EFFECTS OF HOUSEHOLD CHARACTERISTICS ON ELDERS’ LABOR FORCE PARTICIPATION AND WORK HOUR DECISIONS IN THAILAND

Inthu-on Whangprasert, Supanika Leurcharusmee, Piyaluk Buddhawongsa, Jianxu Liu
Faculty of Economics, Chiang Mai University, Faculty of Economics, Chiang Mai University,
Chiang Mai, Thailand Chiang Mai, Thailand

This research estimates on the effects of household characteristics on elders’ labor force participation and work hour decisions in Thailand by introducing a sample selection in quantile regression. In order to achieve particular aim, the research includes the effects of household structures and individual demographics on elders’ labor force participation and work hour decisions in Thailand. The framework based on Thailand’s Surveys of the Older Persons (SOP) data in 2007 and 2014, collected by the National Statistical Office (NSO).

For this research, there are significant changes in Thailand elder labor market, especially the ones who participate in the labor market in 2014. The result of the research is evidence for less participation rate in 2014 comparing to 2007. However, the elders who work tend to work for a longer hour on the average. For individual factors affecting the labor force participation and work hour decisions, the elders with no high-school degree and no government pension plan are more likely to work and, if they do, they seem to work for a longer period. Besides, the elders who live in rural area with saving and assets are feasibly continue working, but for only fewer hours. Moreover, the results of the research demonstrate a negative relationship of health and both labor force participation and work hours. This implies that working may negatively affect elder health. For family factor, the posterity financial support plays an important role. The elders who receive less financial support or, in some case, still have to support their children offspring are more likely to remain in the labor force and work for a longer hours. Likewise, the elders who have less saving as well as ones with less financial supports and bad health condition tend to work for longer hours.

Keywords — Aging society, labor force participation, work hour decision, quantile regression

I. INTRODUCTION
For the twenty-first century, an increasing in the proportion of the elder population with longer life span, along with the change in household characteristics becomes one of the most significant social transformations. According to the Thailand Research Fund (2016), with more than 10 percent of the elder population, Thailand entered into the “Aging Society” since 2015. Dealing with population aging becomes one of the greatest challenges for several countries, including Thailand. Aging society is a major concern for
both households and government. Change in household characteristics lead to changes in the roles and responsibilities of the elders and younger generations. For household characteristics, this research focus on five variables of household characteristics with data available for Thailand including the number of household members, number of children living in the same household, number of grandchildren living in the same household, spouse’s income, and money received from/giving to the children. A change in the household characteristics leads to changes in the pattern of dependency among age groups with higher aged dependency ratio. As a result, it causes the overall economy a greater burden to support and provide social services for the needed elders and thus a higher financial burden on the working-age population. Therefore, Thai elders have to seek their economic securities and the sources of their incomes on their own or some may depend on their family. Most of the elder do not have enough income to compensate in daily life, especially those who live in the rural areas. The inadequate of elder’s saving and family supports call for late retirement and higher social welfare. These problems inspire the researchers to examine effects of changes in the household characteristics on elders’ decision to work and work hours.

Working status may be an alternative to reduce the society’s burden relative to elderly because work is the main source of income. This implies that work is a crucial source of income for elders due to the limited availability of pension, savings among older persons, including the gradual eroding of family support, specifically from children. Household characteristics affect working decisions differently for senior workers with different levels of work hours. For example, having children to take care of them should have different outcomes between workers with long work hours and workers with shorter work hours. With the heterogeneous effects, this research applies the quantile regression in order to focus on the observations in a higher quantile. To this aim, the researchers can examine the impacts on elder who work in the extremely long work hours that potentially lead to a higher risk in their health. To do so, this research has three main objectives, which are (1) to compare household characteristics and labor force decisions of the elders in Thailand between 2007 and 2014; (2) to examine the effects of individual and household characteristics on the elders’ labor force participation and work hour decisions and; (3) to examine effects of individual and household characteristic on elders’ work hour decisions for workers with different level of work hours.

II. Literature Reviews

Although several researchers realize the problem of household structure transformation and aging society, the study based on the effects of household characteristics on elders’ labor force participation and work hours decisions have not yet examined in Thailand. The following reviews focus on two major schemes, which are the effects of (1) household characteristics and (2) individual characteristics on labor force participation and work hour decisions for general working age population.

