Retirement Savings by the Young Working Adults: A Global Perspective

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We draw on the latest edition of the Global Findex Database (2017) to investigate the responses of 17,717 respondents from 143 countries to gain a perspective on the retirement savings by the young working adults aged between 18 to 30 years using the multilevel binary logistic regression. The evidence brings into light the gender gap in retirement savings and the positive influence of education, household income and the economic development on retirement savings. The findings add to the debate on pension reforms and social security and motivate informed policy initiatives to address the low level of retirement savings.

Keywords: Young-Retirement savings-Savings for old age-Pension-Social security

Introduction

The fact that public pension systems put governments under financial stress in the form of large budget deficits and debts, and demographic compulsions (lower mortality age and ageing populations) have motivated governments around the world to increasingly shift the onus on individuals to save in order sustain themselves after the working years of their life (Joo & Grable, 2005; Teusta, 2016). This has led to the increasing shift to private pension systems which are linked with the financial markets (Holzman, 2013). However, private pension systems are based on the accumulation of funds and susceptible to market fluctuations (Lagoutte & Reimat, 2013). Thus, retirement savings by individuals assumes significance due to increased life expectancy, pension and social security reforms and an uncertain investment environment (Joo & Grable, 2005). However, there is inadequate empirical research to contribute to policy decisions as pointed out by Illiashenko (2017). The author observed that it is widely believed by academics and policymakers that individuals or households do not save adequately for retirement.

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However, there is little evidence to support or negate this widely held opinion at the global level due to the non-availability of microdata to explore the various aspects of retirement savings worldwide. Munnell *et. al.,* (2012) documented that Americans who are inadequately saving for retirement have increased from about 30 percent at the beginning of 1980's to over 50 percent at the end of 2010. Rhee and Boivie (2015) observed that 45 percent of the working-age American households have no retirement savings. The evidence in the US context for under saving points towards an impending retirement crisis in the US and invites policy initiatives to address the low level of savings. Using micro-level data of the Global Findex Data (2014), Demirguc-Kunt *et al.* (2016) observed that globally only 25 percent of the adults save for old age. The authors also investigated the differences in the savings rate based on gender, age, education, household income, marital status, place of residence (rural or urban), number of dependent children and employment status

In this context, we draw on the work of Demirguc-Kunt *et al,* (2016) to study the odds of retirement savings by individuals which coincides with saving for old age among the young working population of the world, using the latest edition of the Global Findex Data (2017), which is the world's most comprehensive database of how people save, borrow, make payments and manage risks. The dataset is a compilation of nationally representative surveys of over 1,50,000 adults aged above 15 years from 143 countries comprising 97 percent of the world population. It may be emphasized that the young have a special relevance with regard to saving for old age in the context of the life-cycle hypothesis (Modigliani, 1986). The author noted that the young will save when they are young so that they can spend when they are old and cease to work.

The study is primarily undertaken with the following objectives:

1. To gain a global perspective with regard to the retirement savings by the young working adults; and
2. To understand the influence of gender, education, household income and the level of economic development on the retirement savings by the young working adults – globally.

To this end, we examine the responses of 17,717 respondents from 143 countries form the Global Findex Data (2017) to study the retirement savings among the working adults aged between 18 to 30 years employing the multilevel binary logistic regression and examine the odds of an individual saving for retirement among the population under study. The insights from the study may be utilized by the financial planners, pension industry and the government policy makers to take evidence-based initiatives to boost

retirement savings among the young working individuals.

The rest of the paper is arranged as follows: A review of related literature in Section 2, followed by a discussion of the methodology followed and data collection in Section 3. We, then, proceed to discuss the findings of the study in Section 4 which is followed by the concluding remarks in Section 5.

2. Literature Review

The theoretical influences on the research on retirement savings can be attributed to Milton Friendman's *Permanent Income Hypothesis* and *Modigliani's Life Cycle Model* (Deaton, 2005).

Engel *et al.* (1990) identified three broad factors which influence savings for retirement, namely (i) environmental factors, (ii) individual differences and (iii) psychological needs. This is referred to as the consumer decision-making model.

Hogart (1991) observed that age, level of education, gender, income level and marital status had significant influence on saving for the future. The author found a positive influence of: (i) being older, (ii) having higher education level, (iii) being male, (iv) having higher income level, and (v) being married on saving for the future.

Devaney *et al.* (1997) observed that age, education and income level influence retirement planning among individuals.

