# Primary factors affecting labor supply of retired people in Kazakhstan

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***Abstract:*** *This paper evaluates the probability of employment of Kazakhstanis eligible for retirement; they decide whether to keep working or to quit. The dataset consists of 237 participants in the Life in Transition Survey. Unexpectedly, in probit estimates, health, education and marital status do not have statistically significant effects on the retirement decision in Kazakhstan, unlike retirement in the West.*

***Keywords:*** *Retirement incentives, pension benefits, aging population, employment, tax burden*

**1. Introduction**

Many countries worry that an aging population may produce more retirees than employees can support. Kazakhstan is no exception. Life expectancy in Kazakhstan has changed positively since 1995: Women live longer by 5.9 years and men by 8.6 years (World Bank, 2014a and 2014b). The increase in life expectancy implies more years spent in retirement; those without savings must rely on retirement benefits from the government. In turn, this weakens the budget of the State Pension Fund and increases labor taxes. Living standards may fall.

To prolong employment of the elderly, the government wants to identify incentives affecting the decision to retire. For example, if people retire because of illness, the government could introduce health insurance for aged workers. Or if the poorly educated retire early, the government could offer training.

In 2013, about 190,000 retirees worked, entitling them to receive retirement benefits at the same time as their salaries, based on Kazakhstani labor laws (KazTAG, 2013). Such labor might improve the financial balance of the State Pension Fund. Also, higher income enables retirees to spend more, which may stimulate the economy during downturns.

This paper evaluates the probability that older Kazakhstanis will continue to work, in response to gender, marital status, health, education, and the presence of grandchildren. Here is the paper’s structure: Part 2 discusses the nation’s pension system and recent changes in policy. Part 3 reviews work on retirement incentives. Part 4 details the binary response model, estimated on data from the Life in Transition Survey. Part 5 presents the model’s results and interprets its marginal response coefficients. Part 6 concludes and offers suggestions for research.

**1.1** **The pension system in Kazakhstan**

This system has three levels -- social, accumulative mandatory, and voluntary. The first level is a “pay as you go” system introduced after the collapse of the USSR. The main source of pension payments is the government budget, financed by general taxes. The second level is a system of mandatory pension contributions (a funded pension system), where a fixed charge of 10% is levied on the salary of citizens and foreigners living permanently in Kazakhstan. The third level is a system of voluntary pension contributions. In 2014, the government channeled all assets of nine pension funds to the Single Pension Fund, with procedures and new investment strategies to be controlled by the government and the National Bank. The main reason stated for this reallocation was investment inefficiency. Officials believed that a new investment strategy would improve the situation.

Beginning in July 2001, retirement benefits were distributed to women aged 58 or older with at least 20 years of work experience, and to men aged 63 or older with at least 25 years of work experience, according to the pension provision law (Unified National Pension Fund, 2008, Article 11). Exempted were people who had lived in zones of great radiation risk in the period 1949-63 but who had complied for less than five years with a law protecting victims of nuclear tests in Semipalatinsk. This exemption covers women aged 45 or older with at least 20 years of experience, and men aged 50 or older with at least 25 years of experience.

Another special case consists of women with at least five children, all of them older than eight. They may retire at age 53. The last special case concerns military and public service workers. Their retirement age is not officially published, but the special cases hold for those who retired before April 2, 2013, when Parliament began considering pension law.

Under the law, a worker could expect an increase in pension payments in 2017 because of a pay raise. This could apply to a retiree who is thinking of going back to work.

To be able to pay benefits, the government would raise the retirement age for women to 63 by 2027. Europe faces a similar situation: An increase in life expectancy burdens pension systems. National governments adjust their welfare policies to stimulate people to work longer, but suitable jobs are scarce.

**2.** **Literature review**

 Many studies identify factors affecting the decision to retire at the usual age.

Gruber and Wise (1999) discussed labor force participation. The population share of workers is declining, pressuring social security systems around the world. The age at which a person can get benefits correlates strongly with her decision to leave the labor force. The social security system reduces participation rates in the labor force at old age, which in turn diminishes labor productivity. The decision to keep working may depend on health, family circumstances, work incentives and financial incentives.

According to Farrer (2014), poor health can induce retirement more powerfully than financial variables can. Of respondents aged 55-59, male and female, 35% perceived poor health as important to the retirement decision. Moreover, people aged 50 or older who spent much money on health and health insurance viewed illness as crucial to the retirement decision (Gruber and Madrian, 1995). The impact of health insurance on the retirement decision was analyzed by observing federal mandates that allowed one to buy such insurance for a while from a previous employer. Increasing this period by one year raised the rate of retirement by 20%.

Financial factors also influenced the decision to retire. Among these are wages and salaries, household income, and wealth which includes benefits. Gordy (2006) suggested that *ceteris paribus* salary relates negatively to the probability of retiring. Lusardi and Mitchell (2007) reported that old workers did not understand financial and investment principles well enough to make the optimal decision about retirement. Many companies offer employees financial seminars and retirement planning programs. Employees who mistakenly thought that full social security benefits could be received at an early age planned to retire earlier than those who were informed correctly (Clark et al., 2012). As workers learned more about finance, they revised retirement plans.