For the effects of household characteristics on labor force participation and work hour decisions, many researchers found that the number of children living in the same household and money received from/giving to children are factors that impact on both labor force participation and work hour decisions. Nonetheless, the number of grandchildren living in the same household and number of householder members only effect on the labor force participation decision while the spouse’s income effects only on the work hour decision.
The effect of number of children living in the same household on labor force participation is being distinct between male and female. According to Faridi, Chaudhry and Anwar (2009), females are less likely to participate in labor force when the numbers of children are larger. The similar result was found in Orbeta (2005), Paphathanarach (2012) and Ngearndee (2013) and Mano and Yamamura (2011). For the male labor force participation, number of children is insignificant as in Orbeta (2005). Yet, for Thailand, a different result was found. A larger number of children causes a larger number of male worker to participate in the labor force (Paphathanarach, 2012; Ngearndee, 2013). Moreover, Ngearndee (2013) found that female with more children work for fewer hours, whereas male with more children work for more hours.

Since Laowiwattana (2008) and Praphupot (2015), the effects of money received from/ giving to children on labor force participation was introduced in Thailand. The elders who have to give money to their children demonstrated higher participation rate than one who received money from their children. In addition, money received from/ giving to children affects work hour decision, as in Praphupot (2015). The elder who have to give money to their children tend to work for longer whereas the one who received money from their children work for less hours. The effect of number of grandchildren living in the same household on labor force participation was founded in the study of Faridi et al. (2009). Female working-age with larger number of grandchildren is less likely to participation in labor force. Moreover, the effect of number of household members on working age labor force participation as in Faridi et al (2009), working age with larger household shows a greater female labor force participation.

Having spouses imply a greater amount of physical, mental and financial supports. As in Praphupot (2015), the analysis suggests that a larger number of spouse’s income negatively affects elders’ work hours. In what follow, discuss how individual characteristics affect the labor force participation and work hour decisions. There are many factors apart from household characteristics factors that significantly affect labor force participation and work hour decisions including gender, marital status, age, health, pension, and saving. However, education attainment, living areas, and house ownership are affected only on the labor force participation decision.

Each society has assigned into different roles and responsibilities in proportion to gender. Each role affects individual’s ability on different activities. Thai society has specified women’s role and responsibilities in the family, i.e. women are in charge of house work and look after their children while men have to make a living to financially support their family, as in Hung (2009), Paphathanarach (2012), Ngearndee (2013), Praphupot (2015), and Kalwij and Vermeulen (2005). That is why men tend to have higher labor force participation and work hour decisions than women. Marital status is one of the significant factors affecting labor force participation. Married and single person have show different labor force participation and work hour. As in Ngearndee (2013) and Praphupot (2015), married person has greater labor force participation and work hour decisions than the single ones. Some researches indicated the effect of marital status on each gender participate in labor force. Hung (2009) and Paphathanarach (2012) found the different effects on the
labor force participation between male and female. That is, married male are more likely to participate in the labor force while married female are less likely to participate in the labor force, which is contrasted to Faridi et al. (2009) i.e. married women have higher participation in labor force.

Furthermore, Age results in the preference of participation and work hour decisions. The young-aged population tends to have higher consumption needs than older. As a result, they have higher participation in the labor force than older population, which is consistent to Hung (2009) and Paphathanarach (2012), analyses show that, after graduation, the working age population are in needed to join the labor force. After that, the probability of labor force participation would be lower in some point with different point in different person. In contrast, the study of Ngearndee (2013) founded the different effect of age on male and female. Male with older age have higher labor force participation whereas female with older age have less labor force participation. Moreover, the study found that older people decided to work for longer period up to the point of age where they will be less participated in the labor force. This is because of health factors that affected the labor force participation. Changing in physical conditions and deteriorating bodily functions make the older age face with more health problem, as in Campolieti (2002), Kalwij et al. (2005), Hung (2009), Maranate (2012), and Praphupot (2015). Moreover, the study of Praphupot (2015) found that the persons with health problem are less work hour decision.

