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# FACTORS INFLUENCING INFORMAL SECTOR WORKERS' CONTRIBUTION TO PENSION SCHEME IN THE TAMALE METROPOLIS OF GHANA

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**Abstract**

Social protection is an essential mechanism for a sustained poverty eradication and development. One of these social protection instruments is the informal pension scheme. In this study, the objective was to identify the factors that influenced informal sector workers' decision into pension scheme as well as their contribution levels. Heckman two-stage approach was adopted in analyzing the data collected from 150 informal sector workers in the Tamale metropolis. It was revealed that the elderly, the single, the highly educated, highly depended and higher income workers have a higher probability of contributing to the informal pension scheme. Similarly, traders, artisans, highly educated and highly depended upon workers contribute higher amounts monthly. Although informal sector workers in general should be encouraged to remain loyal or join pension schemes, farmers in particular need to be re-targeted. In order to restore confidence in the pension scheme and ensure its sustenance, public education must be intensified.

## 1. INTRODUCTION

The rebasing of Ghana's economy in 2010 to a reference year of 2006 put her in the lower middle income countries (GSS, 2012). In order to justify this attainment and serve as a role model to other developing countries, she must demonstrate greater commitment and implementation of social protection strategies in the country. USAID (2012) mentioned that

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there are some persistent developmental challenges that must be addressed to realize and sustain the benefits of Ghana's middle-income status. Economic security is the most cherished condition that people wish to attain in life in order to satisfy their basic needs both present and future. In many parts of Africa however, the traditional safety net for the elderly is the extended family, especially their own children (Gockel & Kumado, 2003). Traditional social networks have also been a source of social assistance to many operators in the informal sector. Extended family members provide for the aged and the disabled, the sick and the unemployed members of the family, the new born child and the mother, the orphaned and even the complete stranger (Kumado & Gockel, 2003). Thus it is a common practice for neighboring households to engage in mutual help associations. The essence of social security is sometimes missing in informal social security arrangements. This has its own setbacks. For instance, Schwarz (2003) noted that, the extended family is not, and was never, a perfect safety net especially when their own children are too poor to support their parents. In recent times though, westernization, education and social mobility have put strain on the extended family that people begin to shift their attention from the extended family towards self-preparedness to live; thus without relying on any one at an old age or uncertainty times like sickness and disability. This has necessitated the need to extend Social Security coverage to workers to complement the family care-giving.

Social protection is important in reducing poverty in as much as it allows vulnerable people to maintain or improve their living standards. The numbers of informal sector workers who have access to social benefits through institutionalized social security schemes are negligible. By March 2011, the Informal Sector Fund 17, a subsidiary pension scheme operated by the Social Security and National Insurance Trust (SSNIT) had enrolled 83,448 (SSNIT Informal Sector Fund, 2011); 85 percent of which were formal sector members. This means that the informal workers are completely at higher risk to adverse conditions and unavoidable ageing. Collins-Sowah et al. (2013) noted that the role of social security in reducing vulnerability and exclusion has gained popularity among policy makers, academicians, and businessmen. This is in the right direction. Although recent policies include or are directed to attract the informal workers into the pension scheme, their participation or involvement still remained questionable. Unfortunately, efforts to identify the reasons for the low participation seem to be missing among researchers. Ironically, Ghana Statistical Service report in 2012 indicated that over half of the employed (55.9 %) are own-account workers (self-employed); 20.4% are employed in family enterprises and only 17.6% are wage employees. Thus the informal economy accounts for about 86 – 90% of total employment (UNDP, 2012).

In Ghana, the SSNIT Informal Sector Fund was established in 2005 to safeguard the future of these workers like their counterparts in the formal sector. Contributions under the Informal Sector fund are not fixed but are based on an "individual's preference as well as his ability to pay. There is however widespread evidence of failures of informal social security arrangement (FES, 2011).Growing economic constraint and urbanization has also affected the ability for family members to provide the needed support.

