Economic Impacts of Income Shocks on Households in Osun State, Nigeria.

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Abstract

This study assessed the causes of income shocks and the long term effects of income shocks on household healthcare use in Osun State, Nigeria. The study was a cross-sectional survey which employed multi-stage sampling techniques. A total of 485 households participated in the study and the data was analyzed through descriptive and inferential statistics. The results indicated that the common causes of income shocks are job loss, business income paralysis, wage reduction, delayed payment of salaries/pensions, drought, flood, crime and civil unrest. The binary logistic regression performed revealed significantly lower odds of healthcare use (using healthcare facility used, amount spent, and the number of visits) among those that experienced any form of income shock relative to those who had no experience of income shock. It other factors that also significantly influenced healthcare use are age, education, gender, income, family size, and health insurance (which increased the odds of utilizing a

public or private healthcare facility by 748% when compared with other healthcare facilities). These findings suggest the need for active participation in the health insurance scheme, which can absorb the effect of income shocks on households.

Keywords: Income shock, healthcare, health insurance, Osun State, Nigeria.

Introduction

A shock is an unexpected or unpredictable event that affects an economy (either positively or negatively);which may result to income and non-income losses for the household (UNDP, 2011).Shocks can reduce group or individual well-being, such as illness, unemployment, or drought, and they may even cause or compound poverty. Shocks that directly affect households are called idiosyncratic; while, shocks that are associated with groups of household, communities, regions or even entire countries are referred to as covariant(Marques, 2003). Consequently, households in constrained economic circumstances resulting from income

shocks experience difficulties deciding how to spend their diminished economic resources between savings and consumption (Monheit,Grafova and Kumar, 2014).

The impact of shocks on households and their social welfare depends on a variety of factors, which includes the nature of the shock, the country's macroeconomic situation, community conditions, and the extent and types of policy responses by the government (UNICEF, 2009). As developing countries like Nigeria face a combination of economic crises (especially due to oil price shocks) the impact passes through to the household level. These are experienced in the form of reduced household income, lower wages, unemployment and high underemployment, limited access to credit, reduced real income, in the face of higher food prices and decreased access to public services, when governments are forced to reduce service delivery in the face of diminished fiscal space (ADB, 2009).In addition,households experiencing income shocks have difficulties paying for healthcare or even participating in a health insurance scheme during the period.

The implications of oil price volatility and recession in Nigeria trickles down to the states, since most states depend mainly on the allocations of the federal government from oil revenue. This is evidenced by the sharp

reduction in revenue allocation to states and consequently the inability to pay public sector's workers their salaries and pension for several months. This has also caused setback to business activities and household economic condition in various states. Osun state, as a case study, was not an exception. The financial challenges in the state have not only affected payment of salaries to workers and pension to retirees; but also caused the closure of government hospitals for several months. All these have therefore contributed to business income paralysis for private sectors and informal sectors in the state.

Several studies have been conducted with a view to understand the impact of economic/income shocks on health and the economy as a whole. Findings from these studies are diverse. For instance, Hernández-Correa (2010) evaluated two different types of shocks: idiosyncratic shocks, which affect the household; and covariate shocks, which involve the entire community. In his findings, covariate shocks increased the likelihood of using formal prenatal care; while community shocks caused food uncertainty, and resulted in a lack of other health resources to women.In 2014, Gool and Pearson examined the impact of economic crisis on health and health care economic downturns. They established that a higher rate of job loss is

strongly linked to lower health care use; and that, economic downturns are associated with adverse outcomes for some, but certainly not all, health indicators. However, Schaller and Stevens (2014) discovered little evidence of reductions in health care utilization after job loss and that access to health insurance and care may be an important part of the health effects of job loss for some workers.

According to Lusardi, Schneider, Tufano(2014), economic stress and medical-care use are strongly correlated: the higher the reported loss of wealth, the lower the reported routine medical-care use. Similarly, Monheit, Grafova, and Kumar (2014) found that the influence of economic shocks on the share of family health care spending is more evident for single-mother families; while,Oyekale&Oyekale (2007) found high vulnerability was displayed by rural areas, male-headed households, large family and large number of dependents. Other research reveals that economic shocks obviously cause risks to health as a result of suicides and alcohol-related mortality (Stuckler, et al. (2009); Stuckler, Basu and McKee, 2010; Simou, Koutsogeorgou, 2014).

