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RESEARCH ARTICLE

IMPACT OF SOCIAL HEALTH INSURANCE ON HOUSEHOLD SAVINGS AND INVESTMENT DECISIONS IN SIERRA LEONE

Daniel Rince George¹, Mohamed Kemoh Rogers⁴, James Fomba Sandy² and Angella Magdalene George³

1. School of Basic Education, Njala University, Freetown, Sierra Leone.
2. School of Social Sciences and Law, Njala University, Freetown, Sierra Leone.
3. School of Nursing and Midwifery, Njala University, Freetown, Sierra Leone.
4. School of Public Health, Njala University, Freetown, Sierra Leone.

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Abstract

Out-of-pocket healthcare expenditure remains a major source of household financial vulnerability in Sierra Leone. Although social health insurance (SHI) is primarily designed to improve access to healthcare and financial protection, its potential influence may extend beyond health service utilisation to household savings and productive investment decisions. Objective: This article evaluates the expected impact of SHI on household savings and investment behaviour in Sierra Leone. Methods: The article draws on the Objective Four components of a cross-sectional doctoral study conducted among household heads or adult household financial decision-makers in selected districts of Sierra Leone. Quantitative survey data were analysed using descriptive statistics and multiple regression models. The savings and investment models estimated the relationship between willingness to enrol, willingness to pay, household income, out-of-pocket healthcare expenditure, household size, and household savings and investment outcomes. Qualitative focus group discussion findings were used to enrich interpretation of the quantitative results. Results: Willingness to enrol in SHI was positively and significantly associated with household savings (coefficient = 0.281; $p = 0.007$) and household investment (coefficient = 0.298; $p = 0.008$). Willingness to pay was also positively associated with savings (coefficient = 0.169; $p = 0.010$) and investment (coefficient = 0.172; $p = 0.012$). Household income produced the strongest positive effect in both models, while out-of-pocket healthcare expenditure and household size had negative and statistically significant effects. The savings model explained 41% of the variation in household savings, while the investment model explained 44% of the variation in household investment.

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Qualitative findings confirmed that fear of unexpected medical bills discourages households from saving and investing confidently. Conclusion: SHI has strong potential to improve household financial stability in Sierra Leone

Corresponding Author:-Daniel Rince George

Address:-School of Basic Education, Njala University, Freetown, Sierra Leone.

by reducing healthcare-related uncertainty, protecting savings, and enabling productive investments. Policy design should prioritise affordability, trust, flexible premium arrangements, benefit clarity, and health system readiness.

Introduction:-

Healthcare financing is a central determinant of household welfare in low- and middle-income countries (World Health Organization [WHO], 2025). Where households depend heavily on out-of-pocket payments, illness becomes not only a clinical event but also an economic shock (WHO, 2025; Edeka et al., 2017). Medical bills may force families to withdraw savings, borrow money, sell productive assets, reduce food expenditure, delay school payments, or divert business capital away from income-generating activities. These responses can weaken household resilience and reduce long-term economic mobility (Edoka et al., 2017).

Social health insurance is increasingly promoted as a pathway to universal health coverage because it shifts healthcare financing from direct payment at the point of service to prepayment and pooled risk sharing (Mathauer et al., 2019; WHO, 2025). The policy objective is to reduce the immediate financial burden of treatment and protect households against catastrophic health expenditure (WHO, 2025). However, the economic significance of SHI extends beyond paying hospital bills (Chou et al., 2003). By reducing uncertainty about future healthcare costs, SHI may influence household decisions on saving, business reinvestment, farming inputs, education, housing improvement, and asset accumulation (Chou et al., 2003; Li et al., 2021).

