

**WILLINGNESS TO PAY FOR SOCIAL HEALTH INSURANCE AMONG INFORMAL AND PRIVATE SECTOR WORKERS IN KANO METROPOLIS: A CONTINGENT VALUATION STUDY**

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**Abstract**

*In sub-Saharan Africa substantial a level of out-of-pocket expenditure for health care by the population causes policy makers to draw particular attention to the proposal of a social health insurance for uninsured members of the society. Hence in essence, it is essential to collect and compile reliable information about the amount of Willingness To Pay (WTP) for healthcare insurance. This study assessed the WTP for health insurance in Nigeria in order to suggest an affordable social health insurance using Kano Metropolis as case study. The study sample included 270 employees from organised private and informal sector organisations. The double bounded dichotomous choice approach was used to elicit the WTP. The average WTP for social health insurance per employees' per month was N2626.90 via contingent valuation bids, while about 80% of the selected respondent were willing to join and to pay for the proposed state health insurance scheme. Employees with higher levels of education, those with serious illnesses and those who experienced high and catastrophic medical expenditure had more WTP for the healthcare insurance compared to others. Findings from the study demonstrated that, level of education, presence of serious illness, present health condition, family size and medical expenditure per month have practical, economic and significant impact on WTP for both first and second bids. While health insurance awareness and level of income demonstrated a mixed result, as were only significant in WTP the first bid. Also the study consistently demonstrated the presence of adverse selection and potential moral hazard subsequent to positive relationship between health risk and willingness to pay for both first and second bid, as measured by marginal effect predicted probabilities, its therefore recommended as a solution to adverse selection and potential moral hazard that government as a pioneer of health insurance scheme, can encourage private and informal sector employees participation through mass awareness campaign, because People are willing to join and pay for health insurance if they are made aware of the principles of insurance and properly understand the concept of risk pooling.*

**Keywords:** Education, Contingent Valuation, Double Bounded Dichotomous Choice, Health Insurance, and Willingness To Pay.

**Introduction**

Most healthcare spending in developing countries is borne by healthcare-seekers through out-of-pocket (OOP) means. Nigeria is a good example where 84 percent of health spending is private; 86 percent of which is OOP (World Bank, 2019). In Nigeria, the absence of health insurance leads households to use savings, sell assets, procure loans or borrow from family and friends to cope with high out of pocket payment. This inequitable and inefficient health financing situation persists in other low-income countries as well. The solution proposed by WHO and other international bodies has been to strive toward universal health coverage (UHC), notably through prepayment and risk pooling mechanisms in lieu of payments at the point and time of service delivery (James and Savedoff, 2010; World Health Organization, 2010). Such a coverage could of course be reached in several

ways, notably through mandating (putting in place legal obligations on all citizens to pre-pay for health services through insurance) or through subsidies (that would be used to deliver services free-of-charge to care-seekers, or to pay the cost of insurance premiums covering certain benefits) or through voluntary affiliation. No low-income country has so far been able to apply universal health coverage (UHC) based on obliging all the population to pay premiums. Attempts to subsidize entire population have also been rare and such UHC has been partial. The penetration of health insurance in most low-income countries also remains very low [for example; i One possible explanation for low insurance uptake is that poorer individuals in the informal sector doubt their own ability to enforce contracts with insurance companies. Other factors explaining uptake of insurance or enrolment into insurance are: how one perceives one's own risk; an understanding of the product; and social factors such as trust in financial institutions or the health insurance scheme as one pays into a fund where services are delivered just in case some event occurs (Acharya et al., 2012)