 Family circumstances may also shape the decision to retire (Coile, 2003). Pertinent are the health, income and retirement status of both the decision-maker and the spouse. Married couples enjoy spending time together, so each spouse considers the other’s value of leisure. If one spouse is retired, the probability rises that the other will retire, too. The National Institute of Aging reported a survey, covering more than 20,000 Americans, in which workers eligible for retirement were less likely to leave their jobs if their spouses worked. But if a person retired due to illness, her spouse was less likely to retire (Farrer, 2014). Gurley-Calvez and Hill (2011) found that married couples were more likely to leave the workforce than single individuals. Those with a retired spouse were more likely to retire, too.

Henkens and Kalmijn (2005) analyzed exits from the labor force based on data of retirees in the period 1979-99 in the Netherlands. They observed a significant trend of early exits starting in the late 1970s and found that an ill-educated person started work early and intended to retire early. Perhaps the ill-educated lack attractive work incentives near retirement age. The authors’ main conclusion was that the less-educated were much more likely to quit work for reasons of disability or chronic unemployment than were the more-educated.

In accordance with human capital theory (Becker, 1975), factors predicting the retirement decision also predicted the behavior of retirees. Investment of adults in education was matched by an anticipated increase in their income and welfare. To earn a return on the investment, people would go to work, accumulating wealth and pension benefits. So, they could retire earlier than those who did not invest. But it was not clear that they *would* retire earlier. On one hand, they had higher salaries and thus more incentive to keep working; on the other hand, they had greater wealth and hence the desire and the ability to retire earlier.

To sum up, many factors influence the retirement decision. Weak health and health insurance are relevant. And spouses decide jointly whether to retire; they are more likely to stop working than are single persons. Education has ambiguous effects: Highly educated people are more likely to stay in the labor force, to earn higher wages; on the other hand, they can also save enough to retire early. This paper will examine the impact of health, education and marital status on the retirement decision of Kazakhstanis, which the literature has not addressed.

**3.** **Model specification**

My model is based on that of Gustman and Steinmeier (2005), modified by Gordy (2006). The employee maximizes her lifetime utility function, which depends on leisure and consumption. If she decides to retire, the model will equate her amount of leisure to one. If she decides to work further, leisure will equal zero.

She maximizes

 $U=\sum\_{t=0}^{\begin{array}{c}T\\\end{array}}\left[\frac{1}{∝}C\_{t}^{∝}+X\_{t}L\_{t}\right]$ (*Equation 1*)

subject to this rule of asset accumulation:

 $A\_{t}=A\_{t-1}+S\_{t}\left(1-L\_{t}\right)+B\_{t}-C\_{t}$ (*Equation 2)*

where $C\_{t}$ is consumption in the current period. $L\_{t}$ is leisure, equaling zero or one. $X\_{t}$ is the vector of variables that describe the valuation of leisure, including age, marital status, level of education, work and health status. $S\_{t}$ is net salary. $B\_{t}$ is retirement benefits or pension payments. $A\_{t}$ is accumulated assets. It can be assumed that the person starts with no assets. Equation 2 says that one’s current assets consist of past assets plus current savings and net benefits.

 Equation 2 permits the employee achieving retirement age to work further and get salary while receiving retirement benefits $B\_{t}$. But if she decides to retire, *Lt* will equal one and she will receive no current salary.

 $L^{\*}=L\left[S\_{t},B\_{t},X\_{t},A\_{t}\right]$ *(Equation 3)*

In Equation 3, the optimal amount of leisure $L^{\*}$ depends on salary, retirement benefits, health status, job satisfaction, etc.

A probit model, in which the dependent variable signals a decision to keep working, tests these null hypotheses:

1. Married people are not more likely to retire than single people. The marriage coefficient is not negative.
2. The sick are not more likely to retire than the healthy. The sickness coefficient is not negative.
3. The ill-educated are not more likely to retire than the well-educated. The ill-education coefficient is not negative.

 The dependent variable *y* is the working status of retirees, a latent variable that can be measured via observable variables. In our case, observable variables are independent or explanatory variables. The dependent variable is 1 if the retirement-eligible person is employed and is 0 otherwise.

The main objective of this paper is to estimate the probability that retirees work.

**4.** **Estimates**

Data are from the Life in Transition Survey by the World Bank and the European Bank for Reconstruction and Development (2006). The survey observed the influence of the transition period on lives, behavior, perceptions and beliefs. It covered 29 transition countries in Central, Eastern and Southeastern Europe, as well as in the former Soviet Union. In each country, there were 1,000 face-to-face interviews of randomly selected adults aged 18 or older.

The sample consists of 237 Kazakhstanis of the standard retirement age -- men aged 64 or older and women aged 59 or older. It does not cover military retirees, people at risk of radiation in 1949-1963, and women with more than four children, since the standard retirement age does not apply to them. The sample covers the period from August to October 2006.

