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Determinants of Labor Force Participation of Older People in Vietnam

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Abstract

As the proportion of the older population (those aged 60 and over) keeps increasing quickly in Vietnam, issues related to older individuals' labor market behavior have drawn a great deal of public attention. This paper aims to identify the determinants of the Vietnamese older people's decision to be active in the labor force. We used data from the Vietnam Aging Survey (VNAS) in 2011 - the first-ever nationally representative survey on older people - which comprised 2,789 respondents. We employed probit models and other statistical methods in order to ensure the validity of the results. The paper demonstrated that various individual factors (such as age and health status) and household-related factors (such as area of living) significantly contributed to older people's decision about participating in the labor force. More interestingly, the effects of the above factors were statistically and significantly different for males and females and those living in urban and rural areas. To reach 'active ageing' in terms of work and income security, Vietnam should have some immediate and long-term solutions so to encourage the participation of older people in the labor force and improve their health and living conditions.

Keywords: Ageing; gender; labor force participation; Vietnam.

1. Introduction

According to the United Nations Population Fund and HelpAge International (UNFPA and HAI, 2012), the world in the 21st century is faced with dramatic population ageing, which is a demographic phenomenon that no longer can be ignored. This ageing is caused by a decline in fertility rates and an increase in life expectancy. Life expectancy at birth is 78 years and 68 years in developed countries and in developing regions in 2010-2015, respectively. Life expectancy at birth is even expected to be 83 years in developed regions and 74 years in developing regions in the mid-21st century. In 2012, about 11.5 percent of the world population (or 810 million people) was at an age of 60 or over. As projected, the number will have reached 1 billion in less than 10 years and be more than doubled by 2050. In the past decade, 178 million people – nearly equal to the whole population of the world's sixth most populous country, i.e., Pakistan – were added to the cohort of older people.

Increasing life expectancy is surely evidence of achievements in health care, education and the economy. However, ageing brings each individual, family and especially each country, social, economic and cultural opportunities and challenges at the same time. Although older people currently account for a larger part in the population of developed countries, the pace of population ageing is more rapid in developing ones. Numbers of aged people are developing fastest in developing countries, including those with a large population of young people. Among the 15 countries with more than 10 million older people at present, seven are developing countries (UNFPA and HAI, 2012). For those developing countries which have less time to adjust to the trend while their economies are at much lower levels, the challenges of a growing population of older people will probably be greater than ever.

Many governments are much concerned about the ageing workforce resulting in labor shortages and huge pension systems in the near future. UNFPA and HAI (2012) showed that 47 percent of older men and 23.8 percent of older women participated in the global labor force. Poor working conditions, ill health, low job satisfaction, pension schemes, and negative perceptions of older workers and the ageing population are believed to be reasons explaining the gradual decline in the rate of older workers participating in the global workforce. It is observed that it is in the informal sector, in which there is an absence of job security, worker benefits or social protection that the majority of older people in developing countries participate. Compared with other regions all over the world, older people in the poorest countries of Africa have the highest labor force participation rate, followed by their counterparts in Asia and Latin America.

In Vietnam, there has been a sharp increase in the older population because of declining fertility and mortality rates and increases in life expectancy. UNFPA (2011) showed that during the period 1979-2009, the total population of Vietnam increased by 1.6 times, the child population decreased by half, but the older population rose by 2.12 times. The annual population survey by the General Statistics Office (GSO) indicated that Vietnam has entered an ageing phase since 2011. It will take only 20 years for Vietnam to transit from an 'ageing' to an

'aged' phase, compared to 22 years for Thailand and 26 years for Japan - the two countries having been considered as the fastest ageing in the region (UNFPA, 2011). In contrast, however, various reports demonstrate a reduction in the participation of older people in the labor force over time and this especially corresponds with their ageing progress. Data from the Vietnam Aging Survey (VNAS) in 2011 showed that income earned from workforce participation was of great significance in covering older people's daily expenses, and older people made a substantial contribution to their families' income: 50 percent of those aged 60-69, almost 34 percent of those aged 70-79, and more than 33 percent of those aged 80 and above said that they still contributed considerably to their households' total income. Thus, encouraging older people to stay in the labor force is a really effective way to enhance the living standard and material life of older people's as well as that of their households.

According to the World Health Organization (WHO, 2002), older people could be better off and their health might be maintained through active ageing. This is the process of allowing aged individuals to continue to participate in social, economic, cultural, spiritual and civic affairs, including the labor force, while they are provided with adequate protection, security, and care. During the process, older people can maintain their contribution to their families, communities, and the country as a whole. Obviously, there are good economic reasons for enacting policies and programs that promote active ageing in terms of increased participation and reduced costs in care. Understanding older workers and the working trend of older people in Vietnam is a key to effective socio-economic policies.

As proved above, the world's workforce is facing a megatrend of ageing which is likely to lead to labor shortages in developing as well as developed countries. Vietnam is not an exception. Therefore, it is significant to study factors influencing labor force participation decisions of older people in Vietnam. Based on knowledge of this, the government can figure out solutions to increase the workforce participation of older workers and to discourage their early retirement. However, not much effort has been put into research about the wide range of determinants of Vietnamese older people taking part in the workforce. This paper aims at analyzing labor force participation trends of Vietnamese older people and examining the significance of individual and household characteristics in their probability of participating in the workforce, with regard to their sex and living areas; and then based on the results, some policy implications and recommendations for the Vietnamese government to maintain a high labor force participation rate among older people, are discussed.

The paper is organized in four sections, including this Introduction. In the next section, we will provide a review of studies about working status of older people in Vietnam and other countries. In section 3, the paper will describe the data source - the Vietnam Aging Survey (VNAS) in 2011 - as well as model specification and variables. The findings and analysis will be presented in section 4, while section 5 will recommend measures to attract more older people into the labor force, so as to pursue active ageing policies.

2. Literature review

Blöndal and Scarpetta (1999) direct their study into factors determining retirement decisions made by older people in OECD countries, especially the negative effect of social security systems. The researchers utilize pooled cross-country time-series regressions and find that the difference in the labor force participation rates of older males across countries and time is the result of financial disincentives to work (pension systems and income-support systems) plus degraded labor market conditions. The researchers prove that a 10-percentage point increase in unemployment benefits leads to a decline of 1.5-2 percentage points in the participation rate. Furthermore, if there is a 10-percentage point increase in the relative pension accrual rate, there will be a rise of 1.3-2.5 percentage points in participation rates, other things being equal. With regard to the labor market, the empirical results show that a drop of 0.6 - 0.9 percentage points in the older workers' participation rate may result from a one-percentage point increase in the unemployment rate. It is also suggested that demographic changes with more people entering a working age have created greater pressure for early withdrawal from the labor force among older male workers.

