

*"Grab That Cash with Both Hands and Make a
Stash"*
Enticing the Youth in Retirement Plans

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Considerable amounts of time and effort have gone in to researching retirement plans and finding ways to increase participation rates. With a great shift from employers being responsible for the retirement period of their employees, to the employees acting as their own agent to plan and prepare for their retirement; it is an employer's fiduciary responsibility to establish a plan that motivates employees to participate. Employers then turn to research to determine how to design a retirement plan, and even with extensive research, participation rates are still dismal. This paper will explore past research and evaluate a new approach in analyzing incentives. Prior research has focused on the wrong population, and therefore the resulting ideas, concepts, and plan design adjustments are all aimed at the wrong population. Research has shown that plan incentives do not matter to older employees and therefore those incentives will not matter for the entire workforce. This paper will explore the notion that older employees have different incentives than younger ones and that retirement plans should be designed based on younger employees and that the most popular plan incentive, employer matches, do in fact have a greater influence on younger employees' participation rates. The resulting analysis of this paper finds that in fact younger employees do respond to plan incentives differently, specifically an employer match. What this paper does determine is that the match decreases as an incentive for employees as they get older and then increases again as the employee moves out of their 40s.

The idea of planning for retirement can be lost on some people. Perhaps they do not understand what the future entails for them or perhaps they do not know how to plan. Commonly, an individual will begin their retirement planning by opening a retirement account. The typical individual has a couple different options to go about opening account; they do it themselves, in a self-directed method or through their employer. The self-directed method requires an individual to take the initiative and open an Individual Retirement Account (IRA). The other option is to participate in an employer sponsored retirement plan; either a Defined Contribution (DC) or a Defined Benefit (DB) plan. For purposes of this paper we will not delve into the multiple types of IRAs, DBs, or DCs. Since participating in an employer sponsored retirement plan does not require a lot of effort from the employee, individuals will typically save for retirement through the employer's plan.

Recent decades have seen major shifts in how employers help their employees towards retirement goals. "Over the last 20 years, defined contribution pension plans have gradually replaced defined benefit plans", (Choi 2004). Defined contribution (DC) pension plans encompass several privately sponsored retirement vehicles, but the most popular and well-known

and the one of focus in this paper is the 401(k) plan. As employers continue to phase defined benefit (DB) plans out and move towards defined contribution, the burden now shifts towards the employee to actively plan and prepare for their retirement on their own. The problem arises that, when left to plan for themselves, employees will not prepare themselves for retirement. In 2005, only 42% of employees were participating in a defined contribution plan, (Costo 2006). With employee sponsored retirement plans as usually the only and major source of retirement income, why isn't the participation rate 100%? Each employer must then do its fiduciary duty and regularly evaluate the DC plan that it has in place to find better designs and better incentives to increase participation rates. Unless the remaining 58% begin participating in a retirement plan, they will be reliant on social programs and families to live out the rest of their lives, or return to the workforce in a role that is possibly diminished in responsibility, compensation, and respect. This paper will follow the course of: motivation and direction, literature review, data and model methodology, and conclusion.

Defined Benefit

A defined benefit plan is one that provides a benefit for a retiree's entire life, post-employment. The benefit amount is based on a formula that is typically made up of an employee's years employed, age at retirement, and salary. Usually the salary component is based on a final average; it is the average of an

employee's last three years of employment. Using this information, an actuary determines the amount of benefit that the employee is able to receive. From that amount, the employee can make specific choices such as receiving a small lump sum with a reduced benefit, or guaranteed payments even after death with a reduced benefit. There are countless permutations that a defined benefit plan can offer for a retiree's benefit.

Fading out are the days when an employee went to work day in and day out and when retirement time came, the employer took care of that employee through a defined benefit plan. Defined benefit plans have proven to be costly and burdensome to the employer as the care for each employee was carried by the firm until death. As medicine and technology advanced, so did employees' longevity which created issues with the actuary's figures. An employee that lives longer than anticipated increases an employer's cash outlay. As employers looked for ways to trim costs, they moved towards defined contribution plans. Costo 2006 states that the decline in DB plans can be attributed to shifts in the labor force. The decline union workers, among others, in the past two decades has created a decrease in the number of DB plans offered as these industries were the largest implementers of DB plans.

