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Financial Development and Households' Healthcare Funding in the Economic Community of West African States (ECOWAS)

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ABSTRACT

Access to quality and affordable healthcare remains a significant challenge in the ECOWAS region, where out-of-pocket (OOP) payments continue to dominate healthcare financing. In this context, we provide a thoughtful and empirical investigation into how financial development, in terms of access, depth, and efficiency, contributes to reducing OOP payments for healthcare in ten ECOWAS countries (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Liberia, Niger, Nigeria, Sierra Leone, and Togo). Specifically, we employed the pooled mean group (PMG) estimator and exploratory data analysis, and found that the proportion of OOP payments on healthcare expenditure averaged 54.16% between 2000 and 2021, exceeding the WHO benchmark of 15–20% for financial protection. This highlights a significant vulnerability within the healthcare financing system. Moreover, we found that financial access, depth, and efficiency contributed positively to OOP healthcare payments during the study period. This suggests that the development of the financial sector, in terms of improved access, size (relative to GDP), and resource allocation, offered households more opportunities to mobilise funds for their healthcare needs, rather than reducing their financial burdens. Additionally, the results showed that regulatory quality significantly decreased OOP payments for health in both the long and short term. This finding is notable as it underscores the important role of the institutional framework in enhancing how healthcare systems are governed, regulated, and financed to provide financial protection and promote universal health coverage (UHC) for households. Consequently, we recommend that policymakers, including monetary authorities and stakeholders in the health sector, ensure that financial development is strategically aligned with the goal of UHC to reduce the rising OOP costs in the ECOWAS region.

1. INTRODUCTION

Access to quality healthcare remains a significant challenge in the ECOWAS region as many member countries still struggle with insufficient public health funding, high out-of-pocket (OOP) payments, and limited insurance coverage. According to the World Health Organisation (WHO, 2010), OOP payments for healthcare account for large proportions of healthcare funding in many low- and middle-income countries (LMICs), including the ECOWAS region. This exposes households to catastrophic health expenditure (CHE) and poverty, as OOP payments for healthcare account for 38–52% of total health expenditures in most West African countries, thus exceeding the WHO's recommended threshold of 15–20% for financial protection (see Boundioa & Diallo, 2025; Lawal & Bubari Umar, 2025; Aregbeshola & Khan, 2018). As outlined in Sirag & Mohamed Nor (2021), OOP payments for healthcare over 29% of total health expenditures exacerbate the incidence of poverty by compelling households to choose between healthcare and other basic needs, including food, housing, and education. As the inadequacy of health financing systems in

protecting the most vulnerable populations increases with the CHE, there is an urgent need to mitigate high OOP costs to improve healthcare outcomes through poverty reduction and access to healthcare.

Following the growing challenge of CHE, driven by excessive OOP payments for healthcare, the role of financial development, which encompasses the depth, access, and efficiency of financial institutions and markets, has garnered significant attention in health financing discourse. This heightened focus is largely due to the increasing recognition of how financial development can improve credit access, facilitate risk pooling and health insurance, and prevent medical debts. As a lifeline for alleviating OOP burdens, financial development bolsters alternative health financing mechanisms (Levine, 2005), enhances access to credit for healthcare financing, and strengthens risk-pooling arrangements (Beck & Cull, 2014). In addition, households' catastrophic OOP payments reduce with an increase in financial access. Demirgüç-Kunt *et al.* (2018) posit that financial development enhances the ability of households to manage their health-related expenses, smoothing consumption, and reducing dependence on immediate cash payments.

It is also argued that a well-developed financial sector plays a crucial role in boosting health insurance by establishing the essential infrastructure, including payment systems and actuarial tools. This approach promotes risk sharing and prepaid methods, which help in reducing reliance on OOP payments at the time of care (Tandon & Cashin, 2010). According to the World Bank (2020) report, the digital health payments and mobile insurance associated with the evolving financial system in developing economies help to reduce the difficulties people face when seeking medical care and decrease the likelihood of unexpected OOP expenses. This highlights the crucial role of fintech in supporting digital financial services and mobile health payments. Contrary to the experience of developed economies such as the United States, the United Kingdom, Germany and Switzerland, the ECOWAS region is characterised by an underdeveloped financial system, with low insurance coverage, limited access to credit, and a large informal sector (Iheonu et al., 2020; Appiah, Li, F & Frowne, 2020). This tends to magnify OOP costs, thereby impoverishing households and deterring healthcare utilisation.

