

Empirical Research on Retirement Expectations in China

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Using survey data sampled from 30 provinces and cities in China in 2015, this paper probes the factors influencing retirement expectations across genders. Empirical results indicate that age, level of education, health, number of dependents, number of independent sources of household income, enterprise characteristics, and working conditions significantly affect expectations for both men and women. Additionally, leisure consumption and the expected retirement age greatly impacts an individual's actual retirement age. This research contributes to the understanding of people's retirement expectations to inform future reforms of Chinese retirement age policies.

Against the backdrop of an aging population and increased pressure on pension funds, the issue of delayed retirement has become a topic of conversation and debate throughout Chinese society. China's Thirteenth Five-Year Plan proposed a policy to gradually delay retirement age in an effort to strengthen the sustainability of social security. Before implementing such a policy, it also needs to make plan and report to the central.

The new retirement age policy is related to the immediate interests of certain social groups as these groups are needed to carry out the policy and solicit public support. Many scholars from different fields have studied delayed retirement (Yang Yinan 2011; Qian Xigong, Shen Shuguang, 2012, Li Qin, Peng Haoran, 2014, Liao Chuhui, Liu Qianyi, 2015, Yin Xiaoyuan, Ren Lanlan, 2015, Liu Han, 2014; Suo Jing, 2015, Yu Cuiting, Yu Jiying, 2013). These studies explore factors influencing people's expected retirement age. However, due to differences in sampling data, the studies' conclusion differs greatly. Domestic research tends to lack high-quality micro data (Li, 2014). Additionally, an individual's retirement expectations change alongside the external environment, age, and personal cognitive or psychological factors (Parker, A M, Hayward M D, 2002). In fact, a person's expected retirement age greatly impacts the person's actual retirement age. Honig (1996) found that retirement expectations are consistent with actual observed behavior using health and retirement survey data. In other words, expected retirement age accurately predicts behavior. Gary (1998), Honig (1998) and other scholars believe that academia must strengthen research of current workers' expected retirement age.

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TABLE 1
PERSONAL AND FAMILY INFORMATION

Variables		number	percentage		number	percentage	
Gender	male	1654	51.3	number of independent sources of household income	1	272	8.47
	Female	1569	48.7		2	1,692	52.69
Age	16~30	1,068	33.13	Marriage	>=3	1,243	38.71
	31~45	1,232	38.21		unmarried	764	23.7
	46~60	889	27.57		married	2,384	73.97
	61~65	26	0.81		divorced	58	1.8
	Above the age of 66	9	0.28		Death of a spouse	16	0.5
Education	below junior high school	193	5.99	Health	0 (worst)	12	0.37
	senior high school or technical secondary school	502	15.59		1	20	0.62
	2-year college	832	25.83		2	37	1.15
	bachelor	1,297	40.27		3	116	3.62
	master	378	11.74		4	227	7.08
	doctor	19	0.59		5	485	15.12
						6	705
number of dependents	0	466	14.48	7	762	23.76	
	1	434	13.48	8	566	17.65	
	2	771	23.95	9 (best)	277	8.64	
	3	615	19.11				
	>=4	932	28.98				

The survey content and statistical results are as follows:

- a. Personal and family information. Based on the life cycle theory, a social network hypothesis can be obtained. An individual's retirement plan is determined by individual factors including gender, age, educational background, family size, number of dependents, number of independent sources of household income, marriage and health.
- b. Employment information. A person's position is inextricably linked to power. The higher the position, the greater the power. Individuals in senior positions tend to exhibit greater satisfaction following retirement. This produces a large psychological gap (Qian Xigong Shuguang Shen, 2012). The survey divided employment as follows: public servants (11.51%), employees of public institution (17.43%), employees of enterprises (66.78%) (66.78%) and others (4.28%). Government positions were divided as follows: bureau level (1.91%), division level (1.63%), section level (18.53%), "the others" (77.93%). Public institution staff was divided as follows: senior (4.71%), deputy high (13.94%) and intermediate (45%). Enterprise staff accounted for nearly 80% of the ordinary staff.
- c. Work conditions. Individuals consider benefits and rewards in order to rationally choose a retirement age. These considerations include not only the economic returns, but also the sense