Primarily the purpose of a pension system is to assist households to achieve the allocations of resources in life through a life cycle (Modigliani & Muralidhar, 2004). Thus these are strategies and policies established to ensure that people in their active ages insured themselves against periods of uncertainties regarding retirement income to help create a better recruitment and holding incentives (Modigliani & Muralidhar, 2004). This pension money or pension contribution which is paid to beneficiaries is always deducted from a person's salary or voluntarily contributed during his or her active working life. This means that after people have retired from active working life, an amount of fix money can be regularly paid to these people to empower them live a meaningful life and support themselves.

Most social security interventions are scale neutral, available to all, but in the case of pension scheme until recent times, more efforts targeted the formal sector workers. This may be due to the fact that the informal sector worker's income is not regulated by an agency which makes it difficult to make pension contribution mandatory as in the case of the formal sector workers.

The decision then is left with the individual worker to willingly decide to join the scheme or not to. In this light, this research was designed to estimate the factors that influence this group of workers into the scheme and how much they are willing to contribute.

### 1.2. Brief history of pension acts in Ghana

The history of pension act in Ghana dates back to The Pension Ordinance of 1946. This is a non-contributory pension scheme known as CAP 30 for workers categorized as senior civil servants. However, the establishment of a national social security system by Act 279 of 1965 was the beginning of a formal social security scheme in Ghana. The Act established a Fund known as the Social Security Fund into which all contributions were paid. In 1972, the Social Security Decree (NRCD 127) was introduced to address some of the anomalies and the problems associated with the 1965 Social Security Act. During this reform, the Social Security and National Insurance Trust (SSNIT) was established. A PNDC Law 247 in February 1991 led to complete eradication of CAP 30 and a revamped the SSNIT with proper management and administrative structures. Based on recommendations by Pension Reform Implementation Committee that began in 2004, a new Pensions Law, the National Pensions Act, 2008 (Act 766) was promulgated on 12th December, 2008. This is known as the three-tier pension scheme. It consists of two mandatory schemes (first and second tier) and a voluntary scheme (third tier). The scheme provides that workers in the informal sector, just like their counterparts in the formal sector (on the First and Second Tier schemes) will also receive monthly pensions or a lump sum after retirement.

## 2. MATERIALS AND METHODS

### 2.1. The study area

The study was conducted in Tamale Metropolis. The Metropolis has a total population of 537,986 (GSS, 2012). Tamale has been reported as one of the fastest growing cities in West Africa. It is the capital of the Northern region of Ghana and the third largest city in Ghana after Accra and Kumasi. The town is located 600 km north of Accra. Over the last few years, Tamale has developed and transformed due to the influx of financial institutions and Non-Governmental Organizations (NGOs). Livelihood in the city is largely dependent on the informal sector. It is estimated that 7 out of 10 people are poor in the northern region. Meanwhile, people around the region migrate into the city in search of jobs. This situation further puts the city in a lot of challenges in its bit to fighting poverty.

### 2.2. Sampling procedure and data

The study area (Tamale Metropolis) was purposive selected due to its wide range of informal sector workers and diversity in social characteristics. A simple random sampling procedure was used to select five communities in the Metropolis. Stratified sampling procedure was then used to put the informal sector workers into contributors of the informal pension scheme and non-contributors. Based on the focus of the study, 80 contributors (53%) and 70 non-contributors (47%) were selected using simple random sampling method. Thus in each community, 30 informal workers were selected giving a total of 150 respondents. Data was collected from the selected respondents using a questionnaire.

## 3. DATA ANALYSIS

### 3.1. Theoretical background

Individuals make choices of belonging to one group or another. This decision is informed by the individual's assessment of the choices. If the expected gains from belonging to a group for instance are greater than not belonging to a group, the individual would opt for the former. The decisions can be said to be a utility maximization problem. In econometrics however, discussions by Lewis (1974) and Heckman (1974) noted that, modeling these kinds of relationship on the outcome from the decision would lead to over prediction of the gains. As such, this is a problem of selectivity bias. This means that there may be some inert characteristics of say the contributors that are related to their contribution level other than the

explicitly measured factors. In this study, the objective was to estimate the factors influencing informal sector workers decision into informal pension scheme contribution and how much they are willing to contribute. This suggested that, we are interested in (1) the determinants of pension contribution and (2) the determinants of monthly contribution by the informal sector workers. The conventional approach would have been to estimate a probit/logit function for the first part of the objective and ordinary least square (OLS) function for the second part. But this is fraud and would lead to inconsistent estimates (Heckman, 1974). To resolve this baseness, we adopted the Heckman (1976) two-stage approach. This involved an iteration procedure to generate a new variable after estimating the probit model (the determinants of worker's decision to join the scheme or not). In the second stage, this new variable is used as an additional variable (the determinants of monthly contribution) (Greene, 1993).

