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Active Decisions: A Natural Experiment in Savings

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Active Decisions:
A Natural Experiment in Savings

Abstract: Decision-makers tend to overwhelmingly accept default options. In this paper, we identify an overlooked but practical alternative to defaults. We analyze the experience of a company that required its employees to either affirmatively elect to enroll in the company's 401(k) plan, or affirmatively elect not to enroll in the company's 401(k) plan. Employees were told that they had to actively make a choice one way or the other, with no default option. This "active decision" regime provides a neutral middle ground that avoids the paternalism of a one-size-fits-all default election. The active decision approach to 401(k) enrollment yields participation rates that are up to 25 percentage points higher than those under a regime with the standard default of non-enrollment. Requiring employees to make an active 401(k) election also raises average saving rates and asset accumulation with no increase in the rate of attrition from the 401(k) plan.

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When faced with many options, decision-makers frequently follow the path of least resistance. Thaler (1980), Samuelson and Zeckhauser (1988), and Kahneman, Knetch, and Thaler (1991) have argued that the status quo has a peculiar resilience, even when strong reasons exist for change. This has been called the endowment effect (Thaler) and status quo bias (Samuelson and Zeckhauser). Thaler showed that loss aversion (Kahneman and Tverksy 1979) explains why many individuals choose to keep even randomly generated endowments instead of trading them for something else. Procrastination (Akerlof 1992, O'Donoghue and Rabin 1999), anticipated regret, and ignorance (Laibson 1998) have also been identified as factors that generate inaction and inertia.

Recent analysis of 401(k) plans (Madrian and Shea, 2001; Choi, et al. 2002 and 2003) shows that saving for retirement is one aspect of behavior in which investors are particularly prone to follow the path of least resistance. For example, very few employees subject to automatic enrollment opt out of their 401(k) plan, generating participation rates that approach 100% in many companies. By contrast, when employees are not enrolled in the 401(k) plan unless they actively elect to participate, 401(k) enrollment rates are substantially lower, particularly at low levels of tenure. Inertia is also apparent in other aspects of 401(k) savings behavior. For example, a substantial fraction of participants in firms with automatic enrollment retain both the default contribution rate and the default asset allocation. These choices are puzzling because most companies with automatic enrollment have very conservative defaults—a low contribution rate of two to three percent, which is typically below the match threshold, and asset allocation to either a money market or a stable value fund.[1]

All of the available evidence suggests that employees are strongly influenced by whatever defaults their employer picks. This sensitivity raises thorny practical problems. Whose interests should a firm serve when choosing a 401(k) default? Firms have a fiduciary responsibility to design their 401(k) plan to benefit their employees, but how would a firm decide which default best serves those workers' interests? For example, different employees will have different short-run retirement savings goals, ranging from a young, cash-strapped single parent

[1] This asset allocation may not seem conservative in light of the recent sell-off in the financial markets. However, employees at these firms adopted these defaults long before the current bear market. Moreover, almost all employees hired at these firms prior to the institution of such defaults chose more aggressive portfolios.

with credit card debt to an older employee who needs to quickly build a retirement nest egg. Even if one diversified portfolio is right for most employees[2], one 401(k) savings rate isn't right for everyone. Such problems partially explain why many firms are reluctant to adopt — or to stick with — defaults.

In this paper, we identify an overlooked but practical alternative to defaults. We analyze the experience of a firm that required each new employee to fill out a 401(k) enrollment form in which the employee either affirmatively elected participation in the plan, or affirmatively chose not to enroll. Employees were told that they had to actively make a choice one way or the other. The option of not deciding was not officially available.

This "active decision" regime provides an arguably neutral middle ground that avoids the paternalism of defaults under both automatic enrollment *and* automatic non-enrollment. The active decision regime favors neither participation nor non-participation. In addition, the active decision regime does not specify a default contribution rate or a default asset allocation. Hence, employees who choose to enroll under the active decision approach are not all corralled into the default elections associated with automatic enrollment.

The active decision regime forces employees to think about retirement planning. For employees hired under an active decision regime, delaying their participation decision is not an option. We believe that such forced decision-making is far less forceful in practice than the use of defaults. Active decisions encourage good decision-making without prejudging or clearly biasing the outcome of that decision-making process.

We study active decision by comparing the period when it was in use to the period immediately after it was abandoned. This change in systems occurred as a by-product of the transition from a paper and pencil administrative system to a phone-based administrative system. Under the paper and pencil regime, all newly hired employees were required to fill out a form in which they either actively enrolled or actively chose not to enroll in the firm's 401(k) plan. After the adoption of the phone-based administrative system, the 401(k) enrollment form was no longer utilized. The enrollment procedure at this company was essentially transformed into the standard system currently used in most large companies in which there is a default of non-

[2] While normative savings rates should vary across employees, there are reasons to believe that normative asset allocations should be relatively homogeneous --- i.e., all employees should be encouraged to hold a diversified portfolio. See Benartzi and Thaler (2001) for evidence on suboptimal heterogeneity in employee asset allocation decisions.

participation unless employees pro-actively choose otherwise. The change in administrative systems was motivated by the convenience and efficiency of phone-based enrollment, and the loss of active decision effects was the casualty of that transition. The firm did not anticipate that the transition to a phone-based system with a default of non-enrollment would transform the psychology of 401(k) decision-making. The current paper is the first research to identify and analyze these effects.

We find that the active decision regime yields participation rates that are up to 25 percentage points higher than those under the regime with a standard default of non-enrollment. Relative to the standard regime, the active decision regime raises average saving rates and average balances, and it is not associated with a higher rate of 401(k) attrition. In this sense, this firm's limited experience with an active decision regime appears to have been a success.

The rest of this paper discusses the active decision experience in greater depth. Section I describes the details of the two 401(k) savings regime at the company we study—the active decision regime and the standard regime with a default of non-enrollment. Section II describes our data. Section III compares the 401(k) savings decisions of employees hired under the active decision regime to the decisions of employees hired under a standard 401(k) regime with a non-enrollment default. Section IV concludes and briefly considers ways to effectively implement 401(k) enrollment approaches with an active decision component.

I. Features of the 401(k) Savings Plan at a Large U.S. Corporation

To analyze the impact on savings behavior of requiring employees to make an active 401(k) savings decision, we use employee-level data on 401(k) participation and savings behavior from a large, publicly-traded Fortune 500 company in the financial services industry. In December of 1999, this firm had locations in all 50 states, as well as the District of Columbia and Puerto Rico. This paper will consider the 401(k) savings decisions of employees at this firm over a five-year period from January 1997 through December 2001.

Until November 1997, newly hired employees at the firm were required to fill out a form either affirmatively electing or negatively electing 401(k) participation. This form was given to all newly hired employees along with all of their other new employee forms (e.g., employment eligibility verification forms, tax withholding forms, other benefits enrollment forms, etc.), and

employees were given 30 days to return the form to the local human resources office at the company.

Although there was no tangible penalty for not returning the 401(k) enrollment form, conversations with company officials indicate that only a small fraction of employees did not return the form. This high compliance rate arose because new employees were told to fill out the form and because the form was viewed as part of a packet that included other information that was legally required (e.g. employment eligibility verification). In those cases in which employees did not return the form, the employee was not enrolled in the 401(k) plan; that is, the failure to return the form was treated the same as a negative 401(k) election by employees who did return the form. Employees who declined to participate in the 401(k) plan during this initial enrollment period could not subsequently enroll in the 401(k) plan until the beginning (January 1) of succeeding calendar years. Later in the paper, we will show that this delay played no role in the success of the active decision regime.

In November of 1997, the company adopted a telephone-based 401(k) enrollment system in lieu of the former paper-based enrollment system. Employees hired subsequent to this change no longer received a 401(k) enrollment form when hired. Instead, the firm adopted the industry-standard enrollment system with a default of non-enrollment. Specifically, employees were given a phone number to call if and when they wished to enroll in the 401(k) plan. This phone call could be made at any time convenient to the employee. The new enrollment system also allowed employees to make changes to their participation status on a daily basis, rather than only at the beginning of each calendar year as had previously been the case. This change in the ability to make 401(k) election changes from an annual basis to a daily basis applied not only to employees hired after November 1997, but to all employees working at the company.