In Sierra Leone, the proposed SHI scheme is particularly important because many households remain outside comprehensive financial protection arrangements (Jimmy et al., 2021; WHO, 2023). The Free Healthcare Initiative has improved access for pregnant women, lactating mothers, and children under five, but a large share of adults still face direct payment requirements when they seek care (Edoka et al., 2016; WHO, 2023). For households with irregular income, especially those in informal trading, farming, and self-employment, unexpected medical expenditure can rapidly disrupt financial planning (Kamara et al., 2018).

This study examines the potential impact of social health insurance on household savings and investment decisions in Sierra Leone. It aims to inform policymakers about how participation in, or willingness to enroll in, a social health insurance scheme could reduce the financial burden associated with out-of-pocket healthcare expenditure and thereby support households' ability to save and invest. The analysis draws on relevant theoretical perspectives, household-level quantitative data, econometric modelling, and evidence from focus group discussions. Particular attention is given to the relationship between health insurance, income, healthcare spending, savings behaviour, and investment decisions. The findings are interpreted in relation to household financial protection and economic resilience, providing evidence to inform the design and implementation of an equitable and financially sustainable social health insurance system in Sierra Leone.

Literature Review:-

Social health insurance and household financial behavior:-

The literature on health financing indicates that health insurance can influence household financial decisions through financial protection, risk reduction, and improved predictability of future expenditure (Mathauer et al., 2019; WHO, 2025). In settings without insurance, households may accumulate precautionary savings specifically to prepare for illness (Chou et al., 2003; Heim & Lurie, 2016). While such savings may provide short-term security, they can also reduce resources available for productive investment (Li et al., 2021). Conversely, when households believe that insurance will reduce the burden of medical bills, they may preserve savings for planned goals and allocate additional resources to business, agriculture, education, housing, or other productive assets (Li et al., 2021).

2.2 Out-of-pocket expenditure, savings depletion, and asset liquidation

Out-of-pocket expenditure is one of the main pathways through which illness affects household savings (WHO, 2025; Edeka et al., 2017). Direct payments for consultation, drugs, laboratory tests, transport, and hospitalisation can exhaust available cash reserves (WHO, 2025). In low-income households, savings are often limited and may be intended for school fees, trading stock, farming inputs, rent, or emergencies (Edoka et al., 2017). When illness occurs, these savings may be diverted to immediate treatment (Edoka et al., 2017). If savings are insufficient, households may borrow or sell assets, further weakening future income-generation capacity (Njagi et al., 2022).

Health insurance and investment behavior:-

Investment behaviour is affected by uncertainty (Arrow 1963). Households that fear unpredictable medical costs may avoid expanding businesses, purchasing farming inputs, improving housing, or paying for long-term education investments because they fear that illness could remove their capital (Li et al., 2021). Health insurance may change this calculation by reducing uncertainty and improving confidence in future financial planning (Chou et al., 2003; Li et al., 2021). Therefore, SHI can be understood as both a health financing reform and a microeconomic stabilisation mechanism (Mathauer et al., 2019).

Theoretical foundation:-

This article is informed by Expected Utility Theory, Health Demand Theory, and Risk Pooling Theory. Expected Utility Theory explains why households may accept premium payments if insurance reduces exposure to large uncertain losses (Arrow, 1963). Health Demand Theory explains how lower effective healthcare costs may improve early care-seeking and reduce severe financial shocks (Grossman, 1972). Risk Pooling Theory explains how regular contributions by many households can spread healthcare costs across a wider population, thereby reducing the need for each household to self-insure through emergency savings (Mathauer et al., 2019; WHO, 2025).

Methods:-**Study design and data source:-**

The research used a cross-sectional study that assessed the potential microeconomic effects of social health insurance on household consumption and investment behaviour in Sierra Leone. Primary data were collected from household heads or adult representatives responsible for household financial decisions. The survey captured information on willingness to enrol, willingness to pay, out-of-pocket healthcare expenditure, household income, household size, savings behaviour, and investment behaviour. Qualitative focus group discussions complemented the quantitative survey by exploring how households manage illness-related financial shocks and how they expect SHI to affect their ability to save and invest.

