**ONLINE APPENDIX**

**Lessons for Public Pensions**

**from Utah’s Move to Pension Choice**

**Online Appendix Table 1. Summary of Benefits by System**

|  |  |  |
| --- | --- | --- |
|  | **Tier I** | **Tier II** |
| **Description** | A person entering full-time employments with a participating employer before July 1, 2011 is a member of the Tier I system. The Contributory System was closed to new employees of the State and its Education institutions on July 1, 1986; a few Local Governmental employers continue to enroll new employees in this system. | A person entering full-time employment with a participating employer on or after July 1, 2011 who does not have service credit in a Tier I system must make an election to participate in either the Hybrid System or the Defined Contribution (DC) Plan, within one year of his/her employment date. The election made is irrevocable. If no election is made, the employee automatically becomes a member of the Hybrid System. |
| **Retirement System** | **Public Employees Contributory** | **Public Employees Noncontributory** | **Public Safety/****Firefighters** | **Public Employees****(Hybrid)** | **Public Employees****(DC)** | **Public Safety/ Firefighters****(Hybrid)** | **Public Safety/ Firefighters****(DC)** |
| **Qualifications****(years/age)** | 30 yrs any age20 yrs age 60^10 yrs age 62^4 yrs age 65 | 30 yrs any age25 yrs any age^20 yrs age 60^10 yrs age 62^4 yrs age 65 | 20 yrs any age10 yrs age 604 yrs age 65 | 35 yrs any age 20 yrs age 60^10 yrs age 62^4 yrs age 65 | Members will have access to the full value of their vested account balance when they leave employment. | 25 yrs any age 20 yrs age 60^10 yrs age 62^4 yrs age 65 | Members will have access to the full value of their vested account balance when they leave employment. |
| **Formula** | 1.25 per yr to 6/30/19752 per yr7/1/1975 to present | 2 per yr all years | 2.5 per yr up to 20 yrs 2 per yr over 20 yrs | 1.5 per yr of service credit & 401(k) contribution (Equal to 10 minus the Hybrid DB Plan Rate) | Employer contributes 10 to member 401(k) plan. Benefit is not based on a fixed formula. | 1.5 per yr of service credit & 401(k) contribution (Equal to 12 minus the Hybrid DB Plan Rate) | Employer contributes 12 to member 401(k) plan. Benefit is not based on a fixed formula. |
| **Final Average Salary** | Highest 5 yrs | Highest 3 yrs | Highest 3 yrs | Highest 5 yrs | Not applicable | Highest 5 yrs | Not applicable |
| **Cost-of-Living (max)** | 4# | 4 # | Public Safety: 2.5#Firefighters: 4# | 2.5# | None | 2.5# | None |

|  |
| --- |
| ^Early retirement benefit calculated with actuarial reduction.#Eligible after one year; percentage increase based on original benefit and change in CPI. Effective July 1, 2008, Tier I Public safety employers have the option to raise COLA from 2.5 to 4.Source: Adapted by authors from Employer’s Guide to the Utah Retirement Systems <https://www.urs.org/mango/pdf/urs/Miscellaneous/employerGuide.pdf> |

##### Online Appendix Table 2. Data Construction and Variable Description

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | All Pre-reform | Post-reform | All |
| All Post-Reform | Defaulted into Hybrid  | Chose Hybrid | DC | Pending |
|  | Individuals in original file | 53,725 | 29,358 | 13,249 | 3,959 | 3,772 | 8,378 | 83,083 |
|  | With some non-missing annual data | 48,439 | 28,324 | 12,929 | 3,948 | 3,616 | 7,831 | 76,763 |
|  | Entered URS between 1/1/2006 and 9/30/2013 | 48,389 | 20,107 | 12,652 | 3,840 | 3,603 | 12 | 68,496 |
|  | No Judicial or Legislative service | 48,353 | 20,106 | 12,652 | 3,840 | 3,602 | 12 | 68,459 |
|  | No previous URS employment | 47,924 | 20,072 | 12,633 | 3,837 | 3,591 | 11 | 67,996 |
|  | Did not separate from employment during the first 12 months | 39,154 | 16,263 | 9,448 | 3,553 | 3,262 | 0 | 55,417 |
|  | Annualized salary available in year of plan choice or year following plan choice. | 38,321 | 16,095 | 9,321 | 3,540 | 3,234 | 0 | 54,321 |
|  | Age and gender available | 38,220 | 16,095 | 9,321 | 3,540 | 3,234 |  | 54,315 |
|  | Entered URS before 9/30/2012  | 38,220 | 9,721 | 5,893 | 1,881 | 1,947 | 0 | 47,942 |
|  | Did not separate due to death or disability | 38,136 | 9,720 | 5,893 | 1,881 | 1,947 | 0 | 47,899 |