A number of other 401(k) plan changes were also made at the same time. We believe that these additional changes all go in the direction of making 401(k) participation more attractive rather than less attractive, and thus any bias from these other plan changes is likely to make our estimates of the active decision effect on 401(k) participation a lower bound. These other changes include the following: a change from monthly account valuation to daily account valuation; the ability of participants to take out a loan against their 401(k) balances; the addition

of two new investment funds as well as company stock to the 401(k) investment portfolio[3]; and finally, a change from annual to quarterly 401(k) statements.

II. The Data

We have two different types of data available on employees at the study company. The first is a series of cross-sections on all individuals employed at the company at year-end 1998, 1999, 2000, and 2001. These cross-sections contain demographic information such as birth date, hire date, gender, marital status, state of residence and compensation.[4] They also contain point-in-time information on 401(k) savings outcomes including participation status in the plan, date of first participation, the year-end contribution rate, total balances, the allocation of assets among the available funds, whether the individual has a loan against his or her plan balances, and if so, the terms of the loan. In addition, the cross-sections have annual flow measures on individual and employer contributions to the 401(k) plan, early withdrawals from the 401(k) plan, and the total transfer of assets across the funds in the plan.

The second type of data we have is a complete history of contributions to and withdrawals from each of the funds in the plan, the reallocation of assets within the plan, and the elected contribution rate to the plan for all 401(k) participants (those with non-zero balances) from September 1997 through April 2002.

To analyze the impact of requiring employees to make an active decision vis-à-vis participation in the 401(k) plan, we focus on two particular groups of employees at the study company. The first is individuals who were hired between January 1, 1997 and July 31, 1997 under the active decision regime.[5] The second is individuals who were hired between January 1, 1998 and July 31, 1998 under what we call the standard enrollment regime.[6] For both groups of

[3] Prior to November 1997, company stock was available as an investment option only for after-tax contributions.
[4] Information on educational attainment, race, and ethnicity is not available.
[5] Although the plan changes did not occur until near the end of November 1997, we restrict our sample of employees hired prior to this change to those hired from January 1, 1997 through July 31, 1997. We exclude employees hired prior to January 1, 1997 because the company made two other substantive plan changes that took effect January 1, 1997: first, the company eliminated a one-year waiting period before employees were eligible to participate in the 401(k) plan, and second, the company changed the structure of its 401(k) match. We do not include employees hired from August through October 1997 in our active decision analysis cohort because the plan changes described in Section I entailed a period of several weeks during which no new employees were enrolled in the 401(k) plan. Employees hired through the end of July 1997 are the last group of monthly hires whose initial enrollment opportunities under the active decision regime are not affected by this blackout period.
[6] We call this the standard regime because 401(k) enrollment at most large companies is conducted in a similar fashion.

employees, we impose two sample restrictions. First, employees must be eligible to participate in the 401(k) plan. This requirement excludes only a handful of individuals who are not employed in the United States and any employees who are under the age of 18. Second, we restrict the sample to employees who are not yet age 65. This latter exclusion is made for two reasons: first, there are very few employees over age 65 who still work at the company, and second, eligibility for Social Security and, potentially, pension benefits from other former employers could make the 401(k) savings decisions for this group very different than those for younger employees.

One potential issue in making comparisons between these two groups of employees is that the length of time between when they were hired and when we first observe them in the data is not the same for both groups. Employees hired under the active decision regime are first observed in the cross-sectional data in December 1998, 18-24 months after hire, and in the longitudinal data starting in September 1997, 3-9 months after being hired (note that only participants are observed in the longitudinal data). Employees hired under the standard enrollment regime are also first observed in the cross-sectional data in December 1998, but for these employees this is only 1-12 months after hire; in the longitudinal data, 401(k) participants from this cohort are observed as soon as they become plan participants. The lag in data collection means that the sample of employees from both cohorts is selected on still being employed when the data are collected, and that this problem is more severe for the active decision cohort than for the standard enrollment cohort. If turnover is unrelated to 401(k) participation and savings behavior, then the differential nature of the selection for the two cohorts is not a problem for our analysis. However, one might surmise that 401(k) participants are less likely to leave the company,[7] and in this case the greater attrition for the active decision cohort will bias upward the measure of 401(k) participation for this cohort relative to the standard enrollment cohort.

The overall retention rate at this company is fairly high—94% of those employed in 1998 are still actively employed one year later in 1999. This is a fairly high retention rate relative to the 75-80% annual retention rates estimated for workers in the U.S. economy as a whole. But we are interested primarily in the retention of workers with lower levels of tenure, and turnover

[7] If the cost of initiating 401(k) participation is fixed and the benefits accrue over time, individuals who anticipate leaving their jobs in a short period of time will be less likely to enroll in the 401(k) plan than similarly-situated employees who anticipate staying in their jobs for a long period of time. This selection in terms of who enrolls in the 401(k) plan will generate a negative relationship between 401(k) participation and the likelihood of job turnover even if 401(k) participation per se has no causal impact on employee turnover. See Even and McPherson (1999) for evidence that 401(k) participants have lower turnover rates than non-participants.

could be much higher for this group than for all employees taken as a whole. Figure 1 illustrates the magnitude of the potential attrition problems in the data by plotting, for those employed in the 1998 year-end cross-section, the probability of being still employed at this company one, two, and three years hence as a function of tenure. While the two and three year retention rates are generally increasing in tenure, the one-year retention rate exhibits more variability—it is generally decreasing at lower levels of tenure (less than 9 months), before increasing again at higher levels of tenure. These patterns are not inconsistent with the theoretical literature on job turnover. Although we don't have any information on employees whom we never observe in our data, we can use the one, two, and three year retention rates in the data to extrapolate retention rates for intervening periods. We conclude that the year-end 1998 data retains about 55-58% of the employees originally hired in the active decision cohort.[8]

To level the playing field between the active decision and standard enrollment cohorts, we restrict the sample in the standard enrollment cohort to those employees who are observed in the December 1999 cross-section. This means that we exclude from our analysis those employees who were hired from January to July 1998 and were still employed on December 31, 1998 but not on December 31, 1999. Although this approach disregards potentially useful information about this group of employees, it does make the sample selection for the two groups of employees we analyze consistent: employees from both cohorts are only included in our analysis if they are employed at the study company for at least 17-24 months. We have no reason to believe that the turnover rates of employees from these two cohorts would be different over these similar time horizons. The economic environment faced by these two groups of employees was fairly similar, at least for tenure levels that would take the employees through the start of the 2001 recession. In addition, the company itself reports no material changes in hiring or employment practices that would differentially impact these two groups; the significant workforce composition changes that this company reported to us took place in 2000 and involved substantial hiring in one division of the company—a change that would not affect the two groups that are the focus of our analysis—and workforce reductions in another division that had not hired any new employees for several years—another change that would not affect these two cohorts.

[8] We base this assessment on several different interpolation approaches, most of which yielded overall retention probabilities in this range. This assessment rests on the assumption that the turnover experience of the employees

Because the empirical analysis below largely consists of comparisons between the savings behavior of the active decision and standard enrollment cohorts as described above, we first want to establish the comparability of these two groups of employees. We do this in Table II, which presents demographic statistics on the active (column 1) and standard decision (column 2) cohorts from year-end 1998 and 1999 respectively (when each cohort has between 18 and 24 months of tenure). Overall, the cohorts appear fairly similar. Both have an average age of about 34 years, and the gender composition of the two groups is almost the same (the fraction who are female is 45.4% for the active decision cohort, versus 43.4% for the standard enrollment cohort). The dimension along which they are most different is marital status, and even here the differences are not large—57.2% of the active decision cohort is married, while this is true for only 52.2% of the standard enrollment cohort. The four measures of income presented—monthly average and median base pay, and annual average and median taxable income—are very close, and do not deviate by more than 2-4% across the two groups. The two cohorts are also very similar in terms of their geographical location. Overall, at least in terms of basic demographics, the two groups of employees look very similar, lending support to the assertions by company officials that there were no significant changes in the composition of the company's workforce at the time of the 401(k) plan changes studied in this paper.