Study variables:-**Table 1. Operationalisation of variables related to Objective Four**

Variable	Role in model	Operational meaning
Household savings (SAV)	Dependent variable	Money set aside monthly by the household
Household investment (INV)	Dependent variable	Spending on business, farming inputs, livestock, productive assets, housing improvement, or education investment
Willingness to enrol (ENR)	Independent variable	Readiness to join SHI; coded as willingness to participate
Willingness to pay (WTP)	Independent variable	Amount or readiness to contribute financially toward SHI premiums
Household income (INC)	Control variable	Total household income
Out-of-pocket expenditure (OOP)	Control variable	Direct household healthcare spending
Household size (HHS)	Control variable	Number of persons in the household

Econometric models:-

The study estimated two multiple regression models for Objective Four: one for household savings and one for household investment. The models are specified as follows:

$$\text{Savings Model: } SAV_i = \beta_0 + \beta_1 ENR_i + \beta_2 WTP_i + \beta_3 INC_i + \beta_4 OOP_i + \beta_5 HHS_i + \mu_i$$

$$\text{Investment Model: } INV_i = \beta_0 + \beta_1 ENR_i + \beta_2 WTP_i + \beta_3 INC_i + \beta_4 OOP_i + \beta_5 HHS_i + \mu_i$$

Where:-

SAV_i represents household savings; INV_i represents household investment; ENR_i represents willingness to enroll in Social Health Insurance (SHI); WTP_i represents willingness to pay for SHI; INC_i represents household income; OOP_i represents out-of-pocket healthcare expenditure; HHS_i represents household size; β_0 represents the intercept or constant term; β_1 , β_2 , β_3 , β_4 , and β_5 represent the regression coefficients of the respective explanatory variables; μ_i represents the error term, which captures other unobserved factors affecting household savings or investment; and the subscript i represents the individual household or observation included in the study.

Results:-**Savings regression model:-****Table 2. Savings regression model**

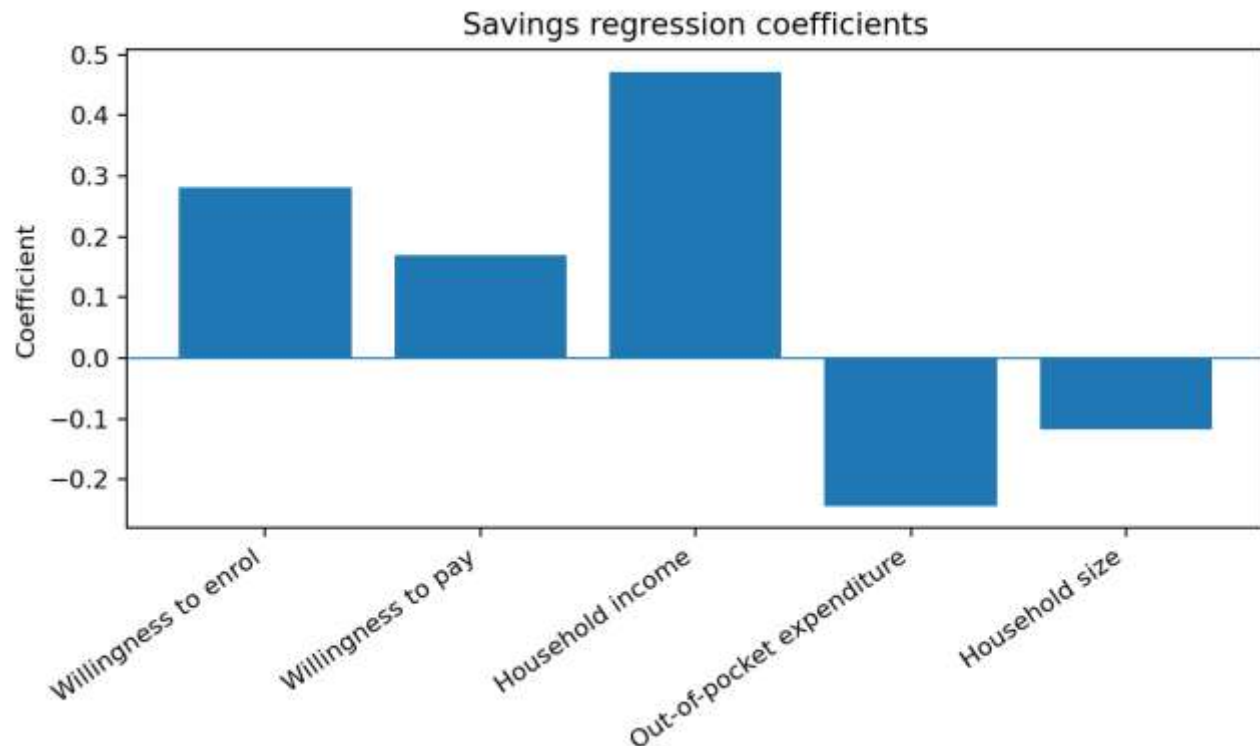
Variable	Coefficient	Std. Error	p-value
Willingness to enrol	0.281	0.103	0.007
Willingness to pay	0.169	0.066	0.010
Household income	0.472	0.101	0.000
Out-of-pocket expenditure	-0.244	0.086	0.004
Household size	-0.118	0.052	0.031

