobanks can possibly make a big contribution toward better financial inclusion.

CURRENT NEOBANKS WORLD SITUATION

The international neobank sector has undergone rapid expansion over the past decade, with digital-first banking organizations gaining considerable traction across multiple world markets. Neobanks like Revolut, N26, Chime, and Monzo are among the leading players in both European and North American markets, offering a wide range of financial services that includes payment solutions, savings accounts, investment platforms, and lending options.

Forecasts from market studies have shown that the neobank industry expanded from a mere USD 0.5 billion in 2019 to USD 37.71 billion by 2023 (see Figure 1). The growth trend of this incredible size is expected to continue, and by 2032, when the market is forecasted to reach USD 500 billion. The trend shows the strong penetration of the sector into traditional financial services. Its rapid development reflects the increasing adoption of digital banking solutions and a critical role that neobanks are playing in this transition.

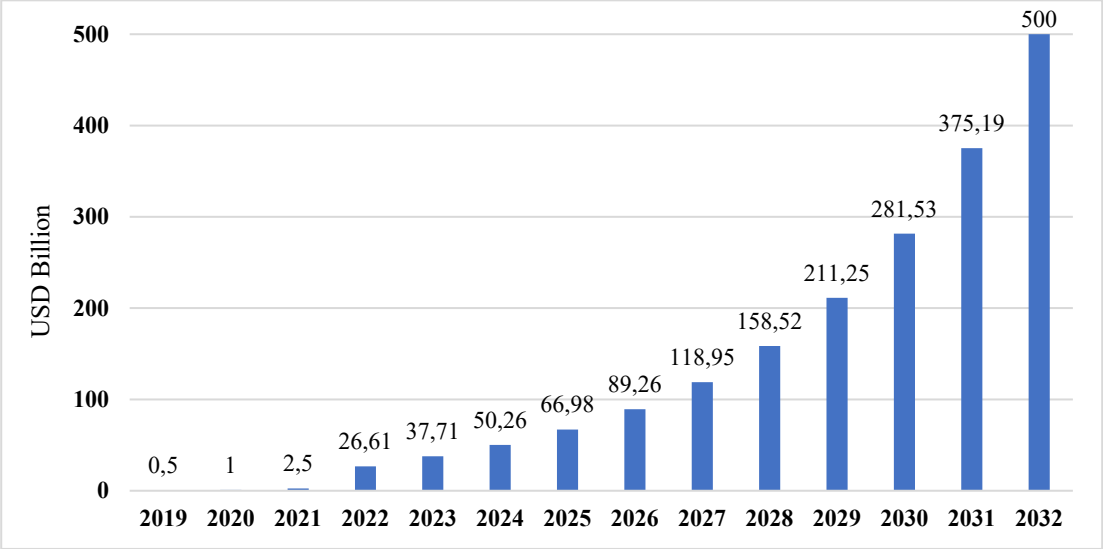

Figure 1. Neobank Market Size (USD Billion), 2019-2032

Source: (Fortune Business Insights, 2023)

In areas like Africa, large parts of the population remain unbanked or underbanked; thus, digital financial services are a very important tool for economic empowerment. For example, TymeBank in South Africa has fast expanded its customer base by offering cheap banking services that are mobile-enabled and have been able to reach out to previously unserved communities. (Jenik, et al., 2020) In Nigeria, Kuda pioneered a model to provide purely digital banking services for a young and highly technology-savvy population lacking access to traditional banks. With its fee-free banking structure, simple loan and savings account access, Kuda is a very good example of how neobanks can address the financial needs of emerging markets. Kuda has raised over $90 million in venture capital funding as of 2022, which underlines the huge interest from global investors in neobanks to accelerate financial inclusion (BPC, 2022).

Neobanks' success is driven by their ability to adopt innovative technologies such as artificial intelligence (AI), blockchain, and open banking:

- AI-driven chatbots and customer service tools have become part of the neobanks, offering 24/7 support and automating a lot of tasks performed by bank employees, thus allowing neobanks to scale rapidly without incurring significant costs related to traditional branch-based banking models (Gomber, et al., 2017);
- The implementation of blockchain technology, which provides secure and decentralized transaction processes, especially in cross-border payments, not only mitigates cybersecurity issues but also enhances operational efficiency, shifting the focus from conventional banking structures towards a more flexible, technology-focused model (Modak, et al., 2024);
- Open banking allows sharing financial information between customers and third-party service providers, enabling neobanks to offer a wide range of tailor-made services, from budgeting apps to investment platforms and peer-to-peer transaction capabilities, allowing them to attract a wider and more diverse customer base. (Brodsky & Oakes, 2017)