We use the data set in row 8 for all analysis except the analysis of retention rates for which we use the data set in row 10. In the analysis of supplemental plan contributions, 55 participants who were reported to have contributed more than the maximum amount allowed by the Internal Revenue based on their age and salary are excluded.

**Variables**

Entry year: The fiscal year ending June 30 during which the individual was first hired into an eligible position by a Utah Retirement System covered employer

Plan choice year: The first calendar year after the entry year in which the individual earned at least .0417 years of service credit. For individuals hired after July 1, 2011, this is the calendar year that includes the date when their plan choice became final, or the year immediately following that year, if they first hired near the end of the year.

Entry age: Approximate age of employee when they first became a member of one of the plans administered by the Utah Retirement System.

Salary in plan choice year: Employee earning in the plan choice year in 2014 dollars. If less than one year of service was reported, earnings are annualized by dividing total salary by total reported service.

Employer: The classification of the employer where the individual worked most during the calendar year in which plan choice became final. State Government includes quasi-state agencies and independent agencies.

System: The pension system in which the individual earned the most service credit during the calendar year in which plan choice became final.

Separated in second year: Indicator for an individual separating from employment within the first 24 months, based on separations reported before November 1, 2014.

Contributed to SRP in plan choice year: Indicator for an individual making a contribution of any amount to at least one of the four Supplemental Retirement Plans (SRPs) offered by URS.**Online Appendix Table 3. Probit Estimates of Plan Choice: Marginal Effects** (standard errors in parentheses)