Saving is the one to guarantee for the elderly to spend over their life cycle. Elderly with more saving has less participation while the elderly with less saving are more likely to participate in the labor force, as in Laowiwarttana (2008), Maranate (2012), and Praphupot (2015). Pension is another tool for the elder to guarantee their life after retirement (Bojas, 2015). The elder with pension has less participation in labor force while the one without pension are more likely to participate in the labor force, as in. Laowiwarttana (2008) and Ohtake and Yamaga (2002) focused only on the elder men workers, as in Ohtake et al. (2002). Therefore, pension is negatively related to the elder labor force participation. For effect of pension on work hour decision, the study of Ohtake and Yamaga (2002) founded that there is no effect of pension on elderly men work hours decision.

Living area is another variable that indicates differences in individual’s living conditions, e.g. employment opportunities. For the employment opportunities, people living in urban area have more employment opportunities with greater income than those who live in rural areas. On the other hand, people living in rural area have to do hard work in order to earn enough income to support their own life and their family. Consequently they have to participate more in the labor force than those who live in the urban areas, as in Hung (2009) and Kangsastiam (2004).

According to Kangsastiam (2004), house ownership is also impact on the elder labor force participation. The elder who own a house are more likely to participate less in the labor force. This is because they felt that they have assets to guarantee their life.

Education is one of the indicator of an individual’s ability to work i.e. opportunity to work, work payment, and characteristics of the jobs. As in Yukolnee (2004), education attainment has a positive relationship to economic systems. Those who received higher education have a better opportunity to get a good job and earn enough income to compensate their living costs. The studies of Faridi et al. (2009) and Mano et al.(2011) focus on the effect of education attainment on the female labor force participation. For Faridi et al.
(2009), female with higher education has higher probability of labor force participation. On the other hand, Mano et al. (2011) focus on the husband’s education on the married Japanese women participate in labor force and found that husband’s education tends to reduce married Japanese women participate in labor force. Without indication of the gender, the studies of Hung (2009), Kalwij et al. (2005), Paphathanarach (2012), and Praphupot (2015) found that the people with higher education attainment has higher probability of labor force participation.

III. Model
This section provides a detailed description of the empirical model and methodology of this research. In modeling relationship between dependent variable and the regressors, traditional regressions usually study the marginal effects at the mean. Koenker and Bassett (1978) introduce the conditional quantile regression to capture heterogeneity of the effects in different quantiles. This research examines the effects of changes in the household characteristics on senior workers’ decision to work and work hours with separately between year 2007 and 2014. Household characteristics can affect working decisions differently for senior workers with different levels of work hours. With the heterogeneous effects, this research is intended to apply the quantile regression. As suggested by Heckman (1979), wage and work hour regressions are subject to sample selection since we cannot observe the wage or work hour of those who are not in the labor market. Therefore, this study applies Buchinsky (1998)’s quantile regression with sample selection model to estimate effects of household characteristics on senior workers’ work hour decision. A worker’s latent work hour equation as a function of the worker’s characteristics is defined as:

\[ y_i^* = x_{2i} \beta + u_i, \]  

where \( y_i^* \) is the labor desired work hour, which can be observed if worker decide to work and cannot be observed otherwise. \( x_{2i} \) is a vector of worker i’s characteristics associated with the work hour decision and \( u_i \) is the error term. However, we only can observe a worker’s work hours if the worker chooses to work. Let the selection into labor force equation be:

\[ d_i = \Phi(x_{1i} \gamma), \]  

where \( d_i \) is the dummy variable for labor force participation. \( x_{1i} \) is a vector of worker i’s characteristics associated with the labor force participation decision and \( \Phi(\cdot) \) is the c.d.f of the normal distribution. The conditional quantile of the work hour regression with sample selection into labor force can be written as

\[ \text{Quant}_\theta(y|x_2) = x_2 \beta_\theta + \text{Quant}_\theta(u_0|x_2, d = 1) \]

\[ \text{Quant}_\theta(y|x_2) = x_2 \beta_\theta + h_\theta(x_{1i}, y) \]

where \( y \) is the observed work hour. The inverse mills ratio, \( h_\theta(x_{1i}, y) \), estimated from equation (2) is include in model to adjust for the selection bias. For the model of this research, the researchers identify as following:

\[ \text{Quant}_\theta(y|x_2) = x_2 \beta_\theta + \text{Quant}_\theta(u_0|x_2, d = 1) \]

\[ d_i = \Phi(x_{1i} \gamma) \] : Label equation

where \( y \) is the observed work hour \( d_i \) is the dummy variable for labor force participation. \( x_{1i} \) is a vector of worker i’s characteristics associated with the labor force participation decision. \( x_{2i} \) is a vector of worker i’s characteristics associated with the work hour decision.