Following the growing dimensions of OOP payments and the associated implications in terms of catastrophic financial burden, delayed treatments, limited healthcare utilisation, and rising poverty incidence, it becomes imperative to ascertain how the extent of financial development affects OOP payments in the ECOWAS region. Essentially, we focus on financial institutions' access, depth, and efficiency while taking into consideration institutional frameworks. Our choice of these financial development variables is consistent with their a priori link with OOP healthcare payments and their relevance to the Sustainable Development Goals (SDGs), including SDG 3, SDG 8 (Target 8.10) and SDG 17. Given the introduction, the rest of this paper is organised as follows: Section II embodies the related literature, while data and methodology a presented in Section III; results and discussion are elaborated in Section IV, and the conclusion and policy insights are provided in Section V.

2. RELATED LITERATURE

The theory of financial liberalisation, introduced by McKinnon (1973) and Shaw (1973), posits that opening up a financial system fosters financial development, which enhances resource allocation, boosts savings and investments, and improves access to credit. This can notably improve healthcare funding by broadening credit and insurance markets, mobilising private savings for health infrastructure, and promoting financial inclusion, enabling families to save and borrow for health expenses. Levine (2005) emphasises that financial liberalisation helps mobilise and allocate capital, allowing households to obtain loans for essential services like healthcare. This is especially vital in low- and middle-income countries where formal health insurance options are largely limited or unavailable.

Shaw (2007) suggests that combining financial market reforms with strong regulatory oversight can promote risk-sharing mechanisms, reducing households' dependence on out-of-pocket (OOP) expenses. Additionally, liberalising interest rates can enhance access to health loans and medical credit lines. This indicates that financial liberalisation can enhance household healthcare funding by increasing credit availability, expanding insurance options, and promoting private health investments. Grossman's (1972) model emphasises the crucial role that financial services, including credit, insurance, and savings, play in enabling both households and governments to invest more effectively in health. In this light, the development of financial services is crucial in boosting healthcare funding, improving health outcomes, and driving economic growth. Nonetheless, these advantages largely rely on complementary reforms, sound regulatory frameworks, and policies focused on financial inclusion and equity. For example, Stiglitz (2000) notes that liberalisation without proper regulation could prevent the poor from accessing financial services, thus deepening health disparities.

Existing literature offers mixed evidence on the relationship between financial development and OOP payments in developing countries, including the ECOWAS region. While financial development is generally believed to lower OOP payments by facilitating risk pooling and improving access to health financing, empirical findings across African nations are varied. Some studies find that financial development significantly reduces OOP costs by increasing access to credit and encouraging savings (Boundioa & Diallo, 2025; Voto & Ngepah, 2025; Fengju & Wubishet, 2024; Demirgüç-Kunt et al., 2015), enhancing access to health insurance (Ngepah & Ndzignat Mouteyica, 2024; Jalali, Bikineh & Delavari, 2021; Ly, Faye & Ba, 2022), and expanding public healthcare funding, which diminishes household OOP burdens (Rana, Alam & Gow, 2021). Conversely, other research indicates that financial

development can worsen OOP payments due to long-term debt obligations with high interest rates (Bolongaita et al., 2023; Aregbeshola & Khan, 2018). Still, some studies argue that the impact of financial development on reducing OOP costs depends on institutional frameworks (Fengju & Wubishet, 2024; Ngepah & Ndzignat Mouteyica, 2024) and insurance coverage (Bolongaita et al., 2023; Rahman, Gasbarro & Alam, 2022). Given these conflicting findings, this study aims to explore how factors like income inequality, institutional quality, and healthcare system structure influence the relationship between financial development and OOP payments.

2.1 Stylised Facts on OOP Payments and Financial Development in the Sampled ECOWAS Countries

The member countries of ECOWAS face serious challenges in mitigating the growing OOP burdens with significant cross-country variations as reported in Figure 1.