As the third column of Table II shows, these two cohorts are somewhat different from employees at the study company overall, although in ways that would not be unexpected given the lower tenure of these two groups of employees. Their gender composition is about the same as that of the whole company, but they are somewhat younger (34 years vs. almost 41 years for all employees) and somewhat less likely to be married than all employees at the company. They are also paid less than all employees on average.

The last column of Table II gives characteristics of the U.S. workforce taken from the Current Population Survey to illustrate the similarities and differences between employees at this company and the U.S. workforce overall. The company we study has relatively more women employed than the economy as a whole, probably due to the fact that it is a service-sector company. Employees at the study company also have somewhat higher levels of compensation than do workers in the economy at large. We believe that this is due in part to the fact that the study company does not employ a significant fraction of very young workers who are more

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hired in 1997 was similar to that of employees hired in 1998.

likely to work part-time and at lower wages than the average worker in the economy. Although this company is not completely representative of the workforce as a whole, we do not consider the differences in the demographic composition of this company extreme in any way when compared to the overall economy.

III. Empirical Results

A. 401(k) Participation

We first examine the impact of requiring employees to make either an affirmative or a negative 401(k) participation decision on participation in the 401(k) plan. Figure 2A plots the fraction of employees who have ever participated in the 401(k) plan as a function of tenure. The black line gives the participation profile of employees hired under the active decision regime, while the grey line gives that of employees hired under the standard decision regime. We should note again that the active decision regime rules only applied to what we are calling the active decision cohort up through November 1997, at tenure levels of 5-11 months for these employees. After this time, the many changes described earlier in Section I were implemented for all employees. The major difference between these cohorts, thus, is the treatment that they received during their first few months of hire.

With the exception of the first month of tenure,[9] the fraction of employees who have ever participated in the 401(k) plan is substantially higher for those hired under the active decision regime than for those hired under the standard enrollment regime. At three months of tenure, 69% of the active decision cohort has enrolled in the 401(k) plan, relative to 41% of the standard enrollment cohort, a difference of 28 percentage points. For both cohorts, 401(k) participation increases with tenure, although at a slower pace for the active decision cohort than for the standard enrollment cohort. As a consequence, the magnitude of the participation differences between the cohorts decreases with tenure. Nonetheless, after 30 months, the active decision

[9] The lower 401(k) participation rate of the active decision cohort during the first month of tenure can be explained by the fact that the paper-based enrollment process of the active decision regime was susceptible to significant delays relative to the phone-based enrollment process of the standard regime (e.g., the paperwork sat on the desk of the HR office for several days, or even weeks, before being sent in to be processed). These processing delays also account for the fact that the 401(k) enrollment of the active decision cohort does not take place entirely within the 30-day period in which the form was due. While some enrollments take place during the first 30 days, most of the enrollments are actually processed during the second and, to a lesser extent, third months of employment. Very few active decision cohort employees have enrollments that are processed beyond the third month of employment and before the November 1997 administrative and plan changes.

cohort still has a participation rate that exceeds that of the standard decision cohort by over 13 percentage points (83% versus 69%).

Figure 2 could paint an artificially inflated picture of the active decision impact on 401(k) participation if participants under the active decision regime are subsequently more likely to drop out of the 401(k) plan. To address this issue, Figure 3A plots a different measure of 401(k) participation—whether an individual is actively contributing to the 401(k) plan. Because we only have the complete history of employee contribution rates beginning in September 1997, this measure of "current" 401(k) participation cannot be calculated for the active decision cohort at levels of tenure less than the employees' tenure in September 1997. Consequently, in Figure 3A the black line for this cohort does not begin until the ninth month of tenure, when all of the active decision cohort can be included. Overall, the underlying participation patterns in Figure 3 are very similar to those in Figure 2. At 12 months of tenure, the active decision cohort has a participation rate about 22 percentage points higher than that of the standard enrollment regime, whether participation is defined by current participation or having ever participated. At 30 months of tenure, the active decision cohort has a current 401(k) participation rate slightly less than 13 percentage points above that of the standard enrollment cohort, relative to a slightly more than 13 percentage point difference in the fraction of employees who have ever participated in the 401(k) plan. That Figures 2A and Figure 3A are so similar is a reflection of the fact that 401(k) participation is a nearly-absorbing state. As Figure 4 shows, at the tenure levels we consider, the fraction of individuals who have ever participated in the 401(k) plan who are not current participants in the 401(k) plan is very low for both cohorts—at most 7% at higher levels of tenure and much lower at low tenure levels.

The strikingly large differences in 401(k) participation rates across the active decision and standard decision enrollment cohorts indicate that something about the active decision enrollment process leads to higher 401(k) participation. While we have implied that this results from the requirement that employees confront the 401(k) participation decision during their first month of employment rather than delaying the decision indefinitely, there is another distinction between the active decision and standard enrollment regimes that could account for some of this difference. Under the standard enrollment regime, employees could make the decision to enroll in the 401(k) plan at any point in time and have that decision take effect immediately (or at least with a delay no longer than the next pay period). Under the active decision regime, not only were

employees required to fill out a form either affirmatively or negatively electing 401(k) participation within the first 30 days of employment, but the option to enroll in the plan, if not exercised during this initial 30-day period, was lost until January 1 of the next calendar year.[10] Therefore, in addition to the required affirmative or negative participation decision, employees hired under the active decision regime also faced an enrollment deadline that did not exist for the standard enrollment regime employees. This deadline could motivate higher initial 401(k) participation rates under the active decision regime.[11]

We first note that the participation differences between the two cohorts are so large that they cannot possibly be explained entirely by a deadline effect. A pure deadline effect that motivated earlier 401(k) participation for individuals who would have otherwise enrolled after 30 days but before the next January 1 ought to result in nearly equivalent participation rates for the two groups of employees after twelve months of tenure. In actuality, the participation rate of the active decision cohort at three months of tenure is not reached by the standard enrollment cohort until that cohort approaches three years of tenure.

If the large participation differences between the active decision and the standard enrollment cohorts cannot be completely explained by a deadline effect, can they be *partially* explained by a deadline effect? If a deadline effect were important in motivating earlier 401(k) participation in the active decision regime, then enrollment during the initial 30-day eligibility period ought to be higher for employees hired early in the year than employees hired later in the same year. This is because employees hired early in the year will have a longer wait until the next enrollment opportunity arises. To see whether this appears to be true, Figure 5 plots the 401(k) participation rate in the third month of tenure for each monthly cohort of employees hired from January through July under the active decision regime.[12] As can be seen, there does not appear to be a relationship between month of hire and initial 401(k) participation. Indeed, the correlation coefficient between the 401(k) participation rate in month 3 and the length of time from the month of hire until the next January 1 is negative (-0.2024) rather than positive.

[10] In fact, for the subset of employees hired under the active decision regime that we analyze (the January-July 1997 hires), the option to subsequently enroll in the 401(k) plan was not lost until January 1of the next calendar year, but until the end of November 1997 when the company switched to the phone-based daily enrollment system. At the time of hire, however, the active decision employees were not aware of this change and would have perceived the option to enroll as one that expired after 30 days until the following January 1.

[11] See O'Donoghue and Rabin (1999) for a theoretical discussion on using deadlines to reduce procrastination.

[12] We use the third month of tenure because, as noted in an earlier footnote, this is the time by which substantially all of the initial enrollments under the active decision regime have been processed.

Although we are hesitant to draw strong conclusions on the basis of this evidence because there can be substantial idiosyncratic variability in 401(k) participation rates across small groups of employees that swamp other effects in the data, the data suggest that whatever deadline effect exists is small.

This assertion is corroborated by also considering the experience of earlier cohorts hired under the active decision regime. We cannot directly compare employees hired before 1997 with the active decision cohort employees hired from January through July 1997 that have been the focus of this paper so far. This is because prior to 1997, employees faced a one-year eligibility requirement before they could participate in the 401(k) plan. In contrast, beginning on January 1, 1997, all employees were immediately eligible to participate in the 401(k) plan. We can, however, compare employees hired in earlier months with those employees hired in later months in the years before 1996.[13]

When looking at the employees hired before 1996, we find no systematic evidence of a positive relationship between the time until the next January 1 enrollment opportunity and initial 401(k) enrollment rates. The relationship in the years immediately preceding 1996 is very weak. It is stronger as we move farther back in time (to approximately the mid- to late-1980s), but looking at participation decisions this far back is somewhat tenuous given that our sample is conditioned on still being employed in 1998 or later, and so the sample sizes for employees hired this long ago are fairly small. We also do not know if other plan changes were made this far in the past that might have affected 401(k) enrollment decisions. We are left to conclude that we cannot find strong evidence of a significant deadline effect, and if there is a deadline effect, its magnitude is small relative to the differences in 401(k) participation that appear to be attributable to requiring employees to make an active 401(k) participation decision.