Out of pocket payment can lead to impoverishment when payment is required to access healthcare services and when households do not have the ability to pay. As a result, the World Health Organization (WHO) regional committee for Africa adopted a regional health financing strategy that recommend the development of pre-payments schemes to expand health insurance coverage and reduce out-of pocket payment, (Carapinha, et al. 2010). In essence the most popular option so far adopted in Nigeria is the establishment of national health insurance scheme (NHIS) to ensure all citizen access to good health care services, the scheme has developed various programs to cover different segments of the society, the popular among which are the formal sector, self employed and rural community social health insurance programs. Health insurance is intended to reduce the financial burden of purchasing health care by pooling funds and sharing the risk of unexpected health event, (Carapinha, et al. 2010). Risk sharing mechanism are particularly important in Nigeria, where all the three tiers of government are dedicating insufficient resources for healthcare financing, while the economic status of a country is directly related to the health status of its people health insurance provides coverage for both out-patient and in-patient care to mitigate sudden and high financial burden due to emergencies and hospitalization. Hence this research intends to examine the determinants of health insurance uptake among informal sector and some organize private sector employees in Kano metropolis, For the newly launch kano state contributory health insurance scheme since it has windows for the participation of both private and informal sector employees. The fundamental idea of healthcare financing through insurance coverage has given rise to large number of studies in contemporary health economics literature to examine the determinants of individual employee's willingness to pay for healthcare insurance E.g. (, Ibok 2012, Khan & Ahmad 2013 Onwujikwe & Veleny 2012,, Pooja &Gaurav. 2012, Olufenke S& Steven 2008, Ying, Hu, Chen, Xu and Huang 2007, Kirigia, Sambo, Uganda, Mwabu, Chотора and Mwase, Barnighausen, Liu, Zhang and Sever Born 2007).

### **Research problem**

Although economic analysis of consumers purchase of health insurance is relatively a recent phenomenon, the determinants of willingness to pay for health insurance have been investigated considerably in the literature, but there is no general agreement on the specific socio-economic and demographic factors mix that determine individuals willingness to pay for healthcare insurance. in essence, this research seek to explores the willingness to pay for health insurance coverage using a virgin sample and in a virgin geographical area of Kano metropolis among the employees of some selected informal and private sector organizations using contingent valuation method . hence its a privilege of this study to pioneer this research since no evidence is documented of similar research being carried out.

### **Literature review**

The purpose of a health financing system is; to mobilise resources for the health system, to set the right financial incentives for providers, and to ensure that all individuals have access to effective health care. Other aspects are that individual should not be impoverished as a result of doing so, nor should they be unable to get care because they cannot pay for it. Most high-income countries rely heavily on general taxation (for example, the UK) or mandated social health insurance (France, Germany etc.) for financing their health expenditures. Low-income countries which Nigeria is amongst depend mostly on out-of-pocket payments by service users at the point and

time of service, and some also rely heavily on international donor support. The various forms of health insurance all have serious limitations in poor countries.

In Nigeria enrolment into Community Health Insurance scheme or the state health insurance scheme on voluntary basis have been low with small average premiums because of a lack of study on Willingness to pay before such schemes took off. It has been shown by Contingent valuation theory and empirical evidence that studies could be undertaken in developing countries to obtain valid and reliable health-related Willingness to pay data. Such valid and reliable Willingness to pay information for a target population would facilitate scheme design and implementation. While some previous studies reveal that households in many part of the world do not readily accept the idea of paying for services they might not use with regard to health care, some other studies reveal the opposite. A research in a urbarn district in Southern Ghana revealed that WTP were compatible with high membership in, and satisfactory performance of a proposed health insurance scheme. Studies in communities where WTP was not carried out before the scheme revealed a high drop-out rate.