IV. Data
This research use secondary data collected from the National Statistical Office (NSO), which are in the year of 2007 and 2014 Survey of the Older Persons in Thailand (SOP) with important detailed information on elderly in all provinces in Thailand and the ones whose aged 50 and above in both rural and urban areas. The
data included personal information, working status, and financial statement information. However, this research limit the scope of the study as in population by studying in elder population whose aged 60 and over.

This section provides a detailed description of the variables' definition and statistics summary for this research. In this research, we examine the impact of five household characteristics on the labor force participation and work hour decisions. These characteristics include the number of household member, number of children living in the same household, number of grandchildren living in the same household, spouse’s income, and money received from/ giving to children. In addition to the household characteristics, this research includes individual demographics and financial status variables.

The detailed variables used in this research are shown in Table I.

TABLE I
Data summarization for the elders who are 60 years and over

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Variable definition</th>
<th>Mean 2007</th>
<th>Standard deviation 2007</th>
<th>Mean 2014</th>
<th>Standard deviation 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xmember</td>
<td>Number of household member</td>
<td>3.54</td>
<td>1.87</td>
<td>3.70</td>
<td>1.82</td>
</tr>
<tr>
<td>Xclsh</td>
<td>Number of children living in the same household</td>
<td>0.79</td>
<td>0.82</td>
<td>1.17</td>
<td>0.94</td>
</tr>
<tr>
<td>Xgclsh</td>
<td>Number of grandchildren living in the same household</td>
<td>1.70</td>
<td>0.88</td>
<td>0.50</td>
<td>0.88</td>
</tr>
<tr>
<td>Xhealth</td>
<td>Health status (1 = very good, ..., 5 = very bad)</td>
<td>2.81</td>
<td>0.95</td>
<td>2.72</td>
<td>0.88</td>
</tr>
<tr>
<td>Xfemale</td>
<td>Female</td>
<td>0.47</td>
<td>0.50</td>
<td>0.59</td>
<td>0.50</td>
</tr>
<tr>
<td>Xurban</td>
<td>Dummy (= 1 if living in urban areas)</td>
<td>0.58</td>
<td>0.49</td>
<td>0.87</td>
<td>0.34</td>
</tr>
<tr>
<td>Xmarried</td>
<td>Dummy (= 1 if married)</td>
<td>0.50</td>
<td>0.49</td>
<td>0.60</td>
<td>0.50</td>
</tr>
<tr>
<td>Xgiving</td>
<td>Dummy (= 1 if they have money giving to children)</td>
<td>0.11</td>
<td>0.38</td>
<td>0.82</td>
<td>0.32</td>
</tr>
<tr>
<td>Xedu_hs</td>
<td>High school</td>
<td>0.12</td>
<td>0.46</td>
<td>0.31</td>
<td>0.46</td>
</tr>
<tr>
<td>Xedu_c</td>
<td>Graduated</td>
<td>0.07</td>
<td>0.37</td>
<td>0.17</td>
<td>0.37</td>
</tr>
</tbody>
</table>

V. Empirical Results
The section presents the empirical results from quantile regression with sample selection on elders’ labor force participation and work hour decision.

A. Change in household characteristics and labor force decisions of elders in Thailand
According to Table I, the table shows the comparable household characteristics and labor force decisions of elder in Thailand between 2007 and 2014. Household characteristic, number of household member, number of grand children living in the same household, and money received from children tend to decline over time. On the other hand, number of children living in the same
household, spouse’s income, and money giving to child are more likely to increase. Elders are less likely to participate in the labor market in 2014 comparing to 2007. For the work hour decision, elders with low work hours and elders with high level of work hours are work for shorter hours whereas elders with median level of work hours are work for a longer hours.