B. 401(k) Contribution Rate

The active decision regime's impact on the average 401(k) contribution rate is not immediately obvious. One the one hand, to the extent that 401(k) participation is higher, the average 401(k) contribution rate ought to be higher as well, since employees with a zero

[13] In doing this we are forced to exclude employees hired during 1996 because these employees, while all hired under the assumption of a one-year waiting period before eligibility, in fact became eligible to participate on January 1, 1997 when the company adopted immediate eligibility. As a consequence, their eligibility came at various different levels of tenure.

contribution rate are replaced with employees who have a positive contribution rate. On the other hand, employees may correctly infer that by initiating participation in the 401(k) plan sooner, they can reach a set retirement savings target with a lower contribution rate. The hastened 401(k) participation for many employees under the active decision regime may also come at the cost of more careful and deliberate thinking about how much an employee should optimally save for retirement; this, however, could lead to a contribution rate that is either higher or lower than it would be otherwise. Given the magnitude of the participation differences documented in Figures 2 and 3, we might expect that the effect of higher participation would be the dominant force affecting the average contribution rate.

Figure 6A, which plots the relationship between tenure and the average 401(k) contribution rate for the two cohorts of employees that we have been considering, bears this out. This graph includes both participants (with a non-zero contribution rate) and non-participants (with a zero contribution rate) in computing the average contribution rate for the two cohorts. As with Figure 3, the average contribution rate for the active decision cohort is not calculated until 9 months of tenure, when the entire active decision cohort is part of the longitudinal data. For the active decision cohort, the contribution rate starts off at 4.8% of income in month 9 and increases very slightly over time until reaching about 5.5% of income in the fourth year of employment. In contrast, the standard decision cohort has an average contribution rate that is only 3.6% of income at 9 months of tenure. It increases to 4.6% of income by 30 months of tenure but is still 0.6 percentage points (a sizeable 15%) below the comparable contribution rate for the active decision cohort.

Figure 7A plots the average contribution rate of employees conditional on their participating (having a non-zero contribution rate) in the 401(k) plan. In contrast to Figure 6, conditional on participation, employees hired under the standard enrollment regime have a higher average contribution rate. The higher conditional average for participants in the standard enrollment cohort could arise for two reasons. First, because this cohort has a much lower participation rate, its higher conditional average contribution rate could be the result of differences in the composition of its participants relative to that of the active decision cohort. It seems likely that the employees with the strongest taste for saving will enroll in the 401(k) plan early and with the highest contribution rates. Over time, employees with a weaker taste for saving enroll but with lower contribution rates, increasing the 401(k) participation rate and

simultaneously lowering the average contribution rate of those who participate. The average contribution rate pattern of the standard enrollment cohort seems consistent with such a composition story. The average contribution rate conditional on participation declines substantially from the first to the twelfth month of tenure, from 8.3% of compensation to 7.2% of compensation, and continues to decline—although at a slower rate—with greater levels of tenure. The second reason that 401(k) participants in the active decision regime could have a lower conditional average contribution rate is that, as noted earlier, participants under the standard enrollment regime may need to save more to meet their retirement savings goals because the participants in this standard decision regime have a later date of first participation on average.

Is there a way to disentangle these two effects? Figure 8 plots the relationship between the 401(k) participation rate and the conditional average 401(k) contribution rate. Each observation in Figure 8 is the combination of a participation rate (from Figure 3A) and an average contribution rate conditional on participation (from Figure 7A) associated with each level of tenure. For the standard enrollment cohort, there appears to be a fairly linear and negative relationship between participation and the average contribution rate, consistent with the composition story described above. For the active decision cohort, there is much less variation in participation rates than we see with the standard enrollment cohort, and consequently the line for this cohort appears much more compressed in the graph. There is also much less variation in average contribution rates. Indeed, it looks as if there is little relationship at all between the average participation rates and average contribution rates for this group. Since there is no overlap in Figure 8 in the participation rates for the active decision and standard enrollment cohorts, the average contribution rates conditional on a given level of participation between these two cohorts cannot be directly compared. However, using a regression to extrapolate the linear relationship between participation and the conditional average contribution rate for the standard enrollment cohort to higher levels of participation appears to closely predict the relationship between participation and the average conditional contribution rate for the active decision cohort.[14] Our

[14] The regression line in Figure 8 comes from a regression of the average contribution rate for 401(k) plan participants at a given level of tenure (from Figure 7A) on the comparable average 401(k) participation rate (from Figure 3A) for the standard enrollment cohort only:

Avg. Contribution Rate | Participation = 8.66 (0.043) – 2.59 (0.079)*Avg. Participation Rate R^2=.975

interpretation of this is that most of the active decision cohort's lower conditional average contribution rate is due to the differing composition of its plan participants.

Another way to distinguish between composition and catch-up effects is to evaluate the contribution rate for the two cohorts at different percentiles in the contribution rate distribution. This is done in Figure 9 for the 25th, 50th, 75th, and 90th percentile contribution rates. The 90th percentile contributor has been participating in the 401(k) plan (has a non-zero contribution rate) since his or her first month of employment and has a virtually identical contribution rate under both the active decision and standard enrollment regimes. The 75th percentile contributor has also been participating in the 401(k) plan since the start of his or her employment, but under the active decision regime has a contribution rate 1-1.5 percentage points higher than under the standard enrollment regime. At the 50th percentile, the active decision contributor has also been participating in the plan since the beginning of his or her employment, while the standard enrollment contributor did not initiate participation until the tenth month of employment. But we do not see that the 50th percentile contributor under the standard enrollment regime is contributing more to the 401(k) plan than his or her counterpart under the active decision regime who initiated participation earlier; indeed, up until about two years of tenure, the standard enrollment participant is contributing less. At the 25th percentile, no one in the standard enrollment regime is participating in the plan. Altogether, Figure 9 gives no evidence that participants in the standard enrollment cohort contribute at a higher rate to compensate for their later 401(k) enrollment. This corroborates the evidence from Figure 8 that the higher conditional average contribution rate of 401(k) participants under the standard enrollment regime results almost wholly from differences in the composition of participants between the two regimes.

C. 401(k) Asset Allocation

We next turn to the impact of the active decision enrollment process on the asset allocation decisions of 401(k) plan participants. The measure of asset allocation we consider is the allocation of future employee contributions to the 401(k) plan. Figure 10 shows the average fraction of future allocations going into each of three asset classes: stocks (excluding company stock), bonds, and company stock. As is readily apparent, there are quite substantial differences in the asset allocation of these two cohorts: the standard enrollment cohort has an average allocation in company stock over twice that of the active decision cohort, while the active

decision cohort has an average allocation in bonds almost twice that of the standard enrollment cohort.

Unfortunately, it is difficult disentangle the extent to which these differences are attributable to the active decision enrollment process, the differential sample composition of plan participants generated by the active decision enrollment process, or other changes that took place concurrent with the switch from the active decision to the standard enrollment regimes. Our hunch is that the differences are largely attributable to the fact that the menu of fund options available to plan participants changed at the same time as the switch to the standard enrollment regime (see Table 1). Of particular note is the fact that during the active decision regime, company stock was only available as an investment option for employees making after-tax contributions to the 401(k) plan, something that only a small fraction of employees do.[15] The plan changes that occurred at the switch to the standard enrollment regime included making company stock available as an investment option for all employees participating in the 401(k) plan, regardless of whether contributions were being made on a before- or after-tax basis. This several-fold increase in the fraction of employees for whom company stock was now a viable investment option would obviously be expected to increase the fraction of employees who do in fact invest in company stock, increasing the average allocation to company stock and decreasing the average allocation to all other asset classes. Although company stock would have become a viable investment option for employees in the active decision cohort as well, it is unlikely that many employees already participating in the 401(k) plan would have made immediate changes to their asset allocation.[16]

While the change in the menu of available fund options at the time of 401(k) enrollment is certainly consistent with the observed differences in the asset allocation of the active decision and standard enrollment cohorts, we do not have any way of disentangling this factor from the other factors noted above. We cannot say for sure whether or not the active decision enrollment process itself has any direct impact on 401(k) asset allocation choices and leave this question to future research, although we suspect that there would be very little overall impact.