More recently, Afeju (2017) examined the effect of income shocks on household real consumption expenditure using the Nigerian Household Panel Survey data for the year 2010/2011 and 2012/2013. His results suggest that idiosyncratic shocks have effect on household consumption expenditure and the informal insurance strategies play only limited roles in providing the needed insurance to households in the face of shocks. Also, the effect of shocks vary according to households characteristics, which depends on whether the household is headed by a male or female and resides in an urban or rural settlement.

Although, few studies have identified the implications of income shocks on healthcare; these studies, no doubt, analysed the effect from the national and international levels. Since, studies between income shocks and healthcare use in Nigeria are sparse and non-existence at the state level; the aim of the current paper is to present a systematic overview of the causes of income shock and its consequences on healthcare use particularly in Osun State, Nigeria.

Methodology

Data Source

This study employed a multi-stage sampling technique (which combined purposive sampling, cluster sampling and random sampling). Purposive sampling was employed in selecting

the three senatorial districts in Osun state, namely; Osun-West, Osun Central and Osun East.Each of these senatorial districts is further divided into two zones, making a total of six zones (Ede and Iwo zones, Osogbo and Ikirun zones, Ilesha and Ife zones).

Furthermore, two well facilitated government hospitals and a private hospital were purposefully selected ineach zone within the senatorial districts (namely: General Hospital, Iwo; State Hospital, Ede;Rombe Hospital, Ede; General Hospital, Osogbo; LadokeAkintola Teaching Hospital, Osogbo; Ayo-Olu Hospital, Ikirun; Obafemi Awolowo Teaching Hospital, Ile-Ife; Apex Medical Centre, Ile-Ife; and General Hospital, Ilesha).

Within a 5km radius from these healthcare facilities, twenty households were selected; between 5 and 10 km from the healthcare facilities, another twenty households were selected; and the last cluster of twenty households were selected among those residing more than 10 km from the facilities considered. Overall, sixty households wererandomly selected by picking from 1out of every 4 houses in the cluster to minimize having many households from the same extended family. Subsequent houses were chosen by adding 4 to that number, giving a total of 540 households.

485 questionnaires were returned which represented approximately 90% of the sample.

Variable Measurement

The outcome variable in this study is the household's health care use, which wasmeasured by (i.) Healthcare facility used (ii) Amount spent to receive health care, and (iii) Number of visits to a health care facility. For the Healthcare facility used, hospital, whether public or private was coded 1; while orthodox medicine, pharmacy shops, drug vendors were and others were coded as 0. The amount spent was coded as zero (0) for those who spent below ₦1000 and one (1) for those who spent above ₦1000 on healthcare. For the number of visits, respondents who didn't visit any healthcare centre were codedas zero (0); while, those who visited at least once was coded as one (1).

The main explanatory variable is income shock. This is categorized into no income shock, shock caused by the delay in the payment of salaries/pension, delay caused by wage reduction and other factors.Other variables previously established in literature as predictors of healthcare use were selected as control variables.These includesage group of the respondent (21-30, 31-40, 41-50, 51 and above), the level of education (no education,primary, secondary, and tertiary education), religion of

the respondent (Christian, Muslim, and others), family size (2-5 members, 6 members and above) , monthly income level (less than ₦100000,₦100000 and above), distance (less than 10km, 10km and above), gender of the respondent (female and male), health insurance status (insured or uninsured), and the employment status (employed, unemployed).

Statistical Analysis

Having obtained the data set through a pre-tested, structured and interviewer administered questionnaire, the datawas analysed using SPSS version 20.0 software. This study employed two(univariate and multivariate) levels of analysis. The household's income shocks was measured at the univariate level using percentage distributions. At the multivariate level, binary logistic regression was employed to explore association among variables. This was used due to the binary nature of the three outcome measures. The logistic regression is of the form:

$$\ln\left[\frac{\lambda}{1-\lambda}\right] = \alpha + \sum_{i=1}^{m} \beta_i Z_i + \varepsilon$$

Where λ is the probability of healthcare use, Z is a vector of the independent variables, and ε represents the error term. Six models were fitted

in all. Model 1A examined the effects of income shocks on the healthcare facility used. Model 1B achieved similar aim but adjusted for the effects of the selected control variables. Model 2A is the unadjusted model examining the association between amount spent on healthcare and income shocks. Model 2B presents the adjusted model. Finally, Model 3A assessed the independent effects of income shocks on the number of visits; while, Model 3B achieved similar purpose, but adjusted for the effects of the selected covariates.The data was analysedusing statistical package for social sciences (SPSS), Version 20.

Ethical Consideration

Written informed consent was sought from all study participants. Confidentiality of the information was also ensured by removing all personal identifiers from the survey questionnaire and participation in this study was voluntary.

