

Information Asymmetry and Its Impact on Pension Contribution for Retirement among Public Sector Employees in Plateau State-Nigeria.

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ABSTRACT: Information plays a very vital role in the process of decision making by consumers who are always striving to maximize satisfaction due to limited resources. This is even more so in respect of pension contributions. This study investigated the impact of information asymmetry on pension contribution among public sector employees in Plateau state Nigeria. Using information generated from primary sources through well structured and closed ended instruments and analysed by Statistical Package for Social Sciences and using the Hierarchical Regression method, the study revealed the following result. A significant proportion of workers have limited knowledge on the contributory pension scheme. Specifically in the first model the variable of Knowledge of defined benefit reveals a more significant influence on the utility of the workers than the knowledge of defined contribution. When two more variables were introduced (External Certifier Influence and sufficient information about retirement savings account) in the second model the influence of knowledge of defined benefit and the knowledge of defined contribution became weaker but with the knowledge of defined benefit exerting more influence on workers utility than the knowledge of defined contribution entailing that workers prefer the defined benefit to the defined contribution. The study recommends an increase in the information made available to workers through deliberate sensitization about the benefits derivable from the new contributory scheme by the pension fund administrators. There should also be an increase in regulations of Pension Fund Administrators to stem tendencies for sharp practices.

Keywords: Information Asymmetry, Pension Contribution, Retirement, Defined Contribution.

JEL Classification: D03, D12, D81, D82, G14, G23, J26.

I. INTRODUCTION

Perhaps the idea of pension for retirement has its roots in the life cycle income theory of consumption by Modigliani and Brumberg (1954), Ando and Modigliani (1963) and Modigliani and Brumberg (1980) who had argued that individuals are faced with three main stages in their lives. These stages are the pre-work life, the working life and the after work life. Each of these stages has its basic challenges; however the after work life poses the greatest challenge and whether this challenge can be surmounted or not depends on what the average worker does in his work life experience. As aptly captured by Modigliani and Brumberg (1965), economic models of consumption behaviour have explicitly recognised that in making consumption decisions, consumers consider their lifetime resources rather than simply their current income. This is otherwise known as consumption smoothing, a process where workers forgo some present level of consumption in their working age in order to save for retirement (Bar and Diamond, 2006). This surely has led to scholars, policy formulators and public authorities to develop the concept of pension. Pension is defined as the amount paid by government or an organisation to an employee after working for some specific period of time or if the employee has reached retirement age (Yusuf and Abdulkareem, 2016). It enables the individual to prepare for a life after work in which a steady flow of regular wages ceases to occur. This is against the fact that the sphere of needs will be expanding while the sources of income would either be static at best or even declining at worst.

Although other reasons exist on why people save while working, the main reason for saving is to provide for oneself as a result of the stoppage of monthly earnings during retirement (Horioka, 1984; Sablik, 2016; Deaton, 2005;

Jappelli, 2005; Munell, 2006; Modigliani and Brumberg, 1954). Workers consciously recognise that not only will they be unable or prefer not to work when they are older, but that their consumption during retirement will depend on their own individual resources (Lesnoy and Leimer, 1985). During these working years, they build up savings in the form of real and financial assets. These savings are then drawn down towards zero during retirement to finance consumption; this is described as life cycle model of saving (Lesnoy and Leimer, 1985). To be able to reap maximally from this, several options may be available and this necessitate that the individuals make not only informed choices but that which maximizes benefit or minimizes a loss, a clear indication that information is critical in such a decision making process.

The Nigerian government had to jettison the Defined Benefit (DB) (otherwise known as the Pay-as-you-go) pension scheme because of the growing burden of pension payment as a result of inadequate budgetary provision. Other challenges such as increase in the salary and wages of workers and attendant demographic shifts due to rising life expectancies that tended to elongate the pension obligations of the employers of labour have also been identified (National Pension Commission (NPC), 2007). The DB became a serious challenge to governments in both developed and developing countries thereby necessitating policy makers to devise prefund pension scheme otherwise known as the Defined Contribution (DC) which has to do with pooling resources into investment purposes (Fieldstein and Liebman, 2002). According to Adeleye and Olujide (2016), the pension system in Nigeria had undergone a series of reviews and reforms with the primary purpose of reducing its negative impact on the retiring employees and the government itself, yet, the problems still remained as the plight of pensioners has not been adequately addressed. Several problems ranging from corruption, poor administration and suspiciousness of underpayment of annuity on retirement coupled with administrative fraud in different quarters. Yusuf and Abdulkareem (2016) averred that mistrust exist among contributors on the Pension Fund Administrators (PFAs) as many fear their contributions may not be well managed or that they will be short changed. This perhaps is one of the reasons why enrolment into the contributory pension scheme has been slow with public sector employees being the least patronisers. The National Bureau of Statistics (2017) reported that as at the fourth quarter of 2016 out of 69,470,091 of the working population in Nigeria, only 7, 343, 028