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[15] At the study company, only 12% of 401(k) participants were making after-tax contributions at year-end 1998. The low fraction of employees making after-tax 401(k) contributions is not surprising since one of the key attractions of 401(k) participation is the ability to make pre-tax contributions and thereby reduce the current year's tax liability.

[16] See, for example, Madrian and Shea (2001) and Choi et al. (2002 and 2003) for evidence on significant inertia in 401(k) savings choices.

D. 401(k) Asset Accumulation

We next consider the impact of the active decision enrollment regime on asset accumulation. In some sense, the best measure of asset accumulation is actually the average 401(k) contribution rate depicted in Figure 6 above (including non-participants). This is because the contribution rate is the primary factor in the accumulation of assets over which the employee has significant control. Other things equal, employees with a higher contribution rate will experience a more rapid rate of asset accumulation. The rate of return on an employee's investments will also influence the rate of asset accumulation, and employees can affect this somewhat through their asset allocation choices. However, asset returns can be highly variable and unpredictable, and making comparisons across groups of employees who have experienced different historical asset returns is problematic. In this company, the issue is even more problematic because of the differences in asset allocation across the two cohorts shown in Figure 10. Fluctuations in the match rate over time also muddy any attempt to make clean comparisons of asset accumulation across different employee cohorts. Nonetheless, it is the level of asset accumulation—the combined effect of contributions, matching, asset allocation, and investment returns—that will eventually affect the retirement decisions of individuals and their consumption levels during retirement.

We measure asset accumulation as non-loan 401(k) balances relative to pay.[17] This measure subtracts from accumulated balances any outstanding principal from a 401(k) loan that the employee may have. We normalize by the employee's annual base pay to account for the fact that other things equal, employees with higher earnings will experience more rapid asset accumulation if measured strictly in dollar terms.

As might be expected given the much higher participation rates and somewhat higher average contribution rates of the active decision cohort, this cohort also has a higher level of accumulated assets relative to pay at each level of tenure (Figure 11). At 12 months of tenure, balances represent almost 5.9% of pay for the active decision cohort but only 4.2% of pay for the standard enrollment cohort, a difference of 22%. Going out to 30 months of tenure, balances represent 11.4% of pay for the standard enrollment cohort and 16.7% of pay for the active

[17] This measure of asset accumulation excludes any 401(k) balances that the employee may have rolled into this company's plan from a previous employer.

decision cohort, a difference of 33%. As we noted previously, these results must be interpreted with caution, as asset accumulation for these two cohorts will be affected by time-varying factors that are not under the direct control of plan participants. That said, the results are consistent with much of the other evidence presented so far: requiring employees to make an active decision vis-à-vis their 401(k) participation leads to much higher rates of saving, and by extension, asset accumulation as well.

E. 401(k) Loans

Another measure of 401(k) savings behavior that might be affected by the active decision enrollment process is the likelihood of taking out a 401(k) loan. Because many active decision employees initiate saving in the 401(k) plan earlier than they would otherwise, these employees may save less elsewhere. If, as a result, these employees then have fewer non-401(k) assets to meet other financial needs, they may be more likely to take out a loan against their 401(k) plan balances. Figure 12A, which plots the likelihood of having a 401(k) loan outstanding by cohort, suggests that this is indeed the case (the sample in Figure 12 is all employees, not just 401(k) participants).

At low levels of tenure—less than 12 months—the active decision cohort is somewhat less likely to have a 401(k) loan than the standard enrollment cohort. We believe that this, however, is largely a result of the fact that 401(k) loans were not available at this company until November 1997, by which time members of the active decision cohort had 5-11 months of tenure. This biases downward the difference between the 401(k) loan rate of the active decision cohort relative to the standard enrollment cohort. This bias, however, is likely to be miniscule. Note that at low levels of tenure, neither group of employees is very likely to have a 401(k) loan. For example, at 12 months of tenure, less than 1% of either group has a 401(k) loan. This makes sense: before employees can take loans out against their vested 401(k) balances, they must first accumulate some balances, a process that only happens over time. At all levels of tenure of 12 months or more, the active decision employees are more likely to have a 401(k) loan than the standard enrollment employees, and the relative difference between the two groups increases over time. By 30 months of tenure, the active decision cohort is 6.8 percentage points (59%) more likely to have a 401(k) loan.

Part of this higher loan activity for the active decision cohort is an artifact of the higher participation rate of this cohort. Only employees who participate in the 401(k) plan will be able to take out a 401(k) loan, and a higher fraction of employees under the active decision regime participate in the 401(k) plan. Conditional on participation, however, the active decision cohort is still more likely to have a 401(k) loan relative to the standard enrollment cohort, although the difference is not as great as that pictured in Figure 12. (For example, at 30 months of tenure, active decision cohort 401(k) participants are 4.7 percentage points more likely to have a 401(k) loan.) That the active decision cohort still has a higher likelihood of having a 401(k) loan, even conditional on 401(k) participation, could arise for two reasons. First, because 401(k) participation rates are much higher for the active decision employees, the active decision group includes more "marginal savers." Alternatively, as suggested earlier, the active decision enrollment process could lead employees to make hasty savings decisions (e.g., saving "too much," or saving "too early") that *ex post* lead to a higher likelihood of taking out a 401(k) loan for all plan participants. While we cannot completely disentangle these two effects, Figure 13A plots an alternative measure of participation in the 401(k) plan—the fraction of employees participating in the 401(k) plan *without* a loan against their plan balances—that speaks to their combined magnitude.

For the active decision cohort, the fraction of employees with a 401(k) loan increases with tenure more quickly than does the fraction of employees participating in the plan, and the net effect is that the fraction of employees participating in the plan without a loan starts falling at about 12 months of tenure. For the standard enrollment cohort, the fraction of employees participating in the 401(k) plan increases with tenure more rapidly than does the fraction of employees with a loan up to about two years of tenure. At this point, however, the two proceed at about the same rate, and the non-loan participation rate for this cohort is fairly constant beyond about two years. One suspects that it will eventually turn down, as with the active decision cohort. Although the trends with respect to tenure in the non-loan participation rate for the active decision and standard enrollment cohorts look very different, the non-loan 401(k) participation rate is nonetheless still higher for the active decision cohort than it is for the standard enrollment cohort. This suggests that the incremental participants resulting from the active decision enrollment process have not all subsequently taken out 401(k) loans. Moreover, whatever impact, if any, the active decision enrollment process has on the likelihood of taking out a 401(k)

loan, it is not large enough that we observe fewer active decision employees participating without a loan relative to the standard enrollment cohort, at least over the tenure levels for which we have data. Even accounting for loans, employees hired under the active decision enrollment regime have a greater participation intensity in the 401(k) plan and higher levels of asset accumulation.

IV. Conclusion

This paper identifies and analyzes the active decision alternative to the standard default-based 401(k) enrollment process. The active decision approach forces employees to affirmatively choose between the options of participation and non-participation in the 401(k) plan. This active decision mechanism picks no default option and hence does not advantage either participation or non-participation. Under the active decision regime, employees are *forced* only to think about their retirement planning and to affirmatively choose a course of action. Active decision 401(k) enrollment avoids the strongly paternalistic consequences of a default options.

Under the active decision enrollment regime, 401(k) participation rates for recently hired employees are 25 percentage points above normal participation rates. The active decision regime also raises average saving rates and average accumulated balances with no evidence of a higher rate of 401(k) attrition.