Friedman and Scholnick (1997) identified the factors which influences retirement savings behaviour namely psychological (including cognitive, motivational and personality influences), task characteristics (complexity and past experience), social norms and financial and economic forces (such as economic environment and household income).

Joo and Grable (2005), using data from the Retirement Confidence Survey, observed that individuals with higher education levels, higher income, smaller household size and positive financial attitude tend to save for retirement. Further, the authors presented the modified Engel *et al.* (1990) framework wherein environmental influences (work and home), individual differences (demographics and socio-economic factors) and psychological influences (attitude towards risk and employer education) affect the decision-making process of individuals with regard to savings for retirement.

Catrambone (1998) observed that among females the lack of knowledge acted as a barrier to retirement planning.

Alcon (1999) observed that younger women lack knowledge about retirement saving and the older women are at a greater disadvantage with regard to retirement due to lack of information on retirement saving.

Joo and Pauwels (2002) documented the relationship of demographic, socio-economic and attitudinal factors with retirement confidence. The authors studied the factors affecting the retirement confidence of women using the 1999 Retirement Confidence Survey of the US population and observed that working *men* had higher retirement confidence compared to working women. The influence of age, education, income, risk appetite, financial education and savings behaviour was also documented.

Huberman *et al.* (2007) observed that retirement savings and retirement planning are positively related with men.

Clark *et al.* (2012) observed that women are less likely to save for retirement compared to men due to lower earnings associated with occupations in which women are primarily engaged.

Chen (2013) observed that speakers of languages which grammatically associate the future and present tend to save more and retire with more wealth.

Foster (2017) investigated the attitudes and expectations of young working individuals towards pension and the potential effects of auto enrolment on their income after retirement. The study using the finding of interviews of 30 individuals, aged between 18 and 30 years from the UK, identified the factors which affect pension contribution namely knowledge and advice, trust and myopia. Further, the study highlighted the under saving for retirement among the young.

In the absence of recent global evidence on the retirement savings by the young working adults, we make an attempt to leverage the world-wide data available in the Global Findex Database (2017) in order to gain a perspective on the retirement savings by the young working adults globally and also investigate the influence of age, education, income and psychology of the individual on the retirement savings need and decision.

Further, the influence of economic development on the individual's retirement savings behaviour is also examined. The economic influence pertains to the state of the economic development of the country, measured in terms of the level of income of the economy which reflects the ability of the state to support social security and pension programs that might potentially influence the individual's decision to save for retirement. The household income of the respondents as a socio-economic influence determines the social class or group of the individuals.

The demographic influences include gender, age and educational level of the individuals. Besides, we account for the psychological influences on the individual's decision to save for retirement by taking into account the saving behaviour of the individual. An individual may be saving but not for old age. The behaviour reflects the individual's preference for current spending over future consumption and may be associated with behavioural issues such as myopia (Thaler & Benartzi, 2004), present bias (Goda *et al.,* 2015) and self-control which stem out of the present bias (Gathergood, 2012).

3. Data and Methodology

Large-scale sociological and demographic surveys are often characterised by multilevel data structures as the surveys are conducted using multistage stratified cluster sampling. The data to be analysed in our study has a multilevel level structure as the respondents (Level 1) are clustered within the countries (Level 2). It may be pointed out that when data has a multilevel structure, the responses of the respondents within the same cluster (country) may be correlated due to the influence of a common variable or context. This means, two randomly selected respondents from a country may have responses that are more similar than the responses of two randomly selected respondents from another country even when the selected subjects are identical on observed characteristics. The failure to account for the intra-cluster correlation in single level or conventional statistical analysis may lead to biased results. This warrants the use of multilevel regression model for the purpose of the study (Goldstein, 1995; Sommet & Morselli, 2017).

In this study, we refer to the responses (binary variable with 0 or 1 as response) to the question: "In the past 12 months, have you saved for old age?". Any form of savings for old age which coincides with retirement savings may have led to a positive response.

As the outcome variable, 'Saving for old age in the past 12 months' in the study is binary, multilevel binary logistic regression is the natural choice. It allows us to simultaneously study the effect of individual-level and country-level predictors on the outcome while accounting for the non-independence of observations within countries.

The purpose of the model is to estimate the odds of an individual saving for old age while taking into consideration the dependency in the data (the fact that respondents are clustered within countries) as a function of Level 1 and Level 2 predictors used in the study. Joo and Grabble (2005) observed that the reverse information may be used to determine the characteristics of the individuals who do not save for retirement. This may be used as an input by financial planners, and counsellors to motivate those without

savings for old age to start saving, and policy makers to fix the potential targets of pension and put in place social security initiatives and measures.