A study by Barnighausten et al examined WTP among informal sector workers in Wuhan, China, found that these workers are willing to pay the equivalent of 4 US Dollars per person per month. Another study in India used unidirectional bidding in a Contingent Valuation (CV) survey to obtain estimates of WTP for health insurance, In this study the median WTP for health insurance is the equivalent of 15 US Dollars per household per month. In rural Iran, the finding was that households are willing to pay three US Dollars per household per month on the average. In a similar study on WTP for a school base chemotherapy program in Tanzania, greater than seventy percent had WTP greater than 1.25 US Dollars per person per year while the median WTP was 1.25 United States Dollars. . Expanding social insurance in Nigeria : In line with provisions of National Strategic Health Development Plan (NSHDP) 2010-2015 Nigeria has aligned itself with the global push for universal access to quality health care devoid of risk of financial catastrophe. This plan highlighted that, a vital feature of “protection from catastrophic expenditure” is the availability of prepayment for health care costs. At present, only about 5% of Nigerians have prepaid health care through social and voluntary private insurance. Whereas the NHIS and private insurance has gained sufficient traction in providing coverage to federal public sector workers, their families and workers of large private organizations, majority of Nigerians are without any form of coverage. This situation has made the aspiration for UHC difficult to attain. State governments have been slow in the uptake of social insurance regulated by NHIS because they feel excluded from the scheme. (Okpani and Seye 2017) Expanding coverage and minimizing out-of-pocket expenditure primarily through greater federal government health care funding is not a realistic proposition given Nigeria's income status, and more important, the autonomy that the constitution gives the states to determine their health care priorities and spending choices. The foregoing presents the rationale for the proposal put forward by National Strategic Health Development Plan (NSHDP) 2010-2015 for reforming health care financing in Nigeria as a prerequisite for progress toward UHC. This proposal recommends shifting away from the federal-led social health insurance scheme toward leveraging the constitutional autonomy enjoyed by the states to extend social insurance coverage to residents of each state by establishing states health insurance schemes.

#### **The Kano state contributory/ health insurance scheme.**

projections from the 2006 census reveals that states in Nigeria range in population from about 2-11 million, with Kano State being the most populous among the 36 states of the federation, and has the largest number of public service employees in the country. This demographic feature presents the state with a large pool of working population without health insurance. In essence, lack of Access to affordable healthcare continues to be a challenge for most of the state residents due to high levels of poverty and significant reliance on out of pocket payments. Beside it's on this background that the state comes up with its insurance scheme to ensure that every resident has access to good health care service, protect families from the financial hardship of huge medical bills and to ensure equitable distribution of health care cost among depreciate income groups. According to its management, the state health insurance/contributory scheme had commenced operation for almost 3 years, and had become successful with over 370,000 enrollees accessing healthcare. The scheme is presently operating in 245 health facilities, comprising 134 primary healthcare facilities, 37 secondary healthcare facilities and 74 private healthcare facilities across the state.

## Methodology

The study will generate primary data through self-administered questionnaire to employees of some selected organization (organized Private and informal sector) within Kano metropolis. The method adopted in this study to generate primary data is contingent valuation method. Contingent valuation is a survey method to elicit the maximum WTP for a good. First, the good and a hypothetical market in which the good can be bought are described to the respondent (the contingency) the respondent is then asked to state the maximum amount she/he would be willing to pay for the good (valuation). (Barnighausen et al 2007).

A number of previous studies have used contingent valuation to measure the WTP for health insurances in developing countries including in rural Burkina Faso (Doug, Kouyale, Carin, Mugisha & Malin 2003) Ghana (Asenko Okeyere, et al. 1997) Cameroon (Binam, Nkama and Nkenda 2004) China (Barnighausen, Liu, Zhag & Saver born 2007) and Nigeria (Onwujekwe, et al. 2010). In all, the method proved to be efficient and reliable in achieving the desired objective.

Considering the sample sizes of similar studies that ranges between 200 to 300 number of respondents, this study will use a sample size of 270 number of respondents. **With regard to sampling**, the research used a multi stage cluster sampling where a total number of nine organized Private and informal sector organization were selected from where departments and subsequently the respondents were selected, a total number of 219 were returned valid.

The theoretical model of this study follow the work of Asfaw 2008 which is based on discrete choice framework, given as  $WTP_i^* = X_i \beta + \varepsilon \dots (1)$

Where X is a vector of explanatory variables which include- Income level, present health condition, education, family size, marital status, estimated medical expenditure per month, employment, degree of risk aversion and consultation of general practitioner.,  $\beta$  is a vector of coefficients to be estimated,  $\varepsilon$  is a random term assume to be randomly and independently disturbed with zero Mean and constant variance  $\sigma^2$ .

