Value of Retirement Benefit vs Retirement Age

Report FAC/FCA-106

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Introduction: Increasing the retirement age is one way of reducing the cost of pensions. The purpose of this report is to provide the data needed to estimate the effect of changing the retirement age on the cost of the pension.

Summary: Use Figure 1 to determine the percent cost saving due to a change in the retirement age. Enter the graph at the present retirement age and read the ordinate. Enter the graph at the new retirement age and read the ordinate. The cost ratio is the ratio of the second ordinate value to the first. Use the solid line if you want to match the assumptions that the Fairfax County pensions use. Use the dotted line if you are pessimistic. An example is given in the Discussion section. (The table below the graph is more convenient to use than is the graph.)

For any particular plan, such as the Education Employee Retirement plan of Fairfax County Public Schools, the savings must be computed for each individual, with the individual savings summed to get the total. Each individual must be considered because employees are not all hired at the same age. The examples used in the Discussion section imply that the percent saved is not very sensitive to the demographics.

Discussion: The Social Security website[1] provides all of the information needed to estimate the impact of changing the age at which people are eligible for retirement. For example, the table at the website shows that people living to age 60 have a life expectancy of 21.27 years if male and 24.3 years if female. We have used the average of these two, 22.785, in our computations. The same table shows that 88,524 people will live until age 60, out of every 100,000 births, again using the average of male and female values. If everyone retired at age 60, the pension covering their retirement would need to cover 88,524 people for 22.785 years, so the cost would be proportional to the product of these two numbers. The same product can be computed for all of the ages listed in the table. The ratio of these products to the product with retirement at age 67 is plotted in Figure 1 under the label of "ROI= 0% above inflation". If the rate of return (ROI) on investments is greater, then the effective number of years must be reduced by the net-present-value formula. The second curve in Figure 1 uses the ROI and inflation assumptions used by the actuaries of the ERFC pension.

Consider as an example the ERFC pension account. The fund has an actuarial liability of $2.57B (billion) and actuarial assets of $1.93B[2]; therefore, it is underfunded by 25%. According to the FCPS employee handbook[3], for recent hires the age of retirement is determined by the formula (age+years of service) = 90. If a person is hired at age 22 and works for 34 years, he can retire at age 56. If the sum is raised from 90 to 112, he must work for 45 years, retiring at age 67, the age of Social Security retirement. If the pension fund realizes a 7.5% ROI, while the inflation rate is 3.75%, the savings can be determined from the graph as the ratio of 1.000 at age 67 to 1.277 at age 56. The cost ratio is 0.78, so the saving would be 22% -- almost enough to cover the underfunding. If the return on investment equals the rate of inflation, the saving would be 40%. The savings are greater because future expenses are not covered by the return on investment.

The foregoing example was for someone hired at age 22. If the person were hired at age 32, the person would be eligible to retire with full benefits after working 29 years (age 61) if the sum is 90 and after working 40 years (age 72) if the sum is 112. (Currently, many people work until they are in their early 70's.[4]) With a 7.5% ROI and 3.75% inflation, the cost of the pension plan is reduced 26%; if the ROI equals inflation, 47%.

[1] http://www.socialsecurity.gov/OACT/STATS/table4c6.html
[2] http://www.fcps.edu/fs/budget/documents/approved/FY14/ApprovedBudgetFY14.pdf , Page 165
[3] http://www.fcps.edu/hr/benefits/publications/2014/employeeBenefitsHandbook.pdf , Page 37
[4] http://www.census.gov/hhes/www/laborfor/Working-Beyond-Retirement-Age.pdf

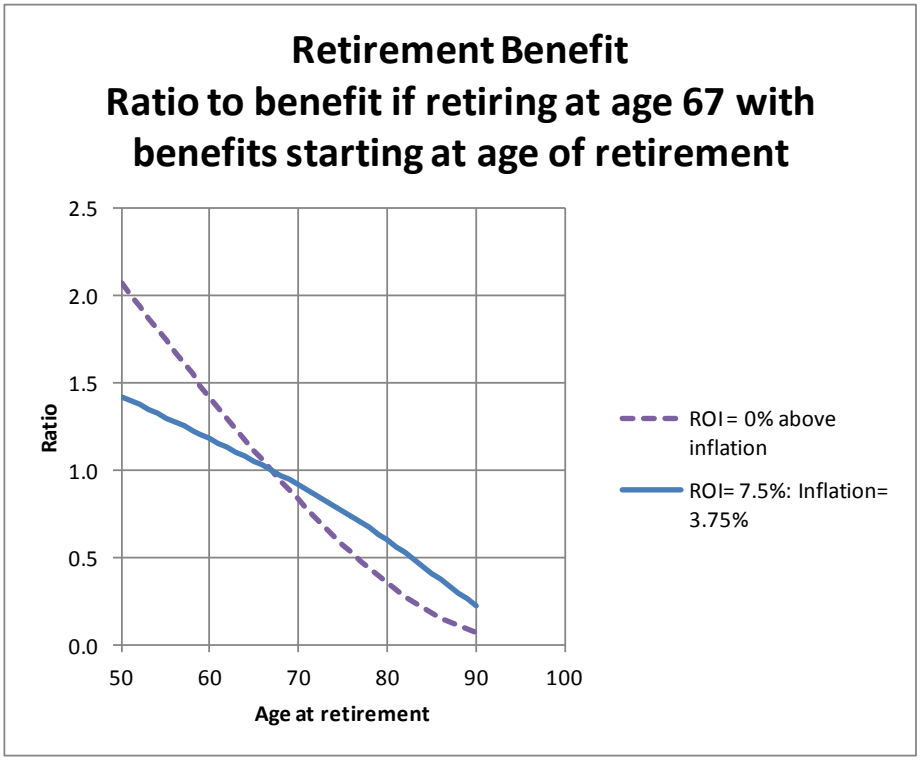

Figure 1: Ratio of Cost of the Retirement Plan to the Same Plan with Retirement at Age 67

	Cost Ratio	
Age of Retirement	ROI=INFL	ROI=7.5%; INFL=3.75%
50	2.070	1.421
51	2.003	1.397
52	1.937	1.373
53	1.872	1.349
54	1.806	1.325
55	1.741	1.301
56	1.677	1.277
57	1.612	1.253
58	1.548	1.228
59	1.485	1.204
60	1.422	1.179
61	1.360	1.154
62	1.298	1.129
63	1.238	1.104
64	1.177	1.079
65	1.117	1.053
66	1.058	1.027
67	1.000	1.000
68	0.943	0.973
69	0.887	0.945
70	0.831	0.917
71	0.777	0.889
72	0.724	0.859
73	0.672	0.829
74	0.621	0.799
75	0.572	0.767