|  |  |
| --- | --- |
|   | Dependent Variable |
|  | Hybrid(by default or choice) | Any Active Choice | Choose DC (given active choice) |
| Independent Variable | (1) | (2) | (3) | (4) | (5) | (6) |
|  |  |  |  |  |  |  |
| Entry Age: Under 25 | 0.020\*\* | 0.019\*\* | -0.055\*\*\* | -0.050\*\*\* | 0.032\* | 0.028 |
| (0.009) | (0.009) | (0.011) | (0.010) | (0.018) | (0.018) |
| Entry Age: 30 - 34 | 0.016 | 0.017\* | 0.009 | 0.004 | -0.043\*\* | -0.043\*\* |
| (0.010) | (0.010) | (0.013) | (0.012) | (0.020) | (0.019) |
| Entry Age: 35 - 39 | 0.019\* | 0.020\* | 0.004 | 0.001 | -0.043\* | -0.041\* |
| (0.011) | (0.011) | (0.014) | (0.013) | (0.022) | (0.022) |
| Entry Age: 40 - 44 | 0.038\*\*\* | 0.045\*\*\* | 0.013 | -0.004 | -0.099\*\*\* | -0.093\*\*\* |
| (0.012) | (0.012) | (0.015) | (0.015) | (0.024) | (0.024) |
| Entry Age: 45 and Above | 0.019\* | 0.027\*\*\* | 0.075\*\*\* | 0.053\*\*\* | -0.110\*\*\* | -0.106\*\*\* |
| (0.010) | (0.010) | (0.012) | (0.012) | (0.018) | (0.018) |
| Male | 0.044\*\*\* | 0.042\*\*\* | -0.034\*\*\* | -0.030\*\*\* | -0.070\*\*\* | -0.069\*\*\* |
| (0.007) | (0.007) | (0.008) | (0.008) | (0.014) | (0.013) |
| Salary in plan choice year ($000) | -0.042\*\*\* | -0.038\*\*\* | 0.069\*\*\* | 0.057\*\*\* | 0.030\*\*\* | 0.032\*\*\* |
| (0.002) | (0.002) | (0.003) | (0.003) | (0.004) | (0.004) |
| Employer: Higher Education | 0.041\*\*\* | -0.011 | -0.163\*\*\* | -0.058\*\*\* | 0.095\*\*\* | 0.088\*\*\* |
| (0.013) | (0.013) | (0.015) | (0.015) | (0.024) | (0.024) |
| Employer: Local Government | 0.067\*\*\* | 0.050\*\*\* | -0.105\*\*\* | -0.092\*\*\* | -0.046\*\*\* | -0.043\*\* |
| (0.011) | (0.010) | (0.013) | (0.012) | (0.018) | (0.018) |
| Employer: Public Education | 0.068\*\*\* | 0.015 | -0.153\*\*\* | -0.050\*\*\* | 0.007 | 0.009 |
| (0.010) | (0.009) | (0.011) | (0.011) | (0.016) | (0.017) |
| System: Public Safety & Firefighters  | 0.041\*\*\* | 0.045\*\*\* | 0.033\* | 0.015 | -0.117\*\*\* | -0.105\*\*\* |
| (0.014) | (0.013) | (0.018) | (0.017) | (0.026) | (0.026) |
| Plan Choice Year: 2013 | -0.002 | -0.002 | 0.034\*\*\* | 0.035\*\*\* | -0.044\*\*\* | -0.047\*\*\* |
| (0.008) | (0.008) | (0.009) | (0.009) | (0.016) | (0.016) |
| Plan Choice Year: 2014 | -0.005 | -0.001 | 0.071\*\*\* | 0.053\*\*\* | -0.075\*\*\* | -0.065\*\*\* |
| (0.008) | (0.008) | (0.010) | (0.010) | (0.016) | (0.016) |
| Separated year after plan choice^ |  | -0.003 |  | -0.076\*\*\* |  | 0.140\*\*\* |
|  | (0.009) |  | (0.011) |  | (0.021) |
| Contributed to Suppl. Plan in plan choice year |  | -0.173\*\*\* |  | 0.395\*\*\* |  | -0.011 |
|  | (0.010) |  | (0.010) |  | (0.014) |
| Observations | 16,095 | 16,095 | 16,095 | 16,095 | 6,773 | 6,773 |
| Log likelihood | -7802.185 | -7622.292 | -10301.082 | -9575.818 | -4566.354 | -4543.456 |
| Pseudo R-squared | 0.034 | 0.056 | 0.060 | 0.126 | 0.026 | 0.031 |
| Mean | 0.799 | 0.799 | 0.421 | 0.421 | 0.477 | 0.477 |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  |
| ^Separation data incomplete for individuals hired after September 30, 2012. Constant term also included. Reference categories: Entry Age 25-29; Employer State Government; System Public Employees; Plan Choice Year 2012.  |

##### Online Appendix Table 4. Probit Estimates of Participation in Supplemental Retirement Plans: Marginal Effects (standard errors in parentheses)

|  |  |
| --- | --- |
|  | Dependent Variable |
|  | Contributed to Supplemental Retirement Plan |
|  | All Post-Reform | Only State Government |
| Independent Variable | (1) | (2) |
|  |  |  |
| Plan Choice: Chose DC | 0.216\*\*\* | 0.454\*\*\* |
|  | (0.008) | (0.021) |
| Plan Choice: Chose Hybrid | 0.223\*\*\* | 0.416\*\*\* |
|  | (0.008) | (0.020) |
| Entry Age: Under 25 | 0.002 | -0.038 |
|  | (0.008) | (0.025) |
| Entry Age: 30 - 34 | 0.006 | -0.028 |
|  | (0.008) | (0.025) |
| Entry Age: 35 - 39 | 0.001 | -0.032 |
|  | (0.009) | (0.029) |
| Entry Age: 40 - 44 | 0.036\*\*\* | 0.044 |
|  | (0.011) | (0.034) |
| Entry Age: 45 and Above | 0.032\*\*\* | 0.041 |
|  | (0.009) | (0.026) |
| Male | -0.005 | -0.043\*\* |
|  | (0.006) | (0.017) |
| Salary in plan choice year ($000) | 0.019\*\*\* | 0.042\*\*\* |
|  | (0.004) | (0.013) |
| Salary2 | -0.001\*\*\* | -0.002\*\* |
|  | (0.000) | (0.001) |
| Employer: Higher Education | -0.222\*\*\* |  |
|  | (0.011) |  |
| Employer: Local Government | -0.014 |  |
|  | (0.011) |  |
| Employer: Public Education | -0.232\*\*\* |  |
|  | (0.009) |  |
| System: Public Safety & Firefighters | 0.015 | 0.012 |
| (0.011) | (0.030) |
| Observations | 16,095 | 2,711 |
| Log likelihood | -5839.755 | -1431.432 |
| Pseudo R-squared | 0.236 | 0.209 |
| Mean | 0.182 | 0.388 |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 |
| Constant term and plan choice year also included. Reference categories: Plan Choice Defaulted into Hybrid; Entry Age 25-29; Employer State Government; System Public Employees; Choice Year 2012. |