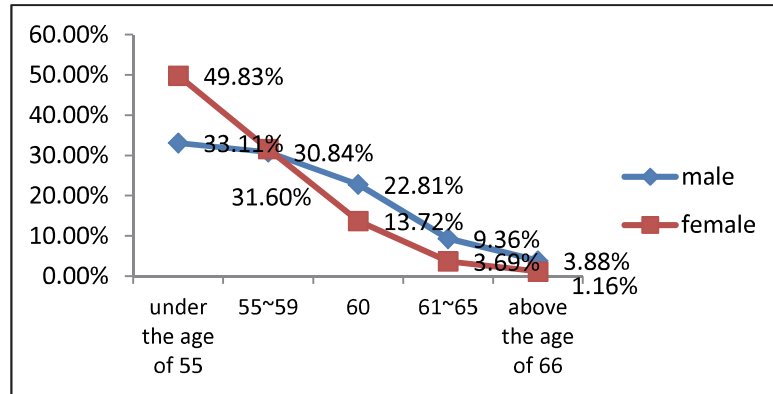
of accomplishment and satisfaction they get from working. The survey measures five factors to gauge work satisfaction. These five factors are: income, welfare, strength, autonomy and pressure.

- d. Consumption status. Consumption status mainly comprises people’s spending habits and income decisions. The survey measures the cost of consumption of items such as food, clothing, and daily necessities cost. Health consumption refers to items such as doctor visits, prescription drugs, health care products, nutrition, and fitness. Entertainment consumption refers to items such as KTV, tourism, and other leisure activities. Education consumption refers to items so as personal continued learning courses and children's education. Researchers (Ren Lanlan, 2015; Yu Cuiting, 2013; Qian Xihong, 2012) have discussed the influence on retirement income. Qian Xihong (2012), using monthly household consumption level as proxy for family income, found that the higher the consumption per month, the greater one’s willingness to delay retirement.
- e. Retirement expectation. The survey shows that only 5.51% of workers are willing to delay their retirement, while 31.36% and 55.7% are willing to retire early and on time, respectively. 7.42% of respondents state that they are unwilling to delay retirement. 94.3% of respondents indicated that they expect to retire before the age of sixty. When examining those respondents that want to retire early, there are no significant gender differences. However, women are 5% more likely to retire at their intended time than men. On the other hand, men are 2% more likely to delay retirement than women. Approximately 8.87% of men indicated that they are unwilling to delay retirement, while only 5.85% of women indicated the same. Finally, about 95% of women and 87% of men want to retire before the age of sixty.

**TABLE 2
GENDER DIFFERENCES IN RETIREMENT INTENTIONS**

	male		female		total	
	number	percentage	number	percentage	number	percentage
Early retirement	517	31.62	484	31.11	1,001	31.36
On-time retirement	868	53.09	910	58.48	1,778	55.7
Delay retirement	105	6.42	71	4.56	176	5.51
No matter	145	8.87	91	5.85	237	7.42
total	1635	100	1556	100	3,192	100

FIGURE 1
GENDER DIFFERENCE IN EXPECTED RETIREMENT AGE



Model and Variable

A reliability analysis of the survey data, using an alpha reliability coefficient of 0.649, indicates that the survey data can be trusted. The dependent variables are early retirement=1, on-time retirement=2; and delayed retirement=3. Factors influencing retirement age serve as independent variables in the mlogit regression model. Because the mlogit model multiple choice options are mutually exclusive, we removed "no matter" in the dependent variable data. As such, 2406 data points remained. The Mlogit model is used as individuals face multiple choice. The multivariate logit model expressed by formula (1):

$$P_{ij} = \frac{\exp(x_i' \beta_j)}{\sum_{j=1}^3 \exp(x_i' \beta_j)} \tag{1}$$

P_{ij} is the probability of workers choosing to retire early ($j = 1$), on-time ($j = 2$), or late (delayed retirement) ($j = 3$). x_i is a vector of labor individuals and their families socioeconomic characteristics (such as income, education degree, etc.) Formula (1) ensure $0 < p_{ij} < 1$ and $\sum_{j=1}^3 P_{ij} = 1$. This paper set on-time retirement as a base category. The β_2 coefficient of on-time retirement is set as 0 to satisfy Formula (1). At this point, $\beta_1(\beta_3)$ reflects individual variable changes on retirement (early or delayed) relative to a timely retirement. Further, this paper considers the reasons why some variables change a person's willingness to retire on time. Mlogit model is a nonlinear model. The marginal effect of a unit change in an explained variable can be shown by (2):

$$\frac{\partial P_{ij}}{\partial x_i} = P_{ij} (\beta_j - \bar{\beta}_i) \quad \bar{\beta}_i = \sum_j P_{ij} \beta_j \tag{2}$$