Model fit: R-squared = 0.41. The model explains approximately 41% of the variation in household savings, indicating that SHI-related variables and household characteristics provide a meaningful explanation of differences in saving behaviour among households.

Willingness to enrol in SHI had a positive and statistically significant relationship with household savings (coefficient = 0.281; $p = 0.007$). This suggests that households willing to participate in SHI tend to exhibit stronger saving behaviour. Willingness to pay also had a positive significant effect (coefficient = 0.169; $p = 0.010$), indicating that households prepared to contribute financially to insurance may have stronger financial planning capacity or greater confidence in risk protection mechanisms.

Household income had the strongest positive effect on savings (coefficient = 0.472; $p = 0.000$), confirming that income remains central to household saving capacity. Out-of-pocket healthcare expenditure had a negative and significant effect (coefficient = -0.244; $p = 0.004$), showing that direct medical spending weakens household savings. Household size also had a negative effect (coefficient = -0.118; $p = 0.031$), suggesting that larger households face higher recurrent expenditure pressures that reduce their ability to save.

Figure 1. Savings regression coefficients



Investment regression model:-

Table 3. Investment regression model

Variable	Coefficient	Std. Error	p-value
Willingness to enrol	0.298	0.110	0.008
Willingness to pay	0.172	0.069	0.012
Household income	0.486	0.104	0.000
Out-of-pocket expenditure	-0.253	0.089	0.006
Household size	-0.126	0.058	0.028

Model fit: R-squared = 0.44. The investment model explains approximately 44% of the variation in household investment behaviour, which indicates substantial explanatory value for the variables included in the model.

Willingness to enrol in SHI was positively and significantly associated with household investment (coefficient = 0.298; $p = 0.008$). This means that households receptive to insurance participation were more likely to demonstrate stronger investment behaviour. Willingness to pay was also positively related to investment (coefficient = 0.172; $p = 0.012$), suggesting that households willing to contribute premiums may also be more willing or able to commit resources toward future-oriented financial goals.

Household income again produced the strongest positive effect (coefficient = 0.486; $p = 0.000$), reinforcing the role of economic capacity in determining investment. Out-of-pocket expenditure had a negative significant effect (coefficient = -0.253; $p = 0.006$), suggesting that direct healthcare payments reduce investment resources. Household size was also negative and significant (coefficient = -0.126; $p = 0.028$), indicating that larger households may struggle to allocate resources toward productive investment because of high recurrent needs.