B. The effect of household characteristic on elders’ labor force participation

As in Table II, the coefficients estimate the effect of household characteristics on labor force participation. There are five household characteristic factors, which are number of household member, number of children living in the same household, number of grandchildren living in the same household, spouse’s income, and money received from/giving to children. Based on the estimation, the number of household member, spouse income, and money received from/giving to children are significant at 0.01 and the number of grandchildren living in the same household is significant at 0.05. These mean that these factors impact on the labor force participation decision at confidence level of 99 and 95. However, the number of children living in the same household is insignificant.

Number of household member and labor force participation have coefficient at –0.07 which means an increasing in number of household member decreases the elders’ labor force participation. Money received from children and labor force participation have coefficient at -0.56 meaning that an increasing in money received from children decreases elders’ labor force participation. Money giving to children and labor force participation have coefficient at 0.50 meaning that an increasing in money giving to children increases elders’ labor force participation. Spouse’s income and labor force participation have coefficient at 0.24 which means an increasing in spouse’s income increases the elders’ labor force participation. Number of grand children living in the same household and labor force participation have coefficient at 0.06 which means an increasing in number of household member increases the elders’ labor force participation.

For elderly labor force participation rate, the coefficient is at 2.66 with the significant level of 0.01. This means that an increasing in elder labor force participation increases the elders’ labor force participation and the condition of the labor market also matters as elders living in the area with lower level of labor force participation rate in the general working age population tend to work more. Low level of work labor force participation rate means elders living in that area have no or less rival to do the job causing elder needs to work more than the ones who living in other areas.

C. The effects of household characteristic on elders’ work hour decision

As in Table III, the coefficient estimates the effects of household characteristic on elders’ work hour decisions for workers with different level of work hours. Work hour can be observed only if worker decide to work and cannot be observed. This research separates the elders into three levels of work hours by quantiles that are qrL, qrM, and qrH. qrL equals 0.20. This means the value of work hour is in percentile twenty that implies the elders with low work hours. qrM equals 0.50 means the value of work hour is in percentile fifty that implies the elders with medium work hours. qrH equals 0.80 means the value of work hour is in percentile eighty that implies the elders with high work hours. The results show significant effects on the low and medium quantiles, but not the high quantile.

In household characteristic factors, elders with low level of work hours, money received from children has coefficient at -0.81 with significant level of 0.01. This means that an increasing in money received from
children decreases level of work hours of elders. Money giving to children has coefficient at 0.47 with significant level of 0.05 meaning that an increasing in money giving to children increases level of work hours of elders. For the elders with medium level of work hours, money received from children has coefficient at -0.75 with significant level of 0.01 meaning that an increasing in money received from children decreases level of work hours of elders with medium level of work hour. For the elders with high level of work hours, all of household characteristic factors have insignificant meaning that there are no factors affect work hour decisions of elders with high level of work hour.

For other factors apart from household characteristic factors, the low and medium quantiles, living in urban area has coefficient at 0.40 while in the low quantile and coefficient at 0.34 in medium quantile with significant level of 0.01. Marital status has coefficient at 0.79 with significant level of 0.05 in low quantile and coefficient at 0.69 with significant level of 0.01 in medium quantile. This means that living in urban areas or being married increase elders’ level of work hours. Labor force participation rate has coefficient at −5.17 in low quantile and coefficient at −4.86 in medium quantile with significant level of 0.01. Subsistence allowance has coefficient at −0.52 in low quantile and coefficient at −0.70 in medium quantile with significant level of 0.01.

In addition, health status has coefficient at −0.36 with significant level of 0.05. Saving has coefficient at −0.21 with significant level of 0.05. High school graduated has coefficient at -0.44 with significant level of 0.10. The finding on low and medium quantiles provided that elders who have less financial support from children or still have to financially support their children tend to work longer hours. For the high quantile, living in the urban area has coefficient at 0.47 with significant level of 0.10. House ownership has coefficient at −0.84 with significant level of 0.01.