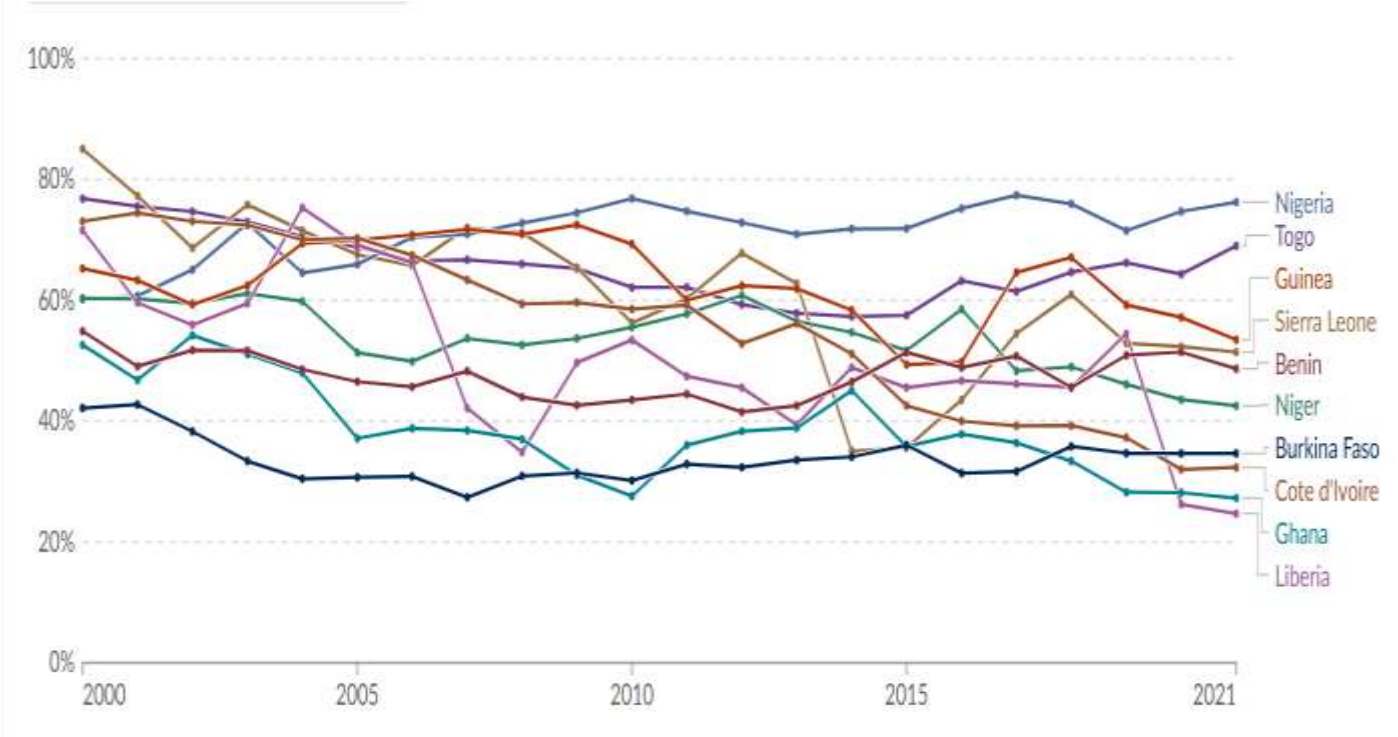

Figure 1: Time series trend of share of OOP payments on healthcare in selected ECOWAS countries, 2000 – 2021
Source: Authors' compilation based on data from the World Health Organisation (WHO) Global Health Expenditure Database (2025)