Mathematically, given.

$$y_i = \beta' x_i + u_i \, where f \, \beta' x_i > 0 \, or \, y_i if \, otherwise \qquad \text{...........................} (1)$$

The problem estimating this equation is that the expected value of the stochastic component is not equal to zero; a violation of the Gauss-Makouv assumption of the OLS. To resolve this, $E(u_i)$ is evaluated and substituted into the equation (Heckman, 1976).Given the nonzero observations from the equation;

$$E(y_i/y_i) > 0 = \beta' x_i + E(u_i/u_i > -\beta' x_i) \ = \beta' x_i + \sigma \frac{\emptyset_i}{\Phi_i} \qquad \text{.......................} (2)$$

Or given that all the observations $y_i$, are considered (Maddala, 1983);

$$E(y_i) = Prob(y_i > 0).E\left(^{y_i}/_{y_i} > 0\right) + Prob(y_i \le 0).E\left(^{y_i}/_{y_i} \le 0\right)$$
$$= \Phi_i \left(\beta' x_i + \sigma \frac{\emptyset_i}{\Phi_i}\right) + 0 = \beta^I (\Phi_i x_i) + \sigma \emptyset_i \qquad \text{.........................} (3)$$

The $\emptyset_i$ and $\Phi_i$ are respectively the density and distribution functions of the standard normal. This is evaluated at $\beta' x_i/\sigma$ and not $\beta' x_i$ as in OLS.

Realigning equations 1 and 2 give;

$$y_i = \beta' x_i + \sigma \frac{\emptyset_i}{\Phi_i} + v_i \qquad \text{.....................................} (4)$$

In this case, $E(v_i) = 0$, however, $\emptyset_i$ and $\Phi_i$ are unknown. Hence estimating this equation using OLS is limited. It is important to note however that, $\emptyset_i/_{\Phi_i}$ is the additional variable discussed earlier. And this formulation is known as the Inverse Mills Ratio (IMR). What Heckman suggested was to define a dummy variable and estimate it using probit model. This is defined as;

$$I_i = 1 \, if \, y_i \ge 0 \qquad or \quad I_i = 0 \, if otherwise$$

Thus in this study, 1 denote contributors and 0 denote non-contributors. Using maximum likelihood (ML), it is possible to obtain the estimates of $\beta/\sigma$ that is then used to estimate the unknowns $\emptyset_i$ and $\Phi_i$. This approach provides consistent estimates of $\beta$ and $\sigma$.

### 3.2. Empirical models
As discussed earlier, two equations are necessary for addressing the objective of the study. In the first stage, we examined the probability that a worker with a particular characteristic contributes to the scheme. This is specified as:

$$Contribution = \beta_0 + \beta_1 Age + \beta_2 Age \, Sq. + \beta_3 Sex \, + \beta_4 Marital \, st. \qquad +$$
$$\beta_5 Educ. + \beta_6 Household \, position \, + \beta_7 Experience \, + \beta_7 Dependents \, + \beta_8 Income \, ..... (5)$$

In the second stage, we sought to identify the factors responsible for the amounts contributed to the scheme by the workers. The model specification here is:

$$Amount = \delta_0 + \delta_1 Educ + \delta_2 Dependents + \delta_3 Experience + \delta_4 Artisanry + \delta_5 Trading + \delta_5 Income \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

Where; age is the number of years of a worker, sex is a dummy variable; 1 for males and 0 for females, marital status is a dummy variable; 1 for married and 0 for single, education is the number of years a worker have been to formal school, household position is a dummy variable; 1 if a worker is a household head and 0 if not, experience is the number of years a worker have being in the informal employment sector, dependents is the total number of household members who depends on the worker for their daily life, trading is a dummy variable; 1 if a worker is a trader and 0 if a farmer or artisan, artisanry is a dummy variable; 1 if a worker is an artisan and 0 if otherwise and income is the total amount of income a worker gets a month on the average.