Defined Contribution

A defined contribution plan is one that has an individual account for each employee. Investment amounts and decisions are self-directed; the planning is

solely on the employee. With a 401(k) plan, employees are solely responsible for their retirement future. An employee must decide if they want to participate in the employer sponsored plan and how much they wish to defer of their salary. Now, an employer provides an opportunity to the employee to plan for retirement. Nothing is mandatory, all decisions are self-directed and an employee has to play an active role in planning for their retirement. Even with the knowledge of no guarantees and the “rumors” of a soon to be bankrupt Social Security Program, employers are still finding participation rates to be lagging.

To entice employees to be fiscally responsible, employers create incentives when designing a 401(k) in hopes of raising participation rates. Several research papers have spent considerable amounts of time analyzing plan design features and which features, or a combination of features spark the greatest motivation in employees. The papers range in focus of topic from investment options to loan features to employer matching and beyond. The focus of my research will differ from all other research to my knowledge, in that considerable attention will be paid to the younger generations in the workforce. A considerable amount of research has been done that has focused on employees over 50 years of age, or the participation behavior of an entire firm, or the investment portfolio decisions of employees. This paper will study the effects that plan incentives have on employees, specifically those that are under 30 years of age. The idea is that plan incentives, in this case focusing on

an employer's match, will have a greater influence in increasing participation rates of younger employees than it will for older employees. While employees under 25 years of age are participating at a meager 30%, encouraging this age group to begin saving for retirement now means a greater chance of reaching their retirement goal (Hewitt 2007). By investing early on, an employee can make the most of compounding and tax-deferred growth. Assuming the same rate of return, inflation rate, and yearly investment amounts for both individuals; an individual who invests yearly from age 25 to age 35 and stops investing will have an account value at age 65 worth nearly two times that of an individual who started investing at 35 years of age and made yearly contributions for the next 30 years; he will also have outlaid three times more than his counterpart (Whelehan 2007). This provides the motivation to encourage young employees to start saving now, hesitation will greatly decrease their chances of reaching their retirement goal. Lusardi (1999) found that individuals follow a life-cycle and as an individual's income increases, so does their retirement savings. While typically young employees are making low incomes, retirement plans need to find a way to encourage them to participate early on in their life-cycle.

Literature Review

Gary Engelhardt and Anil Kumar (2006) provide the concept behind the motivation for this paper. Their study focuses on the employer match and participation rates using data from the Health and Retirement Study. In their

study, they find that increases in employer matches have very little effect on the participation rate; an effect that they determine is so small that it should not be taken into consideration when designing 401(k) plans. While this research is insightful, they lack a considerable amount of the workforce. The HRS survey only includes individuals in the workforce age 51-61. Although this is considered the Baby Boom generation, and a significant part of the workforce, the paper leaves out an extremely large segment of the labor force, everyone else! While this paper calls on employers and policymakers to believe that matching is a poor incentive to encourage retirement plan participation, it can prove misleading. Employers and policymakers cannot make wise decisions based upon a generation that is nearing retirement and not gearing decisions on the remainder of the workforce.

Olivia Mitchell, Stephen Utkus, and Tongxuan Yang (2006) is the other cornerstone of foundation for my research. The paper looks at 500 retirement plans and develops two models to determine employee behavior and employer contributions in relation to tax consequences. My model borrows their employee behavior model, made up of employee characteristics, plan characteristics, and employer characteristics. As with Engelhardt and Kumar, their research shows that the matching characteristic in a DC has minimal influence to entice employees to participate in an employer sponsored retirement plan. While they use a very robust data set, they use an average of all the data points which can lead to skewed results. As policymakers and

employers rely on research as a way to perform their fiduciary duty by designing a desired plan, it is possible that the research they are referring to is misleading. A retirement plan that has a majority of older people will not represent younger employees correctly. By averaging the data, Mitchell, et al, cannot specifically predict the behavior of individual employees, simply the trend of the plan as a whole.