### TABLE II

#### Estimations of elders’ labor force participation

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>ylfp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xmember</td>
<td>-0.07*** (0.02)</td>
</tr>
<tr>
<td>Xclsh</td>
<td>-0.02</td>
</tr>
<tr>
<td>Xgclsh</td>
<td>0.06**  (0.02)</td>
</tr>
<tr>
<td>Xhealth</td>
<td>-0.30*** (0.02)</td>
</tr>
<tr>
<td>Xfemale</td>
<td>-0.31*** (0.03)</td>
</tr>
<tr>
<td>Xreceived</td>
<td>-0.56*** (0.04)</td>
</tr>
<tr>
<td>Xgiving</td>
<td>0.50*** (0.05)</td>
</tr>
<tr>
<td>Xurban</td>
<td>-0.11*** (0.03)</td>
</tr>
<tr>
<td>Xmarried</td>
<td>0.46*** (0.04)</td>
</tr>
<tr>
<td>Xedu_hs</td>
<td>-0.21*** (0.05)</td>
</tr>
<tr>
<td>Xspouseinc</td>
<td>0.24*** (0.04)</td>
</tr>
<tr>
<td>xhouse_own</td>
<td>0.33*** (0.03)</td>
</tr>
<tr>
<td>Xlfpr</td>
<td>2.66*** (0.21)</td>
</tr>
<tr>
<td>inc1_pension</td>
<td>-1.17*** (0.08)</td>
</tr>
<tr>
<td>inc2_univ</td>
<td>-0.33*** (0.03)</td>
</tr>
<tr>
<td>inc3_saving</td>
<td>0.07** (0.03)</td>
</tr>
<tr>
<td>Years</td>
<td>-0.49*** (0.07)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.11   (0.11)</td>
</tr>
<tr>
<td>Observations</td>
<td>12,293</td>
</tr>
</tbody>
</table>

### TABLE III

#### Estimations of elders’ work hour decision

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>qrL</th>
<th>qrM</th>
<th>qrH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ywh</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
VI. Concluding Remarks and policy implications

In this study, we applied quantile regression with sample selection model to estimate effects of household structure and individual demographics on elders’ labor force participation and work hour decisions in Thailand. The data used in this study are from the 2007 and 2014 surveys of the Older Persons in Thailand (SOP) collected by the National Statistical Office (NSO).

There have been significant changes in the household structure and elders’ labor market in Thailand. Between 2007 and 2014, number of household member and money received from children decreased. On the other hand, number of children living in the same household and money giving to children increased. These trends can significantly affect elders’ working decisions. For the labor force participation, elders worked less in 2014 comparing to 2007. For the work hours, the data exhibits less variation in work hours in the year 2014 comparing to 2007. That is, elders with low and high level of work hours worked less in 2014 than 2007, whereas elders with medium level of work hours worked more. Nevertheless, the average work hours increased overtime.

Household structure has significant effects on elders’ labor force participation. Highly educated married male elders living in a rural area with grandchildren in a smaller household size have a higher tendency to participate in the labor force after turning 50 years old. Financial supports from children are crucial factor. Elders who receive less financial support or still have to...
support their children are more likely to remain in the labor force after 50 years old.

The researchers used quantile regression to estimate the effect of household characteristics on work hour decision. Work hour can be observed only if worker decides to work and cannot be observed otherwise and this research separates elders in 3 groups with different level of work hours. The results show more significant effects on the low and medium quantiles, but not the high quantile. For the low and medium quantiles, unmarried elders with no high school degree and no saving tend to work for longer hours. However, elders who have less financial support from children or still have to financially support their children tend to work for longer hours. For the high quantile, only the one who live in the urban area and owning a house significantly affect the work hour decision. The statistically insignificant effects in the high quantile group can be due to high heterogeneity in the reasoning toward working longer hours. Specifically, some elders may need to financially support themselves and families, while some may just directly gain utility from working.

Elders with less saving, less financial supports from children and deal with bad health condition struggled with longer work hours implies that some elders may have endure a longer hours of work due to financial need. From these results, Thailand’s falling fertility rate potentially has two implications. If there is no change in the trend, Thailand will face a shrinking labor force and the financial support from children will be a less reliable source of money for elders. For an individual level, elders will have to rely more on their own saving, pension or labor market income. For the country level, policy makers should make certain of sufficient work opportunities for the elders, and adequate financial literacy and pension options for general population. To fulfill the shortage of workers from aging society and to financially reduce the burden of the working-age population, it is necessary to be aware of the self-selection into the workforce and plan suitable incentives for capable elder workers with good health condition to retire later and work for a longer hour.

REFERENCES


