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Introduction

Academics have long been interested in the level and manner by which faculty are compensated. Compensation is a tool used by organizations to attract and retain employees. This is particularly important for institutions of higher education because of the labor-intensiveness of the field. Compensation is important to individuals when deciding whether to work in higher education or in other labor markets, where to work within the academy, and how long to work before retiring.

Most of the attention to compensation issues in academe has been given to faculty salaries. This is largely the result of Equal Pay legislation in the 1960s and 1970s that required colleges to treat workers fairly in terms of salaries. A number of studies followed that examined whether there was evidence of pay disparities for faculty by gender (e.g., Barbezat, 2002; Toutkoushian & Conley, 2005). In addition to salary, however, employees in academe usually receive in-kind compensation such as medical benefits, and deferred compensation in the form of retirement benefits. These non-salary components of compensation can be substantial, totaling half or more of the total financial benefits that a person receives during their lifetime. Non-salary benefits can also influence the labor market decisions of faculty and staff.

Retirement benefits are an important, but relatively understudied, aspect of compensation for faculty and staff in postsecondary education. Planning for retirement can often be a challenging exercise for workers (Costrell & Podgursky, 2009; Keim & Mitchell, 2015; Lushak & Gunderson, 2000). An employee does not know at the time of hire how long he or she will live in retirement. It can be difficult for employees to accurately estimate how much money they will need to ensure a financially comfortable retirement. Finally, the retirement plans themselves can be confusing due to the many details involved in how they determine a worker's retirement funds.

A retirement plan can generally be classified as either a defined benefit (DB) plan or a defined contribution (DC) plan.[1] In a DB plan, the employee's income in retirement is determined by a formula based on years of employment. The employee then receives this annual payment for every year in retirement. In contrast, the retirement benefits in a DC plan are determined by the contributions made by an employee and employer into a fund and the annual market returns on these investments. Over time, many providers have moved away from DB plans in an effort to reduce their pension liability and give employees retirement options that tend to be more portable across employers (Conley, 2008; Dulebohn & Murray, 2007; Goldhaber & Grout, 2016; Gustman & Steinmeier, 1992).

Although many firms have a single plan for their employees, roughly half of public colleges and universities give their employees a choice between a DB and DC plan (Brown & Weisbenner, 2014; Clark, Hanson, & Mitchell, 2016). The choice is complicated because these types of plans are notably different in terms of the risk to the employee, the portability of benefits, and the total size of the financial payout during retirement (Clark & McDermed, 1988; Clark & Pitts, 1999; Chingos & West, 2015). In addition, DB and DC plans may differ in the number of years that an employee must work to become vested and receive full retirement benefits (Clark & McDermed, 1988). The vesting rule can impact the risk associated with a retirement plan and the expected benefits received. Chingos and West (2015), for example, show that employees who leave prior to vesting would gain more from DC plans than DB plans. And there are significant variations in the details of DC plans and DB plans offered by providers (Toutkoushian, Bathon, & McCarthy, 2011).

[1] Some providers, however, offer hybrid plans that combine aspects of a DB and DC plan (Goldhaber & Grout, 2016).

Theory and prior literature suggest that there are reasons to believe that different types of employees may favor one plan over another. Individuals who are relatively healthy and feel that they will live a long time may prefer a DB plan because it lowers the risk of not being able to fully fund their retirement. Others who are more financially savvy may prefer DC plans because of their ability to manage financial investments. Likewise, employees who are mobile such as younger workers may prefer a DC plan where retirement benefits tend to be more portable and have shorter vesting requirements. As a result, decisions about retirement plans could be correlated with factors such as gender, age, and type of position.

Learning more about the types of employees who prefer different retirement plans is important for several reasons. Colleges and universities would value this information when selecting retirement plans for their employees. Companies that manage retirement funds such as TIAA would obviously find it helpful to learn about how customers view their services and how they may be improved. And employees can also benefit from a better understanding of how retirement plans compare to each other and how this aligns with their career and retirement goals.

In this study, I focus on how faculty and non-faculty staff make the choice between a DB and DC plan. I begin by reviewing the types of retirement plans available to academic employees, and the main studies that have been conducted when employees were given a choice between types of plans. I then turn to an analysis of plan choice for employees in the public university system in the State of Georgia. Since 1990, the University System of Georgia (USG) has allowed faculty to select either a DB or a DC plan at the time of hire. The same options were subsequently extended to other benefits-eligible staff in 2009. I rely on data for faculty and benefits-eligible staff who were employed at USG institutions in 2015-16 to examine how

selected personal and institutional characteristics were associated with the choice between these plans. The analysis is conducted separately for faculty and non-faculty staff.

Literature Review

Overview of Retirement Plans

Employers typically offer workers deferred compensation in the form of either a defined benefit plan or a defined contribution plan. The advantages to the worker of deferred compensation are that the financial contributions are not taxed until retirement (and thus are usually taxed at a lower rate), and the plan helps the employee save for their retirement. Each plan has costs and benefits associated with it. On the cost side, the employee usually must contribute a certain amount from each paycheck to participate. These costs can be estimated fairly easily and then compared across plans and employers. The benefit refers to the amount of money that the employee has at his or her disposal during their years in retirement. The benefits, however, tend to be more difficult than costs to evaluate. To examine retirement options, let's consider the case of an employee who is hired at time t=1 and works at the employer until time t=W. The employee then retires and lives in retirement until time t=T.