Adhikari et al. (2011) employ univariate, bivariate, and multivariate analyses to study the data of the 2007 Survey of Older Persons in Thailand to evaluate the significance of the factors affecting the labor force participation of older people. It is proved that respondents who are female, older, divorced/widowed, living with their children, those whose family income is relatively low, and work in the state sectors have a lower probability of workforce participation than their counterparts do. Similarly, older people with great difficulties in daily life, chronic diseases and poor self-assessed health are less likely to be involved in the labor force compared to their counterparts. In contrast, living in urban areas, being the head of the household, or being in debt all increase the likelihood of older people remaining in the workforce. In addition, the researchers offer a recommendation that improvement of older people's health condition is needed to encourage their employment, solve labor shortage issues and then enhance the economic condition of Thailand.

Davey (2008) does the job of a compiler and a commentator when he reviews literature on a range of personal and contextual factors deciding older people's workforce participation and exit, with special regard to New Zealand related sources. He ranks health status first and considers it as a dominant factor after citing the persuasive rate of retired people's opinions in the Health, Work and Retirement Study and the EEO Trust's Work and Age survey. Many, especially female, older people indicate that they will continue to work if their health condition allows them after the age of 65. Another crucial factor is income. People with more income will have greater choices of whether to continue working and when to exit from the labor force. Moreover, work related factors like good relationships between older workers and their employers, feeling being valued by bosses and co-workers, or having a sense of control, etc. also have influence on older people's strong likelihood of getting involved in the labor force. Another contextual factor explaining older people's continuing to work is

policy change, which allows people to work till 65 instead of 60 as earlier. However, having a partner who is retired, wanting to spend more time with family, pursuing hobbies, caring for grandchildren are pull factors attracting older workers to retire. Fewer employment opportunities available for older workers also force workers of advanced age to withdraw from the workforce. The findings of the qualitative interviews following up on the Study of Health, Work and Retirement reaffirm the above conclusions.

Chiu and Chen (2013) attempt to identify the determinants of older married men's labor force participation in Taiwan by employing the data from the Manpower Survey and Manpower Utilization Survey from 1988 to 2008. They prove that the regional unemployment rate has a negative impact on older married men's likelihood of participation, causing at least a 3.5 percentage point decrease. In contrast, the involvement of wives contributes to a one-percentage point decline in the propensity to exit from the labor force of their husbands.

Using data from the Current Population Survey Annual Social and Economic supplements of 1995, 2000, 2005 and 2009, Shattuck (2010) produces a brief of labor force participation among Americans aged 60 and above with gender, education level, residential areas and marital status taken into account. The percentage of older male workers was 17 and 22 in 1995 and 2009 respectively, while that for females was less (9 in 1995 and 13 in 2009). Different from previously mentioned researches, this brief provides the fact that there is not much differentiation between the labor force participation rate of older workers in rural areas and those in urban or suburban areas. Another key finding is that workers having university degrees, men, and divorced women living in urban areas are more likely to stay in the workforce than before. However, the group of females with university degrees shows the fastest increase, in working at higher ages, of 8 percent in the period 1995-2009. Although older Americans work longer, the major proportion do not have full-time jobs. But it is noticeable that 48 percent of working men and 37 percent of working women aged 65 and over are being involved in full-time and year-round employment in 2008, which shows a growth compared with 1994. Rural workers are less likely to participate in full-time and year-round jobs than their counterparts in urban areas.

Using a logit model to analyze the demographic and socio-economic determinants of elderly people's labor force participation rate in Penang, Ling and Fernandez (2010) find that gender, high monthly expenses, previous employment status of the individual (self-employed/ employee), and spouse's labor force participation status (working/ not working), have a considerable positive relationship with the labor force participation rate of older people. The human capital variables, i.e. education and health, race, marital status, number of children, previous employment sector (private/state sector) also have a positive influence on older workers' participation rates, but is statistically insignificant. The factors which have a significant negative relationship with workforce participation of the elderly are age, spouse's income, financial security and low monthly expenses.

With a focus on the rural area, Pang et al.

(2004) seek to study the propensity of the near elderly and elderly in China to work in the formal and informal sectors and to understand factors facilitating rural elderly people's working decisions. It could be said that there is no definition of retirement in rural China, as only a tiny proportion of people aged over 60 do not work. Most of them work in the formal sector and those stopping work but who are healthy enough, still work in the informal sector. The researchers found that pension systems do not work in explaining the working behavior of the elderly in rural China, but their severe sickness and bad health status are the main determinants of their labor force withdrawal.

Similar to Pang et al. (2004), being aware of the decisive role of physical condition in the older cohort's work force withdrawal, a number of researchers have observed subjects in various areas and exercised diverse econometric methods to present their arguments. Mete and Schultz (2002) use the data from three Surveys of Health and Living Status of the Middle Aged and Older people in Taiwan in 1989, 1993 and 1996. The positive influence of health on working decisions of both males and females are first examined through three indicators of health status, self-evaluation health, and self-reported specific health problems. Declining health is associated with reduced participation in the labor force for both genders. On the contrary, good health means an abundant labor supply and delay of retirement of those aged 60 and above. Then instruments including parent longevity, birthplace and childhood conditions which are expected to affect health status and labor force participation are employed to identify the endogenous effects of health status on current labor force participation in either part-time or full-time work.

Kalwij and Vermeulen (2005) reaffirm the importance of health in labor force participation decisions made by European individuals aged 50-64. Employing the data from the Survey of Health, Ageing and Retirement covering 11 European countries, their empirical analysis reaches a new conclusion that different health indicators play their own roles in shaping the aged's working behavior. The researchers show that self-assessed health which has been widely used as an explanatory variable in participation models is subjective and potentially endogenous. In their study, Kalwij and Vermeulen examine the value added of objective health related variables in relation to potentially endogenous self-reported health status. For men, the research results demonstrate that health is multi-dimensional in six countries. Then, some health related variables are taken into account so that the issue of how health and employment are associated can be tackled.