In dichotomous choice specification, the WTP\* is not directly observed. However, the study observed a range WTP from the survey responses using double bounded dichotomous choice elicitation method. Using this method each respondent is given two bids, depending whether the individual response “Yes” or “No” to the first bid and “Yes” or “No” to the second question. Four possible outcomes can be observed which can be indexed by  $y_i = (1,1) (1,0) (0,1)(0,0)$  In particular

$y_i = 1(1,1)$  if both bids get accepted ( $B_i^* \geq B_i^U$ )

$y_i = (1,0)$  if first is accepted and second rejected ( $B_i^I \leq B_i$ )

$y_i = (0,1)$  if first bid is rejected and second accepted ( $B_i^I < B_i^* < B_i^L$ )

$y_i = (0,0)$  if both bids get rejected ( $B_i^* < B_i^L$ )

Where  $B^I$  = initial bid,  $B^U$  = upper bid,  $B^L$  = lower bid.

We assume that  $\beta_i$  is NID ( $0 \sigma^2$ )

From the above the probability of observing there first outcome  $Y = 1,1$  is given by –

$P(y_i = 1,1 | X_i) = P(X_i \beta + \varepsilon \geq B_i^U | X_i) = 1 - \Phi\left(\frac{B_i^U - X_i \beta}{\sigma}\right)$  Similarly, the probability of observing the third outcome

is  $P(Y = 0,1 | X_i) = P(B_i^I < X_i \beta + \varepsilon < B_i^L | X_i) = \Phi\left(\frac{B_i^L - X_i \beta}{\sigma}\right) - \Phi\left(\frac{B_i^I - X_i \beta}{\sigma}\right)$

The two other probabilities can be derived along the same line. These probabilities directly enter the log likelihood function maximization which will yield consistent estimators for  $\beta$  and  $\sigma^2$

## Result and Discussion

Variables	observation	mean	std. dev	min.	max.	Variance	skewness	kurtosis
Health insurance awareness	229	0.834	0.373	0	1	0.139	-1.796	4.225
Medium of (hia)	194	3.427	2.267	1	8	5.137	0.887	2.631
Risk aversion preference	190	3.153	1.412	1	6	1.992	0.204	2.474
Wtj Health insurance scheme	221	0.624	0.485	0	1	0.236	-0.514	1.264
wtp for 5% monthly basic	210	0.652	0.477	0	1	0.228	-0.64	1.41

**Source: Author's field work 2017**

Table 1 above presents the summary statistics of the health insurance awareness, wtp and wtj related information of the respondents. Health insurance awareness is a categorical variable, taking the value of 0 and 1, 1 stands for the respondents that are aware of health insurance program, and 0 other wise. The mean of these two categories is 0.834; the variance is 0.139 which is relatively low. The distribution is negatively skewed (-1.796) with kurtosis 4.225 indicating that, the distribution is more peaked than a normal distribution. (That the distribution is non normal in the sense that it is both skewed and has excess kurtosis)

Risk version preference is ordinal in nature, ranging from 1 extreme risk aversion to 6 risk loving/preference. The mean of these six categories is 3.153, with variance of 1.992, showing dispersion in the observations, and that the probability distribution has a relatively wide spread about the mean. The distribution is positively skewed (0.204) with a kurtosis of 2.474 indicating a playtykurtic curve with long and fat tails than a normal distribution Willingness to pay 5% of monthly basic salary as insurance premium is also use as categorical variable, taking the value of 0 and 1, where 1 stand for wtp, and 0 other wise. The means of these two categories is 0.652 with the variance of 0.224 which is slightly high. The distribution is negatively skewed -0.640 with kurtosis of 1.41 indicating a flatter curve (playtykurtic curve with long and fat tails) than a normal distribution.

<b>Table 2. Responses to contingent valuation and maximum wtp/bid</b>								
<b>Variables</b>	<b>observation</b>	<b>mean</b>	<b>std. dev</b>	<b>min.</b>	<b>max.</b>	<b>Variance</b>	<b>skewness</b>	<b>kurtosis</b>
Initial bid of N2300	163	0.681	0.467	0	1	0.219	-0.776	1.603
Second lower bid of N2170	55	0.182	0.389	0	1	0.152	1.65	3.722
Second higher bid of N2430	138	0.558	0.498	0	1	0.248	-0.233	1.055
Maximum bid/wtp	155	1626.9	1476.17	0	10000	2179077	2.996	15.371