The trend in the time series indicates that the proportion of OOP payments on healthcare exceeds the WHO-recommended threshold of 20%, signifying a substantial financial strain on households. The distribution of OOP healthcare payments across the ten sampled ECOWAS countries reveals considerable variation between countries, with Nigeria surpassing all others in the sample. This suggests that households in Nigeria continue to bear high OOP burdens. Specifically, Nigeria experienced the highest OOP payments between 2000 and 2021, with an average of 71.27%, resulting in financial catastrophe for vulnerable households. It is closely followed by Togo, Guinea, and Sierra Leone, with average OOP payments of 65.86%, 63.11%, and 61.53% respectively, during the period 2000–2021. Similarly, OOP payments in Niger, Liberia, and Côte d'Ivoire account for over 50% of total healthcare expenditure from 2000 to 2021, showing that households bear a significant burden of healthcare costs in these countries. However, there is a positive trend in Ghana, where the share of OOP payments for healthcare has gradually decreased from 45.05% in 2014 to 27.25% in 2021. This improvement is likely due to systematic reforms in the country's health financing, such as the expansion of the National Health Insurance Scheme (NHIS). Overall, the high proportion of OOP payments on healthcare continues to pose risks of impoverishment and limited healthcare access, with many vulnerable households facing financial catastrophe.

In addition, the extent of financial development in the ECOWAS region has varied in recent times as reported in Table 2.

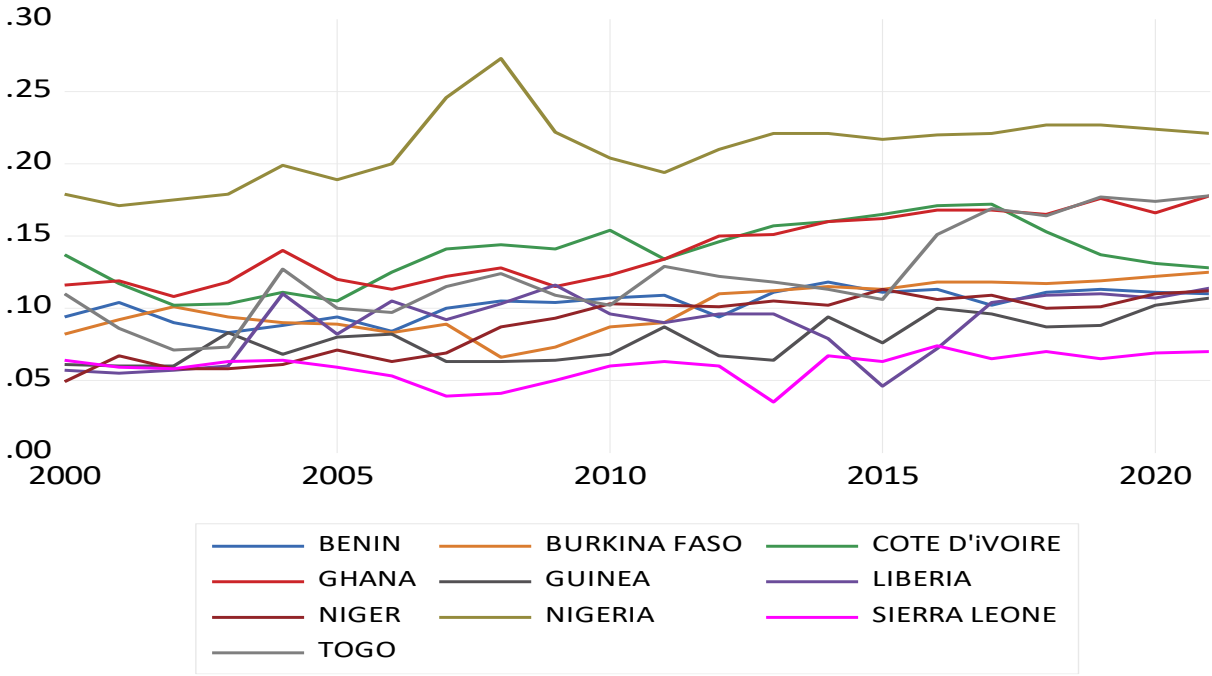

Figure 2: Time series trend of financial development index in selected ECOWAS countries, 2000 – 2021
Source: Authors' compilation based on data from the International Monetary Fund (IMF) and World Bank

The time series trend of the financial development index shows that Nigeria surpassed the countries in the sample with an average financial development index of 0.211 between 2000 and 2021. This could be attributed to the deepening of the Nigerian banking sector. Ghana is the next to Nigeria in terms of financial development, with an average financial development index score of 0.141, from 2000 to 2021. The average financial development index score for Sierra Leone, Togo, Benin and Burkina Faso stood at 0.13, 0.12, 0.102 and 0.100, respectively, over the period 2000-2021. However, the level of financial development in Sierra Leone, Guinea, Liberia and Niger is relatively poor compared to the countries in the sample. This could be attributed to a weak financial sector and poor financial intermediation in these countries. There is also institutional and regulatory bottlenecks as central banks and financial regulators in these countries often lack the capacity to enforce prudential standards and foster financial inclusion.