The independent dummy variables are gender, marital status, the highest level of education attained, health status, and the presence of grandchildren. Background variables include primary school education, bad health, and no grandchildren present. Table 1a details the variables, and Table 1b shows their descriptive statistics.

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| *Gender* | =1 if the person is female, = 0 otherwise |
| *Marital status* | =1 if the person is married or lives with a partner, = 0 otherwise |
| *Highest level of education attained* | *Secondary school education* =1 if the person has a secondary school education, =0 otherwise;*Higher professional degree* =1 if the person has such a degree (university, college) , = 0 otherwise |
| *Health status* | *Medium health* =1 if the person has average health, = 0 otherwise;*Good health* =1 if the person has good health, = 0 otherwise |
| *Presence of grandchild* | =1 if the person has any grandchildren, =0 otherwise |

Table 1a. Exogenous variables.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | *Mean* | *Max.* | *Min.* | *Std. Dev.* | *Frequency distribution (by female)* | *Frequency distribution (by male)* |
| Gender | 0.527426 | 1 | 0 | 0.500304 | NA | NA |
| Marital status | 0.42616 | 1 | 0 | 0.495564 | 9 | 92 |
| Presence of grandchild | 0.130802 | 1 | 0 | 0.337897 | 15 | 16 |
| Good health | 0.135021 | 1 | 0 | 0.342469 | 12 | 20 |
| Medium health | 0.413502 | 1 | 0 | 0.493504 | 52 | 46 |
| Secondary school education | 0.35865 | 1 | 0 | 0.480619 | 44 | 41 |
| Higher professional degree | 0.126582 | 1 | 0 | 0.333208 | 17 | 13 |

Table 1b. Descriptive statistics for dummy variables (237 observations).

Table 2 presents results. The Breusch-Pagan-Godfrey test did not indicate heteroskedasticity.

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|  | *Coefficient* | *Standard Error* | *Prob* |
| Intercept | -1.14143\* | 1.10604 | 0.3021 |
| Gender | 0.04849\* | 0.25890 | 0.8514 |
| Marital status | -0.11418\* | 0.26147 | 0.6623 |
| Presence of grandchild | 0.06155\* | 0.25557 | 0.8097 |
| Health status |  |  |  |
| Good health | 0.10563\* | 0.27318 | 0.699 |
| Medium health | -0.04726\* | 0.18830 | 0.8018 |
| Highest level of education attained |  |  |  |
| Secondary school education | 0.16802\* | 0.18379 | 0.3606 |
| Higher professional degree | 0.06272\* | 0.26937 | 0.8159 |
| Number of observations: 237 |  |  |  |
| McFadden R2: 0.008798 |  |  |
| Table 2. Probit binary choice regressions of women aged 59-88 and men aged 64-86 in Kazakhstan who are eligible for retirement.*Notes:* The data are from the Life in Transition Survey.\*p > .3 |

In previous studies, people with higher education were more likely to be employed since they could earn higher salaries. Married persons were more likely to retire, because couples coordinated their actions. And ill people were more likely to stop working than healthy people.

 Marginal response coefficients (Table 3) suggest several in-sample results. First, females are 1.6% more likely than males to work after the usual age of retirement. The reason might be lower lifetime savings and earnings of women in comparison with men, since they take time out of the labor force to care for their children and old parents. Also, married people are 3.8% less likely than unmarried people to work. Individuals with grandchildren are 2% more likely than others to continue working, perhaps to support these children. Healthy people are 3.4% more likely than unhealthy people to work. And elderly people with secondary school education are 5.5% more likely than those with only primary education to work, while people with higher professional degrees are 2% more likely to work than others are. But all coefficients are statistically insignificant (Table 2 gives the p-values for two-tailed tests), so the independent variables may not affect the work decision in the statistical population. Strikingly, the study does not reject any of the three null hypotheses listed above.

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|  | ***Marginal response*** |
| Gender | 0.01605 |
| Marital status | -0.03781 |
| Presence of granchild | 0.02038 |
| Health status |  |
| Good health | 0.03497 |
| Medium health | -0.01565 |
| Highest level of education attained |  |
| Secondary school education | 0.05563 |
| Higher professional degree | 0.02077 |

 Table 3. Marginal response coefficients.

**5. Conclusions**

This paper evaluates the probability that a Kazakhstani old enough to retire would opt instead to work. The sample consists of 237 observations from the Life in Transition Survey of men aged 64 or older and of women aged 59 or older. Based on studies in the West, marital status, gender, health, education and presence of grandchild were expected to influence the work decision; but in fact they did not have statistically significant effects. This raises the possibility that transition economies have institutions that affect individual decisions in unanticipated ways. Future research might also address whether the decision to retire in Kazakhstan depends on financial education and saving habits.

Concerning policy, the literature review suggests that the government could support work by the elderly by providing health insurance, training, and financial consulting.

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