##### Online Appendix Table 5. Probit Estimates of Second-Year Retention: Marginal Effects (standard errors in parentheses)

|  |  |
| --- | --- |
|  | Dependent Variable: Remain in second year |
|  | Post-Reform | All | Hired 7/2010- 6/2012 |
| Independent Variable | (1) | (2) | (3) |
|  |  |  |  |
| Plan Choice: Chose DC | 0.021\*\* |  |  |
|  | (0.010) |  |  |
| Plan Choice: Chose Hybrid | 0.084\*\*\* |  |  |
|  | (0.009) |  |  |
| Post-Reform |  | -0.035\*\*\* | -0.027\*\*\* |
|  |  | (0.004) | (0.006) |
| Entry Age: Under 25 | -0.029\*\*\* | -0.027\*\*\* | -0.025\*\* |
|  | (0.011) | (0.005) | (0.010) |
| Entry Age: 30 - 34 | -0.004 | 0.019\*\*\* | 0.022\*\* |
|  | (0.013) | (0.005) | (0.011) |
| Entry Age: 35 - 39 | 0.026\* | 0.043\*\*\* | 0.039\*\*\* |
|  | (0.014) | (0.006) | (0.011) |
| Entry Age: 40 - 44 | 0.042\*\*\* | 0.059\*\*\* | 0.077\*\*\* |
|  | (0.014) | (0.006) | (0.011) |
| Entry Age: 45 and Above | 0.045\*\*\* | 0.054\*\*\* | 0.056\*\*\* |
|  | (0.012) | (0.005) | (0.010) |
| Male | 0.017\*\* | 0.017\*\*\* | 0.012\* |
|  | (0.008) | (0.003) | (0.007) |
| Salary in plan choice year ($000) | 0.037\*\*\* | 0.025\*\*\* | 0.034\*\*\* |
|  | (0.003) | (0.001) | (0.003) |
| Employer: Higher Education | 0.008 | -0.030\*\*\* | -0.030\*\* |
|  | (0.017) | (0.007) | (0.013) |
| Employer: Local Government | 0.069\*\*\* | 0.027\*\*\* | 0.039\*\*\* |
|  | (0.014) | (0.005) | (0.011) |
| Employer: Public Education | 0.057\*\*\* | 0.029\*\*\* | 0.041\*\*\* |
|  | (0.013) | (0.005) | (0.010) |
| System: Public Safety & Firefighters | 0.128\*\*\* | 0.093\*\*\* | 0.103\*\*\* |
|  | (0.013) | (0.005) | (0.009) |
| Plan Choice Year: 2013 | -0.027\*\*\* |  |  |
|  | (0.008) |  |  |
| Plan Choice Year: 2014 | -0.169\*\*\* |  |  |
|  | (0.064) |  |  |
| Observations | 9,721 | 47,899 | 12,140 |
| Log likelihood | -4220.202 | -18429.189 | -4821.414 |
| Pseudo R-squared | 0.055 | 0.042 | 0.053 |
| Mean | 0.828 | 0.862 | 0.852 |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 |  |  |  |
| Constant term also included. Reference categories: Plan Choice Defaulted into Hybrid; Entry Age 25-29; Employer State Government; System Public Employees; Plan Choice Year 2012. |