

**DEFINED BENEFIT
VOLUNTARY PENSION SYSTEM
WILLINGNESS TO PARTICIPATE
THE CASE OF VIETNAM**

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The Issue

- Although policy makers around the world widely recognize that social protection programs such as disability insurance, survivor insurance and old-age pensions are welfare enhancing, social insurance coverage rates in developing countries especially when the systems are not mandatory are rather disappointingly low
- This paper explores the determinants of the informal workers' willingness to participate in a pension system in Vietnam.

The Data

- The analysis uses the results of the Survey on Voluntary Social Insurance for the Informal Sector in Vietnam (VSIIS) conducted in 2005 by ILSSA in 2005
- It is a follow up of the analysis produced by Sarah Bales P. Castel in 2005 (VSIIS, Policy implications)
- It searches to improve the analysis of the determinants of willingness to participate in particular in relation to the age of the potential participants.

The VSIIS Survey

- Research about the willingness to participate in a actuarially fair pension system
- Theoretically, a worker will be willing to participate to a pension system, if the level of well-being it can attain with the pension system's benefits is higher than the level it can attain without, by simply saving the same amount of contributions

Saving the Contributions:

A Financial Actuarial Benchmark

- Every period, the participant contributes C to a financial institution that pays the interest r on the savings
- At the end of the period T , she/he has accumulated the capital S (equat.1)
- From this capital, she/he can generate a regular monthly income B
- At the end of the period $T+1$, he/she withdraw B , the remaining amount $(S-B)$ still keep earning interest (equation 2 and 3 in the period $T+2$)
- At the end of the $T+R$, all the savings are exhausted (equation 4)

$$S_T = c_1 \cdot (1+r_2)(1+r_3)\dots(1+r_T) + c_2 \cdot (1+r_3)(1+r_4)\dots(1+r_T) + \dots + c_{T-1} \cdot (1+r_T) + c_T$$

$$S_{T+1} = S_T \cdot (1+r_{T+1}) - B$$

$$S_{T+2} = \{S_T \cdot (1+r_{T+1}) - B\} \cdot (1+r_{T+2}) - B$$

$$0 = S_T \cdot (1+r_{T+1})(1+r_{T+2})\dots(1+r_{T+R}) - B \cdot (1+r_{T+2})(1+r_{T+3})\dots(1+r_{T+R}) - \dots - B \cdot (1+r_{T+R}) - B$$

Actuarially-fair System

- The amount of capital S required to finance the regular payment of B during R periods, given the interest rate r is:

$$S_T = B \cdot \frac{1 - (1 + r)^{-R}}{r}$$

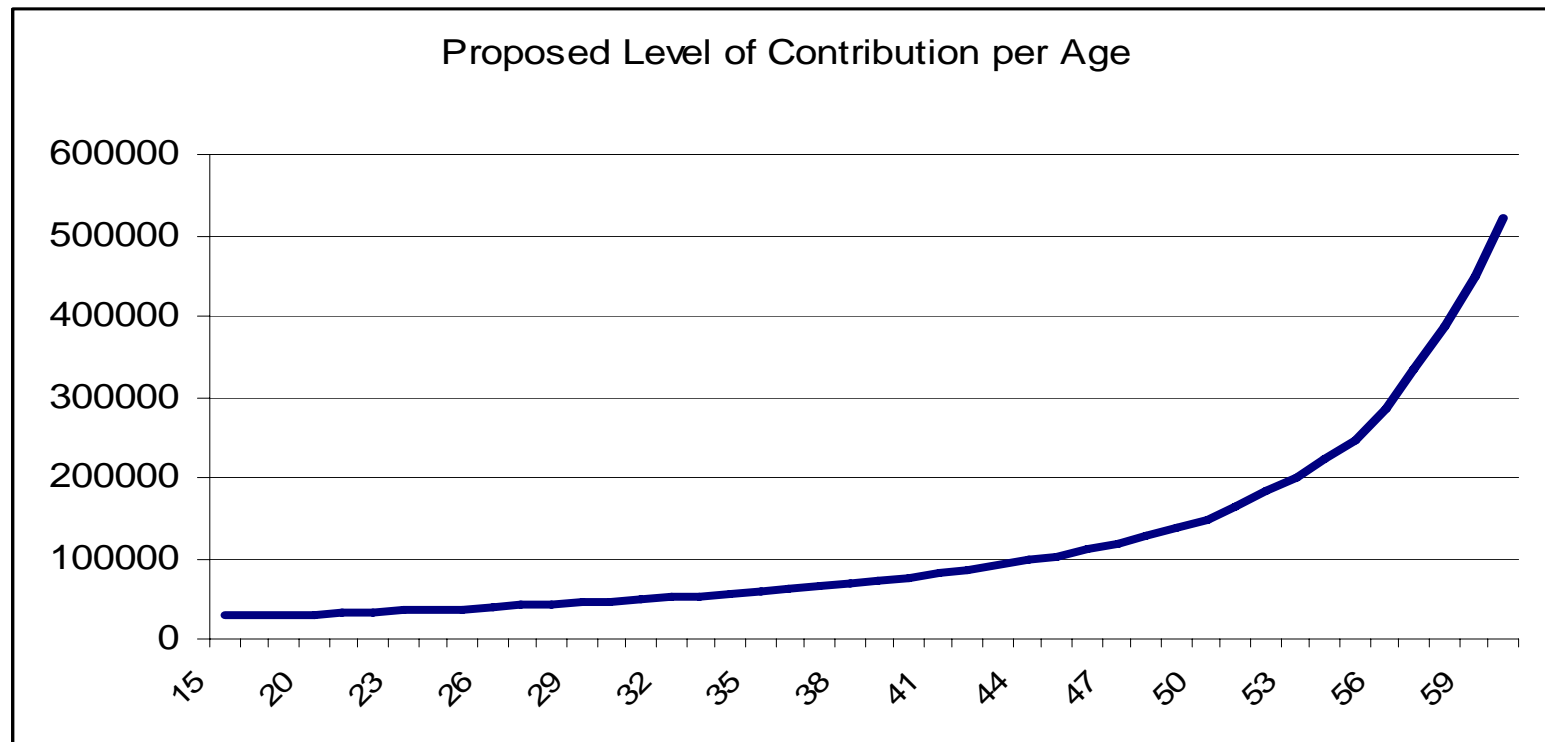
- The level of monthly contributions required to be paid during a period of length a so to accumulate the capital S at the end of the period T is:

$$c_a = \frac{S_T}{12} \frac{r}{(1 + r)^{T-a} - 1}$$

- Given a standard retirement age, the length a depends on the age of the participant when he/she decides to save or participate in the pension plan.

Contributions vary, depending on the age

- For a given level of benefit B, contributions vary depending on the age (not the income) of the participant when she/he joins the saving plan / the pension plan



VSIS Questions

1. Willingness to participate in order to receive a pension at the age of 60 of half the minimum wage or:
at age 65 for a lower level of contribution, or for a benefit of the minimum wage for a higher level of contribution
2. Willingness to participate if the level of contributions is reduced by 20%, 40% or 60%.

VIIS direct results (Sarah Bales, Paulette Castel, 2005)

	Agree	Confidence interval	Agree and report consistent savings	Confidence interval
<i>Respondents willing to participate</i>				
Total	51.5	[46.8 - 56.3]	51.0	[46.3-55.8]
<i>Ready to pay actuarially fair amount of contributions</i>				
300.000 VND at age 60	17.2	[13.9-21.2]	13.3	[10.7-16.5]
150.000 VND at age 60	15.7	[13.5-18.2]	15.6	[13.2-18.4]
150.000 VND at age 65	4.2	[3.0-5.8]	5.6	[4.2-7.3]
<i>Accept if receive some financial support</i>				
150.000 VND at age 65 (subsidized 20%)	3.8	[2.8-5.2]	4.6	[3.5-6.1]
150.000 VND at age 65 (subsidized 40%)	2.6	[1.9-3.7]	3.5	[2.7-4.5]
150.000 VND at age 65 (subsidized 60%)	8.0	[6.4-9.9]	8.4	[6.9-10.2]
<i>Respondents not willing to participate</i>				
Total	48.5	[43.7-53.2]	49.0	[44.2-53.7]
Total respondents	100.0		100.0	