Attempting to address the same question for older people, but in India, Pandey (2009) places his effort into a recent paper. Taking care of possible endogeneity between health and labor force participation and measurement error, he uses both subjective and objective measures of health. Health has a significant and positive effect on labor force participation of the aged, is found by utilizing the full information maximum likelihood (FIML) method and comparing estimation results with alternative two-stage methods. For aged women, participation rate as well as health status are lower in comparison with men. Pandey also finds a two-way causation running between health and labor

force participation among Indian older people. In his opinion, to solve the foreseen shortage of labor supply, it is vital to invest in the health-care system to better older people's health and then encourage labor force participation.

For Vietnam, there have been few studies on older people's work and employment. Knodel and Truong (2002) employ data of the Population and Housing Census 1999 to explore numerous characteristics of the elderly with regard to their living area and gender. According to them, there are substantial contrasts between rural and urban living respondents. Rural elderly are obviously disadvantaged compared with their urban counterparts in terms of educational attainment, housing quality and access to mass media. More noticeably, the percentage of rural elderly remaining active in the workforce is much higher than that of urban elderly dwellers. The result that females are less advantaged in only limited dimensions in comparison with males is quite different from previous researches. Women tend to have a lower formal education attainment and literacy, but have more probability to be widowed than men of the same age. In addition, while older women are less likely to be economically active than men, they are more likely to be active in housekeeping or related work.

Bui et al. (1999) use the datasets from 1996 Survey of Elderly in the Red River Delta and 1997 Survey of Elderly in Ho Chi Minh City and Environs to discover how the elderly's social welfare changed during the economic transitional period. In the past, the government used to be the sole provider of welfare for older people. But the report emphasizes that both work and family play a critical role in contributing to the well-being of Vietnamese older people in recent years. These sources are even much more extensive and important than state assistance. Many older people keep working till after their 60s and 70s. Furthermore, their adult children who are co-residing with them, as well as who are not living in the same household, provide both financial and material support for their old parents.

Friedman et al. (2001) investigate patterns of working and withdrawal from the workforce of Vietnamese older people based on two recent surveys in the North and the South of Vietnam – a developing country and a transition economy in the period 1996-1997. Their results show that age and health status are the most important among the factors determining respondents' age of stopping work. Urban or rural location and employment sectors are also significant, which is consistent with some neighboring countries with similar economic conditions like Thailand and the Philippines. In their paper, rural living location is proved to positively and significantly affect the elderly being active in the workforce, whereas the coefficient for females has an insignificant negative sign. Furthermore, a large outflow from the state sector can be explained by the contraction of this sector caused by the transition from a command economy to more market-oriented, the nature of work and a fixed age of retirement.

Evans and Harkness (2008) mainly discuss social protection which is unequally transferred to the elderly in Vietnam. Those who are employed in the formal sector, state employees, better educated, and located in the urban area, benefit more from state transfers. However, those most likely to be poor, or ethnic

minorities, are least likely to be state support receivers. Instead, their own economic activity and benefits from co-residing with their married children and informal transfers from their family members are their main sources of day-to-day provision. At the same time, the two researchers make two contradictory findings. First, the average income of households with elderly is relatively higher than those without elderly members. Second, if there is an older member in the household, the risk of poverty is 4-percent higher.

Understanding about socio-economic and demographic factors influencing labor force participation and withdrawal decisions by older people in Vietnam is a key to stimulate the labor force engagement of this group in the population, reduce public expenditure on retirement pensions, and enhance economic growth. There have been several researches considering the differences among the elderly workers in terms of their gender and living area. To the best of our knowledge, however, no research studies totally devote to the factors influencing the Vietnamese elderly's decision whether to remain active in the workforce or withdraw from it, and then to make policy recommendations for the better living condition of this cohort. Therefore, this research is designed to investigate the most update data from VNAS 2011 to address the question of what factors are the driving forces of Vietnamese older people's workforce participation with regard to their gender and location.

3. Data and methodology

3.1. Data source

The paper is based on the data from the Vietnam Aging Survey (VNAS) in 2011 in order to estimate to what extent the impact of different influential factors on older people's decision to work, and how different the influence is across sex and living areas.

Researches on topics related to the Vietnamese elderly have been done since the 1970s and have significantly contributed to the enhancement of public awareness about ageing-related issues and shaping of the policies and programs for the elderly population. Nevertheless, there have been no nationally representative surveys conducted in Vietnam until the VNAS in 2011. This survey was designed using the results from the Population and Housing Census 2009, so that it could provide information representative of people aged 50 and over across Vietnam, as well as for urban and rural areas.

The VNAS 2011 was conducted with more than 4,000 people aged 50 and over in 6 ecological regions, in which 2,789 people were aged 60 years and above (or older people as defined in this paper). Among older people, 1,683 were female and 1,106 were male; and 2,050 were living in rural areas, while 739 were living in urban areas.

All the information about the socio-economic characteristics, health status, living conditions and arrangements, roles and the contributions to family, community and society of older people was investigated and collected. Particularly, examined health characteristics with a variety of questions delivered to participants in order to get both subjective and objective health information are appropriate for us to achieve the paper's set objectives.

3.2. Methodology

In order to pursue the specific objectives mentioned above, we will first provide some

characteristics of labor force participants with regard to their sex and living location. We will then identify determinants of labor force participation by older people. Individual characteristics include age, marital status, education status and self-rated health status, whereas household characteristics are represented by location, social group, and size of household. Lastly, based on the estimated results, we will discuss some policy recommendations for raising labor force participation rates among older people.

3.2.1. Tabulations and t-test

This paper will employ simple frequency tables which clearly show several demographic and socio-economic characteristics of working older people, taking into account consideration of their sex and location variations. These considerations are: self-rated health status, age, education level, sex, location, marital status, education, poverty status, and size of household.

In order to test the statistical significance of the differences between male and female and urban and rural older people, we will employ a paired t-test comparing two different groups on the above variables. The significance level may range from 1 percent, 5 percent to 10 percent.