workers were registered under the pension scheme which is a mere 10.8% of worker force in Nigeria. With the private sector having a higher proportion registered under the scheme. The federal government has 1,866,850 registered under the Retirement Savings Account (RSA) of national pension scheme, the state governments had 1,508,471 state public workers while the private sector firms had 3,972,707 registered members under the pension scheme as of fourth quarter of 2016

The pension reform act of 2004 of Nigeria mandated the employee to contribute 7.5% while the employer is to contribute 7.5% into the employee's RSA to be managed by Pension Fund Administrators (PFAs). Due to the need to extend the scheme to the private sector and to address some challenges encountered in the 2004 act, the pension reform act 2014 was introduced which was an amendment of the 2004 act. The new act demands the employee to pay 8% while the employer pays 10% into the employee's RSA, private sector employers with five (5) employees and above were also mandated to join while those in the armed forces, intelligence and secret services were exempted from the scheme (Pension Reform Act (PRA), 2014).

Due to the imperfect flow of information to consumers especially where monopoly thrives, they most often make choices that hardly maximises their consumption benefits. This is even worst in a pension situation where its administrators operate based on market instincts driven by the forces of demand and supply. There is a compelling need for retiring pensioners to possess adequate knowledge of the choices available. There is no doubt that there has been a dearth of studies in this area especially for developing countries like Nigeria, making it rather difficult for pensioners to make informed decisions. This study is intended to generate information to would-be pensioners that will assist them in making informed decisions or choices regarding pension.

II. LITERATURE REVIEW

2.1 Review of relevant literature

Information asymmetry started with the work of Akerlof (1970) where he applied information economics in the market for automobile in the United States of America, his work proved the existence of 'Lemons' in the automobile market. 'Lemons' in his finding are bad cars in the market that end up chasing out the good cars. According to Mocan (2001), if it is difficult for buyers to assess the quality of the product and if

quality is costly to produce, sellers of high quality products will not be able to command high prices for higher quality for their products and as a result, high quality products will withdraw from the market, leaving the 'lemons'. Akerlof's work has shown that in a market with asymmetric information between buyers and sellers, adverse selection is likely the result. This happens when the hidden or undisclosed characteristics of the individual or people on the informed side of the market self-select in a way that is harmful to the uninformed side of the market. Adverse selection is usually post ante (Lewis, 2011).

Imperfections in the credit market has been shown to affect the behaviour of the consumer (Modigliani, 1985), when information is not readily available. Even where it is available, due to the complex nature of goods and services, consumers tend to behave irrationally towards it (Bar and Diamond, 2006). According to these authors, individuals are imperfectly informed, first because of uncertainty about the future, secondly when faced with a risk and thirdly when the product they are patronising is complex. They also posited that even if information is available, consumers still find it difficult to take actions that are self promoting especially when the product they are patronising is complex. The European Commission (2017), showed that even in advanced countries that have been practicing the DC scheme, subscribers still feign ignorance. Consequently, information and knowledge are complimentary, more information entails greater knowledge, those who are knowledgeable about their environment prosper by making more rational choices. Most of the knowledge based economies thrive due to the information at their disposal. According to Spread (2015) an information interface forms the focus of economic exchange and the evolution of economies. People often possess different information and the different information they possess affects their behaviour in many situations (Auromen, 2003). For efficiency and equilibrium to exist in the market, each party of an economic transaction should have sufficient knowledge or information about the other party to be able to make accurate decision.

Economic reasoning suggest that market failure occurs when information fails or when one person or a group of persons have certain information at their disposal that they can use to their advantage which at the same time will lead to welfare loss for another person(s), such situation is regarded as information asymmetry. According to Davies (Undated) three key types of market failure exist in finance; they are information asymmetry,

externality and monopoly. The neoclassical analysis centred on equilibrium, which is the state of agreement where demand and supply agree and in such cases, information plays a significant role in the equilibrium process, thus helping to ensure that the market clears itself (Stiglitz, 2001). In real life however, equilibrium conditions do not always exist because people involve in economic transactions will always have more or less information compared to those they relate with. In the words of Veghes (2005), "increase in information leads to improve market mechanism and improve market mechanism leads to increased welfare of economic entities". On the other hand when information is purposely incomplete and manipulated by some actors, it can result in misallocation of resources, causing more welfare losses (Veghes, 2005; Lucas and McDonald, 1987). Davis (Undated) averred that it is difficult or costly for the purchaser of a financial service to obtain sufficient information on the quality of the service they are purchasing hence making them vulnerable to exploitation.