The Determinants of the Willingness to Participate

- A worker will be willing to participate to a pension system, if the level of well-being it can attain with the pension system's benefits is higher than the level it can attain without, by simply saving the same amount of contributions, or by choosing other old-age income strategy like continuing working or getting the financial support of its friends and relatives.

$$W_i = G\left\{\left(\frac{b}{w_i}\right), \left(\frac{c_a}{w_i}\right), X_i, H_i, Z\right\}$$

- c_a/w_i = contribution if age a proposed in the initial question divided by household income per capita of the person i
- b/w_i = benefit divides by household income per capita
- X_i, H_i, Z_i personnel, household and commune characteristics of person i

New Estimation Strategy

- Bales & Castel 2005: logistic regression
- Equation 1: conditional (fixed-effects) logistic regression by age group
- Equation 2: maximum-likelihood ordered logit regression given the 7 possible choices:
 - The values 7, 6 and 5 are attributed to the persons who accepted to participate at actuarially fair levels of contributions: in order to receive a benefit of 300 000VND (level 7), a benefit of 150 000VND (level 6) or, a benefit of 150 000VND but at the age of 65 instead of 60 (level 5).
 - The values 4, 3 and 2 are attributed to the persons who accepted to participate at lower than actuarially fair levels of contributions. In order to receive a benefit of 150 000VND at the age of 65 these persons required to pay contributions 20% lower (level 4), 40% lower (level 3), 60% lower (level 2) than the level initially proposed in level 5.
 - The level 1 is attributed to the persons who refused all the options.

The determinants of willingness to participate

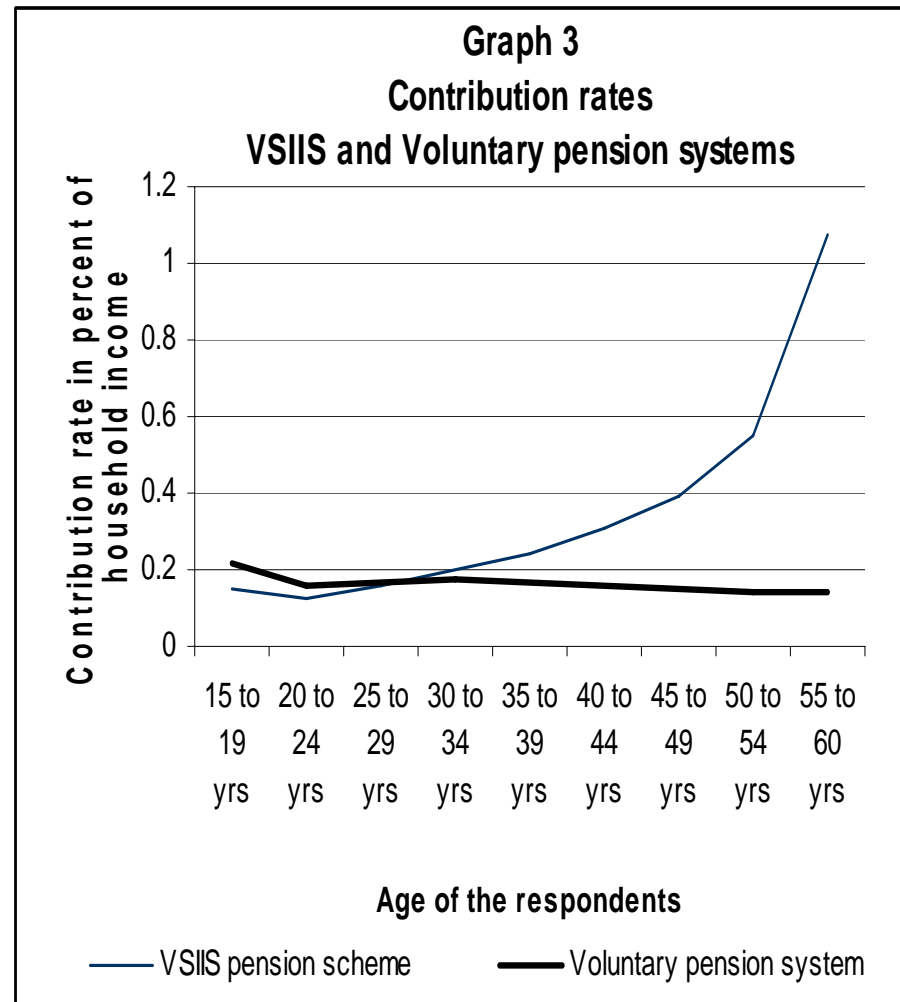
- Workers in sales, services and construction sectors do participate more likely. Farmers also but not if they have seasonal income.
- Workers in registered activities are significantly less inclined (with business license, working at a local market, paying taxes, with a bank account or, subject to health and food safety inspection).
- Higher willingness is associated to higher wealth. Workers with stable monthly income in relation to consumption needs, higher saving and higher tax rates do participate more likely. Being a registered poor or living in a household with a high dependency ratio has a negative impact.
- Rural households are more inclined to participate.
- Persons expecting child support, planning to use savings in their old-age or that are very patient (accept delayed payment in a “virtual” lottery whatever the prize) do participate more likely.
- Persons that have access to borrowing participate less likely.
- As expected: participation increases with replacement rate and decreases with contribution rate.
- Finally having a knowledge of social insurance or living in a commune with higher social insurance coverage increases willingness