In a defined contribution plan, retirement benefits are a function of the annual contributions of the employee and employer, the number of years for which contributions are made, how the contributions are distributed over permissible investments, and the annual financial returns (or losses) on these investments:

$$(1) \qquad B(dc)_i = \sum_{t=1}^{W} \sum_{j=1}^{J} (C + M)_{it} * a_{ijt} * \left(1 + r_j\right)^{W-t}$$

where C_{it} = employee contribution to the DC plan in year t, M_{it} = employer contribution to the DC plan for the employee in year t, a_{ijt} = percentage of total contribution made to the j-th

financial asset (e.g., mutual fund, annuity) out of J options, and r_j = percentage gain or loss in the next year on the j-th asset in year t.[2] From equation (1), the benefits from the DC plan depend on the size of employee and employer contributions, how the contributions are distributed by the employee among designated investment options, the returns on these investments, and the length of time that the investments are compounded. The total lifetime benefit is known to the employee at the time of retirement. On the cost side, although employees are usually required to make financial contributions to the DC plan, these are best viewed as investments rather than "costs" because the level of benefits is directly tied to the level of employee contributions.[3]

In a defined benefit plan, the financial benefit for retirement is determined by a formula set by the provider of the plan. The general DB formula can be written as follows:

$$(2) \qquad B(db)_i = \sum_{t=W+1}^{t=T} Y_i * E_i * m$$

where Y_i = final average salary used in the benefit calculations, E_i = years of service credit, and m = annual multiplier set by the employer. The final average salary is usually calculated as an average of the salaries received in the last several years of employment (generally 2 to 5 years). The years of service credit represent the amount of time that an employee has worked at the organization.[4] The multiplier can be thought of as the percentage of salary received in retirement

[2] As simplifying assumptions, I assume here that employees make all financial contributions at one time each year rather than monthly or quarterly, and that the returns on each investment are constant over time. Relaxing these assumptions does not fundamentally change the main results of the study.

[3] Of course, these contributions are not costless if the employee has a positive time preference for money, or could earn more money by investing the contributions in alternative ways.

[4] The years of service credit can exceed the years of experience if the employee is able to transfer years of service from previous employers. Likewise, the years of service credit may be less than the years of experience if the DB plan places limits on how many years of experience can be used in the formula.

for each year of service credit. In DB plans for K-12 educators, the multiplier ranges from a low of 1.3 to a high of 2.5 (Toutkoushian, Bathon, & McCarthy, 2011).

The financial value of a defined benefit plan is affected by several factors. The first is the final average salary. As can be seen, the greater the final average salary the larger the payouts will be in retirement. Accordingly, DB plans tend to be more lucrative to employees who are working for their last institution because the salaries tend to be highest near retirement age. Likewise, DB plans with larger multipliers will on average have higher retirement benefits. As years of service credit rise, so will the annual retirement payout. Because the payouts are made each year that a person is in retirement, those who spend more years in retirement will receive greater lifetime benefits from the plan. Accordingly, although the annual retirement benefit is known by the employee when they retire, the total lifetime retirement benefits are not known with certainty unless the employee opts for an annuity payment in lieu of annual payments. With regard to costs, the contributions made by an employee to take part in a DB plan are costs in the sense that future benefits are not directly tied to the level of contributions. In this sense, employees have higher costs for participating in a DB plan than in a DC plan.

A complicating factor in retirement planning is that an employer may place restrictions on the size of annual payouts in a DB plan. For example, some plans may limit the maximum number of years that can be used. For example, a faculty member who worked at College A for 35 years may only be able to use 30 years of service credit. Or the employer may impose a rule that the annual payout in retirement cannot exceed a specified percentage of the employee's final average salary (such as 75% or 100%). Likewise, in some states the employee must forfeit his or her Social Security benefits to participate in the DB plan.[5]

[5] For more information on these types of restrictions in DB plans for K-12 education, see Toutkoushian, Bathon, and McCarthy (2011).

Theoretical Framework

Studies of worker compensation have addressed the share of compensation that is given in the form of salary versus non-salary benefits. Employers are mostly concerned with the total compensation paid as opposed to the salary versus benefit distribution of compensation in terms of how much it costs to utilize a worker. However, the different forms of compensation can influence the type of workers who are attracted to an organization and how long they stay. Benefits may be more important to workers with large families, health problems, and where the employee is the sole provider for the family. In contrast, younger and more mobile workers may prefer salary as opposed to benefits.

In this study, I draw on cost-benefit analysis to model the choice employees make with regard to their retirement benefit plan (Clark, Ghent, & McDermed, 2006; Goldhaber & Grout, 2016; McCarthy, 2003). According to this framework, an employee considers the expected benefits (B_p) and costs (C_p) of the retirement plan, and the risk associated with the retirement plan (π_p), when evaluating options at their disposal. In simple terms, the utility of each type of plan to the employee is as a function of the expected benefits and costs of each plan and the risk to the employee associated with each plan:

(3) $U_p = \mathrm{U}(\mathrm{E}(B_p - C_p), \pi_p), \qquad p = \mathrm{DB}$ or DC

The plan preferred by the employee (R) is then the option with the highest expected utility. This may be expressed as a function of personal and work-related characteristics, as in:

(4) $$R = U_{DB} - U_{DC} = X\beta + \varepsilon$$

where R = 1 if prefer DB and 0 otherwise, and X = set of personal, occupational, employer, and other characteristics that are associated with this choice.