3.2.2. Chow test

There have been some researchers working out the significant differences in the Vietnamese older people's working behavior between their sex and living area such as Knodel and Truong (2002) and Friedman et al. (2001). Therefore, to attain more accurate estimates, we first conduct Chow tests for the samples of male and female older people and the samples of older people living in urban and rural areas. If the null hypothesis (i.e., there is no significant difference between samples) is rejected, we will estimate separate models for these sub-samples. If it is proved that there is no difference between the subsamples, then only one pooled regression model will be used.

3.2.3. Probit models and marginal effects

To identify the influences of different determinants on older people's choice to participate in the labor force, we will set up a probit model. Variables representing individual and household characteristics of older people will be considered for each sex and residential location. An older person i (i = 1, 2,…, N, where N is the total number of elderly people) is considered to be a participant in the labor force (p_i=1 if they answer 'Yes' to the question 'Are you currently working?'). The probability of taking part in the labor force of older people can be estimated with a probit model as follows:

$$P(p_i = 1) = \beta_i X_i + \varepsilon_i \quad (1)$$

where:

X_i represents a range of relevant characteristics of older people and their households;

β_i are the respective coefficients; e_i is the error term.

In addition, for each dummy variable subgroup, one member will be chosen as a reference group. For instance, the variable 'respondents' self-assessed health status covers two sub-groups: poor and good. Then, the first group or the second is used as a reference group, and the other will be a comparative group. A negative and statistically significant coefficient shows that the comparative group is less likely to participate in the labor force than the reference group; in contrast, a positive and statistically significant coefficient indicates that the comparative group has a greater like-

lihood to be labor force participants than the reference group.

After conducting binary probit models for male, female and urban, rural, and older people, we will compute marginal effects which give the derivative of the probability that the dependent variable (i.e., labor force participation) equals one, with respect to a particular conditioning variable. The aim is to see whether the probability of labor force participation increases or decreases for one unit increase in the independent variable from the baseline, holding other variables constant.

The defining feature of equation (1) is that the change in is always β_i times the change in X_i:

$$\Delta P = \beta_i \Delta X_i, \quad (2)$$

where: Δ denotes "change".

In other words, the marginal effect of X_i on P depends on not just β_i, but on the value of X_i and all other independent variables in the equation.

3.2.4. Variables

Dependent variable:

The variable representing labor force participation will take the value 0 if the individual is not in the labor force, and 1 if he or she is in the labor force.

Independent variables:

The determinants of the labor force participation of older people include both demographic and socio-economic factors. The following is a discussion on how the variables are measured and the hypothesized relationship between labor force participation and these factors.

Variables representing individual characteristics include:

- Age: Age is included in the equations since the increase in an individual's age tends to have a negative influence upon his health and likelihood to be engaged in the labor force as synthesized in the report in 2011. In the probit models, age is measured as a continuous variable. The subjects in the VNAS are divided into three groups, including older people aged 60-69, those aged 70-79, and those 80 and over. The first is chosen to be the reference group. It is expected that the other two groups will receive negative coefficients since the older the people are, the less likely they are to participate in the labor force.

- Sex: This variable is employed to identify the potential difference in labor force participation between male and female older people. In this research, a dummy variable is used for sex, where 1 indicates male and 0 indicates female. Female is selected to be the reference and the coefficient of the remained group is probably positive since the report (UNFPA, 2011) shows that females evaluate their health less positively compared with their male counterparts. Furthermore, women are more likely to live on their children's or spouse' income in their later life. Therefore, even if they desire to stay in the workforce, they still cannot.

- Marital status: This is another demographic variable which is likely to affect the labor force participation of older people. Vietnamese older people are categorized into three groups: married, widowed, and others (including divorced, separated, and single). For this variable, marital status is an ordered variable with a value of 1 if the individual is married; 2 if widowed; and 0 if others. The last group is used as a refer-

ence and others are expected to have negative coefficients since they can be financially supported by other members in their families. This expectation is consistent with the empirical results by Bheemeshwar (2014) and Adhikari et al. (2011).

- Education: Education is the first-mentioned human capital variable and older people are divided into two sub-groups: one for older people who have not finished lower secondary or who have only completed this level, and the other for those having higher education levels from upper secondary to doctoral level. The reference group is the former and the coefficient for the latter is supposed to be negative. Those with higher levels of education may have had a relatively high salary in their previous jobs, so they have greater choice of not working to exhaustion.

- Self-assessed health status: The influence of a correspondents' health on their labor force participation decision is one of the most central questions that many researchers have sought to answer. Through empirical results, it is proved that health status has a positive link to participation decisions made by older people in many countries. In Vietnam, statistics also support this result (UNFPA, 2011). For the significance of number of frequency, older people are just classified into two smaller groups: those with very good self – assessed health receive value 1, and those with very poor/poor or fair/good health assessment are given value 0. In accordance with other studies, when good health is taken as a reference, poor health is supposed to receive a negative coefficient.

Although self-evaluated health status is a crucial determinant, there is a debate around the extent to which self-rated health measures correspond to actual health. According to Gameren (2010), participants' under-reporting of their health status or over-reporting of their health problems may happen during data collecting. To explain working-age people's absence from work, bad health is often used as a legitimate reason. Hence, their health problems may be over-reported and/or their health status may be under-reported to rationalize their withdrawal from the labor market, which is known as the 'justification hypothesis'.

Moreover, another issue related to the second question ('Compared to other men/women, would you say your health is much better, somewhat better, about the same, somewhat worse, or much worse?') is that there is no commonly accepted reference point. As a result, although different groups have the same level of actual health, they may assess their health corresponding to dissimilar scales.

Variables representing household characteristics include:

- Living location: In Vietnam, location of residence (rural or urban) is often highly related with poverty, so this may have a positive impact on the labor force participation. UNFPA (2011) shows that those living in rural areas have a high propensity to participate in the work force more than their counterparts in urban areas. Thus, in separate binary probit regression models for male and female when rural older people are the reference group, their urban counterparts' coefficient must be negative.

- Poverty status: Listed as poor households, their older members will be less likely to withdraw from the workforce since they are finan-

Table 1: List of variables

Variables	Detailed information
Dependent variable	
Labor force participation: dummy	=1 if participated in labor force/ 0 otherwise
Explanatory variables	
Individual characteristics	
Age beyond 60	actual age in years
Sex: dummy	=1 if male, 0 if female
Marital Status: ordered	=1 if married, = 2 if widowed, 0 if others
Educational Status: dummy	= 1 if lower secondary and less, =0 if above lower secondary
Self-assessed health status: dummy	assessment of own current health status (0=poor, 1= good)
Household characteristics	
Location: dummy	= 1 if rural, 0 if urban
Social group: dummy	= 1 if poverty, 0 otherwise
Size of household	Size of the household

cially forced to support their own life as well as their family members'. Therefore, older people living in poverty are the reference group, those of better financial ability will work less.