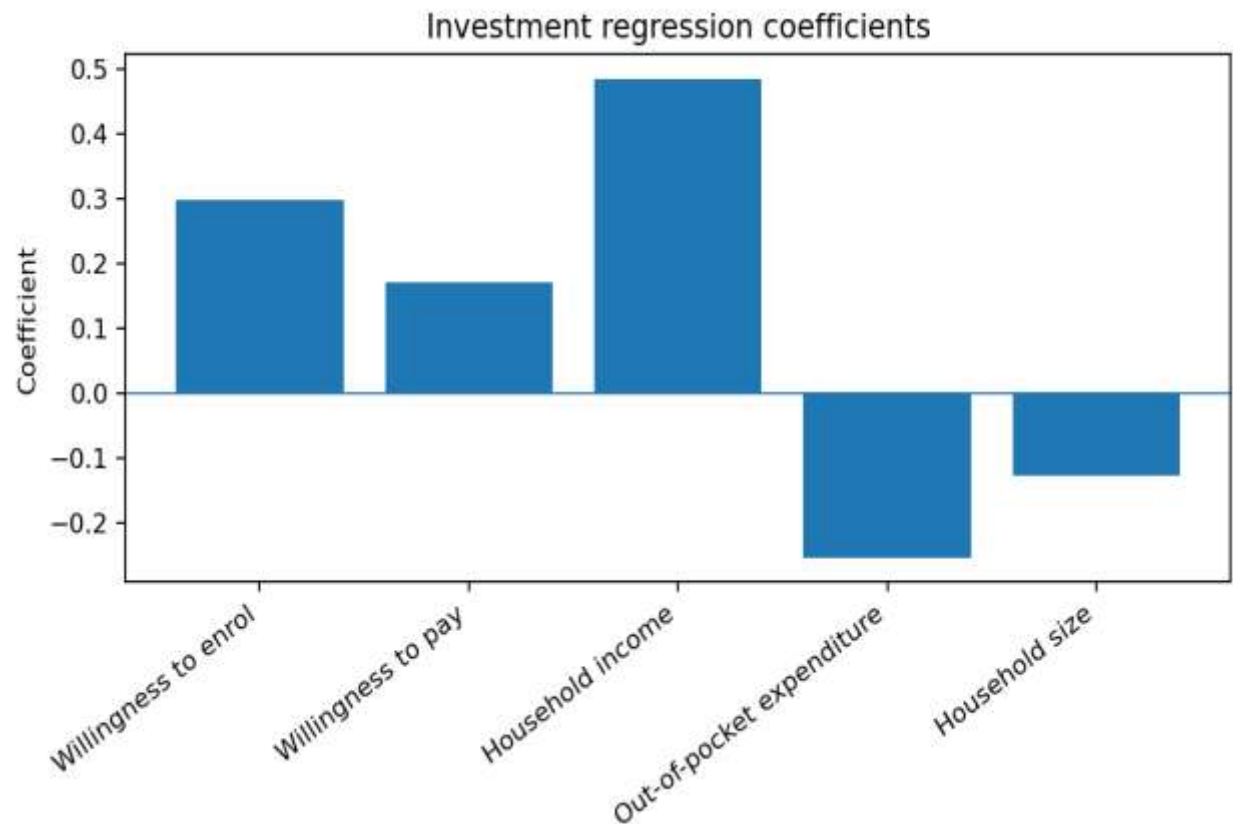


Figure 2. Investment regression coefficients

Comparative interpretation of savings and investment effects:-

The direction of coefficients is consistent across the two models. Willingness to enrol, willingness to pay, and household income are positive predictors of both savings and investment. Out-of-pocket expenditure and household size are negative predictors. The investment model has a slightly higher explanatory power ($R^2 = 0.44$) than the savings model ($R^2 = 0.41$), suggesting that the included variables explain investment behaviour particularly well.