Information asymmetry has contributed a lot to the advancement of theories in economics; it has attempted to bridge the gap between economic theory and real life situation. According to Tumay (2009), information asymmetry occurs when one party of an economic transaction has insufficient knowledge about the other party to make accurate decision. It means that some sellers are always informed on the quality of goods/services they offer and consumers cannot recognise the difference in quality, so they cannot form their preferentiality based on the quality of goods. Similarly, Veghes (2005) maintained that information asymmetry exist when somebody knows more than somebody else. He further maintained that information can be purposely made incomplete and manipulated by some actors in order to take advantage for a gain or deny the other party the economic benefits that can accrue from the investment decision. In the words of Veghes (2005) information asymmetry is when somebody knows more than somebody else in a market situation with imperfect information which can lead to market failure. According to Sagi and Pataki (Undated), asymmetric information distribution means that some sellers are always informed on the quality of goods they offer and consumers cannot recognise the differences in quality, so they cannot form their preferentiality based on the quality of goods.

2.2 Empirical Literature

The rapid growth of pension funds in many countries and the stimulus they are providing to the growth of capital markets, both suggest that their activities as financial intermediaries merit considerable attention (Davis, 2000). Pension funds collect, pooled and invest funds contributed by sponsors and beneficiaries to provide for the future pension entitlements of beneficiaries (Davis, 1995; Birdie and Davis, 2000) cited in Davis (Undated). Monies pooled by employees and employers are intermediated by PFA into a variety of financial assets which include corporate equities, government bonds, real estate, corporate debt, securize loans, foreign holdings of the instruments and money market instruments and deposits as forms of liquidity (Davis, 2000). In Nigeria, National Bureau of Statistics (NBS) (2019) maintained that as at third quarter of 2019, pensions fund assets under the management of PFAs stood at ₦ 9.55 trillion as against ₦9.03 trillion in first quarter of 2019. The bureau further maintained that federal government bond has the highest weight of 46.71% followed by treasury bills with 23.62% weight. The local money market securities have a weight of 11.21% weight while foreign money market securities have the least with 0.09% weight. Other areas that pooled resources are invested include real estate properties 2.4%, Sukuk bonds 0.84%, green bonds 0.14%, corporate debt securities 6.49% weight. In order to generate maximum benefits to its subscribers, early withdrawals of funds are restricted or forbidden. Pension funds have long term liability, allowing holding of high risk and high return investment.

Information asymmetry in pension scheme provides certain basic information like the balance of contributors, account statements but certain other information are not easily communicated like

$$U_{DB} = \sum_{t=0}^T \left[\sum_{m=1}^2 S_{m,t} \left(\frac{1}{\alpha} C_{m,t}^{\alpha} + e^{X_t^{DB} \beta^{DB} + \varepsilon^{DB}} W_t^{DB} \right) \right] \text{-----(1)}$$

Where C is the consumption during working period and W is welfare at retirement. m is an indicator of the two scenarios at time t, $S_{m,t}$ is the probability that the individual will be at state m at time t. W takes the form 0 when the worker is still working and 1 when he/she is retired. The

$$U_{DC} = \sum_{t=0}^T \left[\sum_{m=1}^2 S_{m,t} \left(\frac{1}{\alpha} C_{m,t}^{\alpha} + e^{X_t^{DC} \beta^{DC} + \varepsilon^{DC}} W_t^{DC} \right) \right] \text{-----(2)}$$

We consider the Akerlof adverse selection set up (cited in Stahl and Stausz, 2017) between one seller and one buyer, where a service quality q represents the buyers' willingness to pay and can

interest realised from investment with resources pooled from the contributions of subscribers (Davis, 2000). In the DC plans, employees have individual investment accounts to which they and/or their employers make periodic deposits. The rules of the plan define the maximum amount of contribution and the extent of employer matching. When these individuals reach retirement age, they make withdrawals or receive annuity payments based upon the value of the assets in their accounts, which reflect both the original contributions and the accumulated investment returns (Fieldstein and Liebman, 2002). Although the asymmetry of information between the annuity buyer and the insurance company continues to be a problem in creating actuarially fair products for those interested in buying annuities, Brown, Mitchell and Poterba (2000) show that, for the average annuity purchaser today, the expected annuity payment are between 90 and 95 percent of his premium.