Although the expected utility and decision process shown in equations (3) and (4) are parsimonious, they are far from simple for most employees to calculate. Starting with the DC plan, employees do not know what the market returns will be on the various investment options at their disposal, nor the size of their future employee and employer contributions. Similarly, employees in a DB plan do not know how long they will work at the institution, what their final average salary will be, nor how long they will draw retirement benefits. Accordingly, workers must form expectations of these quantities when making decisions about retirement benefits.

Risk is equally important to employees in assessing their retirement options (Clark & Pitts, 1999). Risk comes from several sources. The first is the uncertainty in the parameters as discussed above for each plan. When an employee estimates, for example, how long they believe they will live in retirement and what the market will do on different investments, they also have to take into account that their expectations may prove to be incorrect. In particular, if an employee overestimates the benefits from a plan, then he or she may not have sufficient financial resources for retirement. Other sources of risk are more unique to each plan. In a DC plan, the risk for funding retirement is borne by the employee because once the retirement funds are depleted there are no future benefits. In contrast, the employer bears the risk in a DB plan because it must find the resources to pay employees for each year that they are in retirement. This is one reason why many institutions and states are moving away from DB plans and towards DC or hybrid plans. In addition, under a DB plan the payout is solely determined by the formula and thus there is no variability or risk in the size of future payouts. Although this protects employees in the event of a financial downturn, it also limits the gains they might experience when security markets are doing well. In contrast, employees in a DC plan can capture the higher returns in good years, but risk having lower returns in bad years.

Finally, risk is added into the decision making process through vesting requirements. An employer may require an employee to stay at the institution for a minimum number of years before they can keep the full retirement benefits of the plan. This process is known as vesting. Some plans have no vesting requirements and thus the employee is entitled to the full dollar of benefits once they are hired. At the other extreme, some retirement plans dictate that employees must work a specific number of years to receive the benefits, or else they forego some or all of the benefits. In the USG, for example, employees who participate in the DB plan must accrue at least 10 years of service credit to become fully vested in the plan. This contributes to the risk of a plan because employees do not know at the time of hire how many years they will stay at the institution.

The vesting requirements of retirement plans are particularly important for faculty who are hired on tenure-track appointments at the Assistant Professor level because the vesting period may exceed the time at which they are required to come up for tenure. Accordingly, junior faculty are at greater risk of not meeting the vesting requirement and losing the financial benefit. The employee's expected benefit from the defined benefit plan is then a weighted average of the expected benefits if the vesting requirement is met and the expected benefits if the vesting requirement is not satisfied.

Vesting requirements may also be expected to affect the mobility decisions of workers. Those who enroll in a plan with a vesting requirement have a financial incentive to stay with their employer at least until the requirement has been met. In this way, vesting requirements benefit the employer by providing more stability in the workforce and possibly reducing turnover.

Prior Studies

There have been a number of studies that have explored how employees make decisions about retirement and the role of retirement benefits in these decisions (Chalmers, Johnson, & Reuter, 2008; Clark-Murphy & Gerrans, 2001; Conley, 2005; Costrell & McGee, 2010; Costrell & Podgursky, 2009; Dulebohn & Murray, 2007; Fields & Mitchell, 1984; Furgeson, Strauss & Vogt, 2006; Ghent, Allen & Clark, 2001; Gustman & Mitchell, 1992; Gustman, Mitchell, & Steinmeier, 1994; Gustman & Steinmeier, 1995; Pozzebon & Mitchell, 1989; Samwick, 1998; Yakoboski & Conley, 2013). This segment of the literature focused on a range of issues, such as how retirement benefits influence job mobility and the timing of retirement.

Within this broader literature on retirement benefits, some researchers have focused specifically on how workers choose among alternative retirement plans (Bodie, Marcus, & Merton, 1988; Brown & Weisbenner, 2009; 2014; Childs, Fore, Ott, & Lilly, 2002; Clark, Hanson, & Mitchell, 2016; Dulebohn, Murray, & Sun, 2000; Goldhaber & Grout, 2016; Papke, 2004; Yang, 2005). Comparing studies on this topic is challenging in part due to the range of different retirement plans offered across institutions being studied. Brown and Weisbenner (2009), for example, examined state employees in Illinois who could select between a DB plan, DC plan, and a hybrid DB plan. In contrast, Goldhaber and Grout (2013) studied a system where employees could choose between a DB plan and a hybrid DB/DC plan, and several studies by Clark focused on the North Carolina system where employees had the option of a DB versus DC plan (Clark, 1999; Clark & Pitts, 1999; Clark, Ghent, & McDermed, 2006). In addition, the specific parameters in the DB, DC and hybrid plans varied across studies, making it hard to draw definitive conclusions from their collective results.

The vast majority of these studies found that there were distinct preferences for DB plans among certain types of employees. Overall, though, the results are fairly mixed across studies. For example, while some researchers found that DB plans were more popular among females (Clark, Ghent, & McDermed, 2006; Brown & Weisbenner, 2014), others concluded that males prefer DB plans (Chingos & West, 2015), or that there were no significant gender differences in plan preference (Brown & Weisbenner, 2009; Clark & Pitts, 1999). One of the more consistent findings in the literature is that employees with higher earnings were more likely to enroll in a DC plan (Brown & Weisbenner, 2009; Clark & Pitts, 1999; Clark, Hanson, & Mitchell, 2016; Yang, 2005), though Clark, Ghent, and McDermed (2006) found no relationship between income and preference for the DB plan in North Carolina. Another factor of interest to labor economists and policy makers is the role of age in retirement planning (Berberet, Bland, Brown & Risbey, 2005; Burkhauser, 1979; Sawchuk, 2009). DB plans may be less attractive to young workers due to their greater mobility, and older workers due to the insufficient time to accumulate years of service credit for their pension.