## 4. RESULTS AND DISCUSSIONS

### 4.1. Occupational engagement of the respondents

The major occupations in the informal sector are farming and trading. From the study, it was realized that while 36% of the respondents were into trading (mostly selling of consumables), only 6% were farmers. The remaining 58% of the respondents were noted to be engaged in artisanry. Most especially in this group were mechanics, seamstresses, hairdressers and carpenters. This is justifiable in the sense that, considering the Tamale metropolis where land for farming has been eroded by urbanization, the major informal activity would be trading and artisanry. What are common in terms of farming perhaps are very few backyard gardens.

### 4.2. Knowledge on SSNIT contribution

It would not be justifiable to lay blames on the informal sector workers if they did not contribute to pension schemes without first knowing whether or not these workers are aware of the schemes. In this case, the respondents were made to indicate whether or not they were aware of the SSNIT informal pension scheme. Surprisingly, 82.7% of the workers were aware of the scheme while the remaining 17.3% were not. This 17.3% of workers is considerably high and perhaps call for agent attention. Public education on the existence of the scheme as well as its benefits needs to be intensified. The service providers need not to handle information delivery in this scheme as it would have been in the formal scheme because, in the case of the formal workers, the workers contribution are deducted from source before they even get their salaries. However, the informal sector worker has to carry his/her money to the scheme's office.
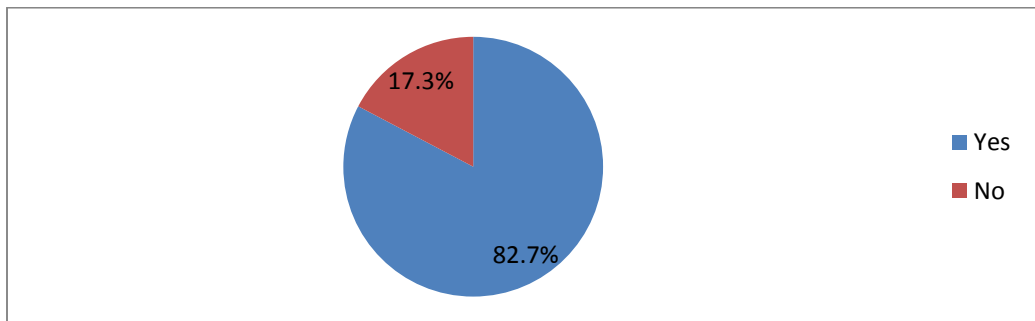


**Figure 1: Workers awareness of the informal pension scheme**
**Source:** Field survey, 2014

### 4.3. Respondent's willingness to contribute SSNIT

The study revealed that 54% of the respondents were contributing to the scheme while the remaining 46% were not. In this section, the objective was to unveil the workers willingness to continue with the contribution and also find out if the non-contributors are also willing to join the scheme. In this case, only 20.7% of the workers are not willing to contribute to the scheme. Thus the remaining 79.3% of the informal sector workers are willing to contribute to the

scheme. This means that an additional 25.3% of the non-contributors are willing to join the scheme. This is quite encouraging and needs support to get these workers into the pension scheme for secured future. Rajasekhar *et al.* (2009) noted that although workers are generally willing to voluntarily pay for social security schemes, their willingness to pay however vary from sector to sector.