**Source: Author's field work 2017**

Table 2 above presents the summary statistics of the responses to contingent valuation and maximum willingness to pay for a hypothetical health insurance scheme. Initial bid of N2300 is used as a categorical variable with nature of yes or no, where yes stands for accepting the bid, and no other wise. The mean of these two categories is 0.681 and the variance is 0.219 which is slightly high. The distribution of these two categories is non symmetrical (negatively skewed with long left tail -0.776) with a kurtosis of 1.603 indicating a flatter curve (platykurtic curve with long and fat tails) than a normal distribution Second high bid of N2430 is also used as a categorical variable with nature of yes or no, where yes stands for accepting the bid, and no other wise. The mean of these two categories is 0.558 and the variance is 0.248 which is slightly high. The distribution of these two categories is negatively skewed with long left tail -0.776, with a kurtosis of 1.603 indicating a flatter curve (platykurtic curve with long and fat tails) than a normal distribution.

Maximum bid/wtp is neither categorical nor ordinal in nature, but is an open ended in nature where the respondents stated their maximum wtp for the health insurance scheme. The average wtp is N2626.90 with variance of 217907 showing dispersion in the observations, and that the probability distribution has a wide spread about the mean. The distribution is positively skewed (2.996) with excess kurtosis 15.371(That the distribution is non normal in the sense that it is both skewed and has excess kurtosis).

As a result, and following the measures of skewness and kurtosis where for a normal PDF skewness = 0 and kurtosis = 3; that is, a Normal distribution is symmetric and mesokurtic. Therefore, a simple test of normality is to find out whether the computed values of skewness and kurtosis depart from the norms of 0 and 3. Therefore, Findings from our descriptive statistics suggest the distributions of our variables are non-normal in the sense that they are all skewed and either has flat or excess kurtosis. This and other measures to be revealed later justify the adoption of nonlinear models in the study.

Bivariate Probit			Table 3. Bivariate Probit Model of Wtp for Healthcare Insurance Using Contingent Valuation (Hypothetical Bid)			
Variables	Coefficient & S.E		pr(wtpa=0, wtpc=0) predict(p00)	pr(wtpa=0, wtpc=1) predict(p01)	pr(wtpa=1, wtpc=0) predict(p10)	pr(wtpa=1, wtpc=1) predict(p11)
	WTPba	WTPbc				
Health insurance awareness (hia)	.788 (.626)	-1.233 (.709)	.229 (.182)	Omitted	.687 (.247)	-.458 (.263)
Marital status (ms)	-1.334 (.536)	-.896 (.408)	.388 (.148)	"	-.056 (.131)	-.333 (.150)
Family size (fs)	-.024 (.172)	.044 (.172)	.007 (.049)	"	-.023 (.034)	.016 (.064)
Education (edu)	.232 (.284)	.774 (.292)	-.068 (.085)	"	-.220 (.109)	.287 (.112)
Emploment (emp)	-.878 (.631)	-.643 (.522)	.255 (.192)	"	-.017 (.214)	-.239 (.195)
Present health status (phc)	.399 (.315)	.282 (.311)	.116 (.093)	"	-.221 (.096)	.104 (.115)
consultation of genral practitioner	.298 (.379)	.345 (.324)	-.087 (.112)	"	-.041 (.079)	.128 (.120)
Income (linc)	.651 (.389)	.169 (.362)	-.189 (.110)	"	.252 (.119)	-.063 (.135)
Risk aversion (ra)	.256 (.149)	.087 (.126)	.075 (.044)	"	-.042 (.041)	-.032 (.046)
Medical expenditure per month (lmexp)	.210 (.254)	.285 (.252)	-.061 (.074)	"	-.044 (.060)	.045 (.065)

Source: Author's Field work 2017

Likelihood-ratio test of rho=0:  $\chi^2(1) = 29.7487$  Prob>  $\chi^2 = 0.0000$  Bivariate probit regression

Number of obs = 79 LR  $\chi^2(20) = 45.52$

Log likelihood = -60.693045 Prob>  $\chi^2 = 0.0009$

Table 3 above presents the result of bivariate probit model of willingness to pay for healthcare insurance using hypothetical bids interpreting the results,

let us see the appropriateness of modelsSpecification. The value of  $\rho$  (the correlation coefficient between the error terms of the lower is large and statistically significant.