Finally, studies within this topic vary considerably in terms of the groups of employees studied. A number of studies addressed the retirement plan choices for K-12 educators (Chingos & West, 2015; Goldhaber & Grout, 2016), while other studies focused on higher education workers (Brown & Weisbenner, 2009; Clark, 1999; Clark, Ghent & McDermed, 2006; Clark & Pitts, 1999; Dulebohn & Murray, 2007) or broad groups of public employees. Within the few studies on higher education employees, studies also differed in whether they examined all benefits-eligible staff or limited their analysis to faculty.

Data and Methodology

Data

The data that I used in this study were obtained from the human resources data system for the University System of Georgia. It includes information on benefits-eligible employees who worked at one of the 30 USG institutions in the 2015-16 academic year (N = ~ 40,000). The dataset includes information from the HR system on the year of hire, personal characteristics such as gender, race, date of birth, and citizenship, work-related characteristics such as academic position and institution employed, and most importantly for the purpose of this study, their retirement plan. I restricted the analysis to benefits-eligible employees who were hired in years when they were provided with the choice between a DB and DC retirement plan. USG faculty were first given a choice of plans in 1991, and staff were extended the same choice beginning in 2009. The final dataset used in the analyses consist of 14,355 faculty and 7,816 staff.

At the time of hire, USG employees must choose between a defined benefit plan known as the Teachers Retirement System (TRS) and a define contribution plan known as the Optional Retirement Plan (ORP). Table 1 provides an overview of the two USG retirement plans. The employee cost to participate are very similar for the two options. For the ORP in 2015, the employee contribution of six percent is matched by an employer contribution of 9.24 percent. Therefore, each year the employee has 15.24 percent of salary to invest in a menu of options ranging from mutual funds to fixed rate annuities. In the TRS plan, the employee also contributes six percent of his or her salary to take part in the plan. Upon retirement, the employee receives 2% of their final average salary (based on last two years of employment) for each year of service credit at USG. There is no cap on the years of service credit nor the annual payout in retirement. Unlike some DB plans, in the TRS plan employees retain their Social Security benefits upon

retirement.[6] An important difference between the two USG plans is in their vesting requirements. Employees who opt for TRS must accrue at least 10 years of service credit to receive their complete retirement benefits. In contrast, the retirement benefits in the ORP are fully vested at the time of hire.[7]

---------- Insert Table 1 Here ----------

Dependent Variable. The dependent variable in my study is whether the employee is enrolled in the TRS plan. Benefits-eligible USG employees are required to select either the TRS or ORP plan at their time of hire, and have 60 days in which to make their decision. Those who do not make a deliberate decision by that time are by default enrolled in the TRS plan. Unfortunately, the USG data cannot separate those who deliberately selected TRS from those who were placed in TRS by default.[8] The employee cannot change his or her retirement plan decision after the 60-day window has passed.

Independent Variables. In this study, I created a number of independent variables that theory and/or prior research suggest could be associated with the choice of retirement plan. Some of the independent variables are used in both the faculty and staff regression models. These include controls for the employee's gender (1 if male), race/ethnicity, age at time of hire, current marital status, and whether the employee is a US citizen. I also created control variables for type of institution (doctoral, master's, bachelor's), estimated salary at time of hire, and year at time of hire. Because the USG data did not include salary at time of hire, I estimated this salary by

[6] In Some DB plans, employees forego their Social Security benefits in order to participate in the plan.

[7] Employees in TRS who leave prior to 10 years receive a lump sum payment of their employee contributions into the plan.

[8] Brown and Weisbenner (2009) note that the default option may be distinct from a deliberate choice of retirement plan, and that many employees enroll in a plan by default (also see Clark, Hanson, & Mitchell, 2016). In contrast, Clark, Ghent, & McDermed (2006) did not have data on which employees were enrolled due to default, and argued that there were relatively few defaulters in their study.

deflating each person's current salary for their years of employment assuming that salaries grew by an average of three percent per year. Estimated starting salaries were converted to real dollars using the Consumer Price Index (base year = 2015). The faculty-specific regression models included added controls for academic rank at time of hire. Similarly, the staff-specific models included added control variables for their type of position and their educational attainment.[9]

Methods

To examine the retirement plan choices made by USG employees, I specified logistic regression models for both faculty and non-faculty staff. The models can be written in the following general form:

(5.1) $R = \alpha + \boldsymbol{P\beta} + \varepsilon$

(5.2) $R = \alpha + \boldsymbol{P\beta} + \boldsymbol{O\gamma} + \varepsilon$

(5.3) $R = \alpha + \boldsymbol{P\beta} + \boldsymbol{O\gamma} + \boldsymbol{I\delta} + \boldsymbol{T\theta} + \varepsilon$

where R = 1 if employee is enrolled in TRS and 0 if in ORP, $\boldsymbol{P}$ = set of personal characteristics that could be related to the choice of plan, $\boldsymbol{O}$ = set of occupational characteristics, $\boldsymbol{I}$ = set of institutional characteristics, and $\boldsymbol{T}$ = set of indicator variables for year of hire at USG. Because the job characteristics and samples of faculty and staff are substantially different in USG, I present findings separately for each group. The first model only controls for personal characteristics such as gender, race, US citizenship marital status, and age at time of hire. The second model adds occupational characteristics (rank for faculty, position type for staff) to the first model. Finally, the last model also includes control variables for type of institution and the year of hire.