### 4.4. Determinants of workers willingness to contribute to the scheme

From the ML estimation, age, age squared, marital status, education, number of dependents, and income were significant in determining the probability of a worker joining the pension scheme. The estimated positive and negative marginal effects of age and age squared respectively means that the older workers have a higher probability (willingness) of joining the scheme than the younger ones. However, with time, this disparity would be restored; younger workers would equally join the scheme. The conceivability is that the older workers are more cautious of their old age than the younger ones who may have the view that there is still more time. Usually, older workers begin to gather wealth for themselves and their families. This is similar to the findings of Sane and Thomas (2013) but contrary to Collins-Sowah *et al.* (2013). Surprisingly, single workers were found to have a higher probability of contributing to the scheme than the married workers. One would have expected that the married workers would have a higher probability of joining the scheme since they may be having families that warrant securing their future. The opposite was the case in this study. This means that in recent times where the family system has changed from extended to a nuclear family type, people are beginning to see themselves as the sole provider of their needs. In this regard, it would be true that the single workers would have a higher probability of joining the scheme. In the works of Holzmann *et al.* (2001) and Sane and Thomas (2013) however, married workers have a higher willingness to voluntarily join informal pension scheme than the single workers. As expected, the estimated effect of education on the probability of joining the scheme was positive. This means that workers with higher levels of education had higher probabilities of contributing to the scheme than those with little or no education. Education is expected to broaden the people's knowledge and understanding of the pension scheme. In general terms, the educated workers though in the informal sector are better informed of developmental policies and also in better placed in terms of financial management. This could be the reason for this important finding. The responsibility now lies on the appropriate stakeholders to provide educational opportunities to these workers. Perhaps, this would yield possible results in the long term where compulsory primary education is enforced and regulated. This confirms Sane and Thomas (2013) and Castel (2006) work where illiterate workers were found to have a lower probability to participate in voluntary pension system. However in Collins-Sowah *et al.* (2013), education have no significance influence on willingness to participate in micro pension schemes in Ghana. The finding also revealed that workers with higher number of dependents have a higher probability of joining or contributing to the scheme than those with lesser dependents. The plausibility is that these workers with higher dependents take the pain decision to join the scheme although they have to spend much money on these many people. Thus in events that they do not take this decision, the possibility would be that they would spend all their monies on these dependents and have nothing for the future. A justification of proper management decision. In other words, people with lesser dependents may have been saving their monies in the banks. It was no doubt that the marginal effect of income was positive. Thus, workers with higher incomes have higher probabilities of contributing to the scheme than those with lower incomes. Usually, it is when the income level of workers is able to cater for minimum standard of living that he/she would think of savings; and here, contributing to the scheme.

**Table 1: Determinants of workers willingness to contribute to the pension scheme**

| Variable | Marginal effect | Std. error | Z-Value | P-Value |
|---|---|---|---|---|
| Age | 0.1737* | 0.0944 | 1.84 | 0.066 |
| Age square | -0.0022* | 0.0012 | -1.9 | 0.058 |
| Sex | -0.1798 | 0.2628 | -0.68 | 0.494 |
| Marital status | -0.7575** | 0.3092 | -2.45 | 0.014 |
| Education | 0.0367** | 0.0002 | 2.19 | 0.028 |

| | | | | |
|---|---|---|---|---|
| Household position | -0.1106 | 0.3065 | -0.36 | 0.718 |
| Experience | -0.0251 | 0.028 | -0.89 | 0.371 |
| Dependents | 0.2346* | 0.1319 | 1.78 | 0.075 |
| Income | 0.0007*** | 0.0002 | 2.89 | 0.004 |
| Chi square | 51.42*** | | | 0.000 |

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

### 4.5. Reasons for non-contribution by some respondents

It would be completely wrong to override the decision of non-contribution by some of the workers. This is because, every individual have his/her judgment of a decision. Therefore there are some reasons for the non-contribution decision by these workers as well. The following are some of the reasons why some of the workers in the informal sector did not contribute to the pension scheme:

1. Low income. The respondents noted that they current income levels are too low for them to deduct any contribution from it. They believe that their current incomes are not even enough for a decent living and see no need to worry about the future whiles they do not have enough to feed on today. This justified the estimated positive effect of income on joining the scheme.
2. Non-awareness. Some of the respondents noted that they were not even aware of the existence of pension scheme for the informal sector workers; hence, they did not contribute to the scheme.
3. Non-salary worker/Not on government payroll. In the case of some of the respondents, they believe that SSNIT contribution is explicitly for the salary workers or workers in the governmental sectors who receives their salaries from controller. And ones they fall out of this group, they don't see the possibility in they also contributing pension scheme.
4. Others simply retorted that there is no time for them. It was also noted that the informal sector workers had no or less time to go to the office in order to make their contributions.