Results   (1)

Descriptive Findings

Table 1 presents the percentage distribution of respondents' background characteristics. The results showed that there were more female respondents (56%) than male (44%) in the

sample of households interviewed within the state. Very few (5.8%) household heads had no education, 8.9% had primary education, 13.6% attended secondary school, while most (71.8%) of the respondents had tertiary education. The table further revealed that 56% of the respondents were civil servants; while 15.7%, 19.6% and 7.8% worked at private organisations, self-employed and unemployed respectively.

About 85% of the respondents were Yoruba people because the study was carried out in a predominantly Yoruba State; while, other tribes constituted the remaining 15%. With respect to religion, the table revealed that more than half (50.5%) of the respondents were Christians, 46.2% were Muslims and very few (2.7%) of them were traditionalist. 19% of the respondents were between 21 and 30 years of age, and about 38%, 31% and 19% are between 31 to 40 years, 41 to 50 years and, above 50 years respectively.Table 1 also revealed that most households in the sample has a family size between 4 and 5 members, while most of them earned above N100,000.

Table 1: Percentage Distribution of Respondents' Background Characteristics

Characteristics	Frequency (N= 485)	Percentage (%)
Gender		
Female	272	56.1
Male	213	43.9
Level of Education		
No primary Education	28	5.8
Primary Education	43	8.9
Secondary Education	66	13.6
Tertiary Education	348	71.8
Occupation		
Civil servants	271	55.9
Private Workers	76	15.7
Self-employed	95	19.6
Unemployed	38	7.8
Others	5	1.0
Ethnicity		
Yoruba	410	84.5
Igbo	37	7.6
Hausa	36	7.4

Foreigner	2	0.4
Religion		
Christianity	245	50.5
Islamic	224	46.2
Traditional	13	2.7
Others	3	0.6
Age		
21-30Years	92	19
31-40Years	184	37.9
41-50Years	148	30.5
51-60Years	61	12.6
Family Size		
2 – 3 members	86	17.7
4 – 5 members	273	56.3
5 – 7 members	112	23.1
8 members and above	14	2.9
Income		
N (0 - 40,000)	51	10.5
N (40,001 – 70,000)	130	26.8

Causes of Income Shocks in Osun State

Table 2 revealed that fifteen respondentsexperienced income shock as a result of job loss, 34.4% was due to the delay in payment of salaries and pensions; while, another 4% experienced income shock due to business income paralysis. Those that experienced mass layoff in the past one year were 3.7%; while this wasn't applicable to 28% (who might be self-employed). More than 40% (195) experienced income shock as a result of wage reduction; and, the total number of 93 people was being owed for services rendered and goods sold in the past one year as revealed in Table 2.

The population of those farmers experienced income shocks due to drought was 74. This was because of the delay in rainfall which affected great a number of farm-produce especially tomatoes, pepper, corn among others. 44 households experienced flooding, which vandalized their property and farm produce; while, 19.2% experienced income shocks due to reduced/loss of remittances. The table also revealed that about 15% experienced crime actions over the period of one year; and, about

half (40%) experienced incidence of civil unrest 9 (such as protests, strikes and demonstrations).

Furthermore, Table 2 showed that about 8% experienced an accident within the period of a year; 3% experienced income shocks due to the death of a close relative;while, 11% experienced income shocks due to the cost of healthcare services when ill.

Table 2: Causes on Income Shocks in Osun State

Variables	No (%)	Yes (%)
Job Loss	344 (96.9)	15 (3.1)
Delayed Payment of Pensions/Salaries	314 964.7)	167 (34.4)
Business Income Paralysis	466 (96.1)	19 (3.9)
Mass Layoff	449 (92.6)	18 (3.7)
Wage Reduction	290 (59.8)	195 (40.2)
Reduced/Loss of Remittances	392 (80.8)	93 (19.2)
Drought	611 (84.7)	74 (15.3)
Flood	441 (90.9)	44 (9.1)
Crime Victim	412 (85.1)	72 (14.9)
Civil Unrest	290 (59.8)	195 (40.2)
Accidents (Domestic or External)	447 (92.2)	38 (7.8)
Healthcare Cost due to illness	430 (88.7)	55 (11.3)
Death of a Close Relative	469 (96.7)	16 (3.3)

Percentages are in parenthesis

Determine Long Term Effect of Income Shock on Household Health Care Use in Osun State.

