

Table 1. Summary of sample defined contribution plan characteristics

Year ending	Number of sponsors	Total participants	Avg. participant	Total assets (billion Won)	Avg. asset per workplace (₩Mil)	Avg. asset per participant (₩Mil)	Avg. options per plan	Avg. choice per participant
2012	4,297	7,888	2	231	5	3	9.2	2.7
2013	9,673	34,831	4	1,300	13	4	9.5	3.1
2014	7,568	57,906	8	3,059	40	5	10.6	2.7
2015	7,591	80,620	11	5,231	69	6	11.2	2.1
2016	8,418	104,541	12	7,629	91	7	11.6	1.9
2017	9,895	135,053	14	10,655	108	8	11.7	1.8

Note: 1) Avg. participant=Total participants/Number of sponsors

2) Avg. asset per workplace=Total assets/Number of sponsors

3) Avg. asset per participant=Total assets/Number of participants

Table 2. Investment profile of plan options by service provider

Asset manager A			Asset manager B	
	Product type	Number	Product type	Number
Safe	1-year maturity deposit	2	Interest rate linked insurance	1
	2-year maturity deposit	2	1-year maturity GIC	1
	3-year maturity deposit	2	2-year maturity GIC	1
			3-year maturity GIC	2
Risky	Government fund	2	Bond balanced fund	3
	Bond balanced fund	4		
	Equity fund	2		
Total		14		8

Note: Bond balanced is equity ratio range above 0% and under 40%

Equity fund is the equity ratio 60% or more

Table 3. Descriptive statistics for workplaces and participants

Variable	Obs	Mean	Std.Dev.	Min	Max
Panel A: Sponsor-level					
Provider	420,839	0.467	0.499	0	1
Plantype	420,839	0.003	0.059	0	1
Industry	420,839	0.847	0.360	0	1
Size	420,839	8.151	6.725	1	29
Location	420,839	0.537	0.499	0	1
Panel B: Participant-level					
R	420,839	1.640	0.716	-12.3	27.5
Gender	420,839	0.608	0.488	0	1
Age	420,839	42.526	10.113	17.8	65
Tenure	420,839	4.838	4.048	1	47.0
PlanTenure	420,839	2.364	1.204	1	7.1
Ln(Wage)	420,839	9.917	1.288	0	13.9
Ln(Asset)	420,839	8.492	0.759	6.9	11.5
RiskyAsset	420,839	0.472	6.422	0	100
Trade	420,839	0.033	0.236	0	22

Table 4. Pooled OLS regression results on investment returns

Variables	Coef.	Std. Err.	t	P>t
Constant	-8.049***	0.086	-93.54	0
Provider	0.168***	0.001	121.88	0
PlanType	-0.014	0.015	-0.91	0.365
Industry	0.007***	0.002	3.82	0
Size	0.000***	0.000	-9.12	0
Location	-0.015***	0.001	-12.22	0
Gender	0.072***	0.001	48.74	0
Age	-0.002***	0.000	-5.15	0
Age ²	0.000***	0.000	8.22	0
Tenure	0.000*	0.000	1.89	0.059
PlanTenure	0.165***	0.001	189.48	0
Ln(Wage)	-0.069***	0.001	-79.66	0
Ln(Asset)	2.272***	0.020	112.58	0
Ln(Asset) ²	-0.115***	0.001	-97.53	0
RiskyAsset	0.756***	0.052	14.43	0
Trade	0.098***	0.009	11.15	0
2013	-0.238***	0.006	-40.33	0
2014	-0.303***	0.006	-54.33	0
2015	-0.828***	0.005	-151.66	0
2016	-1.303***	0.006	-233.37	0
2017	-1.510***	0.006	-274.07	0
F-statistic	36865.16			
Prob > F	0.0000			
R ²	0.5896			
Observation (N)	420,839			
T-bar	2.02			
n	207,836			

Note: 1) Standard errors are robust.

2) *, **, and *** denote significance at the 10%, 5%, and 1% level respectively.

Table 3. Tobit regression results on risky asset allocation

Variables	Coef.	Std. Err.	t	P>t
Constant	-14.985***	4.386	-3.42	0.001
Provider	-0.754***	0.144	-5.22	0
PlanType	2.623***	0.578	4.54	0
Industry	1.351***	0.222	6.08	0
Size	-0.009***	0.003	-2.79	0.005
Location	0.790***	0.140	5.66	0
Gender	-0.017	0.135	-0.13	0.899
Age	0.039	0.049	0.78	0.434
Age ²	-0.001	0.001	-1.56	0.119
Tenure	0.010	0.016	0.62	0.532
PlanTenure	0.168***	0.061	2.76	0.006
Ln(Wage)	0.064	0.044	1.48	0.139
Ln(Asset)	-0.854	0.948	-0.9	0.368
Ln(Asset) ²	0.152***	0.052	2.93	0.003
Trade	2.102***	0.192	10.96	0
2013	-1.646***	0.182	-9.06	0
2014	-2.137***	0.227	-9.42	0
2015	-2.559***	0.261	-9.8	0
2016	-3.281***	0.303	-10.82	0
2017	-3.899***	0.337	-11.57	0
F-statistic	18.34			
Prob > F	0.0000			
Pseudo-R ²	0.1119			
Observation (N)	420,839			
Left-censored	418,303			
Uncensored	1,160			
Right-censored	1,376			
T-bar	2.02			
n	207,836			

Note: 1) Standard errors are robust.