While they are rapidly growing and are at the forefront of the technological curve, neobanks do face significant challenges, especially when it comes to navigating the complex regulatory landscape. Being entirely digital, neobanks are subject to much tighter monitoring by regulatory bodies aimed at controlling risks in the security of data, fraud prevention, and general financial stability:

- The EU's GDPR and similar data privacy laws enforce stringent requirements on the handling of personal data, which present compliance challenges to neobanks trying to balance these obligations with their competitive need for agility and innovation;

- Regulators are implementing more stringent security measures to safeguard consumers and financial systems, as digital platforms are vulnerable to cyberattacks;
- Another area of concern to regulators is financial stability: neobanks often have much lower reserves than traditional banks, and this exposes financial systems during economic downturns. Policymakers across different countries are advocating for stricter capital adequacy requirements, stress testing, and liquidity management, ensuring the ability of neobanks to absorb any financial shocks. In this regard, a more substantial investment in risk management systems is a must for each neobank to be compliant with these dynamic regulations;
- In addition, neobanks have to operate under strict anti-money laundering (AML) and know-your-customer (KYC) rules to reduce financial crimes such as fraud and money laundering. Being digital, neobanks face unique challenges in verifying the identity of customers, particularly in regions where official identification documents are scarce. In order to meet compliance standards, governments are forcing neobanks to implement advanced digital verification systems and monitoring networks, increasing operational costs;
- Regulatory licensing: Neobanks, therefore, undergo difficult, fragmented processes while acquiring banking licenses in different countries. While some regions, such as the UK with its regulatory sandbox, have relatively favorable environments for fintech innovation, many governments are still fine-tuning their policies to balance both the need for oversight with the desire to promote innovation. Harmonization of regulations globally is also an issue, since neobanks operating across borders are required to comply with varying national regulations, adding more compliance burdens;

While neobanks have managed to amass large customer bases, profitability remains one of the major challenges for many neobanks. According to a report by Deloitte (Pearce, et al., 2021), due to their low-cost business models and competitive pricing for customers, most neobanks work on thin margins. Though venture capital investments have supported their expansion, the road to sustainable profitability is not clear for many of these organizations as they look to scale up their operations and enter new markets.

ECONOMETRIC MODEL ANALYSIS

The rapid growth of neobanks has garnered significant academic attention, particularly regarding their measurable impact on advancing financial inclusion. To evaluate this effect, we employ an econometric model using panel data for the period 2022 to 2023. This dataset covers 34 countries, selected to represent diverse economic contexts ranging from affluent developed nations to mid-income emerging markets, a wide array of geographical locations, including North and South America, Europe, Asia, Africa, and Oceania, thus reflecting diverse financial environments, degrees of technological integration, and socio-economic contexts.

Specifically, a Random Effects Model was utilized in our analysis. This modeling permits including time-variant and time-invariant predictors; hence, it covers a broad spectrum of determinants that influence financial inclusion. The Random Effects Model is particularly suited for our study as it accounts for unobserved heterogeneity across countries, assuming that individual-specific effects are uncorrelated with the independent variables.

In this model, the Financial Inclusion Index (***FII***), sourced from Financial Inclusion report (Principal Financial Services, Inc., 2024), serves as the dependent variable, providing a comprehensive measure of financial inclusion across three pillars—Government Support, Financial System Support, and Employer Support—each composed of a set of indicators that reflect the accessibility and quality of financial services.

The Economic Freedom Index (***Economic_Freedom***) (The Heritage Foundation, 2024), measures the level of economic freedom in a country, including regulatory efficiency, property rights, and market openness. Larger values mean more economic freedom, which is assumed to promote greater financial inclusion by offering a better environment for financial services to operate in.

Neobank Penetration (***Neobank_Penetration***), obtained from Statista's Digital Banking Reports (Statista GmbH, 2024), represents rate of adoption and use of neobanks by the population. A higher rate of neobank penetration could improve the degree of financial inclusion since neobanks offer easily accessible, user-friendly alternatives to traditional banking for all.

The Global Innovation Index (***GII***) (World Intellectual Property Organization, 2024), assesses the innovation potential of a country, including research and development, technological progress, and creative outputs. A high GII score reflects a stronger innovation ecosystem, which can support financial inclusion by enabling the development of innovative financial products and services.

Unemployment Rate (***Unemployment***) (International Labour Organization, 2024) reflects the level of unemployment in a country and acts as an indicator for economic stability and labor-market dynamics. Higher unemployment rates are expected to negatively impact financial inclusion since economic instability can reduce individuals' capacity to engage with formal financial services.