We do not know of other companies currently using an active decision enrollment scheme. We anticipate, however, that the evidence reported in this paper will lead to broader adoption of such schemes. In the current electronic environment, an active decision enrollment scheme need not necessarily take the form of the paper and pencil enrollment process that we studied. Instead, active decision schemes could be designed that take advantage of the efficiencies available with electronic enrollment. For example, a firm could "require" new employees to visit a Web site where they would actively elect to either enroll into or opt out of the 401(k) plan, perhaps in conjunction with electing other benefits or providing other information relevant to the company. Employees without web access would be able to make their election at the human resources department. Employees who failed to make an election would be reminded to do so with email notices or inter-office mail. We speculate that such reminders would be sufficient, eliminating the need for more extreme measures. A small amount of non-

compliance does not pose a problem for such a scheme. Firms could also confront non-participating employees with additional opportunities to make an active decision in the 401(k) plan during the firm's annual open enrollment period for other benefits. This would ensure that non-participating employees rethink their election of non-participation in the 401(k) plan at least once a year.

This approach to increasing 401(k) participation has some attractive features relative to other approaches. Compared to financial education, requiring an active decision is a more cost-effective way to boost 401(k) participation since it requires little expense above the cost of processing enrollments, which would be incurred for participants anyway. It is also more cost effective than increasing the employer matching rate, since increases in the match rate would apply to all employees, even those who would have enrolled with little or no match. Relative to automatic enrollment, it avoids the problems of inertia at the default contribution rate and investment options. This is because the active decision approach requires employees to actively choose all the parameters of their 401(k) participation (or non-participation). The results in this paper suggest an alternative implementation of automatic enrollment that companies could successfully employ—"require" employees to fill out a paper or Web-based form in the first 30 or 60 days of employment either opting-out of the 401(k) plan or specifying a 401(k) contribution rate and asset allocation, and use the automatic enrollment defaults only for those employees who do not respond (rather than using a default of non-participation, as was the case with the company studied in this paper).

We should note that we are not opposed to financial education, employer matching, or automatic enrollment. Rather, we view all of these, as well as requiring an active 401(k) participation decision, as potentially complementary approaches to fostering increased and higher quality 401(k) participation. These tools, when implemented well, can greatly enhance the potential retirement income security of a firm's current and future employees.

More generally, requiring individuals to make an active decision represents a weaker alternative to standard paternalism. Standard paternalism advantages a particular course of action. By contrast, active decision interventions are designed principally to force a decision-maker to think about a problem. This is still a form of paternalism, but the evidence reviewed above suggests that at least in the savings domain, it is relatively non-coercive.

We view an active decision intervention as benign paternalism because of its implicit agnosticism. Active decision interventions will be useful in many situations where consumer heterogeneity implies that one choice isn't ideal for everyone (e.g., the selection of a health plan), and where firms feel uncomfortable implementing employee-specific defaults (e.g., if such employee-specific defaults are viewed as "advice" with fiduciary consequences).[18] By contrast, defaults will have a natural role to play in cases where a large degree of homogeneity is appropriate (e.g., portfolio allocation) and when household decision-makers have limited expertise. Future research should explore active decision experiments in a wide range of decision domains and compare the relative efficacy of active decision and default-based systems, as well as hybrid systems, which may turn out to be the most useful approach of all.

[18] For an example of an interesting employee-specific default, consider a default savings rate that increases with the age of the employee.

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TABLE I
401(k) Plan Features by Effective Date

	Effective January 1, 1997	Effective November 23, 1997
Eligibility		
Eligible employees	U.S. employees Age 18+	U.S. employees Age 18+
First eligible	Immediately upon hire	Immediately upon hire
Match eligible	Immediately upon hire	Immediately upon hire
Enrollment	First 30 days of employment or January 1 of succeeding calendar years	Daily
Contributions		
Employee contributions	Up to 17 percent of compensation	Up to 17 percent of compensation
Non-discretionary match	50 percent of employee contribution up to 5 percent of compensation	50 percent of employee contribution up to 5 percent of compensation
Discretionary match	Up to 100 percent of employee contribution depending on company profitability (50 percent for bonus-eligible employees); 100% in 1997.	Up to 100 percent of employee contribution depending on company profitability (50 percent for bonus-eligible employees); varied from 0% to 100% from 1997-2000.
Vesting	Immediate	Immediate
Other		
Loans	Not available	Available—2 maximum
Hardship withdrawals	Available	Available
Investment choices	6 options (company stock also available, but only for after-tax contributions)	8 options + company stock (available for pre- and post-tax contributions)

Source: Summary Plan Descriptions and personal communication with company officials.

TABLE II
Comparison of Worker Characteristics

	Study Company			
	Active Decision Cohort 12/31/1998	Standard Cohort 12/31/1999	All Workers 12/31/1999	U.S. Workforce (CPS)
Average age (years)	34.1	34.0	40.5	38.8
Gender				
Male	45.4%	43.4%	45.0%	53.1%
Female	54.6%	56.6%	55%	46.9
Marital Status				
Single	42.8%	47.8%	32.4%	39.0%
Married	57.2%	52.2%	67.6%	61.0%
Compensation				
Avg. monthly base pay	$2,994	$2,911	$4,550	--
Median monthly base pay	$2,648	$2,552	$3,750	--
Avg. annual income[a]	$34,656	$34,001	$52,936	$32,414
Median annual income[a]	$30,530	$29,950	$42,100	$24,108
Highly compensated employee	0.4%	0.4%	14.5%	NA
Geography				
East	10.0%	8.4%	12.1%	18.9%
Midwest	37.9%	39.8%	35.3%	24.1
South	37.1%	39.0%	37.8%	34.7
West	15.0%	12.6%	14.7%	22.4
Number of Employees	N=2205	N=2344	N=46,822	--

Authors' calculations. The sample in the first three columns is individuals employed at the study company on the date in the column head. The sample in the last column is all individuals in the March 1998 Current Population Survey who worked in the previous year (weighted).

[a] The annual income measure that is reported to us for the study company is the employee's annual taxable (W2) income. Annual income for the U.S. workforce calculated from the CPS is total annual labor earnings in the previous calendar year, some of which may be non-taxable.