The result of multivariate analysis from binary logistic regression analysis are presented in Table 3 and four. Six models are fitted in all. As shown in Model 1A, income shock is significantly associated with the use of public/private hospitals rather than other healthcare facilities. For instance, households that experience income shocks due to delayed payment of salary/pension had significantly lower odds (51.9%) of using a hospital when compared with households without income shocks. Income shocks as a result of other

factors also decreases the odds of patronizing a private/public hospital by 81.6% (OR: 0.18, CI: 0.09-0.38, P<0.01) compared with households without income shocks.After adjusting for other variables within the model, Model 1B also indicated lower odds of utilizing a private/public hospital when in need of healthcare services. Other variables that significantly influenced healthcare facility as shown in the model are age, education, and health insurance. Compared with other healthcare facilities, having a health insurance coverage significantly increases the odds of utilizing the private/public hospital rather than other healthcare facilities by 747.9%.

In Model 2A, odds of spending above a₦1000 on healthcare services are significantly lower (92.4%) for respondents who experience income shocks as a result of other factors (OR: 0.08, CI: 0.02-0.33), P<0.10) compared with those who did not experience any income shock. This result is also statistically significant (OR: 0.11, CI: 0.02-0.49), P<0.10) among households who experience income shocks for other reasons after adjusting for the control variables in Model 2B. That is, income shocks significantly decreasethe odds of spending above ₦1000 on healthcare by 89.5%. However, compared with respondents who earn less than ₦100,000 monthly, the odds of spending above ₦1000 on

healthcare significantly increases by 269% for respondents whose income ranges between ₦100,000 and above. Selected covariates such as age, education, and gender are significantly associated with the amount spent on healthcare services in Osun State, Nigeria.

Table 4 contains the results from multivariate analysis which examined the relationship between number of visits to a healthcare facility and income shocks. As revealed in the table (Model IC), the odds of visiting an healthcare center is significantly lower for households that experience income shock as a result of delayed payment of salary/pension (OR: 0.332, CI: 0.157-0.703, P<0.001), wage reduction (OR: 0.172, CI: 0.081-0.365, P<0.001), and other factors (OR: 0.150, CI: 0.069-0.327, P<0.001) relative to those who did not experience income shocks. These results are also statistically significant when the selected control variables are adjusted for. That is, delayed payment of salary/pension, wage reduction and other sources of income shock decreases the odds of visiting an healthcare centre at least once by about 70%, 75.8%, and 65.1% respectively. In addition, the analysis established significant association between education and number of visits to an healthcare centre, family size, age, and income.

Determine Long Term Effect of Income Shock on Household Health Care Use in Osun State.

Variables	Healthcare Use		Amount Spent	
	Model 1A UOR(CI)	Model 1B AOR (CI)	Model 2A UOR(CI)	Model 2B AOR (CI)
Income Shock				
No	RC			
DelayedPayment of Salary/Pension	0.481 (0.236-0.982)**	0.722 (0.323-1.611)	0.728 (0.407-1.299)	0.768 (0.399-1.476)
Wage reduction	0.567 (0.261-1.228)	0.864 (0.357-2.089)	0.643 (0.336-1.231)	0.917 (0.430-1.957)
Others	0.184 (0.088-0.384)***	0.449 (0.188-1.069)*	0.076 (0.018-0.331)***	0.105 (0.023-0.486)***
Age				
btw 21-30yrs	RC			
btw 31-40yrs		1.814 (0.882-3.730)		2.189 (1.000-4.791)*
btw 41-50yrs		2.363 (1.092-5.114)**		1.443 (0.616-3.381)
btw 51-60yrs		0.367 (0.152-0.886)**		0.798 (0.252-2.525)
Education				
No Education	RC			
Primary		0.364 (0.111-1.191)*		0.129 (0.012-1.422)*
Secondary		0.670 (0.217-2.066)		0.458 (0.092-2.290)
Tertiary		1.186 (0.389-3.617)		0.939 (0.229-3.852)
Religion				
Others	RC			
Christian		0.428 (0.105-1.738)		0.835 (0.167-4.179)
Muslim		0.937 (0.225-3.905)		0.725 (0.145-3.637)
Family Size				
2-5 members	RC			
6 members and above		1.030 (0.560-1.894)		1.655 (0.850-3.225)
Income				
Less than N100,000	RC			
btw N100,000&above		1.247 (0.674-2.307)		3.694 (2.009-6.793)***
Distance				
10km and above	RC			

less than 10km		1.534 (0.843-2.791)	1.457 (0.817-2.597)
Gender			
Female	RC		
Male		0.671 (0.396-1.139)	1.685 (0.958-2.966)*
Health Insurance			
Uninsured	RC		
Insured		8.479 (2.742-6.215)***	0.660 (0.351-1.240)
Employment Status			
Unemployed	RC		
Employed		0.500 (0.165-1.517)	0.513 (0.196-1.342)