- Size of household: Household size variable can be used as an explanatory variable as well. Large family with a big number of household members definitely discourages the older people's maintenance in the labor force since they can receive support from their children and have a choice to retire when their health status does not allow them to work anymore.

Detailed information on selected independent variables is listed in Table 1.

4. Findings and discussion

4.1. Labor force participation of Vietnamese older people

Table 2 presents several key characteristics of Vietnamese older people which play as decisive factors in labor force participation decisions by them in 2011. It shows that the labor force participation rate among older people is only 39.94 percent.

In terms of self-assessed health status, the table suggests that the majority (64.45 percent) of surveyed older people report poor health status. However, this variable may contain some biases as explained in the previous part. This figure is relatively high and can be a potentially decisive factor in determining labor force participation probability.

Younger older people make up for the largest proportion (45.75 percent) of the whole older population while the oldest group aged 80 and over accounts for 20.91 percent. Making up for more than one third of the population is the 70-79 aged group. Nevertheless, Vietnam is entering the period of ageing, so the oldest cohort as well as the proportion of older people in the Vietnamese population will probably increase quickly.

Table 2: Descriptive statistics for the variables

Variables	%
Dependent variables	
Labor force participation	
Yes	39.94
No	60.06
Explanatory variables	
Age	
60-69	45.75
70-79	33.34
80 and above	20.91
Sex	
Male	42.08
Female	57.92
Marital Status	
Married	70.55
Widowed	24.95
Others (single/ divorced/ separated)	4.50
Educational Status	
Lower secondary and less	84.21
Above lower secondary	15.79
Self-assessed health status	
Poor	64.45
Good	35.55
Location	
Urban	31.65
Rural	68.35
Poverty status	
Poor	16.15
Non-poor	83.85

Source: Authors' calculations using VNAS 2011.

With a percentage of 57.92, female older people dominate the aged population, which can be explained by their longer life expectancies. Characterized by an economy with a developed agriculture, most older people (68.35 percent) still live in rural areas. However, the percentage is in a declining process since the key industries of Vietnam's economy are moving towards services.

More than 70 percent of older people are married, whereas those who are divorced, separated and never married account for just 4.5 percent. The remaining percent (24.95) are widows.

Since in the past not many older people were sent to school due to their family's poor financial ability and low awareness of the importance of education, 84.21 percent of older people have only finished lower secondary or even lower than that level. And only about one fourth of that figure completes senior lower secondary school level or above.

About 16 percent of older people's households are considered as living in poverty. These people are likely to participate in the labor force to earn their living to support their life and their whole families' as well.

It is estimated that older people in the VNAS 2011, on average, are living in families of nearly four members. Size of household in reality is one of the influential factors determining older people's taking part in the workforce or not.

Before analyzing the determinants of labor force participation for older people using a probit model, we conduct Chow tests for the samples of male and female older people as well as those of the older people living in urban and rural areas. The estimates indicate that, at 1-percent significance level, both the samples of male and female older people and those of urban and rural older people are significantly different.

The whole sample of older people is divided into two sets for the Chow tests: (i) a sample of male and female older people; and (ii) a sample of urban and rural older people. For the first set, there are 1,106 male and 1,683 female older people. For the second set, there are 739 urban and 2,050 rural older people. Both the null hypothesis for the male and female group (i.e. there are no significant differences between male and female older people) and the one for the urban and rural group (i.e. there are no significant differences between urban and rural older people) are rejected at a 1-percent significance level. Thus, separate probit models will be conducted for the samples of male and female older people as well as those of urban and rural older people.

Table 3 presents the percentage of Vietnamese labor force older participants with regard to their characteristics and sex.

As for age, working males aged 60-69 account for 65.97 percent of the total number of 60-69 male people, whereas the figure for females is just 54.27, which is 11.7 percentage points lower than that for men at 10 percent significances. A similar case happens in the oldest group. The rate of workforce participants among men aged 80 and over is 1.72 percentage points less than that of women. In contrast, the percentage of 70-79 aged working men is higher than that of women; however, this difference is insignificant. The lowest percentage of labor force participation in the advanced group can be explained by their declining health and other kinds of illnesses. The differences in the percentage of working older people by their marital status and sex are all significant at a 1 percent level. The married men who are participating in the labor force are a really large component of their group (47.84 percent) and that component in female older people is also quite large (40.88 percent), but still lower than their male counterparts. Unlike the married group, females who are widowed and others (divorced, separated or never-married) groups have higher percentages of participants than the male elderly since this group cannot receive support from their spouse.

The tabulation results for older people categorized by their education levels and sex are statistically significant at 1 percent. For both men and women, the rates of working people whose formal education stops at lower secondary school or even lower, account for approximately nearly one half of their population (45.93 and 38.04 respectively). The rates

Table 3: Labor force participation rate by characteristics and sex

Characteristics	Male	Female	Difference
Age			
60-69	65.97	54.27	11.7***
70-79	35.06	28.15	6.91
80 and over	9.48	11.2	1.72***
Marital status			
Married	47.84	40.88	6.96*
Widowed	14.7	26.02	11.32*
Others	12.07	58.74	46.67*
Education status			
Lower secondary and less	45.93	38.04	7.89*
Above lower secondary	39.83	21.86	17.97*
Self-rated health status			
Poor	39.28	31.81	7.47*
Good	51.97	46.99	4.98*
Location			
Urban	30.95	24.16	6.79
Rural	50.41	42.29	8.12
Social group			
Poor	34.58	47.6	13.02*
Non-poor	45.89	34.21	11.68*
Size of household	4.02	3.41	0.61**

*Notes: *, **, *** denote statistically significant Beta coefficients less than or at the 1, 5 and 10 percent significance level, respectively.*
Source: Authors' calculations using VNAS 2011.

of workforce participation by older men and women with higher levels of education are much lower, only 39.83 percent for men and 21.86 percent for women. The difference between men and women of the second group of a higher education level (17.97 percentage points) is bigger than the first one of a lower level. Normally, older people with higher formal education receive their retirement pension which is relatively helpful in their life after their working age, so they tend to work less for their living.