The Median Age (***Medianage***) (The World Factbook, 2024), represents the population's median age and is an indicator of demographic influence on financial behavior and the adoption of technology; with an older median age potentially indicating barriers to adopting new financial technologies like neobanks.

Building upon this methodological framework, we have estimated the following model:

$$\mathbf{FII}_{it} = -0.101 + 0.439 \times \text{Economic\_Freedom}_{it} + 0.013 \times \text{Neobank\_Penetration}_{it} + 0.731 \times \text{GII}_{it} - 0.112 \times \text{Unemployment}_{it} - 0.432 \times \text{Medianage}_{it} + u_{it} \quad (1)$$

Where, $u_{it}(composite\ error\ term) = \alpha_{it} + \epsilon_{it}$;

Here, α_{it} represents the country-specific random effect, capturing unobserved heterogeneity, and ϵ_{it} denotes the idiosyncratic error term.

The analysis conducted brings forth several important findings regarding the determinants of financial inclusion:

a. Economic Freedom (p = 0.030976):

Economic freedom shows a positive and statistically significant effect on financial inclusion at the 5% significance level. This implies that an increase in economic freedom is associated with a significant increase in financial inclusion. Policies aimed at reducing regulatory barriers, securing property rights, and promoting open markets can help considerably improve access to financial services

b. Neobank Penetration (p = 0.012000):

Neobank penetration shows a small yet statistically significant positive impact on financial inclusion at the 5% level. This may be an indication that increasing neobank adoption has a positive effect on financial inclusion. The digital and user-centric nature of neobanks likely attracts previously unbanked or underbanked population, thus increasing access to formal financial services.

c. Global Innovation Index (GII) (p < 0.001):

The Global Innovation Index has a strong positive and highly statistically significant effect on financial inclusion. Higher innovation levels greatly improve financial inclusion by enabling new financial products and services that are more accessible and efficient for a wider population

d. Unemployment (p = 0.006404):

Unemployment negatively and significantly impacts financial inclusion at the 1% level. Higher unemployment rates are associated with lower financial inclusion, as unemployment restricts the financial ability of individuals to engage with formal financial services, therefore reducing overall access and usage.

e. Median Age (p = 0.032880):

The median age has a statistically negative effect on financial inclusion at the 5% level of significance. An increase in the median age of the population decreases financial inclusion. Older population may be less adaptive to digital financial services and hence more resistant to the use of innovative financial technologies like neobanks.

Our model demonstrates a robust fit, with an R-Squared of 57.7% and an Adjusted R-Squared of 53.5%, indicating that the selected independent variables effectively explain a significant portion of the variability in financial inclusion. The highly significant Chi-squared statistic (83.2047 on 6 DF) further validates the model's overall significance. Additionally, the absence of multicollinearity among the predictors, as evidenced by acceptable VIF values (all factors are under 2.76), underscores the reliability of the model's estimates. Collectively, these results validate the model's ability to generate significant understandings regarding the factors influencing financial inclusion in various economic environments.

CONCLUSIONS

The rapid growth of neobanks has fundamentally changed the global financial ecosystem by bringing in an innovative, digital-first approach that challenges the status quo of traditional banking. As underlined in this article, with advanced technologies such as artificial intelligence, blockchain, and open banking, neobanks offer low-cost, customer-centric financial services that increasingly contribute to financial inclusion, mostly in emerging regions where traditional banking alternatives have been scarce.

The performed econometric evaluation highlights the positive impacts of neobank expansion on financial inclusion. Our results indicate that as neobanks grow, the availability of accessible and affordable banking options for marginalized groups increases, which effectively reduces the financial inclusion gap, particularly in emerging markets like Nigeria and South Africa. Neobanks have a strong and positive relation with financial inclusion in countries with a high rate of mobile internet adoption and innovation.

Our research has shown the importance of economic freedom and innovation. Economies characterized by higher levels of regulatory efficiency, well-defined property rights, and open markets would offer a more fertile environment for neobanks, as proved by the positive impact of the Economic Freedom Index in the model. Similarly, the Global Innovation Index supports the technology needed for digital financial services, helping to improve financial inclusion.

Neobanks still face several challenges: regulatory control, economic sustainability, and growth. While effective for younger, tech-savvy users, they must address the concerns of older, more traditional customers hesitant to switch to digital-only services. Additionally, low profit margins, rising compliance costs, and growing competition from both established banks and fintech companies threaten their long-term survival.

Despite these issues, neobanks have played a key role in expanding access to financial services. By improving digital infrastructure and supportive regulations, they are well-positioned to drive global financial inclusion. This highlights the need for policymakers to maintain digital financial ecosystems that foster innovation while balancing risk management and technological growth.

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