[9] I omitted the educational attainment variables from the faculty models because most faculty had a graduate degree.

Results

I begin the analyses with descriptive statistics for the two samples (faculty and non-faculty) as shown in Table 2. With regard to retirement plans, I found that the TRS was more popular among staff (60 percent) than among faculty (38 percent). Turning to other selected characteristics, the majority of USG employees were white and United States citizens. Likewise, USG employees in 2015 were most likely to have been hired prior to age 35, be married, and have been hired within the last five years. For the faculty-only sample, about half of faculty were employed at bachelor-level institutions, and more than one-third of them were hired at the Assistant Professor rank. For the non-faculty staff sample, the majority of employees worked at research-focused institutions in the system, and had earned a bachelor's or graduate degree.

---------- Insert Table 2 Here ----------

Figure 1 illustrates how the shares of faculty and staff enrolling in the TRS plan have changed over time. For faculty, in general there has been an upward trend over time in the proportion of faculty in the system's defined benefit plan. Interestingly, over the last six years in the data, the trends for faculty and staff moved in opposite directions, with staff showing a steady decline between 2009 and 2015 in the share who enrolled in the TRS plan.

---------- Insert Figure 1 Here ----------

Faculty Analysis

In this section, I focus first on the results from the logistic regression models explaining the retirement plan choices made by USG faculty. The findings are summarized below in Table 3. As noted earlier, the sample includes all faculty in regular appointments who were employed at a USG institution in 2015-16 and were hired after 1990. I present the results from several alterative model specifications. The first model only controls for personal characteristics of each faculty member. The second model adds controls for the type of academic position at the time of

hire. And finally, the last model adds controls for the year of hire and the type of institution. All coefficients are reported as marginal effects so that they can be interpreted as the effect of a one-unit change in the independent variable on the probability of a faculty member enrolling in the TRS plan.

Beginning with personal characteristics of faculty, females were more likely than comparable males to be enrolled in the TRS plan. The TRS plan was more popular among black and other race faculty than it was for white and Asian faculty, and US citizens were more likely to opt for the defined benefit plan as well. Turning to age, I found that the defined benefit plan was most attractive to middle-aged faculty and less popular among younger and older faculty at the time of hire. With regard to rank, the TRS plan was least popular among tenured and tenure-eligible faculty ranks. I also found that there was a strong and negative association between a faculty member's estimated starting salary and his or her likelihood of being enrolled in the defined benefit plan. The TRS plan was less popular among faculty at the bachelor-level institutions in the USG system and most popular among those at 2-year institutions. Finally, the time trend variables in Model 3 show that TRS enrollment rates increased over time for faculty even after controlling for the other characteristics in the model.

---------- Insert Table 3 Here ----------

In Table 4, I report the findings from a similar model estimated for non-faculty staff in the dataset. As noted earlier, many of the same personal and institutional controls were used in both the faculty and staff models. However, the staff-only models added control variables for type of position (managerial, service, etc.) and for educational attainment given the wider variety of education levels for these employees. The statistical models were also logistic regression

models where the dependent variable is whether the staff member was enrolled in the TRS plan at USG. All coefficients are again shown as marginal effects.

I found the same gender and racial patterns of TRS enrollment for staff as was true for faculty in USG, with females and blacks being more predisposed to enrolling in the TRS plan. Interestingly, US citizenship did not affect the retirement plan decision for staff as it did for faculty. The TRS plan was preferred by middle-aged staff and those with lower salaries at the time of hire. Turning to educational attainment, the TRS plan was more popular among non-faculty staff with lower levels of education. With regard to position, managerial staff and service staff were more likely to enroll in the TRS plan than were staff in the "all other positions" category. At the organizational level, the defined benefit plan was most popular among staff working at 2-year institutions in USG, and the time of hire dummy variables indicate that interest in the TRS plan was lower for more recent cohorts of staff.

---------- Insert Table 4 Here ----------

Summary and Discussion

Choosing the right retirement plan is an important and often difficult decision. Employees must estimate a number of parameters when making this decision, such as how long they will likely stay with the employer, what the stock market will do in coming years, and how much money they will need to live comfortably in retirement. These estimates can be particularly challenging for younger workers who have to make such forecasts over a longer time horizon and have fewer experiences on which to draw when forming these estimates. For employees who work at an organization where there is only one retirement option, planning for retirement is fairly well defined. However, in many public colleges and universities, employees must choose shortly after their hiring between two or more types of plans which can differ dramatically not

only in their costs and expected payouts, but also the amount of risk imposed on the employee, the portability of benefits, and vesting requirements.

In this study, I used personnel data on faculty and benefits-eligible staff at a large, public university system to examine how selected personal and work-related characteristics influence enrollment into a defined benefit versus a defined contribution plan. The University System of Georgia is particularly interesting to study because the same benefit choices are given across the thirty USG institutions, the choices are available to both faculty and staff in benefits-eligible positions, and the vesting requirements for the two plans are substantially different. Furthermore, since employees have had the choice of plans for a number of years, I could also examine time trends in enrollment rates in the System's defined benefit plan.