2) *, **, and *** denote significance at the 10%, 5%, and 1% level respectively.

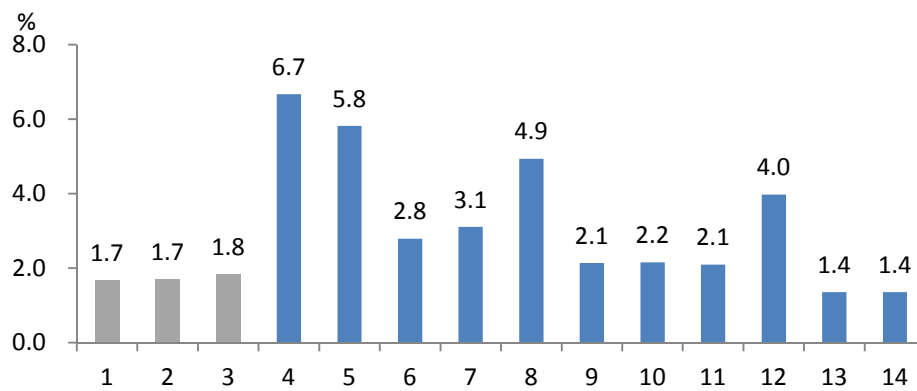


Figure 1. Investment Rates by investment products

- Note: 1) Average annual investment returns for 3 years (2015-2017) using geometric returns.
2) Safe products 1, 2, and 3 represent 1-year, 2-year, and 3-year maturity deposit, respectively.
3) Risky products 4-5, 6-7, and 8-14 are represent equity funds, bond balanced funds, and government balanced funds, respectively.

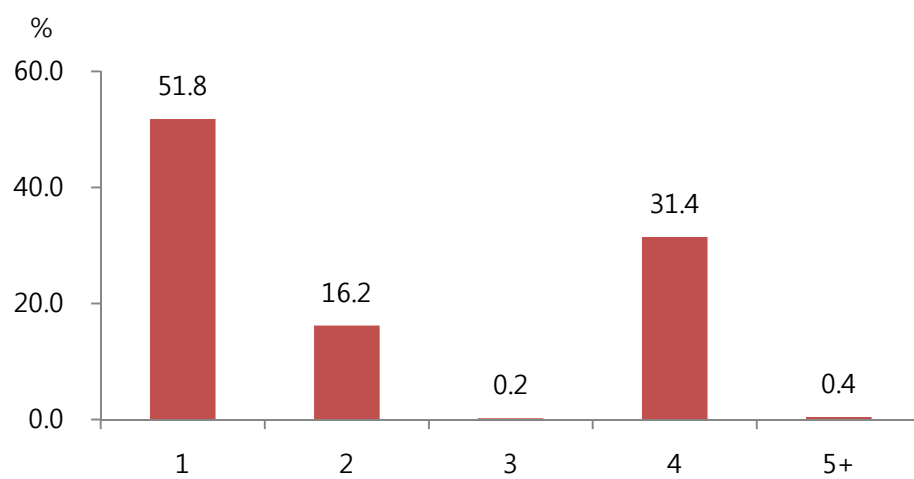


Figure 2. Number of investment options chosen by participants

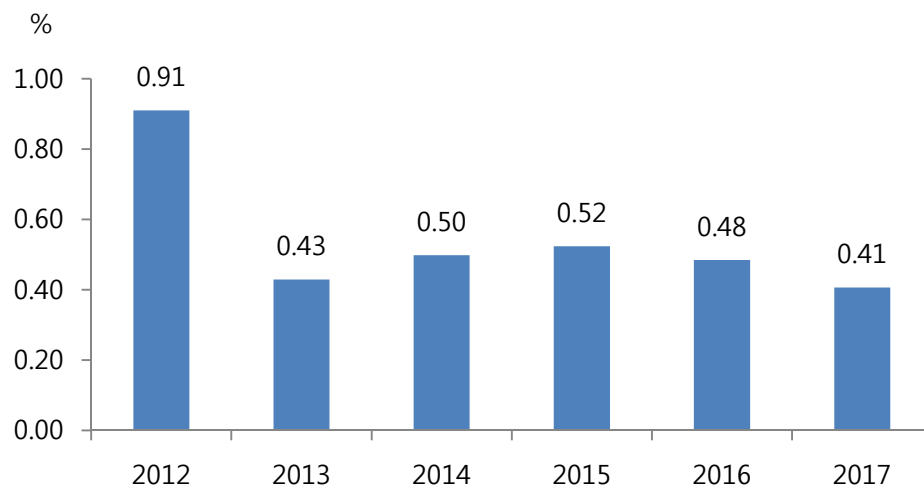
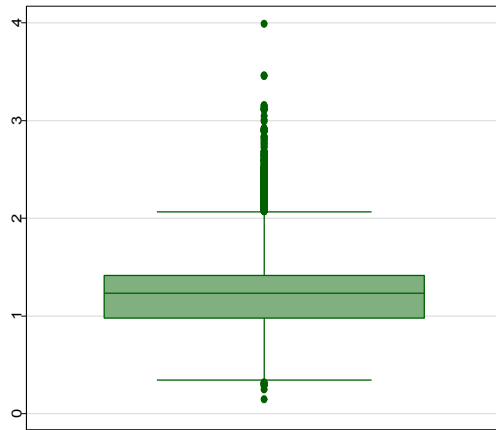


