

By 2017, Korea became an aged society. The elderly population rate is the highest among the OECD countries. The size of the aging population is growing faster than any other countries. However, in contrast with the high speed of aging, the relevant policy reforms are undertaken at a slow speed. Although there are the national pension fund and the old-age pension that government provides for retirees and elderly people, these seem to be insufficient to maintain their lives without participating in the labor force.

The national pension service, enacted in 1986, was implemented in 1988. Within 11 years, it expanded its coverage from full-time workers aged 18 to 60 in businesses with 10 or more employees to full-time workers in businesses with 5 or more employees and agricultural workers in rural areas. In 2013, full-time workers in businesses with less than 5 employees, self-employed, temporary, daily, and hourly employees became eligible for the national pension service (NPS, 2018). Given the short implementation period, only few elderly people participated in the service. The participation period was too short to receive a sufficient pension fund at the age of 65. To subsidize insufficient pension funds, the government provides the old-age pension fund for elderly people aged 65 or older. The amount of the old-age pension fund varies by the amount of the national pension funds, disability living allowance, or bereaved allowance (Ministry of Health and Welfare, 2018).

Korea had no mandatory retirement age prior to 2016. Companies frequently asked employees to voluntarily resign or retire with the early retirement severance payments. Although the government mandated the legal retirement age to be 60 in 2016, it is conventional for companies to recommend early retirement to workers. The average retirement age is 51.6 years for men and 47 years for women (Kim, 2017). Table 1 confirms a rapid increase in the proportion of people who are not in the labor force by reaching the age of 55. Those people who decided to resign or retire earlier than the legal retirement age might be too young and healthy to stay out of the labor force. Table 1 shows that more than 50% of people aged between 55 and 64 reported that their health conditions are very good, good, or fair. Given a high life expectancy and relatively good health conditions but limited public pensions and inadequate provision for retirement, elderly people might not be ready for their later lives but be willing to stay in or return to the labor force. Poor health conditions may induce people to leave the labor force early. However, early retirement and being unable to return to the labor force after retirement may also affect their health status. This paper examines a dynamic relationship between labor force participation and health status of elderly people.

We use the 2006-2017 Korea Welfare Panel Study (12 waves). As an annual longitudinal panel survey with a representative sample of 7,072 households and 14,463 individuals, it provides detailed information on demographic, economic, and housing characteristics, health status, labor force participation, and the utilization of healthcare and welfare services at the household-level and the individual-level. For the main analysis, we use a sample of 3,956 individuals who are aged 45 or older.

To investigate the causal relationships between labor force participation and health status, we use the Arellano and Bond Generalized Method of Moment Model (Arellano & Bond, 1991) and Maximum Likelihood Structural Equation Model (Moral-Benito et al, 2017). These dynamic panel-data models have the following form:

$$y_{it} = \alpha + \beta_1 y_{i,t-1} + \beta_2 k_{i,t-1} + \beta_3 x_{it} + \varepsilon_{it}$$

where the unit of observation is a person i in wave t . The dependent variable Y_{it} indicates being employed or being healthy in the current wave. $k_{i,t-1}$ indicates being healthy or being employed in the previous wave. X contains various individual- and household-level variables, and ε_{it} indicates the error term.

Table 2 provides the preliminary results on the causal relationships between labor force participation and health status of elderly people. While there is no causal effect of the short-term change in health condition on labor force participation, we find a statistically significant causal effect of the short-term change in labor participation on their health status. It indicates being able to stay in or return to the labor force positively affects elderly people to maintain good health status. These results are robust regardless of the type of dynamic panel-data model used and the inclusion of a set of controls.

Since different age groups may show diverse causal effects between health status and labor force participation, we aim to separate elderly people to the young-old, middle-old, and old-old age groups. These three age groups will further be sub-grouped based their gender and region to examine the gender and regional differences. A different set of controls will be used for the robustness checks. We expect the dynamic panel data modeling to provide valuable insights into the effect of labor force participation on health status of elderly people in Korea.

Reference:

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Kim, A. J. (2017). Prime-aged people's actual retirement age in the labor market. Employment Trend Brief. Korea Employment Information Service.

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Table 1. Descriptive statistics by age category (base year = 2006)