Overall, the results showed that there were a number of similarities and differences in the retirement plan choices for faculty and staff. Across both groups of employees, I found that females, blacks, and those with lower estimated starting salaries tended to prefer the DB plan over the DC plan. Asian faculty were also less likely than white faculty to choose the DB plan. The gender effect could be consistent with females being more risk averse (Jianakoplos & Bernasek, 1998), or having a longer average life expectancy. Likewise, the negative relationship between starting salary and enrollment in the DB plan could reflect different comfort levels with managing money, or higher-paid employees having more to potentially gain from strategically investing retirement funds in stocks. Both models also showed that middle-aged employees were most likely to prefer the DB plan. Accordingly, younger employees may not prefer the DB plan due to mobility issues, whereas older employees may not prefer the DB plan because of having insufficient time to receive the (back-loaded) benefits that accompany these plans. Finally, faculty and staff with managerial-related duties were more likely to select the DB plan.

At the same time, I found that there were many differences in the processes for faculty and staff to enroll in the System's DB plan. For faculty, US citizens were more likely to choose the TRS plan than were non-citizens; however, I found no similar difference for staff. Marital status mattered for staff, but not for faculty, when choosing the DB plan. The time trends for enrolling in the DB plan were opposite for faculty (positive) and staff (negative). These trends persisted even after taking into account these other factors that may influence the type of plan that an employee might prefer. It is particularly interesting that the enrollment rate in the DB plan for staff fell between the years 2009 and 2015, given that this time period coincided with a major recession that would tend to favor secure financial payoffs over riskier investments such as stocks, mutual funds, and bonds.

One the main implications of this study is that retirement plan options should not be viewed as a "one size fits all" policy. The regression results show that defined benefit plans are more attractive options for certain types of employees. The alternative plans are also differentially appealing in this sample to faculty and staff. Many more USG staff than faculty are currently enrolled in the System's defined benefit plan, perhaps owing to the wider range of occupations, income levels, and educational backgrounds of staff relative to faculty.

This study also fits within the larger trend in the US of movement away from defined benefit retirement plans. Given the unfavorable demographic trends in the US, the defined benefit plans in many states will likely face – if they haven't already – significant challenges in determining how to fund the sizable retirement obligations of employees in these plans. As states phase out DB plans in favor of DC plans or hybrid DB/DC plans, they shift the risk for funding retirement onto employees. Colleges and universities that maintain DB-type plans would therefore be more attractive to academics who are risk averse, in the middle of their careers, and

perhaps less prone to voluntary turnover. Of course, employers who find a way to maintain DB plans may do so by raising the participation costs for workers, or cutting back on other expenditures to ensure that the DB plan can fulfill its financial obligations.

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Table 1: Overview of USG Retirement Plans in 2015

Plan Attribute	**Teachers Retirement System (TRS)**	**Optional Retirement Plan (ORP)**
Type of plan	Defined benefit	Defined contribution
Benefit at retirement	Based on formula: Final Salary x Yrs Service x 2%	Based on contributions and return on investments
Vesting	10 years of service credit	Immediate
Contribution rates	Employee: 6.00% Employer: 14.27%	Employee: 6.00% Employer: 9.24%
Payout risk	Low for vested employees, but high prior to vesting	High for employees, but no vesting risk
Payout for early USG departure (< 10 yrs)	Accumulated employee contributions plus interest only	All employee and employer contributions
Risk to employer	High, must ensure adequate funding for future payouts	No risk after employer contributions are made

Notes: Human Resources, University of Georgia. Description of plans is effective July 1, 2015.

Table 2: Descriptive Statistics

	Faculty Only		Staff Only	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
TRS Plan	0.38	0.49	0.60	0.49
ORP Plan	0.62	0.49	0.40	0.49
Male	0.53	0.50	0.47	0.50
White	0.75	0.43	0.62	0.49
Black	0.10	0.30	0.23	0.42
Asian	0.11	0.32	0.09	0.28
Hispanic	0.03	0.17	0.03	0.16
Other Race	0.01	0.09	0.01	0.09
US Citizen	0.75	0.43	0.88	0.32
Hire Age: Before 35	0.38	0.49	0.48	0.50
Hire Age: 35-44	0.36	0.48	0.27	0.44
Hire Age: 45-54	0.18	0.39	0.18	0.38
Hire Age: 55-64	0.07	0.26	0.07	0.25
Hire Age: 65+	0.01	0.08	0.00	0.06
Married	0.68	0.47	0.57	0.49
Single	0.28	0.45	0.39	0.49
Other Marital	0.04	0.20	0.03	0.18
Doctoral Inst	0.37	0.48	0.54	0.50
Bachelor Inst	0.50	0.50	0.39	0.49
Two-Year Inst	0.13	0.34	0.07	0.26
Lecturer	0.04	0.21	-----	-----
Instructor	0.18	0.39	-----	-----
Assistant Prof	0.38	0.49	-----	-----
Associate Prof	0.12	0.33	-----	-----
Full Prof	0.08	0.27	-----	-----
Other Rank	0.19	0.39	-----	-----
Education: HS	-----	-----	0.02	0.13
Education: AA	-----	-----	0.06	0.24
Education: BA	-----	-----	0.31	0.47
Education: Grad	-----	-----	0.41	0.49
Education: Unknown	-----	-----	0.20	0.40
Faculty Hired: 1991-95	0.08	0.27	-----	-----
Faculty Hired: 1996-00	0.13	0.34	-----	-----
Faculty Hired: 2001-05	0.17	0.38	-----	-----
Faculty Hired: 2006-10	0.25	0.43	-----	-----
Faculty Hired: 2011-15	0.35	0.48	-----	-----