3. DATA AND METHODOLOGY

3.1 Data Description

The healthcare funding was measured by the OOP payment as a percentage of total current healthcare expenditure, while financial development was measured using the World Bank financial development indicators, including access to financial institutions, depth, and efficiency, which are part of the Global Financial Development Database (GFDD) framework. The financial access index reflects the inclusiveness of the population within the financial system, often indicated by bank account penetration, the number of bank branches, and the percentage of firms with access to formal credit, among other factors. Conversely, the financial depth index gauges the size of financial institutions relative to the economy, typically represented by the ratio of private sector credit to GDP, the broad money supply to GDP, and bank assets to GDP. The financial efficiency index evaluates the operational performance of financial institutions, commonly measured by the interest rate spread, return on assets, and net interest margin. Additionally, the institutional framework, particularly the regulatory quality index, which indicates the government's ability to develop and implement sound policies and regulations that foster private sector growth, was included as a moderating variable. The datasets on OOP payments and financial development were obtained from the WHO Global Health Expenditure Database, the IMF, and the World Bank.

3.2 Model Specification

We closely followed the work of Ly, Faye & Ba (2022) and Rana, Alam & Gow (2021) in specifying the model set up for this study, with some improvements following the disaggregation of financial development into financial institutions' access, depth, and efficiency and introduction of regulatory quality as a moderating variable. The formal specification of the functional model is provided as:

$$OOP = f(FASS, FDEPT, FEFF, REQUA) \quad (1)$$

Where: OOP = Out-of-pocket payment as a percentage of total current healthcare expenditure, FASS = financial access index, FDEPT = financial depth index, FEFF = financial efficiency index and REQUA = regulatory quality index

More importantly, the panel autoregressive distributed lag (ARDL) model for this study is specified as follows:

$$\Delta OOP_{it} = \theta_i[OOP_{it} - \wedge_{1i} FASS_{it-1} - \wedge_{2i} FDEPT_{it-1} - \wedge_{3i} FEFF\beta_{it-1} - \wedge_{4i} REQUA_{it-1}] + \sum_{j=1}^{p} \beta_{ij} \Delta OOP_{it-j} + \sum_{j=0}^{q} \beta_{ij} \Delta FASS_{it-j} + \sum_{j=0}^{q} \beta_{ij} \Delta FDEPT_{it-j} + \sum_{j=0}^{q} \beta_{ij} \Delta FEFF_{it-j} + \sum_{j=0}^{q} \beta_{it-j} \Delta REQUA_{it-j} + \mu_i + V_{it} \quad (2)$$

Where: $\wedge_i$ = long run parameters, β_{ij} and β_{ij} = short run parameters, p and q = optimal lag orders, θ_i = error correction coefficient, μ_i= individual effects and V_{it} = remainder disturbance term, i = cross-sectional units comprising the ten selected countries in the ECOWAS sub-region and t = time frame (2000 to 2021).

A priori, financial development is expected to negatively influence OOP payments, as improvements in financial development tend to reduce healthcare payments made out-of-pocket. Specifically, financial development is likely to boost health insurance markets, enabling households to pool health risks and reduce high OOP costs. Furthermore, robust regulatory quality is anticipated to strengthen how financial development helps reduce OOP healthcare payments.

3.3 Estimation Strategy

We employed the Pooled Mean Group (PMG) estimator developed by Pesaran, Shin, and Smith (1999) to estimate the PARDL model specified for this study. The choice of this estimator was motivated by the fact that it only allows differences between groups in the intercept and short-run coefficients but assumes identical long-run coefficients across panel units. Goswami & Junayed (2006) assert that the robustness of the PMG estimator in estimating long-run equilibria while accommodating short-run heterogeneity makes it essential for empirical research in economics and finance. By pooling information across units for long-run estimates, PMG reduces sampling uncertainty (Bangake & Eggoh, 2012). To control for spurious results and identify the respective order of integration, we performed panel unit root and cointegration tests at the 5% significance level. These tests, especially Levin, Lin & Chu (LLC, 2002) unit root, Im, Pesaran & Shin (IPS, 2003) unit root and Kao (1999) cointegration are also vital to ensure the validity of the model and the reliability of the estimates.