Figure 3. Risky asset allocation by participants

a. Participants with 100% safe products
mean=1.22%, s.d.=0.33%



b. Participants with 100% risky products
mean=1.36%, s.d.=0.89%

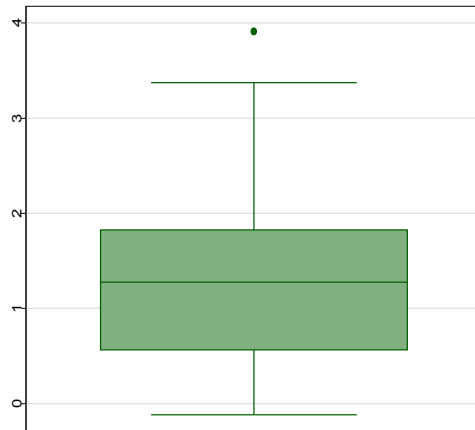


Figure 4. Participants' annual geometric rates by risky asset allocation

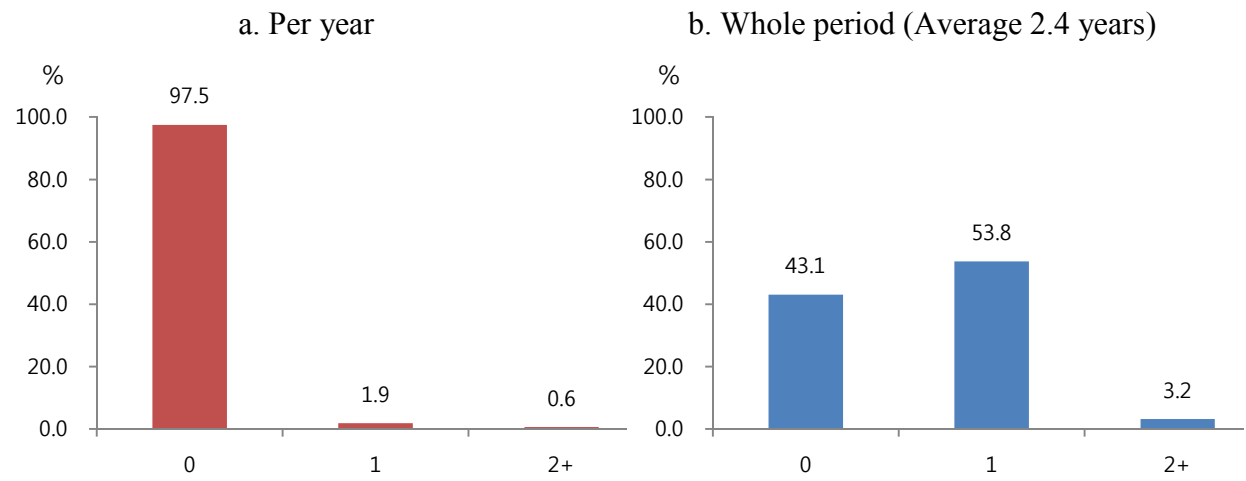


Figure 5. Number of product changes by participants

APPENDIX

A1. List and description of variables in the model

Variables	Descriptions and Units
R	Participant's annual investment returns (%)
Provider	Offered equity funds, 1: Yes ('Asset manager A'), 0: No ('Asset manager B')
PlanType	Plan type of workplace, 1: corporate IRP, 0: DC
Industry	Business industry of workplace, 1: Service, 0: Manufacture
Size	Total employee number of workplace
Location	Workplace location, 1: Metropolitan, 0: Local
Gender	1: Female, 0: Male
Age	The age of participant at the end of year (years old)
Tenure	Total years since entered in the workplace (years)
PlanTenure	Total years since participated in the DC type plan (years)
Ln(Wage)	Sponsor's yearly contribution to a participant (1,000 Won) Transformed to logarithmic scale
Ln(Asset)	The accumulated asset size at the end of year (1,000 Won) Transformed to logarithmic scale
Ln(Asset) ²	The squared value of log(Asset)
RiskyAsset	Share of the total asset invested in risky products at the end of year
Trade	Whether the participant account included a product change or not per year, 1: Yes, 0: No
Year	Dummy, 2012: Reference group