Brigitte Madrian and Dennis Shea (2000) focus on the automatic enrollment feature of retirement plans that is gaining great momentum in the plan design world. The automatic enrollment feature is becoming more and more common practice when designing a retirement plan. The auto enroll feature is a way for an employer to put their fiduciary duty on cruise-control. Plans that have this feature automatically enroll an employee into the 401(k) as soon as they are eligible. The employer is able to forcefully encourage their employees to participate by making the plan minimum employee contributions once the employee is eligible. After collecting data before an automatic enrollment feature was implemented, and then collecting data afterwards, their conclusions are rather logical and expected. For an employee to not participate in a DC that has an auto enroll feature, an employee must sign a waiver stating that he or she does not want to participate in their employer's retirement plan. Their findings show that having the automatic enrollment feature does have a dramatic effect on DC participation rates. Since employees do not have to do anything to enroll, but actually must exert effort to

opt out, employees simply stay enrolled and therefore participation rates increase. Since this feature is based on minimal decision on the employee's part, my research will focus on actions taken by the employee. The research also points out that DC participation increases as employees get older, tenure and income increase.

James Choi, Brigitte Madrian, and David Laibson (2004) look at 401(k) plan design and its effect on participation rates. The focus of their research is more on the plan side and less on the employee side which takes out any analysis of employee behavior and the decision process. Through their research they do find that designing a quality retirement plan will increase not only the participation rate of employees, but also each employee's amount of participation. While all the features that they examined do increase participation rates, in contrast to other research, they do conclude that increased employer matches lead to increases in employee's contribution amounts and participation rates.

Leslie Papke (2004) finds that investment choices in a plan increase contributions in retirement plans. Along the lines of Choi, Madrian, and Laibson, Papke researched the role of features in a plan have on participation rates. The paper singles out specifically investment choices available to employees as an encouragement to participate and if already participating, increase contribution amounts. Papke goes on to conclude that providing investment

choices has a huge impact on participation and contribution rates. The interesting point that is emphasized is that these results do not vary across income levels which may, in some cases, seem illogical. A short-coming in this paper is that it also samples the HRS of 51-61 year old respondents which, in the case of Engelhardt and Kumar, can be misleading. Also, Papke suggests that as employer matches become reduced or eliminated, loan provisions and increased asset choices may spark increased participation rates.

Gary Mottola and Stephen Utkus (2007) follow along Papke in the research of investment choices. While they do not focus on participation rates of employees they do find evidence to compel plan designers to take closer looks at the investment choices that are created in retirement plans. The paper studies a large sample of participants' retirement plan portfolios and categorizes them into three sets: red, yellow, and green; a progression from aggressive to conservative. While employees are typically left to their own devices to construct a portfolio of their liking, many times plan sponsors create model portfolios for the employees to follow. This adds another facet to the design of retirement plans as plan designers must be cautious with investment choices yet at the same time provide enough variety to increase participation rates as suggested by Papke. The findings show that there is desire in participants for diversification and risk. A sideline finding of this paper is the fact that those that make significant gains from portfolio strategy are typically females with low levels of financial literacy, income, and wealth.

Methodology

A contention that I make is individuals that are near retirement are already extremely motivated to participate in a retirement plan, or in this paper more specifically, a 401(k) plan; Choi, et al, (2004) and Lusardi (1999) support this theory as they state that as an employee ages and their income increases, so does their deferral amounts; additional plan features will not change participation decisions. Plan features will have a greater influence on younger workers that do not have an impending retirement goal. Policymakers and employers should be focusing greater attention on the younger generations that have little motivation to plan for their retirement. My research will focus on plan features that increase participation rates among individuals that have a longer timeline for retirement. With great desire to reform Social Security, attention has to be paid to the individuals who believe they will not have Social Security when they retire. Policymakers need to determine what motivates the younger generations to plan and save for retirement. While each age group and each point in an individual's life-cycle will be different than others, attention needs to be paid to designing a plan that takes into account these differences.