(Table continues)

	Faculty Only		Staff Only	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Staff Hired: 2009	-----	-----	0.07	0.25
Staff Hired: 2010	-----	-----	0.09	0.29
Staff Hired: 2011	-----	-----	0.12	0.32
Staff Hired: 2012	-----	-----	0.14	0.35
Staff Hired: 2013	-----	-----	0.16	0.37
Staff Hired: 2014	-----	-----	0.20	0.40
Staff Hired: 2015	-----	-----	0.21	0.41
Number of Observations	14,355		7,816	

Notes: Data drawn from USG human resource system for faculty and staff employed at a USG institution in the 2015-16 academic year. Faculty sample includes only those faculty members who were hired in years 1991-2015. Non-faculty sample includes only non-faculty staff who were hired in years 2009-2015.

Figure 1: Trends in TRS Selection by Year for Faculty and Staff

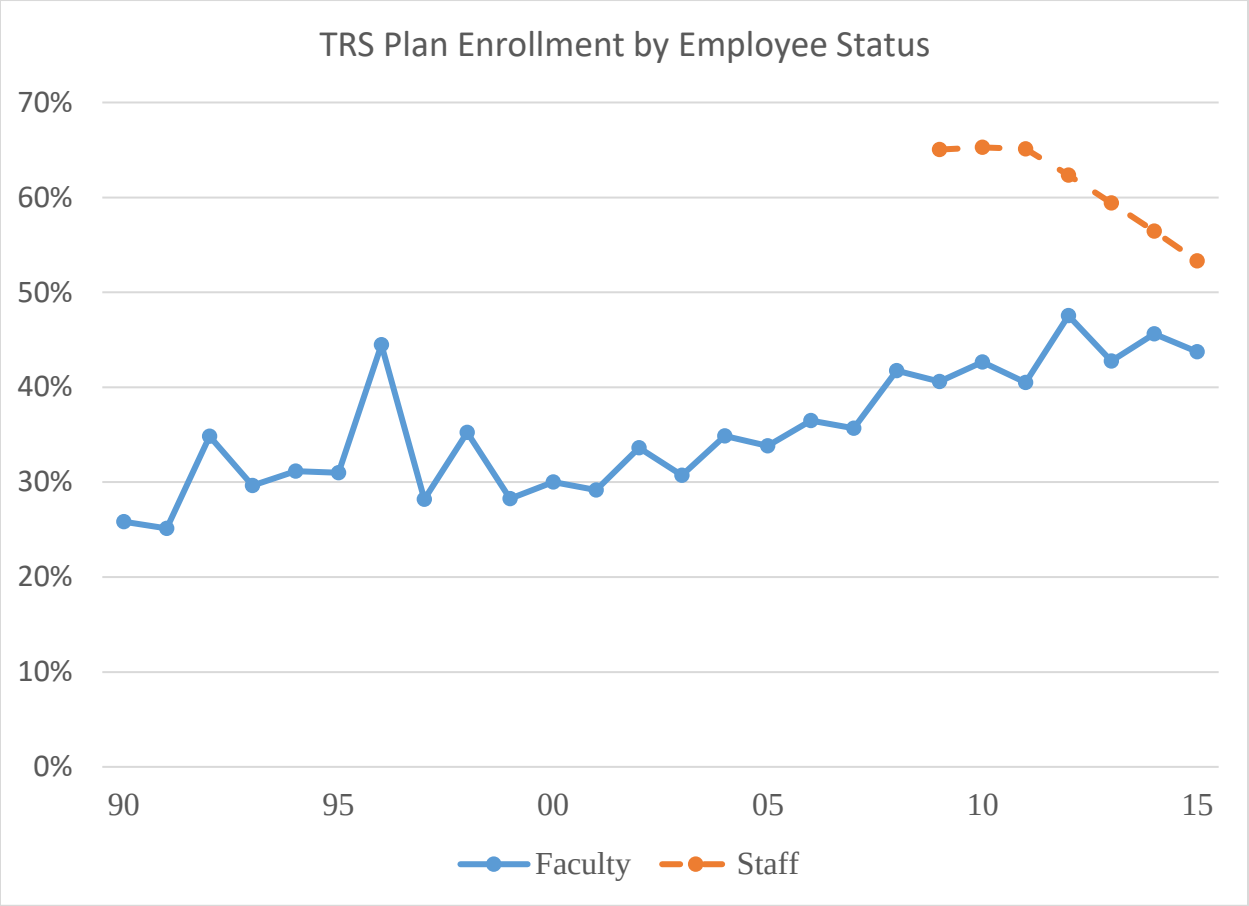

Table 3: Logit Models for Whether Enrolled in TRS Retirement Plan – Faculty

Variable	Model 1	Model 2	Model 3
Male	-0.067***	-0.021**	-0.021**
	(0.008)	(0.008)	(0.008)
Black	0.125***	0.109***	0.106***
	(0.013)	(0.013)	(0.013)
Asian	-0.091***	-0.048***	-0.057***
	(0.014)	(0.014)	(0.014)
Hispanic	0.012	0.021	0.014
	(0.023)	(0.023)	(0.022)
Other Race	0.151***	0.122**	0.117**
	(0.046)	(0.044)	(0.044)
US Citizen	0.059***	0.052***	0.039***
	(0.010)	(0.009)	(0.009)
Age Hire: 35-44	0.003	0.019*	0.018*
	(0.009)	(0.009)	(0.009)
Age Hire: 45-54	0.034**	0.051***	0.043***
	(0.011)	(0.011)	(0.011)
Age Hire: 55-64	-0.077***	-0.055**	-0.083***
	(0.017)	(0.017)	(0.017)
Age Hire: 65+	-0.102*	-0.098+	-0.139**
	(0.052)	(0.050)	(0.050)
Married	-0.007	0.014	0.021*
	(0.009)	(0.009)	(0.009)
Other Marital Status	-0.032	-0.004	0.008
	(0.021)	(0.021)	(0.021)
Management Position	-----	0.082***	0.084***
		(0.013)	(0.013)
Hired Lecturer	------	-0.089***	-0.115***
		(0.020)	(0.020)

(Table continues)

Variable	Model 1	Model 2	Model 3
Hired Instructor	-----	-0.033*	-0.037**
		(0.013)	(0.014)
Hired Assistant Prof	-----	-0.151***	-0.165***
		(0.010)	(0.012)
Hired Associate Prof	-----	-0.232***	-0.220***
		(0.015)	(0.016)
Hired Full Professor	-----	-0.142***	-0.145***
		(0.018)	(0.019)
Ln(Starting Salary)	-----	-0.174***	-0.146***
		(0.011)	(0.012)
Hired 1996-00	-----	-----	0.005
			(0.017)
Hired 2001-05	-----	-----	-0.016
			(0.017)
Hired 2006-10	-----	-----	0.062***
			(0.016)
Hired 2011-15	-----	-----	0.105***
			(0.016)
Doctoral Institution	-----	-----	0.034***
			(0.010)
Two-Year Institution	-----	-----	0.090***
			(0.012)
Likelihood Ratio (χ^2)	362.81***	1250.67***	1433.61***
Pseudo R^2	0.02	0.07	0.08