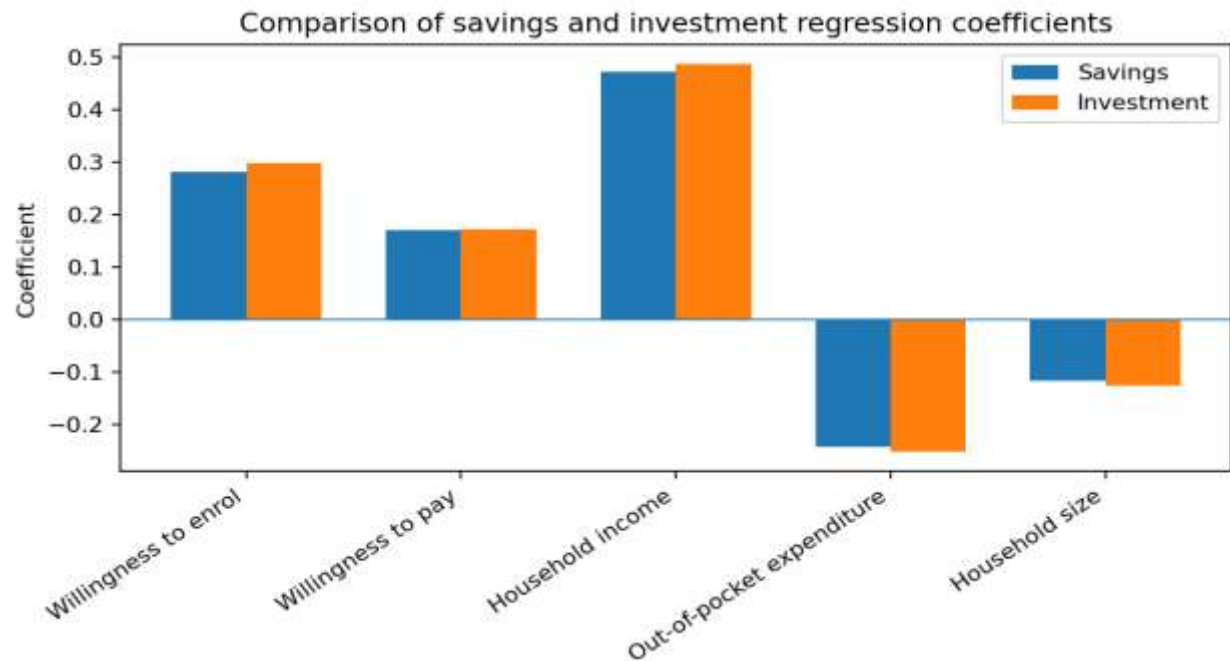


Figure 3. Comparative coefficients for savings and investment models

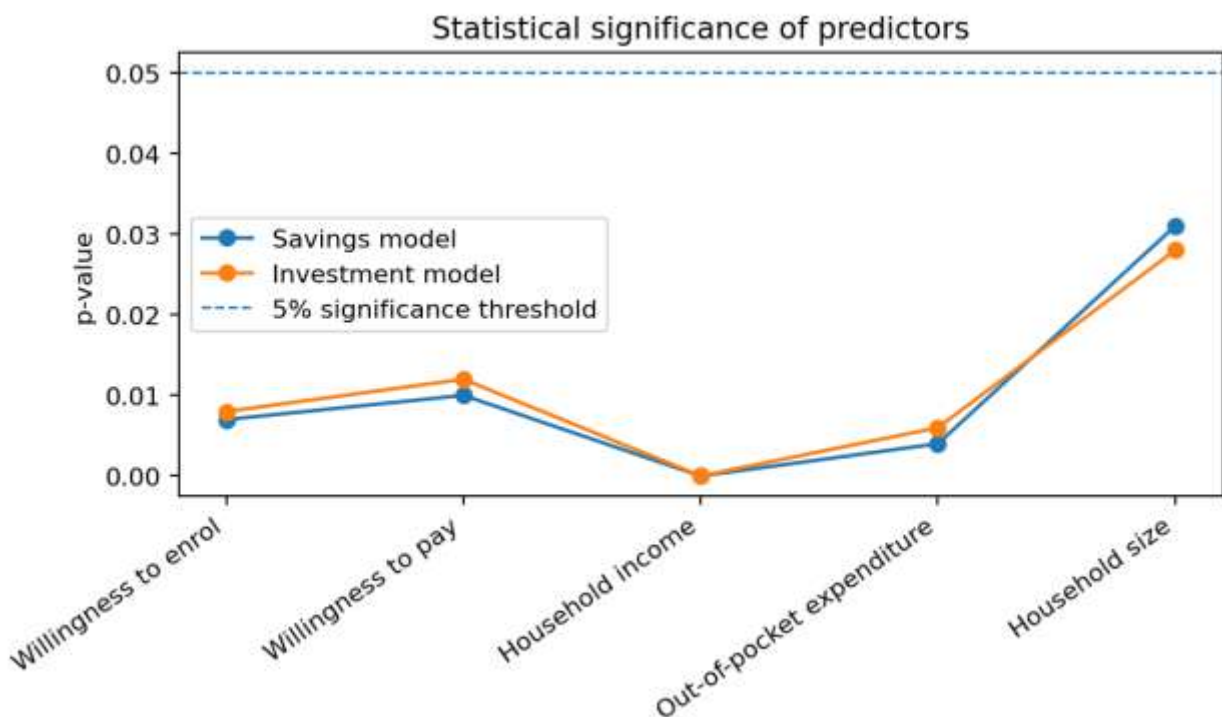


Figure 4. Statistical significance of predictors in the savings and investment models

Focus group discussion findings related to savings and investment:-

The focus group discussions provided strong qualitative support for the regression findings. Participants described healthcare expenditure as a major disruptor of financial planning. Illness often forced households to borrow money, sell assets, reduce food expenditure, delay school payments, or use business capital for treatment. These coping

strategies were viewed as damaging because they reduced household welfare and weakened income-generating activities.

Table 4. Focus group discussion

Participant / location	Theme	Illustrative response
Young male participant, Lower Bambara	Business capital and investment loss	Many young people use their business money for hospital bills. After treatment, the business becomes small and sometimes it dies completely.
Trader, Bo City	Savings and reinvestment confidence	If I know that hospital bills will not remove all my capital, I can put more money into my business and save small-small.
Young male participant, Lower Bambara	Planning and productive investment	When health cost is controlled, people can plan. They can buy tools, pay school fees, or expand business because they are not afraid that one sickness will take everything.
Farmer participant, Yoni	Flexible premium design	Farmers do not get money every month. If the insurance wants farmers to join, payment should consider harvest time.

Discussion:-

The findings show that SHI has potential to influence household economic behaviour beyond the health sector. The positive coefficients for willingness to enrol and willingness to pay in both the savings and investment models suggest that households that accept the idea of insurance also tend to demonstrate stronger financial planning behaviour. This is consistent with the logic that insurance reduces uncertainty and helps households protect resources that would otherwise be reserved for or diverted to medical emergencies.

The strongest predictor in both models was household income. This finding is expected, as higher-income households are better positioned to meet daily needs, save regularly, and allocate resources toward productive investments. However, the significance of insurance-related variables after controlling for income suggests that SHI may independently contribute to financial stability by reducing the perceived risk of sudden medical expenditure.

The negative effect of out-of-pocket healthcare expenditure is particularly important. It confirms that direct payment for healthcare weakens household financial capacity. In the savings model, OOP expenditure was associated with reduced savings; in the investment model, it was associated with reduced investment. This means that direct healthcare payments do not only affect immediate access to care; they also reduce the resources available for future-oriented activities such as business expansion, farming, housing improvement, and education.