TABLE 3
VARIABLES AND DEFINITIONS

Independent Variables	Name	Variable definitions
Personal and Family Information Variables	Age(x_1)	16~30 =1 ; 31~45 =2 ; 46~60 =3 ; 61~65 =4 ; \geq 66 =5
	Education(x_2)	below junior high school =1 ; senior high school or technical secondary school =2 ; 2-year college =3 ; bachelor=4 ; master=5 ; doctor=6
	Marriage(x_3)	married=1 ; others=0
	Health(x_4)	the worst=0 ; the best=9
	Number of dependents (x_5)	0 people=1 ; one people=2 ; two people=3 ; three people=4 ; \geq four people=5
	Number of independent sources of household income (x_6)	one people=1 ; two people=2 ; \geq three people =3
Employment Information Variables	Public servants (x_7)	public servants=1, others=0
	rank (x_{71})	bureau=1, others=0
	(x_{72})	division=1, others=0
	(x_{73})	section level (the control group)
	Institution staff x_8	public institution staff =1, others=0
	(x_{81})	senior=1, others=0
	(x_{82})	sub-senior=1, others=0
	(x_{83})	middle=1, others=0
	Enterprise staff x_9	primary (the control group)
(x_{91})	senior manager=1, others=0	
(x_{92})	middle manager=1, others=0	
		ordinary (the control group)
Work Conditions Variables	Income (x_{10})	Very dissatisfied = 1; dissatisfied = 2; General = 3;
	Welfare(x_{11})	Satisfaction = 4;
	Intensity(x_{12})	Very satisfaction = 5
	Autonomy(x_{13})	
	Pressure(x_{14})	
Consumption Status Variables	Living Consumption(x_{15})	\leq 20% =1 ; 30%=2 ; 40%=3 ; 50%=4 ; \geq 60% =5
	Leisure Consumption(x_{16})	
Expected retirement age(x_{17})		\leq 55 =1 ; 55-59 =2 ; 60 =3 ; 61-65 =4 ; \geq 66 =5
Dependent variable(P_i)	Early retirement=1, On-time retirement=2 ; Delay retirement=3	

Analysis of Regression Results

Table 3 contains the mlogit model regression results of a person's willingness to retire using on-time retirement as the reference group. A Multivariate Logit model analysis of regression coefficient (β) and the marginal effect ($\delta p / \delta x$) was used.

TABLE 3
MLOGIT MODEL REGRESSION RESULT OF RETIREMENT WILLINGNESS

Table 3 Mlogit model regression result of retirement willingness

Explained variable	Male				Female			
	Early retirement		Delay retirement		Early retirement		Delay retirement	
Explanation variables	β_i	$\frac{\delta p_{i1}}{\delta x_i}$	β_i	$\frac{\delta p_{i2}}{\delta x_i}$	β_i	$\frac{\delta p_{i1}}{\delta x_i}$	β_i	$\frac{\delta p_{i2}}{\delta x_i}$
x_1	0.9*	0.208	-1.44**	-0.064	-0.095	-0.019	-0.11	-0.002
x_1^2	-0.17	-0.041	0.311***	0.013	—	—	—	—
x_2	0.322	0.081	-1.064***	-0.043	0.149	-0.032	0.132***	0.004
x_2^2	-0.041	-0.01	0.817***	0.007	—	—	—	—
x_3	-0.112	-0.021	-0.196	-0.006	0.16	0.038	-0.554	-0.018
x_4	-0.113***	-0.024	-0.01	0.001	-0.073*	-0.015	0.062	0.002
x_5	-0.42*	-0.102	1.071***	0.044	0.119***	0.023	0.241***	0.005
x_6	0.232***	0.051	-0.163	-0.008	0.166	0.031	0.472**	0.01
x_7	0.112	0.025	-0.126	-0.005	0.509***	0.11	0.407	0.006
x_{71}	-0.45	-0.315	-2.21	-0.04	1	0.3***	0.966	0.974***
x_{72}	0.9	0.696	-0.81	-0.039	0.453	0.11	0.741	-0.026
x_{73}	-0.764*	-0.132	-0.85	-0.018	-0.266	-0.05	0.037	0
x_8	-0.053	-0.019	0.549	0.025	0.395*	0.078	0.798*	0.02
x_{82}	-0.171	-0.058	1.2	0.083	-0.096	-0.02	0.383***	0.012
x_{83}	-0.285	-0.055	-0.183	-0.003	-0.619**	-0.115	-0.057	-0.002
x_{91}	0.383	0.095	-1.083	-0.027	1.9***	0.426	1.18	0.004
x_{92}	-0.035	-0.011	0.29	0.012	-0.212	-0.046	0.35	0.012