As shown in the table, the likelihood ratio test of  $\rho=0$  is rejected at less than 1 percent level. This indicates that the second decision is endogenous in the system and estimating individual probit models will give inefficient results. This supports our bivariate probit specification. The Wald statistics also reveal that the variables Include d in the model are jointly statistically significant in explaining the WTP decision of respondents.

Result of the contingent valuation (cv) questions shows that ,68.10% of the respondents who responds to questions accepted the initial bid of (N 2300), while The second high bid of (N2,430) were accepted by 55.80%

of those who accepted the initial bid. Education is statistically significant and positively affects the probability of respondents to accept both the first and the second bids. Holding all other variables constant at their reference point, a one-grade increase in the highest grade completed will increase the probability of respondents' willingness to pay for both first and second bids by 28.7%. The variable consultation of general practitioner represents the presence of serious illness which positively affects the probability of WTP for both bids, its MEMs shows that, presence of serious illness increases the probability of accepting both bids by 12.8%. Medical expenditures per month affects the probability of accepting both bids, its predicted probabilities shows that, increases in medical expenditure in form of out-of-pocket expenses increases the probability of accepting both bids by 4.5%. the coefficient of present health condition are only positive in the second bids equations, but its conditional probabilities shows that improvement in health condition of the respondents increases the probability of accepting both bids by 10.4%. Also the marginal coefficients of family size show that an increase in family size by one person increases the probability of accepting both bids by 1.6%.

Health insurance awareness and income levels demonstrated a mixed result; they positively affected the probability of accepting the first bid only. Their respective conditional probabilities revealed that, an increase in health insurance awareness campaign by one program will increase the probability of accepting the first bid only by 68.7%, while an increase in level of income by one unit will increase the probability of accepting the first bid only, by 25.5%. Although only two covariates marital status and level of education are statistically significant at 5 and 10% respectively, other covariates were also economically and practically significant measured by the magnitude of their marginal effect at means with exception of risk aversion and type of employment.

Accordingly, to the model suggest the presence of adverse selection and potential moral hazard, following the positive relationship between health risk and health insurance coverage among the respondents, revealed by the coefficients, the magnitude and the sign of marginal effect of consultation of general practitioner in the model.

### **Conclusion and policy implication.**

With reference to our model of WTP for healthcare insurance using hypothetical bids through contingent valuation method, with Bivariate probit specification, the dependent variables were the initial (first bids) and the higher (second bids) values. the value of  $\rho$  (the correlation coefficient between the error terms of the first and second equations) is large and statistically significant, also the Wald statistics also reveal that, the variables included in the model are jointly and statistically significant in explaining the WTP decision of respondents. This and the kernel density plots of the dependent variables (first and second bids) supported the bivariate probit specification. Findings from the model demonstrated that, level of education, presence of serious illness, present health condition, family size and medical expenditure per month have practical, economic and significant impact on WTP for both first and second bids. While health insurance awareness and level of income demonstrated a mixed result, as were only significant in WTP the first bid only. Also the model consistently demonstrated the presence of adverse selection and potential moral hazard subsequent to positive relationship between health risk and willingness to pay for both first and second bid, as measured by marginal effect predicted probabilities of presence of serious illness.

Besides the aforementioned, this study has several economic policy implications.

First, the presence of adverse selection is problematic as it reduces risk-pooling and increases the costs of health insurance schemes, while the primary benefit of compulsory insurance is the inclusion of all consumers within the same pool, resulting in cross-subsidization. This thus alleviates adverse selection, while simultaneously reducing the cost of insurance for high-risk consumers.

second the empirical findings of this study also suggest that; government as a pioneer of health insurance scheme, can encourage private and informal sector employees' participation through mass awareness campaign, because people are willing to join and pay for health insurance if they are made aware of the principles of insurance and properly understand the concept of risk pooling. third, although the socio-economic and demographic variables



that significantly affected the WTP of the respondents are not easily influenced by policymaker's decisions, this study suggests that they be integrated into the marketing mix of health insurance schemes.

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