The negative effect of household size shows that larger households are more financially constrained. Larger families must spread income across more members and therefore face higher recurrent costs for food, education, transport, clothing, and healthcare. For SHI design, this implies that contribution structures should consider household composition and affordability, particularly for poor and larger households.

The qualitative results deepen the interpretation of the regression findings. Participants repeatedly linked health costs to business contraction, delayed school payments, loss of savings, and inability to plan. They viewed SHI as a potential economic protection mechanism, but their support was conditional on affordable premiums, flexible payment schedules, drug availability, clear benefit packages, transparent fund management, and reliable service delivery. This indicates that SHI will only produce household-level economic benefits if households trust the scheme and if health facilities are ready to deliver the promised benefits.

Summary of Key Findings:-

The study found that willingness to enroll in social health insurance (SHI) was positively and significantly associated with household savings and investment. Similarly, willingness to pay for SHI demonstrated a significant positive relationship with both savings and investment outcomes. Among the explanatory variables, household

income was identified as the strongest positive predictor in both models, underscoring its critical role in enhancing financial capacity. Conversely, out-of-pocket healthcare expenditure had a negative effect on both savings and investment, confirming its status as a major source of financial vulnerability for households. Household size also negatively influenced savings and investment, indicating that larger households experience greater financial pressure. Focus group discussions corroborated these quantitative findings, revealing that medical expenses often reduce business capital, weaken the ability to save, delay education-related expenditures, and discourage long-term financial planning. Participants generally indicated that social health insurance could enhance saving behaviour and promote productive investment, provided the scheme is affordable, transparent, flexible, and supported by a well-prepared and responsive health system.

Conclusion:-

The findings demonstrate that social health insurance has strong potential to improve household financial stability in Sierra Leone by protecting savings and encouraging productive investment. The regression results show that willingness to enrol and willingness to pay are positively associated with both household savings and investment, while out-of-pocket healthcare expenditure has a negative effect on both outcomes. These findings confirm that healthcare financing arrangements can shape household economic behaviour beyond the immediate health sector. The study concludes that SHI could help households preserve savings, reduce the diversion of business capital to medical bills, and strengthen confidence in long-term financial planning. However, these benefits are not automatic. They depend on affordable premiums, flexible payment mechanisms for informal workers and farmers, transparent governance, reliable drug availability, clear benefit packages, and visible improvements in service delivery.

Recommendations:-

Design Affordable and Equitable SHI Contribution Arrangements: The government and relevant stakeholders should design flexible premium-payment mechanisms that reflect the financial circumstances of low-income households, informal-sector workers, traders, and farmers whose incomes may be irregular or seasonal. Targeted subsidies or exemptions should also be provided for poor and vulnerable households to ensure equitable participation and prevent financial exclusion.

Strengthen Transparency, Accountability, and Public Confidence: The effective implementation of Social Health Insurance should be supported by transparent fund management, regular public reporting, community participation, and accessible grievance mechanisms. These measures will strengthen public trust, improve willingness to enroll, and promote accountability in the administration of the scheme.

Strengthen Health System Readiness and Household Financial Protection: Before full implementation of SHI, health facilities should be adequately prepared with essential medicines, trained health personnel, efficient claims-processing systems, functional referral mechanisms, and clearly defined benefit packages. Public education should also emphasise the broader economic benefits of SHI, including the protection of household savings, business capital, and education expenditure, as well as overall economic resilience.

Recommendation for Further Research: Future studies should adopt longitudinal or prospective research designs to assess the long-term effects of Social Health Insurance after implementation. Such studies should follow households over time to determine the actual impact of SHI enrolment on out-of-pocket health expenditure, household savings, investment, consumption, poverty reduction, and economic resilience. Further research may also compare outcomes across urban and rural households, income groups, and workers in the formal and informal sectors to provide stronger evidence for future policy improvements.

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