While there are many approaches, my focus will be the effect employer's match has on the participation rates of younger individuals. Both Engelhardt and Kumar (2006) and Mitchell, et al (2006) determined that an employer match is ineffective, but their results are biased. Only using a specific age group

or rounding out an entire workforce's age will create unrepresentative conclusions; it could have drastically different implications on younger workers. The idea is, at a time when savings rates of individuals are negative, the younger generations are living off of credit cards and sinking into debt, what can employers do to guide their young workers to plan for their future? Social Security can also learn how to best attack reform AND go about it in a way that will ensure maximum participation. Employers and policymakers want to target the workforce ages 18-40 when they are trying to attract new hires and increase DC participation or create legislation that entices the youth, and not understanding that behaviors change with the life-cycle can result in a poor reception from several age groups.

Model Specification

The model used in this paper is one that was constructed from the Mitchell, Utkus, and Yang paper. They were able to model employee behavior based upon plan design features, employee characteristics, and employer characteristics. My model will follow that guideline with the dependent variable being participation rate deferral.

$$EEParticipation = \beta_0 + \beta_1 PD + \beta_2 ER + \beta_3 EE + \varepsilon$$

PD entails the variables that are in the plan design; ER are the variables of the employer; and EE are the employee characteristics. The plan design variable is loan feature. I anticipate the coefficient sign to be positive because allowing

the employee access to money that is typically illiquid should be a positive incentive for employees. The employer variable is the plan's participation. This also has a positive coefficient sign as well. The logic behind this is peer motivation and also an unaccounted for variable of plan education. If a plan provides a high level of financial education, then most employees will see the benefit in participating so therefore plans with high levels of participation can be thought of to be well educated. The employee variables are c_age, y_age, x_age, o_age, years_employed, compensation, mperc, and female. C_age, o_age, and years_employed are all anticipated to have negative signs. These three variables are all related as can be assumed that as an employee ages, tenure increases, their motivation to participate will not be as great. They are nearing retirement and seemingly no incentive will encourage them now if they are not already participating. The remaining variables should seem logical in their anticipated positive sign. Those employees under 50 should find encouragement and as compensation increases, one would conclude so would participation. The dummy variable of female having a positive sign is based on Mottola and Utkus (2007) in that females typically participate highly.

Variable	Variable Description	Anticipated Sign
C_age	Employee Age	-
Y_age	Employee Under 30	+
X_age	Employee Between 31-50	+
O_age	Employee Over 51	-

Compensation	Employee's Annual Compensation	+
Mperc	Employer's Matching Percent	+
Years_employed	Employee's Tenure	-
Female	Employee's Gender	+
Plan_parti	Plan's Participation Rate	+
Loan	Plan Offers Loan	+

The data was gathered from a retirement plan service company, it was provided in census form by each firm so as to meet specific Internal Revenue Service filing requirements. From this data, individual employee statistics were grouped with employer and plan characteristics. All distinguishing information for each employee and employer were not provided; the identity of each company and employee were anonymous. Plan Description in the model is made up of match amount, and if a loan is offered. Employer characteristics are made up of size of the employer and overall participation rate. Employee characteristics are made up of the employee's age, tenure, compensation, deferral amount, and if female or not. Please refer to Table 1 in the appendix for the descriptive statistics.

The following details the econometrics used in this paper. While using the model from Mitchell, et al, my paper diverges in how the data was used. While Mitchell used a total average of all the observations; I am grouping the data into age categories so as to determine the effects per age group, not on an

entire population. The problem in the Mitchell paper is the fact that averaging all the values could misrepresent a 25 year old employee's behavior. A 54 year old employee could skew the results in a negative way that could mislead employers and policy makers. Using SAS, I eliminated specific lines of data that I felt were not relevant, or were to be excluded regardless; depending on the plan specifics, there could be a service requirement that an employee must meet before participating in the retirement plan; therefore, those employees were not included in the analysis. Also, I removed any employee that was still in the workforce after the age of 65; this study is to look at employees in the age range of typical employment, not beyond normal retirement age.