Age category	45-55		55-65		65 +	
	Mean	s.d.	Mean	s.d.	Mean	s.d.
Gender	Male	0.463 (0.499)	0.378 (0.485)	0.379 (0.485)		
	Female	0.537 (0.499)	0.622 (0.485)	0.621 (0.485)		
Marital status	Married	0.812 (0.391)	0.798 (0.402)	0.644 (0.479)		
	Widowed	0.048 (0.213)	0.144 (0.351)	0.319 (0.466)		
	Divorced	0.082 (0.274)	0.040 (0.196)	0.021 (0.145)		
	Separated	0.022 (0.147)	0.011 (0.102)	0.009 (0.094)		
	Never married	0.037 (0.188)	0.008 (0.091)	0.006 (0.079)		
Education	No education (7 or over)	0.019 (0.136)	0.095 (0.294)	0.327 (0.469)		
	Elementary school	0.235 (0.424)	0.440 (0.497)	0.402 (0.491)		
	Middle school	0.245 (0.430)	0.209 (0.407)	0.119 (0.324)		
	High school	0.376 (0.485)	0.189 (0.392)	0.096 (0.294)		
	Community college	0.026 (0.158)	0.008 (0.086)	0.008 (0.091)		
	University	0.083 (0.277)	0.047 (0.212)	0.040 (0.196)		
	Master	0.015 (0.123)	0.011 (0.106)	0.007 (0.083)		
	PhD	.	(.)	.	(.)	.
Employment status	Regular employee	0.185 (0.388)	0.057 (0.232)	0.004 (0.064)		
	Temporary employee	0.127 (0.333)	0.083 (0.275)	0.032 (0.177)		
	Daily employee	0.105 (0.306)	0.086 (0.280)	0.036 (0.186)		
	Self-support/public/elderly employee	0.014 (0.120)	0.011 (0.102)	0.003 (0.052)		
	Employer	0.017 (0.129)	0.008 (0.086)	0.001 (0.037)		
	Self-employee	0.174 (0.379)	0.173 (0.378)	0.214 (0.411)		
	Unpaid family employee	0.091 (0.288)	0.123 (0.329)	0.104 (0.305)		
	Unemployed	0.043 (0.204)	0.050 (0.219)	0.026 (0.160)		
	Not in labor force	0.244 (0.429)	0.410 (0.492)	0.579 (0.494)		
	Severity of disability	No disability	0.905 (0.293)	0.887 (0.316)	0.894 (0.308)	
Severity level 1		0.013 (0.112)	0.008 (0.086)	0.006 (0.074)		
Severity level 2		0.015 (0.123)	0.012 (0.109)	0.012 (0.108)		
Severity level 3		0.026 (0.158)	0.014 (0.116)	0.010 (0.101)		
Severity level 4		0.007 (0.082)	0.016 (0.125)	0.028 (0.164)		
Severity level 5		0.009 (0.096)	0.025 (0.156)	0.019 (0.135)		
Severity level 6		0.019 (0.136)	0.028 (0.164)	0.017 (0.128)		
Severity level 7		0.006 (0.077)	0.011 (0.106)	0.016 (0.125)		
Religion	0.812 (0.391)	0.798 (0.402)	0.644 (0.479)			
Alcohol use	Once a month or less	0.279 (0.449)	0.191 (0.393)	0.145 (0.352)		
	two to four times a month	0.162 (0.369)	0.105 (0.307)	0.066 (0.248)		
	two to four times a week	0.077 (0.267)	0.082 (0.275)	0.088 (0.283)		
	More than four times a week	0.482 (0.500)	0.622 (0.485)	0.701 (0.458)		
	Never	.	(.)	.	(.)	.
Household size	3.362 (1.194)	2.506 (1.025)	2.110 (1.080)			
Number of children	0.607 (0.890)	0.121 (0.423)	0.158 (0.550)			
Region	Seoul	0.181 (0.386)	0.166 (0.372)	0.128 (0.334)		
	Incheon/Gyeonggi	0.208 (0.406)	0.196 (0.397)	0.172 (0.377)		
	Busan/Gyeongnam/Ulsan	0.196 (0.397)	0.187 (0.390)	0.180 (0.384)		
	Daegu/Gyeongbuk	0.119 (0.324)	0.129 (0.336)	0.176 (0.381)		
	Daejeon/Chungnam	0.080 (0.272)	0.081 (0.273)	0.093 (0.291)		
	Gangwon/Chungbuk	0.066 (0.249)	0.065 (0.246)	0.074 (0.263)		
	Gwangju/Jeonnam/Jeonbuk/Jeju	0.149 (0.356)	0.176 (0.381)	0.177 (0.382)		
	Rural	0.212 (0.409)	0.285 (0.451)	0.408 (0.492)		
Household Income per capita per month	80.137 (57.672)	68.980 (72.505)	46.957 (33.243)			
Labor income per capita per month	35.491 (45.953)	20.191 (49.397)	7.353 (18.613)			
Health condition	Very good	0.158 (0.365)	0.057 (0.232)	0.017 (0.128)		
	Good	0.449 (0.498)	0.311 (0.463)	0.222 (0.416)		
	Fair	0.146 (0.353)	0.201 (0.401)	0.158 (0.365)		
	Poor	0.201 (0.401)	0.352 (0.478)	0.465 (0.499)		
	Very poor	0.047 (0.211)	0.080 (0.271)	0.139 (0.346)		
Observations		1,174		1,331		1,451

Table 2. Relationship between labor force participation and health status

Panel A: Arellano and Bond model											
	Health status						Employed				
	(1)			(2)			(3)		(4)		
Lagged health status	0.117	(0.007)	***	0.111	(0.007)	***	0.003	(0.004)	0.002	(0.004)	
Lagged employment status	0.022	(0.010)	**	0.020	(0.010)	**	0.459	(0.008)	***	0.423	(0.009) ***
Controls	No			Yes			No		Yes		
Wald Chi-squared test	314.95	(0.0000)		360.27	(0.0000)		3096.9	(0.0000)	3391.53	(0.0000)	
Observations	3,956						3,956				
Panel B: Dynamic panel data with maximum likelihood											
Lagged health status	0.131	(0.007)	***	0.131	(0.007)	***	0.003	(0.004)	0.003	(0.004)	
Lagged employment status	0.030	(0.007)	***	0.030	(0.007)	***	0.502	(0.010)	***	0.501	(0.010) ***
Controls	No			Yes			No		Yes		
Wald Chi-squared test	410.88	(0.0000)		777.70	(0.0000)		2749.4	(0.0000)	3786.55	(0.0000)	
Observations	3,956						3,956				