About the self-rated health status, working men and women who report to have good health make up relatively large proportions (51.97 percent and 46.99 percent, relatively) of their groups. And 39.28 and 31.81 percent of the group with poor health assessment are made up by the male and female older people participating in the labor force. The differences between sexes are 1-percent statistically significant.

In terms of household living area, the difference between the proportion of older male workforce participants in male respondents and that for females is 6.79 percent in urban areas and 8.12 percent in urban areas. No matter whether older participants' households have a rural or urban location, the rates of working for males are higher than that for their female

counterparts. However, these figures are not statistically significant.

Being characterized as poor households or not has adverse effects on the working rate of males and females. It is estimated that those male workforce participants whose families are not poor make up 45.89 percent of the population of men, whereas the rate for those living in poor households is just 34.58 percent. These figures prove that working activity is the main source of income of many households in the urban area. But in the rural area, a higher rate for working females living in poor families is found, which may be caused by the low–income jobs that poor workers are normally involved in. The relatively big distinctions between males and females are 1-percent significant.

The proportions of male and female older participants living in the families with an average number of members in their whole population are 0.61 percentage point different at a 5-percent statistical significance. This small distinction between the two sexes demonstrates the fact that once their family size is big, both older men and women have to be more responsible for their households' living.

Table 4 illustrates different rates of labor force participation by Vietnamese older people with regard to their characteristics and their residential location.

About age, in the urban youngest group, 38.42 percent participate in the labor force. This figure is 31.02 percentage points lower than the rate of rural working older people of the same ages. Similarly, the rate of the 70-79-year-old working group in rural areas accounts for 35.04 percent which is 13.25 percentage points higher than that in urban areas. Of course, the working advanced aged group is the smallest compared to the two others. Yet the differences between the figures are statistically insignificant.

In terms of sex, the estimated results show that both male and female respondents in urban areas have a low percentage of labor force participation (30.95 and 24.16, respectively) in comparison with those in rural areas. But once again the differences in working participation rates among male and female older people in the two areas are not statistically significant.

As for marital status, the highest participation rates are for the separated, divorced or never-married older people in both areas, and the 5-percent significant and relatively great difference (20.9 percentage points) between urban and rural areas also exists in this group. For the married and widowed groups, the rates of economically active older people vary between locations, but these variations are not statistically significant.

The estimated differences for labor force participation rates in rural and urban areas by education levels are significant at a 1-percent level. It is demonstrated that the really high percentage of those with lower secondary and lower levels of education in the workforce are in urban (27.65) and rural areas (45.75). For those above the lower secondary level, the difference in participation rates between urban and rural areas is even greater at 20.18 percentage points.

About health self-assessment, the rate of working older people with a good health status in the urban area is relatively higher than that of those with poor health assessments. Similarly, in rural areas, the rate of people reporting to

Table 4: Labor force participation rate, by characteristics and location

Characteristics	Urban	Rural	Difference
Age			
60-69	38.42	69.44	31.02
70-79	21.79	35.04	13.25
80 and over	7.9	11.66	3.76
Sex			
Male	30.95	50.41	19.46
Female	24.16	42.29	18.13
Marital status			
Married	28.21	52.22	24.01
Widowed	19.14	26.18	7.04
Others	40.76	61.66	20.9**
Education status			
Lower secondary and less	27.65	45.75	18.1*
Above lower secondary	25.67	45.85	20.18*
Self-rated health status			
Poor	21.16	39.75	18.59*
Good	34.48	59.01	24.53*
Social group			
Poor	41.64	43.1	1.46*
Non poor	26.06	46.46	20.4*
Size of household	4.47	3.52	0.95*

*Notes: *, **, *** denote statistically significant Beta coefficients less than or at the 1, 5 and 10 percent significance level, respectively.*
Source: Authors' calculations using VNAS 2011.

have good health participating in the workforce is high compared to those in a poor health condition. The differences for urban and rural older people with poor and good health are 18.09 and 22.19 respectively at a 1-percent statistical significance.

Working older people account for a really significant part of the poor older population in urban and rural areas (41.64 percent and 43.1 percent, respectively). The part of the non-poor participants in urban areas is quite small compared with that in rural areas (46.46 percent). And the participation rate difference in terms of residential location for the older people living in the non-poor household group is 1-percent statistically significant at 20.4 percentage points.

The proportions of older labor force participants living in families with an average number of members in urban and rural areas in their whole population are 4.47 percent and 3.52 percent. The distinction of 0.95 percentage points between the two areas is proved to be significant at a 1-percent level.

4.2. Determinants of labor force participation by older people

As presented above, Chow tests show that there are significant differences in labor force participation decisions made by Vietnamese

Table 5: Probit of labor force participation, by sex

Dependent variables	Male	Female
Age		
60-69 (ref.)	-	-
70-79	-0.739*	-0.694*
80 and over	-1.443*	-1.511*
Marital Status		
Others (ref.)	-	-
Married	0.829**	0.146
Widowed	0.267	-0.165
Educational Status		
Lower secondary and less (ref.)	-	-
Above lower secondary	-0.315*	-0.668*
Health status		
Good (ref.)	-	-
Poor	-0.381*	-0.449*
Location		
Rural (ref.)	-	-
Urban	-0.424*	-0.404*
Poverty status		
Poor (ref.)	-	-
Non-poor	-0.119	-0.230*
Size of household	-0.040	-0.399*

*Notes: *, **, *** denote statistically significant Beta coefficients less than or at the 1, 5 and 10 percent significance level, respectively.*
Source: Authors' calculations using VNAS 2011.

older people when taking their sex and living location into consideration. Table 5 presents the estimated results of probit models for male and female older people, while Table 6 shows marginal effect estimates for various variables. The results are considered at 1, 5, and 10 percent significance levels. A negative and statistically significant coefficient shows that the comparative group is less likely to participate in the labor force than the reference group.. Meanwhile, a positive and statistically significant coefficient indicates that the comparative group is more likely to be workforce participants. During discussion of the factors, results for both areas and sexes are compared and contrasted.