III. MATERIALS AND METHODS

3.1 The Model

The study adopts the models used by Gustman and Steinmeier (2004) and Stahl and Stausz (2017) with some modifications to suit the research objective. The model of Gustman and Steinmeier (2004) was premised on two scenarios: one where the worker has unbalanced information (adverse selection) guiding his retirement decision and the other where the worker has sufficient information in making his retirement decision with the role of a market certifier or regulator in the form of pension commission. We assume that with adverse selection the worker will prefer the defined benefit pension with a utility maximization function cast as follows:

exponential expression is the utility value of retirement in period t. The linear form $X\beta$ and an individual effect ε reflect the strength of the workers preferences for retirement over work.

While the define contribution pension with a utility function:

either be high, q^h or low q^l , where $\Delta q = q^h - q^l > 0$ and $q^l > 0$

In this case workers prefer the Define Benefit (DB) against the Define Contribution (DC) because they believes that their welfare on retirement will be

higher with define benefit than with define contribution.
 $W_t^{DB} > W_t^{DC}$ ----- (3)

Meaning workers will prefer the DB against the DC
 $\sum_{t=0}^T [\sum_{m=1}^2 S_{m,t} (\frac{1}{\alpha} C_{m,t}^\alpha + e^{X_t^{DB} \beta_{DB} + \epsilon_{DB}} W_t^{DB})] > \sum_{t=0}^T [\sum_{m=1}^2 S_{m,t} (\frac{1}{\alpha} C_{m,t}^\alpha + e^{X_t^{DC} \beta_{DC} + \epsilon_{DC}} W_t^{DC})]$ --- (4)

Akerlof's framework creates a demand for an external certifier who raises market transparency (Stahl and Stausz, 2017), the consumer has to pay some fee for the information provided which can be greater or equal to zero

$$ECI \geq 0 \text{ ----- (5)}$$

Where ECI = External Certifier Information

With the entry of an external certifier, the preference function changes to:

$$W_t^{DB} < W_t^{DC} + ECI \text{ ----- (6)}$$

given the influence of the external certifier. Meaning the define contribution plus adequate information from an external certifier reveals to the worker that his welfare is more assured under the defined contribution than the define benefit.

$$\sum_{t=0}^T [\sum_{m=1}^2 S_{m,t} (\frac{1}{\alpha} C_{m,t}^\alpha + e^{X_t^{DB} \beta_{DB} + \epsilon_{DB}} W_t^{DB})] < \sum_{t=0}^T [\sum_{m=1}^2 S_{m,t} (\frac{1}{\alpha} C_{m,t}^\alpha + e^{X_t^{DC} \beta_{DC} + \epsilon_{DC}} W_t^{DC})] \text{ --- (7)}$$

The worker will prefer to go for the defined contributory scheme when adequate information is available to him to understand that he stands to benefit more choosing the defined contribution to the define benefit.

3.2 Population and sampling technique

The population of the study comprises of employees in the federal public sector who have enrolled into the Contributory Pension Scheme, Only federal public sector employees were considered as the Plateau State civil service is still

under the Pay-as-you-go Pension scheme. Given that the total number of public sector employees is not readily available, the study employed the use of Cochran (1963) cited in Israel (2003) equation for representative sample. The formula is given as

$$n_0 = \frac{Z^2 pq}{e^2} \text{ ----- (8)}$$

Where n_0 is the sample size, Z^2 is the abscissa of the normal curve that cuts off an area, α at the tails (1- α equals the desired confidence

level), e acceptable sampling error, p is the estimated proportion of an attribute that is present in the population and q is 1- p .

Given $p=0.5$, $e = \pm 10\%$, $p = 0.5$, $q = 0.5$, $Z = 1.96$

$$n_0 = \frac{(1.96)^2(0.5)(0.5)}{0.10^2} = \frac{0.9644}{0.01} = 96.04$$

$\cong 96$

Similarly, as posited by Mathers et al. (2009), to make up for allowance of the expected non-response of some respondents, allowance of 5% will be made for this study.

$$5\% \text{ of } 97 = 4.85 \cong 5$$

$$97+5 = 102$$

Therefore a total sample (n_0) of 102 is used.

3.3 Instruments for data collection

The study being a survey method employed the use of a well structured questionnaire to generate data from respondents. The questionnaire was broken into two sections; the

first is the bio data section while the second is on general information about the contributory pension scheme. The questionnaires were self administered by the researchers so as to give room for clarification where necessary.