Notes: Sample size = 14,355. Coefficients are reported as marginal effects; Standard errors in parentheses. Reference category for race is White. Reference category for age at hire is 25-34. Reference category for marital status is single. Reference category for rank is "no rank given". Reference category for year of hire is 1991-95. Reference category for type of institution is bachelor institution. + p<.10, * p<.05, ** p<.01, *** p<.001.

Table 4: Logit Models for Whether Enrolled in TRS Retirement Plan -- Staff

Variable	Model 1	Model 2	Model 3
Male	-0.068***	-0.034**	-0.032**
	(0.011)	(0.011)	(0.011)
Black	0.119***	0.125***	0.126***
	(0.014)	(0.013)	(0.013)
Asian	-0.272***	-0.216***	-0.203***
	(0.019)	(0.019)	(0.019)
Hispanic	-0.016	-0.022	-0.016
	(0.033)	(0.032)	(0.031)
Other Race	0.030	0.032	0.024
	(0.060)	(0.058)	(0.058)
US Citizen	-0.108***	0.015	-0.008
	(0.017)	(0.019)	(0.020)
Age Hire: 35-44	0.050***	0.066***	0.061***
	(0.013)	(0.013)	(0.013)
Age Hire: 45-54	0.087***	0.119***	0.108***
	(0.015)	(0.015)	(0.015)
Age Hire: 55-64	-0.094***	-0.044*	-0.057**
	(0.021)	(0.021)	(0.021)
Age Hire: 65+	-0.355***	-0.265**	-0.265**
	(0.097)	(0.095)	(0.094)
Married	0.035**	0.046***	0.034**
	(0.012)	(0.011)	(0.011)
Education: Unknown	-----	0.130***	0.161***
		(0.017)	(0.019)
Education: High School	-----	0.181***	0.175***
		(0.050)	(0.050)
Education: Two-Year	-----	0.155***	0.148***
		(0.026)	(0.026)

(Table continues)

Variable	Model 1	Model 2	Model 3
Education: Graduate	-----	-0.101***	-0.097***
		(0.012)	(0.012)
Service Position	------	0.035+	0.040*
		(0.019)	(0.019)
Management Position	-----	0.062***	0.041**
		(0.014)	(0.014)
Teaching Position	-----	-0.070+	-0.039
		(0.038)	(0.039)
Ln(Starting Salary)	-----	-0.185***	-0.156***
		(0.014)	(0.015)
Hired: 2010	-----	-----	-0.021
			(0.027)
Hired: 2011	-----	-----	-0.003
			(0.025)
Hired: 2012	-----	-----	-0.021
			(0.024)
Hired: 2013	-----	-----	-0.044+
			(0.024)
Hired: 2014	-----	-----	-0.059*
			(0.023)
Hired: 2015	-----	-----	-0.097***
			(0.023)
Doctoral Institution	-----	-----	-0.052***
			(0.013)
Two-Year Institution	-----	-----	0.080***
			(0.022)
Likelihood Ratio (χ^2)	519.38***	1182.97***	1261.46***
Pseudo R^2	0.05	0.11	0.12

Notes: Sample size = 7,816. Coefficients are reported as marginal effects; Standard errors in parentheses. Models also include variable for other marital status. Reference category for race is White. Reference category for age at hire is 25-34. Reference category for marital status is single. Reference category for position is "All Other Position". Reference category for year of hire is 2009. Reference category for type of institution is bachelor institution. + p<.10, * p<.05, ** p<.01, *** p<.001.