### 4.6. Determinants of monthly contribution by the informal sector workers

After identifying the factors that influenced the workers decision into the pension scheme contribution, it was important also to find out the factors responsible for the amount contributed by the workers. This is shown in the table 2. From the result, education, artisanry, trading and number of dependents significantly determines the amount of monthly contribution made by a worker. However it is important to note that all these variables had a positive effect on monthly contribution. With education, people are better placed in better and higher income generating occupations. Education is noted for developing the human capacity and therefore with improved human capacity, the gains associated are likely to be high as well. This could be the reason for the estimated positive effect of education on monthly contribution. It is important to note that education also had a positive impact on the willingness of contributing to the scheme. This overall effect of education justified its role in terms of working/employment and income. In the case of the number of dependents, as these numbers increase, the workers monthly contribution also increases. This is contrary to the research's a priori expectation that with higher number of dependents, people savings capacity begins to decrease, hence a lower monthly contribution. Nevertheless, this group of workers was found to have a greater willingness to join the scheme (table 1). The positive significance of trading and artisanry suggests that both traders and artisans contribute higher than the farmers. This is true as these workers are able to get somehow regular income than the farmers whose income is highly seasonal if not yearly. Farmers must therefore be retargeted in terms of policy to enhance their contributions as well. However, the non-significance of lambda in the model means that the problem of selectivity bias is neglect able in the data set.

**Table 2: Determinants of monthly pension contribution**

| Variable | Marginal effect | Std. error | Z-Value | P-Value |
|---|---|---|---|---|
| Education | 2.329*** | 0.693 | 3.36 | 0.001 |
| Experience | -0.257 | 0.788 | -0.33 | 0.744 |

| | | | |
|---|---|---|---|
| Dependents | 12.87*** | 3.125 | 4.12 | 0.000 |
| Artinsanry | 49.567*** | 13.871 | 3.57 | 0.000 |
| Trading | 25.479* | 15.201 | 1.68 | 0.094 |
| Income | -0.007 | 0.788 | -0.33 | 0.744 |
| Lambda | -9.629 | 12.902 | | |

**Note:** *** and * indicates significance at 1% and 10% respectively

### 4.7. Benefits associated with informal pension schemes

The workers mentioned some benefits associated with the informal pension scheme. However, these were not different from those benefits as one would associate with the formal pension scheme. In any case, the objectives of these schemes are the same. These benefits are the more reasons why the informal sector workers would prefer to join the scheme. The benefits include;

1. Secured future. In the view of the workers, there is a secured future for anyone who contributes to the scheme. They believed that with the scheme, the frustrations associated with old age and retirement are at least minimized if not completely eradicated.
2. Get money for family up-keep at old age. Thus, it is they hope that in their future days where they can no longer do any economic activity, their retirement benefits from the scheme should be able to cater for the cash needs.
3. Enjoy retirement periods. If for nothing at all, people should have a sound mind and able to live happily after several years of hard work at their active ages. It is often observed that at old, people are still seen struggling to make money for their daily. People at old age (retirement) needs a lot of time to rest. The respondents noted that with a constant flow of income even in retirement, they are able to enjoy these retirement periods.

### 4.8. Constraints to informal sector pension contribution

Although there are several benefits associated with the scheme, there are also several challenges or constraints. The respondents noted that these are the hindering factors why some people do not join the scheme. Among these are (1) Difficulty in access to contribution. One frustrating outcome of contributing pension scheme is how difficult it is to access retirement benefits. In their view, it takes a lot of stress and times to get retirement benefits. The important thing is that with this bad experience, other people are not likely to join the scheme or even those in the scheme are more likely to withdraw their contribution. (2) Difficulty in access to the office. The office of the informal sector pension scheme although located at the center of the capital, the respondents noted that it is difficult for them to get access to the office. This has to simply do with the fact that the self-commitment to the scheme is low and people do not take it as part of their responsibility. Perhaps, they would prefer that the contributions are collected at either their homes or work places. (3) Low confidence on the scheme. People do not or are beginning to lose confidence on the scheme. This might be attributed to past experience of some relatives. (4) Low salary/Irregular flow of income. The respondents noted that the flow of their income is not regular and therefore makes it difficult to constantly contribute the monthly dues. (5) Finally, others mentioned low knowledge of the scheme as a major challenge. In their view, there is little awareness creation on the scheme. Thus people do not actually know much on the conditions, terms and benefits of the scheme. All they know is that they can get money at retirement age. This does not auger well for the sustenance of the scheme and therefore needs a redress.