In Equation 1 that follows, let Yij denote the binary response variable measured on the ith respondent within the jth cluster (Yij =1 denotes the occurrence of the event "Saving for old age", while Yij = 0 denotes the non-occurrence of the event "Saving for old age"). Further, let X1ij through Xkij denote the 'k' level 1 predictor or explanatory variables measured on this respondent (e. g. age of the respondent) and Z1j denote the Level 2 predictor on the jth cluster (i.e., economic development of the country):

$$\text{logit}(P(Y_{ij}=1)) = \alpha_0 + \alpha_1 X_{1ij} + \ldots + \alpha_k X_{kij} + \beta_1 Z_{1j} + \alpha_{0j} \ldots\ldots\ldots (1)$$

where $\alpha_{0j} \sim N(0,\tau^2)$.

We estimate two multilevel binary logistic regression models in the analysis. Model I is the intercept only or the empty model. In the Model II, we incorporate the individual level (age, educational level and household income) and country level (level of economic development of the country) characteristics in addition to the country-level random effects. The expected probabilities are estimated by the exponentiation of the regression coefficients (odd ratios). Further, we assess the clustering effects in the dataset by estimating the Intra-class correlation coefficient (ICC) using Equation 2:

$$ICC = \frac{\tau^2}{(\tau^2+3.29)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

The ICC helps us to understand if we are to proceed with the multilevel binary logistic regression or, the single level analysis would suffice. In Equation 2, τ^2 is the random intercept variance (i. e. the Level 2 variance). A higher variance denotes a large variation of the average log-odds between clusters (countries) and 3.29 is the assumed Level 1 variance (based on the standard logistic distribution). The ICC indicates the odds of an individual saving for old age explained by between-country differences. (Wu *et.al.,* 2012).

In Table 1, we present the definitions of independent and dependent variables used in the study. The binary dependent variable used is 'Saved for Old Age in past 12 months' which the respondent can answer as 0= "No" and 1= "Yes". Gender (male or female), education level (completed primary or less, secondary and completed tertiary or more) and household income quintiles (Poorest 20%, Second 20%, Middle 20% , Fourth 20% and Richest 20%) are the Level 1 predictors of the outcome variable while level of economic development of the country (low Income, lower middle income, higher middle income and high income) is the Level 2 predictor.

Table 1: Variable Definitions

Variable	Coding
Saved for old age during the past 12 months	0=No 1=Yes
Gender	1=Male, 2=Female
Education Level	1=Completed primary or more
	2=Secondary
	3=Completed tertiary or more
Household Income Quintile	1=Poorest 20%, 2=Second 20%,
	3=Middle 20%, 4=Fourth 20%,
	5=Richest 20%
Level of Economic Development	1=Low Income
	2=Lower Middle Income
	3=Higher Middle Income
	4=High Income

In Table 2, we provide the summary of the dataset used in the study. The responses of 17,717 respondents have been summarized according to gender (male or female), educational levels (completed primary or less, secondary and completed tertiary education or more); household income according to quintiles and the level of economic development of the country (low income, lower middle income, upper middle income and high income). To account for the psychological aspect for the individual, all the respondents included in the study are savers. However, a saver may or may not be saving for 'old age'.

Table 2: Distribution of Savers and Non-Savers for Old Age

Categories	Savers	Non-Savers	Total
Gender			
Male	2769 (55.1%)	6760 (53.4%)	9542
Female	2254 (44.9%)	5907 (46.6%)	8175
Educational Level			
Primary or less	840 (16.7%)	2713 (21.4%)	3553
Secondary	2795 (55.6%)	7660 (60.3%)	10455
Tertiary or more	1388 (27.7%)	2321 (18.3%)	3709

Household Income-Quintile			
Poorest 20%	544 (10.8%)	1495 (11.8%)	2039
Second 20%	679 (13.5%)	1836 (14.5%)	2515
Middle 20%	804 (16.0%)	2181 (17.2%)	2986
Fourth 20%	1110 (22.1%)	2969 (23.4%)	4079
Richest 20%	1885 (37.6%)	4214 (33.1%)	6099
Level of Economic Development			
Low Income	958 (19.1%)	3126 (24.6%)	4084
Lower Middle Income	2057 (41.0%)	5026 (39.6%)	7083
Upper Middle Income	1458 (29.0%)	3542 (27.9%)	5000
High Income	550 (10.9%)	1000 (7.9%)	1550
Total	**5023**	**12694**	**17717**

Source: Global Findex Dataset, 2017
Note: Figures in bracket indicate percentage of savers and non-savers

Among the 5,023 savers for old age, 55.1% were males and 44.9% were females. 16.7% of the savers had completed primary education or less, 55.6% had secondary education and the remaining 27.7% had completed tertiary education or more.