3.4 Model specifications

The model for the study is cast thus:

$$U_{DC} = f (K_{DC} + I_{DC} + K_{DB} + EC + \epsilon) \text{ ----- (9)}$$

Estimating the model gives

$$U_{DC} = \alpha_0 + \beta_1 K_{DC} + \beta_2 I_{DC} + \beta_3 K_{DB} + \beta_4 EC + \epsilon \text{ ----- (10)}$$

Where

U_{DC} = Utility derived from Defined Contribution

K_{DC} = Knowledge about Defined Contribution

I_{DC} = Information about Defined Contribution

K_{DB} = Knowledge about Defined Benefit
 EC = External Certifier
 ε = Error term
 α_0 = Intercept
 β_1 to β_4 = The estimates

3.5 Method of Data analysis

The study employed the Hierarchical method of multiple regression using Statistical Package for Social Sciences (SPSS) to analyse the collected data. Tables from the output of regression analysis are indicated and the necessary components of the results discussed appropriately.

IV. RESULTS

4.1 Hierarchical regression

The results for the determination of the utility of defined contribution by hierarchical multiple regression are presented in tables 1, 2 and 3 below:

Table 1: variables entered/removed
Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Knowledge of the Defined Benefit, Knowledge on defined contribution ^b		Enter
2	External certifier Influence, Sufficient info about Retirement Savings Account ^b		Enter

a. Dependent Variable: Utility from Defined Contribution
 b. All requested variables entered.

Table 1 shows the variables entered in the hierarchical regression, the dependent variable is the utility derived from defined contribution while the independent variables in the first model are Knowledge of defined benefit and knowledge of defined contribution. The second model has an addition to the two previous independent variables

of Knowledge of defined benefit and knowledge of defined contribution, external certifier influence and sufficient information about retirement savings account. We are going to ascertain the level of influence of the two models on the dependent variable in the next table that follows.

Table 2: Model Summary

Model Summary					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.937 ^a	.879	.876	.24460	.879	336.533	2	93	.000
2	.943 ^b	.890	.885	.23532	.011	4.741	2	91	.011

a. Predictors: (Constant), Knowledge of the Defined Benefit, Knowledge on defined contributory
 b. Predictors: (Constant), Knowledge of the Defined Benefit, Knowledge on defined contributory, External certifier Influence, Sufficient info about Retirement Savings Account.

The result in table 2 shows the first model to have the R square of 0.879 and an adjusted R square of 0.876, with the addition of two more independent variables in the second model the R square improved to 0.890 while the adjusted R square also improved to 0.885. This signifies that 87% variation in the utility that workers get can be

explained by the contributory pension and the defined benefit pension. However with the introduction of External certifier and sufficient information at the disposal of workers, the dependent variable is further influenced. The F-statistics is significant at 1% level of significance for both models one and two

as result indicate that the defined benefit contributes more to workers utility than the defined contribution. With the introduction of external certifier the level of workers confidence in the defined contribution increase but not up to the confidence workers have in the defined benefit scheme. Sufficient information about the retirement savings account has also contributed significantly to the utility of workers on the contributory pension scheme.

V. CONCLUSION AND RECOMMENDATIONS

The study used the hierarchical regression method to analyse data collected from respondents in the study area and findings showed that the defined contribution and defined benefit pension scheme have significant effect on workers utility. Both variables explained about 87% change in workers utility at the 1% level of significance. With the addition of more variables the proportion of defined contribution reduced significantly while that of defined benefit also reduced but not as much as that of the defined contribution. Results further showed that the introduction of an external certifier did not significantly increase the utility of workers especially in the area of defined contribution. However, the result indicate that sufficient information about the retirement savings account made available to workers has a significant impact on workers utility at 1% the level. This means that when sufficient information is provided to workers, they tend to save more and derive high level of satisfaction from the defined contribution pension scheme.

The study gives the following recommendations

1. Adequate information should be provided by the pension fund administrators to pension contributors on regular basis about their savings, the interest accruing to their account, the profit made by their pension fund administrators so that they will have greater confidence in the whole process.
2. There should be increased regulatory activities by the National pension commission in order to boost contributors confidence that they are not short changed and that they are receiving what is ideally supposed to be given to them.
3. There should be greater participation by public sector employees especially at the state and local governments level. Investigations have revealed that most state and local government are yet to pass laws that will allow workers to join the contributory pension scheme hence limiting the amount of funds that are supposed to be accruable to the scheme.

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