After adjusting the data to fit my specifications, I then performed four simple Linear Probability Model regressions on the data using the deferral percentage as the dependant variable. The first regression was using the entire population. The next three each account for a specific age group; under 30 years of age, 31 to 50 years of age, and finally 51 to 65 years of age. Because my dependant variable is bound between the values of zero and one, my results suffered from heteroscedasticity. To correct for heteroscedasticity, I used MacKinnon and White (1985) correction, the heteroscedasticity-consistent standard error estimates. The resulting analysis was both expected and unexpected. Please refer to Tables two through five for the regression analysis output.

Implications and Conclusion

The resulting regression analysis was significant for all the age groups and the sign coefficients were all but expected. As with prior research, when taking the entire population; the matching percentage does have a positive impact, although it is rather minimal. With an increase of the employer match by 1%, employee's participation will increase by .38%. Also, the loan variable carries an unexpected negative coefficient. Following prior research, the results are to be expected. Next, taking the "Under 30" sample, the results are quite impressive. The matching percentage is nearly three times that of the entire population. A 1% increase in the employer match will increase employee participation by .97%. This does lend encouragement to the idea that an analysis of an entire population does not predict or account for a specific age group. Oddly enough though, an employee's tenure carried a negative coefficient. There seems to be no logical explanation for this except for something that cannot be accounted for in a census. Taking a look at the middle ground, those between the ages of 31 and 50, we find nearly a mirror of what was observed when looking at the entire population. A 1% increase in the employer match will increase employee participation by .24%. This is significantly lower than the "Under 30" group, but what proves quite intriguing is that it is lower than the entire population. To fit the last piece of puzzle in place, the "Over 50" regression has completely unexpected results. It can be observed that employees over 50 actually react to a match nearly the same as

those employees under 30! An employer match of 1% will increase employee participation by .85%.

While the theory that, as an employee moves through the life-cycle, participation will increase, is not fully supported; the results have important implications. The observation is that employees under 30 do find an employer match enticing, as do those employees over 50. Taking a closer look at the analysis shows that the match as an incentive for those over 50 does decrease as they get older where as it increases for those under 30. The quite unexpected results come in the 31 to 50 age group. They are actually not as inclined or excited to participate in their employer's retirement plan if a match is present. Based upon these results, participation in retirement plans is U-shaped as age progresses. This could be explained by increased burdens, responsibilities, and expenses of this age group; but at the same time, all age groups would experience similar characteristics.

To examine closer, as a younger employee ages he will be very inclined to participate, but as he reaches his 30s and the demands of a family and other high ticket items such as a home and children's education come to the forefront, incentives do not matter. As that employee ages more and financial burdens are lifted; children move out of the home, the employee once again responds to retirement plan incentives. To support the notion that this age group is suffering more financial hardships, one would surmise that a loan

feature built into the plan design would prove worthwhile; but in this case, it does not.

Also, an interesting point to note, compensation had little to do with participation. One would think that the more an employee earned, the more likely they would participate and the more they would defer. The regressions show that this is not a correct assumption. The overall participation rate in each plan carried significant weight for an employee's participation. My assumption is that plans with high participation rates are those with excellent plan and retirement education for its employees. The gender of the employee did not hold any conclusive results. The gender influence on participation fluctuated from age group to age group not lending to any significant deduction to the reasoning.