FIGURE 1. Retention Rates by Tenure Over Time

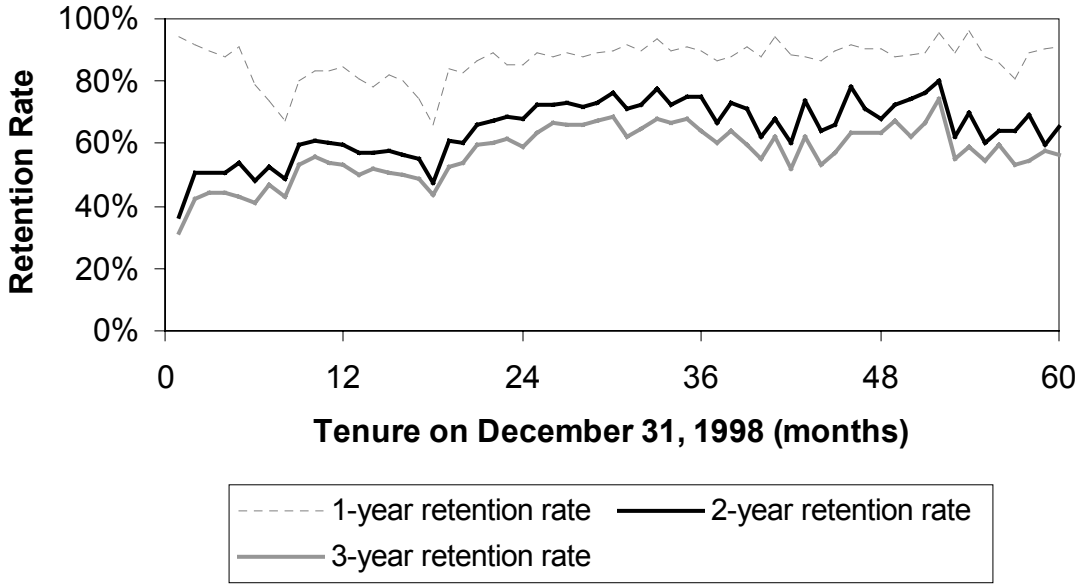

FIGURE 2A. Fraction of Employees Ever Participating in the 401(k) Plan by Tenure

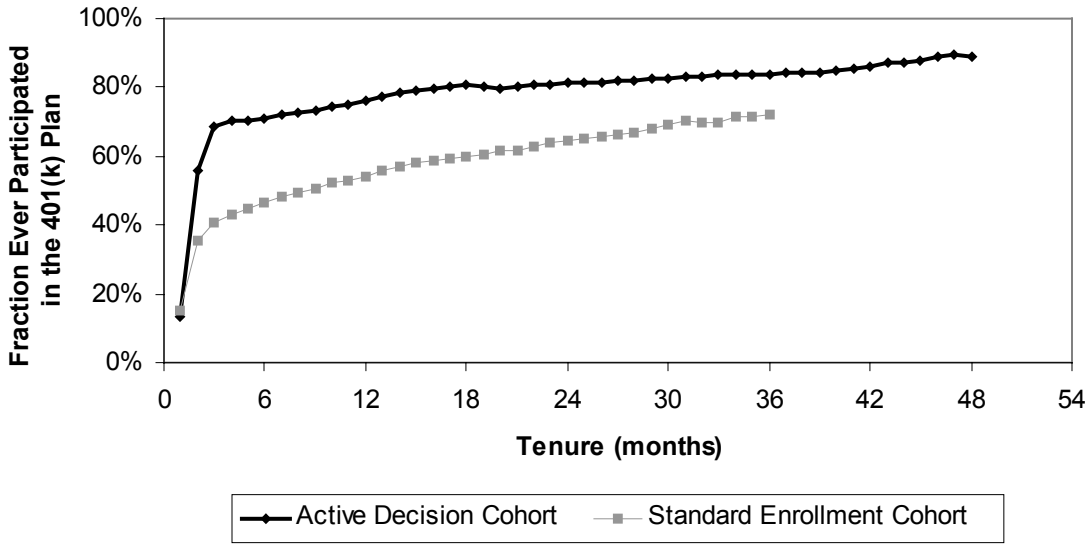

FIGURE 2B. Fraction of Employees Ever Participating in the 401(k) Plan by Tenure

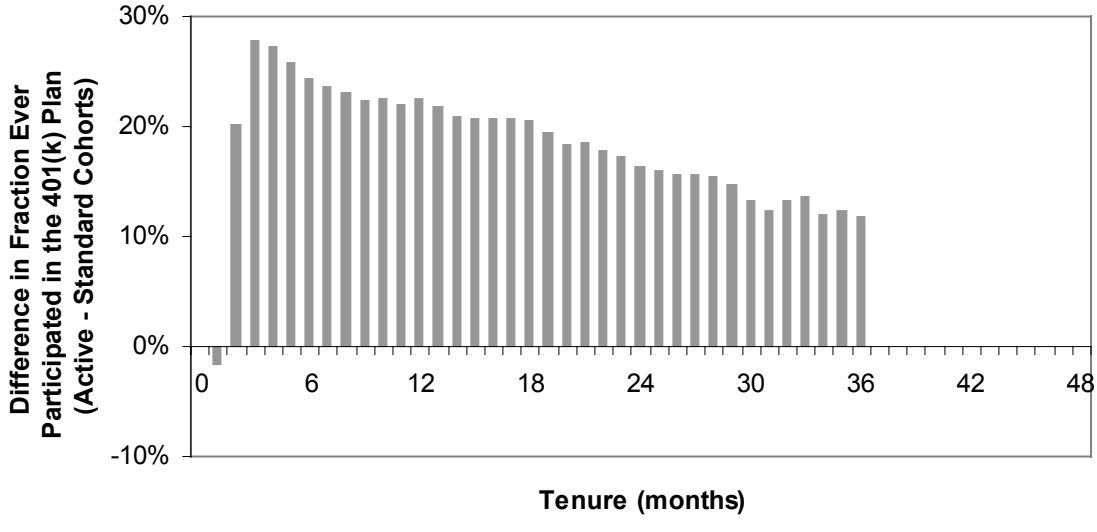

FIGURE 3A. Fraction of Employees Currently Participating in the 401(k) Plan by Tenure

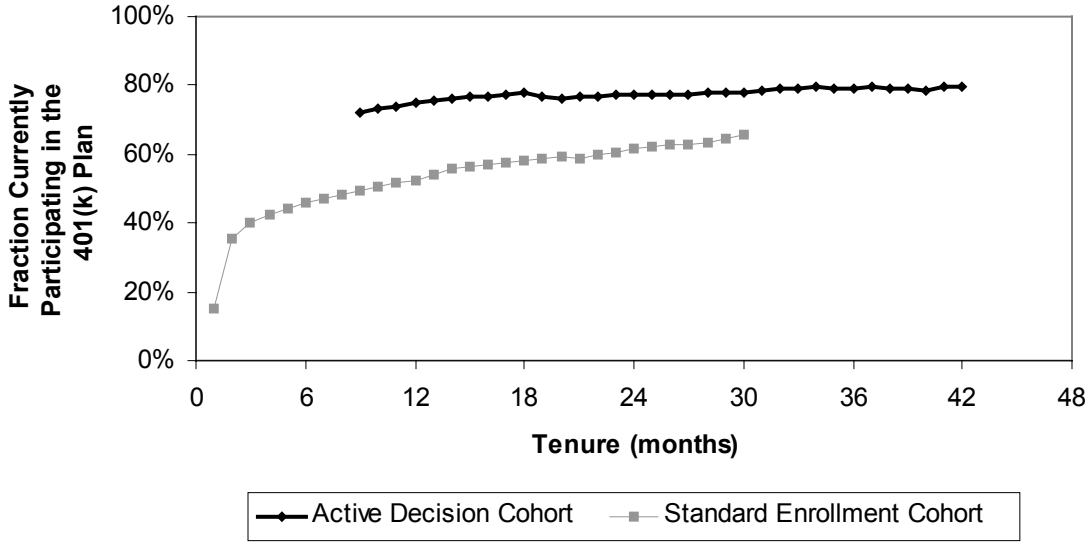

FIGURE 3B. Fraction of Employees Currently Participating in the 401(k) Plan by Tenure