x_{10}	-0.186*	-0.04	0.083	0.005	-0.285***	-0.059	-0.115	0
x_{11}	-0.008	-0.001	0.036	0.001	-0.062	-0.017	0.626***	0.016
x_{12}	-0.35***	-0.069	-0.434**	-0.012	-0.371***	-0.077	-0.104	0
x_{13}	-0.062	-0.016	0.297**	0.011	-0.074	-0.015	-0.003	0
x_{14}	-0.139	0.031	-0.152	-0.007	-0.133	0.3	-0.336	-0.009
x_{15}	0.057	0.013	-0.077	-0.003	0.084	0.016	0.187	0.004
x_{16}	0.259***	0.051	0.28**	0.007	0.167**	0.031	0.43***	0.009
x_{117}	-0.633***	-0.144	0.835***	0.038	-0.646***	-0.142	0.866***	0.027
C	0.605		-2.97		0.874		-7.65	

Results show that the factors affecting the willingness of men and women to retire are not identical.

1. Age. Age has a significant impact on men's willingness to retire and exhibits a nonlinear relationship. Men under the age of 45, relative to on-time retirement, are more willing to retire early and less willing to delay retirement. Men over the age of 45a are more willing to delay retirement and are less willing to retire early. The influence of age on women's willingness to retire is not significant.
2. Level of education in men. Education level has a significant impact on men's retirement age and exhibits a nonlinear relationship. Men with Master's degrees, relative to on-time retirement, are more willing to retire early and are not willing to delay retirement. Men with degrees above Master's degrees tend to delay retirement.
3. Level of education in women. Education level significantly increases women's willingness to delay retirement. The influence on women's willingness to retire early was not significant. The Yang Yinan (2011) made similar research on education effecting female retirement age significantly positive, the higher is education of female, the greater is willingness to delay retirement. Hall & Johnson (1980), Burtless & Moffitt (1985), Montalto, Yuh & Hanna (2000) and others' findings are also consistent with these results. It is generally believed that the more years of the education an individual has, the more likely they are to put off retirement. As such, education investment has immense human capital investment benefits.
4. Health status. Health status in men and women has a significantly negative effect on early retirement. In other words, both men and women are less willing to retire early the better their health. Healthy men tend to retire on time. Healthy women tend to delay retirement. The reasons for this difference are that, in China, women's retirement age is only 50-55 years old. Additionally, the life expectancy for women is generally longer than men. These factors combine to encourage women to delay retirement.
5. The number of dependents (children and elderly). The number of dependents has a significant impact on the retirement age of both men and women. The impact of the number of dependents on the willingness to delay retirement is stronger in men. In women, this factor is largely dependent on the women's role in the family.