With regard to household income of the respondents, 10.8% of the savers belonged to the poorest 20 percent, 13.5% belonged to the second 20 percent, 16% belonged to the middle 20 percent, 22.1% belonged to the fourth 20 percent and 37.6 % belonged to the richest 20 percent.

Further, 19.1% of the savers came from low-income economies, 41% percent from lower middle-income economies, 29% from upper middle-income economies and 10.9% from high income economies.

4. Discussion of Results

We fit two multilevel binary logistic regression models as discussed in the methodology section. The estimated regression coefficients are reported in Table 3.

Table 3: Coefficient Estimates and Standard Errors for Two-Level Model of Incidence of Saving for Old Age

Model Term	Model - I (Empty Model)	Model - II (With Predictors)
Intercept	-0.95**(0.064)	-1.303**(0.168)
Gender		
Male[R]		
Female		-0.087*(0.041)
Educational Level		
Primary or Less[R]		
Secondary		-0.084 (0.061)
Tertiary or more		0.175* (0.073)
Household Income-Quintile		
Poorest 20%[R]		
Second 20%		0.088 (0.074)
Middle 20%		0.086 (0.071)
Fourth 20%		0.148* (0.068)
Richest 20%		0.378**(0.065)
Level of Economic Development		
Low Income[R]		
Lower Middle Income		0.237 (0.186)
Upper Middle Income		0.157 (0.195)
High Income		0.46* (0.238)
Variance of Random Effects	0.538**(0.072)	0.512**(0.075)

Notes:

[R] denotes reference category.

Standard errors of estimates are given within brackets.

*and**denote statistical significance at 5 % and 1 % levels respectively.

In Model I of Table 3, the intercept was -0.95 ($p<0.01$) with a standard error of 0.067. Thus, in an average country, the odds of a young working adult saving for old age is 27.9 %. The 95 percent probability interval for the country specific intercept is (-1.077 and -0.823), which means that 95% of countries will have a random intercept within the said interval. Thus, for 95 % of the countries, the country-specific odds of a young working adult saving for old age would lie in the intervals 25.4 and 30.5%. The statistically significant variance of the random effect is measured at 0.538 ($p<0.01$) and the estimated ICC using Equation 2 is 0.141, which is evidence of substantial clustering and the appropriateness of multilevel analysis (Wu *et al.,* 2012; Sommet & Morselli, 2017).

In Model II of Table 3, with individual and country characteristics, the intercept of the model was -1.303 ($p<0.01$) with a standard error of 0.168, while the estimated variance of the random effect was 0.512. Thus, in an average country, the odds of a young working individual, , saving for old age when other covariates were held constant, is 21.4%. The negative regression slope for the variable 'gender' (-0.087, $p<0.05$) signifies that the odds for saving for old age decreases for young working females compared to the young working males – after controlling for the remaining characteristics and the random effect. The odds of saving for old age, if the respondent is a female is 47.8% less relative to a male. For the variable 'Education Level', the positive and statistically significant regression slope for the education level 'Completed Tertiary or More' (0.175, $p<0.05$), signifies that the odds for saving for old age increases when the respondent completes tertiary education or more compared to a respondent with primary education or less after controlling for the remaining characteristics and the random effect. The odds of saving for old age, if the respondent has completed tertiary education or more is 65.8 percent more relative to the respondent who has completed primary education or less. The relationship between the individual's odds for saving for old age and the variable 'Household Income Quintile' was found to be significant for the income quintiles 'Fourth 20%' quintile (0.148, $p<0.05$) and 'Richest 20%' (0.378, $p<0.01$) with the 'Poorest 20%' being the reference category. It signifies that the odds for saving for old age increases for the young working individual with household income in the top two quintiles compared to the reference category after controlling for the remaining characteristics and the random effect. The odds of saving for old age are 53.7% and 59.3% higher for a young working individual with household income in the top two quintiles, compared to the reference category. Further, the relationship between the variable 'Level of Economic Development' and individual's odds for saving for old age was statistically significant for the 'High Income Economies' (0.46, $p<0.05$). Thus, the odds for savings for old age is higher for a young working individual from a 'high income' economy compared to the

reference category after controlling for the remaining characteristics and the random effect. The odds of saving for old age is 61.3 percent higher for a young working individual from a 'high income' economy compared to the reference category. The random effect is measured at 0.512 ($p<0.01$) and the estimated ICC is 0.135, which translates into a proportional reduction of 4.18% variation due to the introduction of predictors in Model II.