Predict participation to Vietnam voluntary pension scheme

- Simulating Vietnam voluntary pension scheme characteristics
 - All participants are assumed to be required to contribute the minimum contribution = 15% of the minimum wage of 2005
 - Pension benefit varies depending on the length of the contribution period: the remaining period between 2005 and retirement age. It varies according to the age of the respondent
 - Lump sum benefits paid to people with less than 20 years of contributions are transformed into monthly payment (based on actuarial calculations).

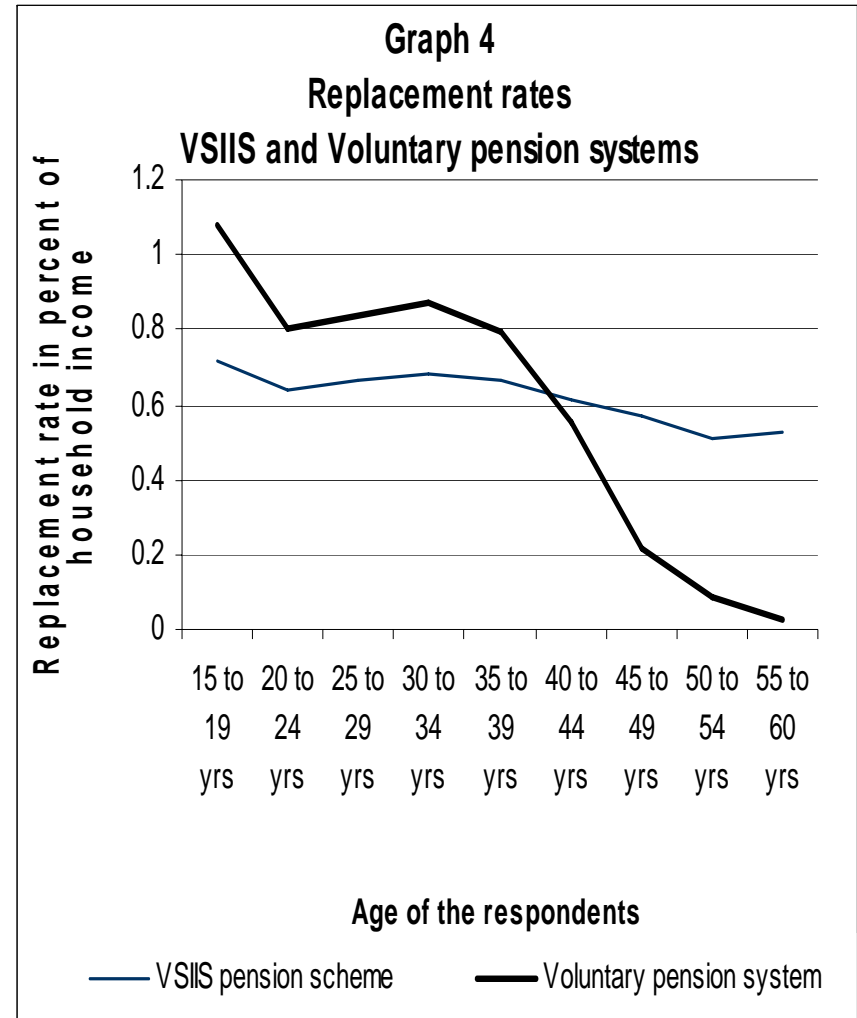
Vietnam voluntary pension scheme vs. VSIS pension scheme (1)