## 5. CONCLUSION

The informal pension scheme seeks to ensure that people at their old age do not go into frustrations due to poverty. In this study, the scheme and its benefits are not only known by the workers but their willing to join the scheme is also high. Nevertheless, awareness creation on the scheme needs to be intensified. Specifically, the study concludes that the elderly, the single, the highly educated, highly depended upon and higher income workers have a higher probability of contributing to the informal pension scheme. Similarly, traders, artisans, highly educated and highly depended upon workers contribute higher amounts monthly. It is important that informal sector workers in general are encouraged to remain loyal or join pension schemes. Also, the

scheme may have to take pragmatic measures to restore the confidence of contributors. It is important that policy makers take early precautions on how to manage and improve informal pension schemes since the workers have direct control over their incomes. However, while these efforts are put in place, the workers should also be encouraged not to withdraw their membership in the scheme but rather see the scheme as a policy in their own interest.

## References

Castel, P. (2006). *Voluntary defined benefit pension system willingness to participate the case of Vietnam*. (pp.1-29). Available at SSRN: *http://ssrn.com/abstract=1379607*. *or http://dx.doi.org/10.2139/ssrn.1379607*.

Collins-Sowah, P. A., Kuwornu, J. K. M., & Tsegai, D. (2013). Willingness to participate in micro pension schemes: Evidence from the informal sector in Ghana. *Journal of Economics and International Finance*, 5(1), 21-34.

Friedrich Ebert Stiftung (FES). (2011). *The informal sector in Ghana*. Editorial by Clara Osei-Boateng and Edward Ampratwum.

Gockel, A. F., & Kumado, K. (2003). *A study on social security in Ghana*. University of Ghana.

GSS (2012). *Ghana statistical service. 2010 population and housing census summary report*. May, 2012.

Heckman, J. J. (1976). The common structure of statistical models of truncations, sample selection and limited dependent variables and a simple estimator for such models. *Annals of Economic and Social Measurement,* 5, 475-492.

Heckman, J. (1974). Shadow prices, market wages, and labour supply. *Econometrica*, 42, 679-693.

Holzmann R., Packard, T., & Cuesta, J. (2001). *Extending coverage in multipillar pension Systems.* Constraints and hypotheses, Preliminary evidence, and future research agenda: In new ideas about old age security; toward sustainable pension systems in the 21st century. Eds Holzmann R, Stiglitz J. E. Fox L. James E and Orszag.

Kumado, K., & Gockel, A. (2003). *A study on social security in Ghana.* Accra: trades Union Congress. pp. 1-50.

Lewis, H. G. (1974). Comments on selectivity biases in wage comparisons. *Journal of Political Economy*, 82, 1145-1155.

Maddala, G. S. (1983). *Limited-dependent and qualitative variables in econometrics*. New York: Cambridge University Press.

Modigliani, F., & Muralidhar, A. (2004). *Rethinking pension reform*. Cambridge University Press.

National Pensions Act (2008). *The parliament of Ghana*, Act 766.

Rajasekhar, D., Sreedhar, N., Reddy, B., & Manjula (2009). *A report on delivery of social security and pension benefits in Karnataka*. Directorate of social security and pensions, department of revenue, government of Karnataka.

Sane, R., & Thomas, S. (2013). *In search of inclusion: Informal sector participation in a voluntary, defined contribution pension system*. Indira Gandhi institute of development research, Mumbai. *http://www.igidr.ac.in/pdf/publication/WP-2013-022.pdf*.

Schwarz, A. (2003). *Old age security and social pension*. Geneva, World Bank.

SSNIT (2011). *Social security and national insurance trust of Ghana: annual report*. Accra, Ghana: Social security and national insurance trust, Ghana.

UNDP (2012). *2010 millennium development goals report*. UNDP, Ghana and NDPC/GOG 2012.

USAID (2012). *USAD/Ghana country development cooperation strategy*. 2013-2017.