6. The number of independent sources of household income. The number of independent sources of household income has a significant negative impact on the willingness of men to retire early. This same variable has a significant positive impact on women's willingness to delay retirement. Every increase in the number of sources of household income make men 5.1% more likely to retire early, while women are 1% more likely to delay retirement.
7. Type of Employment. Relative to enterprise staff, public servants – both men and women – are more willing to retire early. This leads to questions about the impact of dual pension system on retirement age. women of bureau are very willing to delay retirement.
8. Working conditions. For both men or women, the higher the income, the more satisfaction is garnered from work. Consequently, this makes people less willing to retire early. Job satisfaction increase by 1%, the probability decreases by 4% of early retirement and increase by 5% of delay retirement for male, but not significantly; the probability of delay retirement increases 5.9% for women significantly. Welfare satisfaction haven't a significant effect on the willingness of men, but significantly increased women's willingness to delay retirement. In both men and women, the higher the work satisfaction, the greater the willingness to retire on time. Job autonomy significantly enhances men's willingness to delay retirement.
9. Consumption status. Leisure consumption significantly impacts both men's and women's retirement age. The higher the proportion of leisure consumption, the less likely both men and women are to retire on time. This finding also conforms to the basic theory of labor economics. According to the classical theory of labor economics (Ehrenberg, Smith, 2006), wages will simultaneously have a substitution and income effect. Higher wages means leisure becomes relatively expensive. As such, the substitution effect encourages the worker increase their total labor by delaying their retirement. Higher wages means that an individual's lifetime income is higher. This increases the individual's ability to pay for more leisure. The income effect encourages employees to reduce their total labor and choose early retirement. In other words, leisure consumption's impact on retirement depends on the individual's leisure preferences.
10. Expected retirement age. The expected age of retirement has a significant impact on actual retirement. With both men and women, the higher the expected retirement age, the more willing people are to delay retirement.

CONCLUSION

Factors impacting the willingness of both men and women to retire vary greatly. For men, age, level of education, health, number of dependents, number of independent sources of household income, work type, income, job autonomy, leisure consumption level, and expected retirement age all have a significant impact. For women, education, health, number of independent sources of household income, rank, title, work welfare, leisure consumption level, and expected retirement all have a significant impact. Retirement system reform is a systematic project involving many factors such as pension, employment and personal choice. Every person's individual characteristics, such as economy, individual, family and career will have an impact on retirement age. This confirms the rationality of developing an elastic retirement system. Such a system allows the worker to choose their own retirement age. Furthermore, this study found that many people choose to retire early. This can cause economic losses and aggravate the strain on labor supply in China.

REFERENCES

- Feng, K., & HU, Y. (2008). An Empirical Study on Early Retirement in Urban China. *Chinese Journal of Population Science*, 4, 88-94
- Gary, B. (1998). Social security, unanticipated benefit increases and the timing of retirement[J]. *The Review of Economic Studies*, 53.
- Honig, M. (1996). Retirement Expectations: Differences by Race, Ethnicity, and Gender[J]. *Gerontologist*, 36(3), 373-382
- Li, Q., & Peng, H. (2015, April). Who prefer to postpone retirement? —an analysis on the determinants of delay retirement of the urban middle—elderly in China. *Journal of Public Management*, 12(2), 119-128
- Lin, X. (2013). An Analysis of the mechanism of flexible retirement in developed countries and relevant lessons. *Comparative Economic & Social Systems*, 2, 226-235.
- Qian, X., & Shen, S. (2012). The impact of incumbents' socioeconomic status on expected retirement age. *Insurance Studies*, 7, 102-110.
- Qian, X., & Shen, S. (2012). The impact of income and health on retirement expectation: an interaction effect model. *Economic Management*, 3, 144-149.
- Suo, J., & Xiao, F. (2015, May). Empirical Study on Influence Factors of Female High — level Talents' Same — Age Retiring Demand—Based on Investigation Data from Cultural Department. *Journal of Xi'an Jiaotong University*, 35, 109-132.
- Xi, H., & Wang, Z. (2017, March). Workers' retirement willing and its factors in different occupations Based on the survey in ten provinces of China. *Journal of Northwest University*, 47(2), 11-20
- Yang, Y., Cai, & Guowei. (2012). Is it feasible to defer retirement age and postpone the earliest age for pension benefit? —Empirical evidences from expected retirement age on —job workers in Guangdong province. *Finance & Trade Economics*, 10, 111-122.
- Zhai, S., & Su, D. (2017, March). *Empirical study on retirement willingness and influencing factors on public employees*. Based on the survey data among ten provinces and cities in China, 47(2), 21-28.