- Contribution to household income per capita
 - VSIS:
 - increases with age
 - VN voluntary:
 - about flat,
 - much lower than in VSIS
- Because average household's income per capita very close to minimum wage



Vietnam voluntary pension scheme vs. VSIS pension scheme (2)

- Benefit to household income per capita
 - VSIS:
 - slightly decreases with age
 - VN voluntary:
 - sharply falls with age
- Because lump sum benefits generate particularly low monthly income



Prediction Methodology

- Predict the probability of falling into one of the seven categories of equation 2 when VSIIS contribution and benefits are replaced by VN voluntary system minimum contribution and benefits
- A respondent will likely participate in the VN voluntary system if the sum of his/her corresponding probabilities of choosing the levels 5,6, and 7 plus the error term is above than 0.5

Predicted potential participation

- 36.6% of the respondents choose VIIS' options 5,6 or 7 (that is at the level of contribution proposed in the first question)
- 48.8% of the respondents would likely choose to participate to the VN

Age group	Participation rate
15 to 19 yrs	60.6
20 to 24 yrs	87.7
25 to 29 yrs	86.3
30 to 34 yrs	83.9
35 to 39 yrs	72.2
40 to 44 yrs	41.5
45 to 49 yrs	8.1
50 to 54 yrs	0.4
55 to 59 yrs (men only)	0.2
Total	48.8

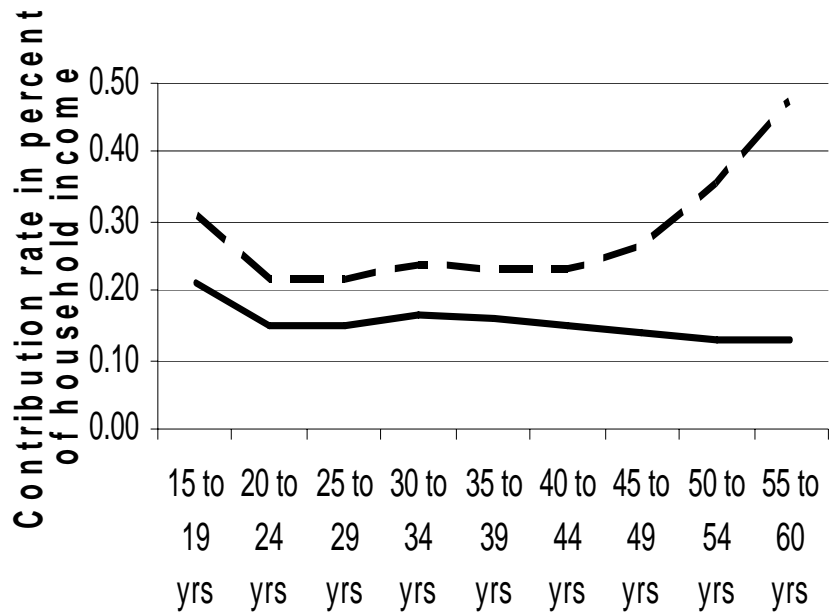
Predicted Participation: Policy Variants