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 1: Summary statistics for the variables

	OOP	FASS	FDEPT	FEFF	REQUA
Mean	54.16006	0.049900	0.043373	0.462468	-0.715750
Median	54.58483	0.043000	0.038000	0.471000	-0.760000
Maximum	85.05292	0.185000	0.133000	0.746000	0.100000
Minimum	24.67734	0.006000	0.004000	0.038000	-1.860000
Std. Dev.	14.27867	0.036044	0.025696	0.131026	0.349967
Jarque-Bera	10.83684	52.41212	40.13990	15.39413	0.099872
Probability	0.004434	0.000000	0.000000	0.000454	0.951291

Source: E-views output

The descriptive statistics revealed that the proportion of OOP payments on healthcare expenditure averaged 54.16%, exceeding the WHO benchmark. This underscores a significant vulnerability in the healthcare financing system within the selected countries during the study period. It worsens the problem of poverty by placing households in these countries at greater financial risk. The results further indicated that the indices for financial access, depth, and efficiency averaged 0.0499, 0.0433, and 0.4624, respectively. These low average scores highlight the underdevelopment of financial institutions in the selected countries. Additionally, the regulatory quality index averaged -0.7157, with minimum and maximum scores of -1.86 and 0.10, signalling that the regulatory environment remains relatively weak. The standard deviations showed that the observations for OOP payments, the indices for financial access, depth, and efficiency clustered around their respective mean values, while the observations for the regulatory quality index deviated from the corresponding mean score. It is evident from the Jarque-Bera statistics and the corresponding probability values that only the observation for the regulatory quality index is normally distributed, while the observations for the other variables are not normally distributed at the 5% level. This could be attributed to the outliers in the variables.

Table 2: Panel unit root test results

Test method	OOP	FASS	FDEPT	FEFF	REQUA
Null Hypothesis: Unit root with common process					
LLC (t*)	-8.625***[b]	-2.448***[a]	-4.862***[b]	-2.087***[a]	-4.182***[b]
Null Hypothesis: Unit root with individual process					
IPS (W-stat.)	-7.010***[b]	-3.303***[b]	-5.793***[b]	-2.504***[a]	-5.492***[b]
ADF Fisher (Chi-square)	86.429***[b]	43.158***[b]	70.799***[b]	38.757***[a]	67.488***[b]
PP Fisher (Chi-square)	145.82***[b]	77.083***[b]	142.38***[b]	45.472***[a]	31.557**[a]
Order of Integration	I (1)	I (1)	I (1)	I (0)	I (1)

Note: a and b denote stationary at levels and first difference, respectively, while *, ** and * indicate statistical significance at 1%, 5% and 10% respectively**

The panel unit root test results revealed a mix of non-stationary and stationary variables. Specifically, while the financial efficiency index is stationary at levels, meaning it is integrated of order zero, I(0), OOP payments, financial access, and depth indexes are non-stationary. However, these non-stationary variables became stationary after first differencing, indicating they are integrated of order one, I (1). These findings led to the conduct of cointegration tests and the choice of a dynamic non-stationary heterogeneous panel estimation method.

Table 3: Kao panel residual cointegration test result

Series: OOP FASS FDEPT FEFF REQUA				
Included observations: 220				
Null Hypothesis: No cointegration				
Newey-West automatic bandwidth selection and Bartlett kernel				
			t-Statistic	Prob.
ADF			-3.0766***	0.0010
Residual variance			0.012877	
HAC variance			0.009669	

Note: *, ** and * indicate statistical significance at 1%, 5% and 10% respectively**

Following the evidence of mixed integration in the variables, we employed the Kao residual cointegration to ascertain if a long-run relationship exists among the nonstationary series. The results showed that the probability value (0.0010) of the test statistic (-3.076) is less than 0.05, indicating that OOP payment has a long-run relationship with the financial development indicators. This corroborates the findings of Chireshe & Ocran (2020) and Grigorakis *et al*. (2018), who established a long-term relationship between financial development and healthcare funding.