With regard to older people's age, the results in Table 5 prove that age 1-percent significantly and negatively impacts both sexes' propensity to be active in the workforce. Compared with those aged 60-69, the probability to work of 70-79-year old females is 21.7 percent less, and of females aged 80 and over is 40.6 percent less. Similar results can be got for male older people. The more advanced their ages, the less likely they are to participate in the workforce. Moreover, it is interesting that probit regression and marginal effect results generally show that the effects of age are more severe for males aged 70-79 than females. This result may be a consequence of the types of work done by males. They often do harder and more

Table 6: Marginal effects on labor force participation, by sex

Dependent variables	Male	Female
Age		
60-69 (ref.)	-	-
70-79	-0.267*	-0.217*
80 and over	-0.457*	-0.406*
Marital Status		
Others (ref.)	-	-
Married	0.282**	0.051
Widowed	0.105	-0.057
Educational Status		
Lower secondary and less (ref.)	-	-
Above lower secondary	-0.119*	-0.189*
Health status		
Good (ref.)	-	-
Poor	-0.148*	-0.162*
Location		
Rural (ref.)	-	-
Urban	-0.158*	-0.131*
Poverty status		
Poor (ref.)	-	-
Non-poor	-0.046	-0.082*
Size of household	-0.015	-0.138*

*Notes: *, **, *** denote statistically significant Beta coefficients less than or at the 1, 5 and 10 percent significance level, respectively.*
Source: Authors' calculations using VNAS 2011.

health-demanding jobs and as a result, their health will degrade quickly over time.

For married males, the probability to participate in the labor force is 28.2 percent higher than divorced, separated and never-married males at a 5-percent significance level, which is in agreement with Adhikari et al. (2011). Those older men without their spouse in their latter life have a working tendency of 10.5 percent higher than the group of others. In contrast, widowed females are 5.7 percent less likely to participate in the workforce than divorced, separated and never-married counterparts. Though the result is statistically insignificant, it is reasonable in reality since older women tend to live on their children's financial support.

The result for education determinant is 1-percent statistically significant and is consistent with that of Bheemeshwar (2014) who studies Indian older people. Those men belonging to the group of above lower secondary level of education have a lower propensity to work (11.9 percent) than those with lower levels. The slightly greater impact of higher education level can be observed in the group of females. A high level of education often brings about a greater chance of doing better jobs with higher salaries for older people, so they may have been saving money for their later life.

Table 7: Probit of labor force participation, by location

Dependent variables	Urban	Rural
Age		
60-69 (ref.)	-	-
70-79	-0.539*	-0.750*
80 and over	-1.250*	-1.549*
Sex		
Male (ref.)	-	-
Female	-0.388*	0.058
Marital Status		
Others (ref.)	-	-
Married	0.018	0.320***
Widowed	0.127	-0.180
Educational Status		
Lower secondary and less (ref.)	-	-
Above lower secondary	-0.366*	-0.420*
Health status		
Good (ref.)	-	-
Poor	-0.447*	-0.406*
Poverty status		
Poor (ref.)	-	-
Non-poor	-0.434**	-0.189*
Size of household	-0.166***	-0.314*

*Notes: *, **, *** denote statistically significant Beta coefficients less than or at the 1, 5 and 10 percent significance level respectively.*
Source: Authors' calculations using VNAS 2011.

The estimated results for both males and females show that health is positively related to labor force participation. Those older people with good health have a higher propensity for participating in the labor force. Self-rated health status has a statistically significant positive impact on older people's decision. This is consistent with the researcher's own calculations using VNAS 2011 and other literature. The 1-percent significant marginal effect result implies that those male older people whose health is rated as bad have a probability of being in the labor force of 14.8 percent, which is smaller than their male counterparts with good health. Similarly, females with bad health assessments have a 16.2 percent lower tendency towards working. Therefore, it can be concluded that self-assessed health status has a more severe impact on the difference in preference for work of females than that of males.

Table 7 presents the estimated results of probit models for urban and rural older people, while Table 8 shows marginal effect estimates for various variables.

The results in Table 7 indicate that both males and females living in urban areas are less likely to be in the labor force than their counterparts in rural areas since they probably get access to financial support from social benefit

Table 8: Marginal effects on labor force participation, by location

Dependent variables	Urban	Rural
Age		
60-69 (ref.)	-	-
70-79	-0.146*	-0.266*
80 and over	-0.289*	-0.476*
Sex		
Male (ref.)	-	-
Female	-0.118*	0.022
Marital Status		
Others (ref.)	-	-
Married	0.005	0.121***
Widowed	0.038	-0.068
Educational Status		
Lower secondary and less (ref.)	-	-
Above lower secondary	-0.101*	-0.150*
Health status		
Good (ref.)	-	-
Poor	-0.136*	-0.158*
Poverty status		
Poor (ref.)	-	-
Non-poor	-0.146***	-0.120*
Size of household	-0.049***	-0.125*

*Notes: *, **, *** denote statistically significant Beta coefficients less than or at the 1, 5 and 10 percent significance level respectively.*
Source: Authors' calculations using VNAS 2011.

systems, mostly retirement pensions. Therefore, the burden of earning their living is less heavy than others. Males in urban residential areas have a likelihood to work of 15.8 percent less than those in rural areas. Similarly, urban females are 13.1 percent less likely to be workforce participants in comparison with their counterparts in rural areas.

Household determinants, including the poverty status that respondents' families are characterized by, and the number of household members, seem to have negative and 1-percent significant effects on older female members' labor force participation. Females living in non-poor families are 8.2 percent less likely to work compared with their poor counterparts. But for males, the negative impact is statistically insignificant. It is really clear that a better financial status means less pressure to work and earn money. These results agree with Bheemeshwar (2014) that poor and vulnerable older people are more likely in the labor force.

If there is one more member in male respondents' households (counting from the member 4.02), the probability of them working insignificantly decreases by 1.5 percent since they can receive support from other family members, especially those who are younger and

healthier. Like male respondents, the more members in female older people's families, the less they participate in the workforce. At the significance level of 1 percent, one positive change in the number of family members will lead to a decline of 13.8 percent in female older people's probability to work. These results share the same opinion with Pandey (2009), that household size has a negative effect on the participation decision of older people.