*p<0.01, **p<0.05, ***p<0.001, UOR = Unadjusted Odds Ratio, AOR = Adjusted Odds Ratio, CI = Confidence Interval

Variables	Number of Visits	
	Model 3A UOR(CI)	Model 3B AOR (CI)
Income Shock		
No	RC	
Delayed Payment of Salary/Pension	0.332 (0.157-0.703)***	0.301 (0.127-0.716)***
Wage reduction	0.172 (0.081-0.365)***	0.242 (0.102-0.577)***
Others	0.150 (0.069-0.327)***	0.349 (0.139-0.877)**
Age		
btw 21-30yrs	RC	
btw 31-40yrs		1.802 (0.862-3.767)
btw 41-50yrs		2.101 (0.966-4.569)*
btw 51-60yrs		1.072 (0.417-2.758)
Education		
No Education	RC	
Primary		0.245 (0.082-0.730)**
Secondary		0.496 (0.183-1.343)
Tertiary		2.387 (0.864-6.595)*
Religion		
Others	RC	
Christian		0.466 (0.109-1.992)
Muslim		0.640 (0.151-2.712)
Family Size		
2-5 members	RC	
6 members and above		0.575 (0.327-1.010)*
Income		
Less than N100,000	RC	

btw N100,000&above		4.851 (2.462-9.556)***
Distance		
10km and above	RC	
less than 10km		0.828 (0.453-1.511)
Gender		
Female	RC	
Male		0.775 (0.467-1.289)
Health Insurance		
Uninsured	RC	
Insured		1.058 (0.531-2.108)
Employment Status		
Unemployed	RC	
Employed		1.152 (0.491-2.704)

*$p<0.01$, **$p<0.05$, ***$p<0.001$, UOR = Unadjuted Odds Ratio, AOR = Adjusted Odds Ratio, CI = Confidence Interval

Discussion

In Osun state, Nigeria, households face enormous economic challenges due to income shocks; which has left an overwhelming number of families without alternative income sources to finance healthcare. Findings from this study indicated asignificant relationship between income shocks and healthcare use in Osun State. As revealed by this study, more than half (72%) of the households had experienced income shock, due job loss, business income paralysis,mass layoff, wage reduction, delayed payment of salaries/pensions, while drought, flood, crime, civil unrest, accident, serious illness and death of a relative were considered as agricultural and health shocks which led to income shock.

It was also discovered that irrespective of the variable used to measure healthcare use, income shock significantly influences healthcare use when other variables are not adjusted for.Income shocks, age, education and health insurance also affects the healthcare facility used when the model is adjusted. This depicts that the availability of health insurance increases the odds of utilizing a public/private hospital by 748% when compared with other healthcare facilities. This finding is consistent with Schaller and Stevens (2014) who discovered that health insurance may be an important part of the health effects of job loss for some workers.

Additionally, the study found that gender plays a significant role in influencing healthcare use, which is consistent with the findings of Oyekale&Oyekale (2007). The income of household heads also significantly affects the amount spent on healthcare. By implication, the

odds of spending above ₦1000 on healthcare increases among those whose income is ₦100,000 and above, when compared with those who earn less than ₦1000.This is consistent with the findings ofGool and Pearson (2014) who established that a higher rate of job loss is strongly linked to lower health care use.Apart from income shock, other variables that affect the number of visits to the healthcare center are age, education, family size and income.

Conclusion and Recommendations

The results of this study has clearly indicated that the common causes of income shocks in Osun state arejob loss, mass layoff, wage reduction, loss of remittance, delayed payment of salaries/pension, and business income paralysis. In the six models used to explain healthcare use, the experience of income shock indicated a statistically significant association with healthcare use. Other factors such as health insurance influenced only the healthcare facility used; gender influenced the amount spent on healthcare, family size influenced only the number of visits to a healthcare facility, while income influenced both the amount spent and the number of visits. Factors such as age and education significantly influenced healthcare use irrespective of the variable used

to measure it. Therefore, it can be concluded that income shocks have a decreasing effect on healthcare use, while, household's total income, age of the household head, health insurance and education are part of the chief factors that has long term effect on a household's health care use in Osun state. Based on these, the study recommends the proper implementation of the labour laws protecting workers; prompt payment of salaries and pension, especially by the government, so as to boost the economy; and,participation in the health insurance schemeshould beencouraged.

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