Table 3: PMG results on OOP effects of financial development

Dependent variable OOP		
Variable	Short-run results	Long-run results
FASS	9.493 [0.4796]	75.536 [0.4782]
FDEPT	10.77 [0.5900]	85.717 [0.5923]
FEFF	5.380 [0.1033]	42.809 [0.1320]
REQUA	-4.886*** [0.0023]	-38.878*** [0.0001]
Ect	-0.1256*** [0.0006]	
Constant	-7.501 [0.6965]	
Summary of diagnostic test results		
Test type	**Test statistic**	**P-value**
Serial Correlation LM test	0.503	0.4781
Heteroscedasticity test	0.162	0.6869
Ramsey RESET test	0.1656	0.9194

Note: Figures in squared brackets are the corresponding probability values. *, ** and * denote statistical significance at 5% level.**

The results showed that financial access positively affects OOP healthcare payments in both the short and long term. This suggests that increased access to financial services enhances households' ability to pay for healthcare, but does not necessarily protect them from direct costs, raising concerns about the adequacy of financial protection within the healthcare systems of the selected countries. It also reveals gaps in risk-pooling mechanisms and weakens universal health coverage (UHC). The positive impact of financial access on OOP payments aligns with the findings of Rana, Alam & Gow (2021), who found that financial sector development is positively associated with per capita health expenditure. Similarly, evidence of a positive effect of financial depth and efficiency on OOP payments was observed in both short and long-term results. Although this finding is not statistically significant, it indicates that the increased size and liquidity of financial institutions, along with their improved resource allocations, are helping households to afford healthcare services without sufficiently shielding them from high OOP burdens. This further explains that instead of

lowering OOP payments through integrated health financing, improved financial institutions' depth and efficiency enable households to pay directly for healthcare services, rather than providing protection. This emphasises the urgency of integrating financial systems with health financing reforms to attain UHC and avoid financial hardship caused by high OOP burdens. This finding is contrary to the work of Boundioa & Diallo (2025), who found that the development of financial institutions improved the effectiveness of public health expenditure in reducing OOP payments for health in the West African Economic and Monetary Union (WAEMU). However, the results showed that regulatory quality significantly reduced OOP payments for health in both the long and short run. This finding is impressive as it highlights the important role of the institutional framework in improving how healthcare systems are governed, regulated, and financed for improved financial protection and UHC for households. This finding corroborates the work of Ngepah & Ndzignat Mouteyica (2024) and Jalali, Bikineh & Delavari (2021), who found that the governance and regulatory quality help in reducing OOP payments for healthcare. The estimated model is associated with an error correction coefficient of -0.1256, indicating that distortions from the long-run equilibrium position can be corrected at a speed of 12.56% each year. The diagnostic test results are also impressive, as they provide enough evidence to reject the presence of serial correlation, heteroscedasticity and functional misspecification in the model.

5. CONCLUSION AND POLICY INSIGHTS

In this study, we offer thoughtful and valuable insights into the link between financial development and OOP payments for healthcare, with a particular focus on financial access, depth and efficiency in ten selected ECOWAS countries. The findings reveal that financial access, depth and efficiency contributed positively to OOP healthcare payments during the study period. This suggests that the development of the financial sector in terms of improved access, size (relative to GDP) and resource allocation provided an opportunity for households to mobilise more funds to cater for their healthcare needs, rather than translating into reduced financial burdens. This further explains that the burden of healthcare falls heavily on households, as the benefits of financial sector development seem to be directed toward increased ability to pay, which impoverishes households and makes them vulnerable to financial risks. The results further showed that regulatory quality significantly reduces OOP payments for healthcare, indicating that a strong and effective regulatory framework is critical for long-term financial protection of households in healthcare systems. Given the findings, we recommend that policymakers, including monetary authorities and stakeholders in the health sector, ensure that financial development is strategically integrated with the goal of UHC to reduce the growing OOP costs. We also recommend that the governments in the ECOWAS region prioritise strong quality regulations to ensure that the benefits of financial development trickle down to vulnerable households by fostering financial risk protection and UHC in line with the SDGs.

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