By location, the age determinant still has a profound negative effect on both urban and rural older people at a 1-percent significance level. The more advanced older people's ages are, the less likely they are to take part in the labor force. In urban areas, compared to the group aged 60-69, the groups aged 70-79 years and 80 years and over have 14.6 percent and 28.9 percent lower probability to work, respectively. In rural areas, the desire for working of the group aged 80 and over is 47.6 percent lower and of the 70-79 aged people is 26.6 percent lower than that of the 60-69 aged people. It has been proven by many researchers, as well as from data from the VNAS 2011, that older people's health status declines when their age gets higher. More health problems will limit older people's employability.

In urban areas, the likelihood to work of older women is 11.8-percent less than that of men at 1 percent significance. Meanwhile, in rural areas, the probability for females is higher than that for males; however, it is statistically insignificant. It can be generally understood that females' tendency to work is low since they tend to live upon their spouse and children. In Oriental countries like Vietnam, there is a traditional belief that a woman's duty is taking care of her family and children instead of doing social activities as well as devoting her time to work.

The estimation results are relatively similar for urban and rural older people of married groups in the two areas. Married status encourages older people to work up to 0.5 percent for urban ones and 12.1 percent (10-percent significance) for rural ones. This conclusion goes in the opposite direction with Ling and Fernandez (2010). They found that respondents who are married are 7.7 percent less likely to participate in the labor force compared to those who are single, widowed or divorced; however, their result is not statistically significant. This research result can be partly explained by the fact that married older people tend to live with their children; therefore daily living expenditures may force them to work more. For rural older people, being widows discourages them from working by 6.8 percent, which is consistent with the result of the study in Thailand by Adhikari et al. (2011). However, the result is statistically insignificant.

The education variable is proved to be significantly and negatively related to older people's labor force participation. Those with higher education levels from senior secondary school to doctoral level in urban areas are 10.1 percent less likely to participate in the workforce than those with a lower secondary level or even less. The result agrees with Adhikari et al. (2011), but is contrary to Ling and Fernadez (2010)'s. In fact, in a mixed market economy like Vietnam, those with a higher education status are more involved in the formal sector and get pensions after retirement. Therefore, the result estimated in the model is reasonable. Like

urban older people, those living in rural areas with higher levels of education have a 15 percent decline in their propensity to work. Lower living costs in rural areas can help to explain the greater negative effect of education there, since the same amount of pension money can be more valuable in rural areas than urban.

Although conducted in rural and urban areas at different periods of time, the results of Pang et al. (2004) and Ling and Fernadez (2010) both support the decisive role and positive relation of health with labor force participation by older people. In line with these researches, the result in this paper does show the 1-percent statistical significance and undeniable impact of the self-assessed health variable. For those living in urban areas, health rated poor means a 13.6 percent-decline in their probability to participate in the workforce. Poor rated health even causes a 15.8 percent lower likelihood of rural older people's participation.

Older people in urban areas whose households are not vulnerable to poverty are 14.6 percent less likely to work than the remained group, whereas in rural areas the percentage is 12 lower for those who are not living in poverty. Though the households in rural areas are not categorized as poor, their family income is not high enough, so they still work for their living.

The results show that one more member in a family may cause a 4.9 percent decline (significant at a 10 percent level) in the probability to work of older people in urban, and 12.5 percent at a 1-percent level of significance in rural areas. It can be concluded that the burden of living in a big family for older people in the countryside is bigger than in cities.

5. Policy recommendations

Not just Vietnam, but many countries around the world are facing problems of population ageing. One of the most far-reaching consequences is the shortage of a labour force in the coming years. Thus, the earlier actions are taken, the better the situation will be under control. In the light of this paper's findings, some recommendations are made:

Raising people's awareness

The very first thing that should be done is the raising of awareness of policy makers as well as the whole society about the living standards of older people and that one of its causes is a low labour force participation rate. For policy makers, they should understand the interaction between a number of socio-economic and demographic factors and older people's labour force participation. If ageing has not been considered as a worth-concerning socio-economic problem, there will be no studies and policies regarding the issue. Awareness cannot happen only with the help from the mass media in the country. Although there are some interviews on official channels regarding ageing issues, they have not caught people's attention. Then, changes should be made about retirement ages and conditions in favour of older people working so that for older people can earn on their own and better their income without waiting for the government's or their families' support.

Creating working opportunities for older people

Older people, especially those with specialized skills, should be encouraged to stay in the labour force longer. More importantly, older people with a lot of practical experience accumulated after their long working life should be

useful in those industries requiring learning by doing. The involvement of older people in these areas benefits the older people themselves and the whole economy as well.

Employment consultant agencies need to be established to help the aged group of people to find jobs that suit their personal profile, especially their physical condition, and provide them with training courses on enhancement of older people's personal and technical skills and knowledge in order to cope with the challenges in the workplace. In addition, employers should be equipped with good facilities and working conditions in favour of older people's health status. Even flexible working arrangements may be necessary, like assigning work that requires less physical strength or shorter working hours to older workers.

In return, employers who hire older people should be given some incentives such as a subsidy or tax deduction. At the same time, the government should implement some regulations or laws on minimum wage and social insurance programmes without age discrimination. Moreover, self-employment among older people should be encouraged as well. This type of working may be developed more if the government provides some support in terms of financial and non-financial aids, like low-interest or interest-free loans, subsidies, income tax reductions or relevant business courses.

Considering changes in policies "gently forcing" older people to work

Older people who are mentally and physically able to work after current retirement ages should be gently "forced" to continue participating in the labour force. Even if necessary, the eligibility for early retirement of those who have enough working years for a retirement pension, but they are in working age, should be postponed.

Improving older people's health

Age has a negative impact on older people's decision to continue in the work force, since the older people are, the more problems in terms of health they have. In this paper, it is proved that poor rated health and other representative variables of health, like chronic diseases, disability and physical mobility difficulties are negatively related to older people's participation decision. Therefore, significantly, it is needed to raise the awareness of people at young ages of their health condition and actively take care of them from now in order to have healthy ageing in their later life. There should be a comprehensive national strategy to reduce prolonged diseases and disabilities, especially among female older people and those living in rural areas who are vulnerable to most health problems.

The establishment of older people healthcare networks, especially those treating chronic diseases common among older people is of great significance. Moreover, special training programmes are necessary for caregivers working in social assistance centres and geriatric hospitals. The vulnerable groups mentioned above should be helped to access healthcare services via the provision of free health insurance. For these actions to be carried out, strong support from the government is vital.

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