The findings in this paper are in contrast to Lusardi's theory of life-cycles. It does prove interesting and useful to plan designers, employers, and policy makers. When designing or implementing a retirement plan, employers and plan designers need to take into account the age demographics of the employees. A summation of a company's workforce will not properly mirror the employees' responses to incentives. A complete overhaul of how retirement plans are designed may be required to increase participation rates. With 58% of employees without a source of retirement income, some drastic changes need to be made. Although it may increase paperwork and administrative costs,

perhaps a tiered or cafeteria plan would make sense. Plan sponsors and employers have age-based portfolios that an employee can enroll in that automatically adjust the asset allocation to their age, why not an entire plan that does the same? Suppose a 26 year old decides to enroll in his company's 401(k) but doesn't like certain features. He could elect to receive a higher match percentage while declining the right to take a loan out. Whereas a 42 year old would rather take a reduction in the company match, as long as he then has the ability to take a loan out if he should need to do so in the future. The idea is that not everyone values the same features and therefore a mix and match strategy may be more appealing to more employees across various age groups. While the administrative cost would most likely increase due to record-keeping, among other things, it would be a small price to pay to not bear the burden of 58% of Americans not having a retirement income.

As Social Security continues to be a hot button item, and the constant talk of its bankruptcy, there needs to be a solution to this problem. The most common answer, other than extending retirement age to the late 60s, which no one wants to hear, is the privatization of Social Security; it can't be done for those that are about to receive the benefits, or those that currently are receiving them, but it can start to be phased out. The only way that legislators can devise a way to privatize Social Security is to determine what is enticing to individuals 40 and under. As can be seen by current retirement plans, it is assumed that what one age group finds appealing will be the same for all age

groups. This paper shows that that is not true and that legislators will need to have a menu of options that will be agreeable with all age groups.

In conclusion, this paper has dispelled the thought that an entire company's workforce can be happily serviced by a retirement plan. There needs to be a certain level of variety in each plan so as to increase the current average level of 42%. It is also important to note that while the employer match remains the strongest motivator in retirement plan participation, it has a very minimal effect on employees. While this paper does prove the differences in age groups' participation rates, there is room for future research to determine which current incentives, never thought of incentives or a combination of incentives specifically tailored to each age group would prove the most beneficial in increasing retirement plan participation rates.

Appendix

Table 1 Descriptive Statistics

Variable	Definition	Mean
P_def	Percent Deferred by Employee	2.91%
Compensation	Annual Compensation Received	\$39,506.31
Mperc	Employer's Match Percent	1.63%
Years_employed	An employee's tenure	7.19 years
Female	If an employee is female	45%
Plan_Parti	The participation rate per plan	45.15%
Loan	If a plan offers a loan feature	43.9%
C_age	The age for the entire population	40.11 years
Y_age	Employees under 30 years of age	24.89 years
X_age	Employees between the ages of 31 and 50	40.94 years
O_age	Employees over the age of 51	58.71 years

Table 2 Heteroscedasticity-Consistent Regression Analysis on Entire Population

Variable	Coefficient
Constant	-0.0298***
Compensation	2.4E-8
C-age	0.0009***
Mperc	0.0038***
Years_employed	0.0001***
Female	0.0007
Plan_parti	0.0481***
Loan	-0.0027

Table 3 Heteroscedasticity-Consistent Regression Analysis Under 30

Group

Variable	Coefficient
Constant	-0.0127
Compensation	3.7E-7***
Y-age	0.0005*
Mperc	0.0097***
Years_employed	-0.0001
Female	0.0049*
Plan_parti	-0.0017
Loan	0.0003

Table 4 Heteroscedasticity-Consistent Regression Analysis 31 to 50

Group

Variable	Coefficient
Constant	-0.0233*
Compensation	6.09E-8*
X-age	0.0004
Mperc	0.0024***
Years_employed	0.0002
Female	0.0044
Plan_parti	0.0720***
Loan	-0.0057

Table 5 Heteroscedasticity-Consistent Regression Analysis Over 50 Group

Variable	Coefficient
Constant	0.0608*
Compensation	-2.4E-8
O-age	-0.0007
Mperc	0.0085***
Years_employed	0.0008*
Female	-0.0068
Plan_parti	0.0118
Loan	0.0009

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