- Increase of minimum contribution to 22% of minimum wage
- Possibility to “buy years” of contributions: respondents (men above 45 years, women above 40 years) are required to pay higher contributions so that at age 60 or 55 they have accumulated like 20 years of minimum contributions and are entitled to a pension income

Impact on Contribution and Benefit

Graph 3a

**Contribution rates
Voluntary pension systems**

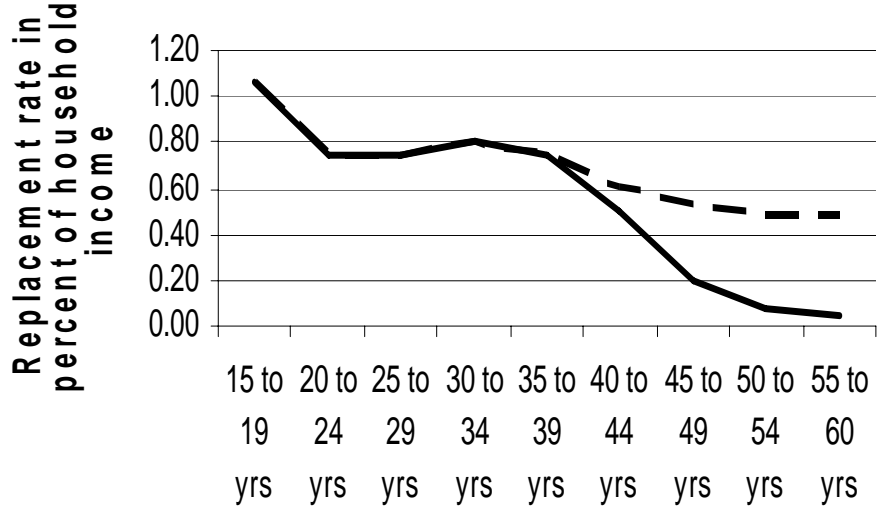


Age of the respondents

— Voluntary pension system - - - older cohorts "buy years"

Graph 4a

**Replacement rates
Voluntary pension systems**



Age of the respondents

— Voluntary pension system - - - older cohorts obtain pensions

Results

	Minimum contribution at 15 % of minimum wage		Minimum contribution at 22% of minimum wage	
	Social Security Law	Variant 1 “buying years” for pension	Variant 2 older cohorts receive lump sum	Variant 3 “buying years” for pension
15 to 19 years	60.6		53.2	
20 to 24 years	87.7		84.4	
25 to 29 years	86.3		84.9	
30 to 34 years	83.9		81.1	
35 to 39 years	72.2		69.0	
40 to 44 years	41.5	52.1	38.2	48.2
45 to 49 years	8.1	49.3	7.7	45.1
50 to 54 years	0.4	37.4	0.4	32.8
55 to 60 years (only men)	0.2	20.4	0.2	19.0
Total	48.8	62.7	46.7	59.4

Policy Implications

- Most of the workers of the informal sector can afford participate into the VN voluntary pension system
- **BUT:** the system does help current middle age workers save towards meaningful pension income at retirement
- The system will have a possible impact on elderly welfare *only in 20 years* maybe more:
 - Only in 20 years, the system will pay monthly pension benefit
 - Given that it will take time to implement the system and inform the public about its existence, it is likely that the system will pay its first monthly pension benefit in more than 20 years.
- Meanwhile the new system will appear to be *inefficient*:
 - It will cover only a small share of the workers of the informal sector
 - It will provide rather low benefits to its participants that reach retirement age
- The perception that the system fails in achieving its objective will likely discourage the willingness to participate of the younger generations. In the long-term there are important risks are that the system will not achieve the potential coverage of 46.7% this study predicts.