5. Conclusion

In this paper, we have studied some of the pertinent predictors of savings for old age, which coincides with retirement savings among the young working population using multilevel analysis, which takes into account the issue of clustering, which is otherwise ignored in traditional statistical approaches or single level analysis. Leveraging the Findex 2017 dataset, we observe that the estimated odds of saving for old age by an individual in an average economy is merely 27.9%. This evidence supports the earlier findings of Holzman (2013) who documented the low level of retirement savings in the European countries and those in the US (Munnell *et. al.,* 2012; Rhee & Boivie, 2015). The odds of saving for old age among the young working females is significantly lower compared to the males. The evidence adds to the findings of Catrambone (1998), Joo and Pauwels (2002) and Demirguc- Kunt *et al.* (2016) who have highlighted the gender gap in aspects related to retirement. Further, we observe that the odds of saving for old age are significantly higher among individuals who have completed tertiary education or more.

It is also observed that the odds of saving for old age were also significantly higher for young working individuals who belong to households with income in the Fourth (20%) and Richest (20%) quintiles respectively. The evidence is in sync with the findings of Hogart (1991) and Joo and Grable (2005) who documented higher level of education and income to exert a positive influence on retirement savings. However, the evidence in our study suggests that the positive influence of education is apparent for individuals with the highest educational levels. The higher level of education may be associated with professional and managerial occupations Individuals in professional and managerial occupations are more likely to be better prepared for retirement than other individuals with lower levels of employment as also documented in the studies by Yuh and DeVaney (1996) and Power and Hira (2004). Also, the evidence in our study suggests that the positive influence of household income is apparent on individuals from the top two income quintiles. Further, the odds of saving for old age by an individual improve significantly in the 'High Income Economies' only. With reference to the dataset, we are limited in terms of the data availability to explore further the influences of additional

factors. It may be noted that the latest edition of the Global Findex Database does not provide information on marital status, place of residence, number of dependent/s or children as in the Global Findex Database, 2014 which might potentially impact the odds of saving for retirement of individuals.

The low incidence of saving for old age among the young working population observed in our study brings into light the impending crisis worldwide with regard to sustaining the elderly after retirement. The low odds of saving for old age may be attributed to low level of financial literacy which is related to poor retirement planning and under saving as observed by Lusardi and Mitchell (2004) and behavioural issues such as present-bias (Goda *et al.,* 2015), pessimism (Perry & Morris,2005) and excessive optimism (Balasuriya *et al.,* 2014).

This calls for steps to be taken by the policy makers and the pension industry to increase the awareness among the young working individuals about the need for saving for retirement to avoid financial distress during the retired life. Initiatives to augment the financial literacy among the young working population may bring about the desired changes in the behaviour of individuals with regard to retirement savings as observed by Joo and Grable (2005), Lusardi (2009) and Hauff *et al.,* (2020). Further, the findings of our study make a case for policy initiatives such as automatic contribution to retirement funds (Chetty *et al.,* 2014), or auto-enrolment (Foster, 2017) to retirement funds.

The role of retirement plan design, rational default option of the plan and flexibility to voluntarily increase the contribution rate to the retirement plan and automatically rebalance the portfolio as envisaged by Benartzi and Thaler (2007) may also be effective to boost the current low level of retirement savings.

Our study is a humble attempt to gain a global perspective on the odds of a young working individual saving for retirement and we leverage upon the global dataset to this end. We provide global evidence on the level of retirement saving among the population of interest, which helps to gauge the severity of the impending crisis. Our work is also an attempt to invite the attention of policy makers globally to the looming crisis which needs urgent proactive initiatives. We also expect to encourage more research on the subject and gain more evidence from more localized studies, which should also take into account the relevant additional country-level or individual-level factors which may influence the decision of the individuals to save for retirement. Future research should also study the impact of the Covid-19 pandemic on the level of retirement savings of individuals in view of the fact that governments around the world have allowed partial withdrawal of retirement corpus by individuals to tide over their liquidity needs owing to the loss of jobs

and reduced incomes which are likely to add to the challenges with regard to adequate savings for the retired life of individuals.

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