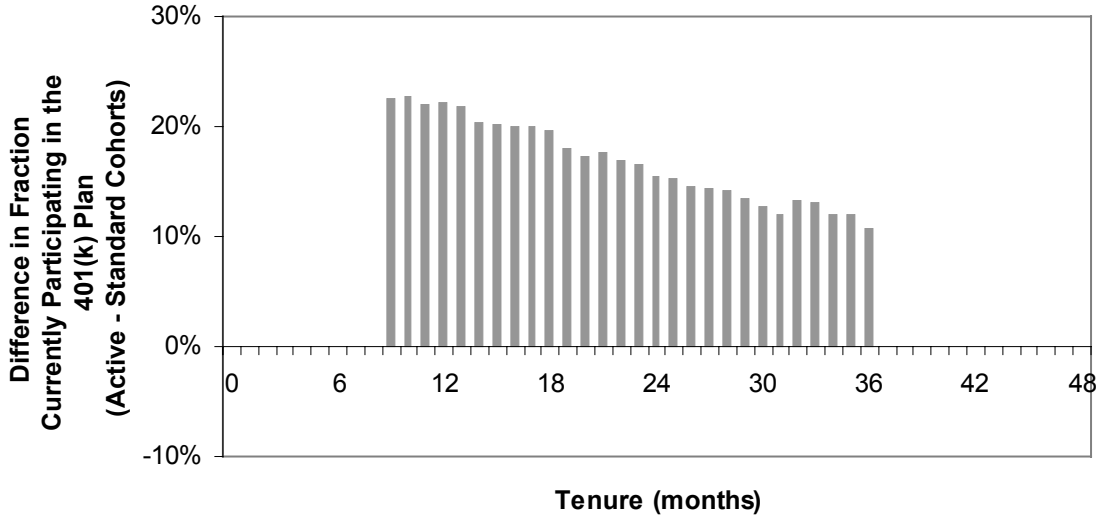

FIGURE 4. The Likelihood of Opting-Out of 401(k) Plan Participation

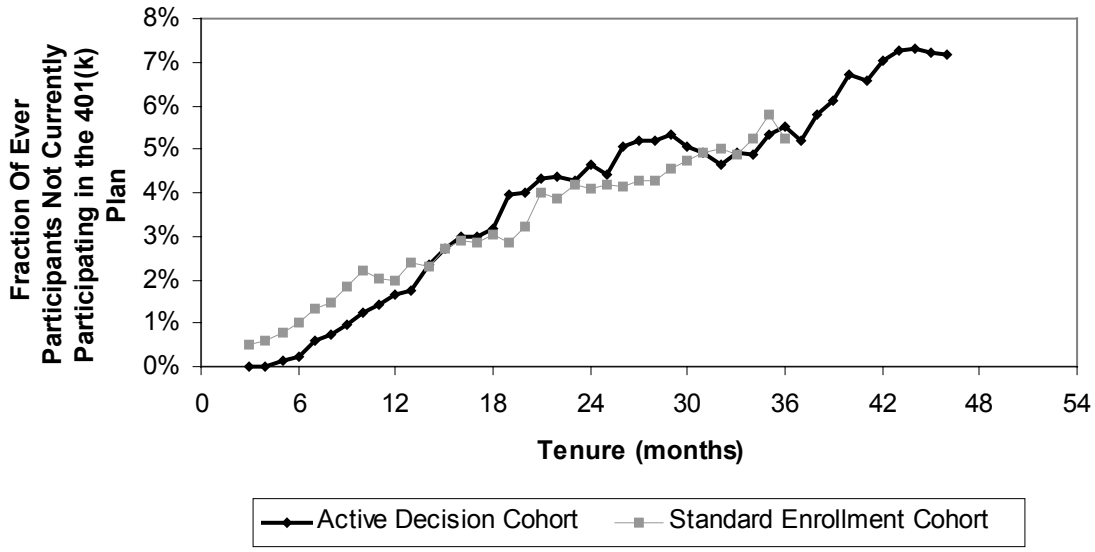

FIGURE 5. Time Until Next Enrollment Opportunity and 401(k) Particiation: Employees Hired in 1997

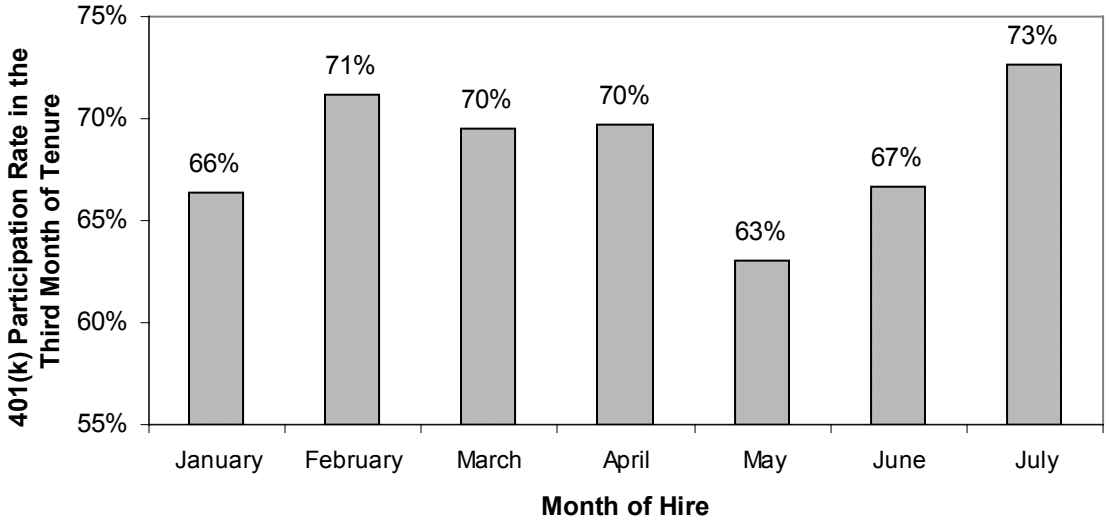

FIGURE 6A. Average 401(k) Contribution Rate by Tenure

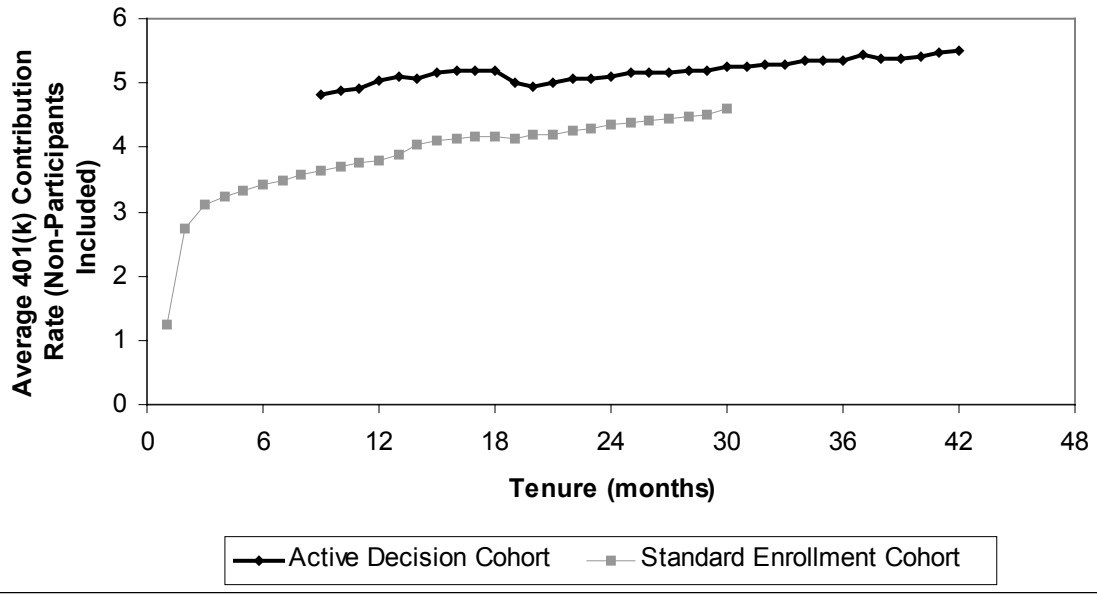

FIGURE 6B. Average 401(k) Contribution Rate by Tenure

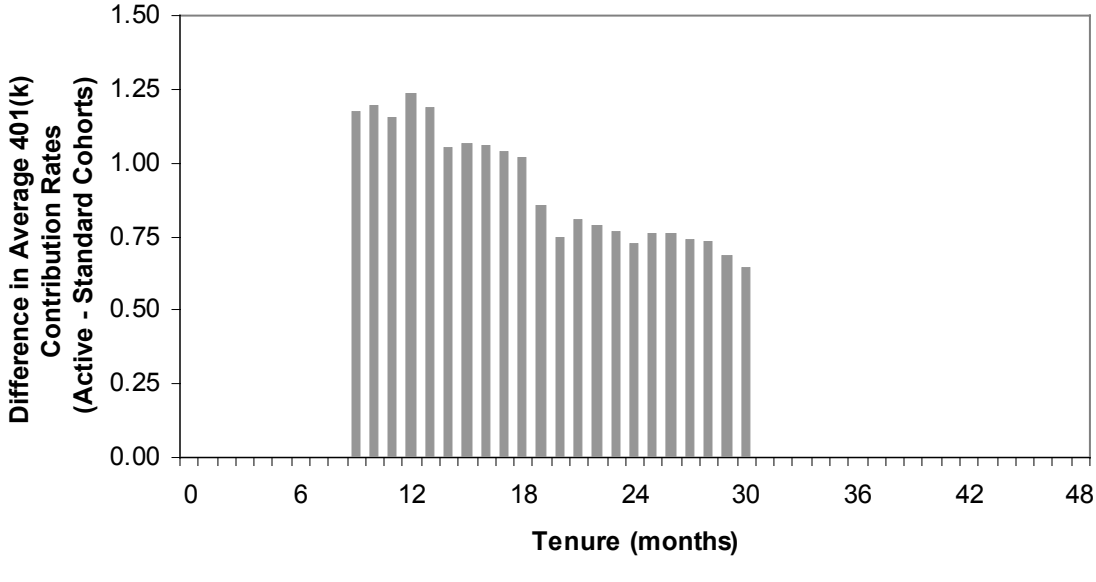

FIGURE 7A. Average 401(k) Contribution Rate Conditional on Participation by Tenure

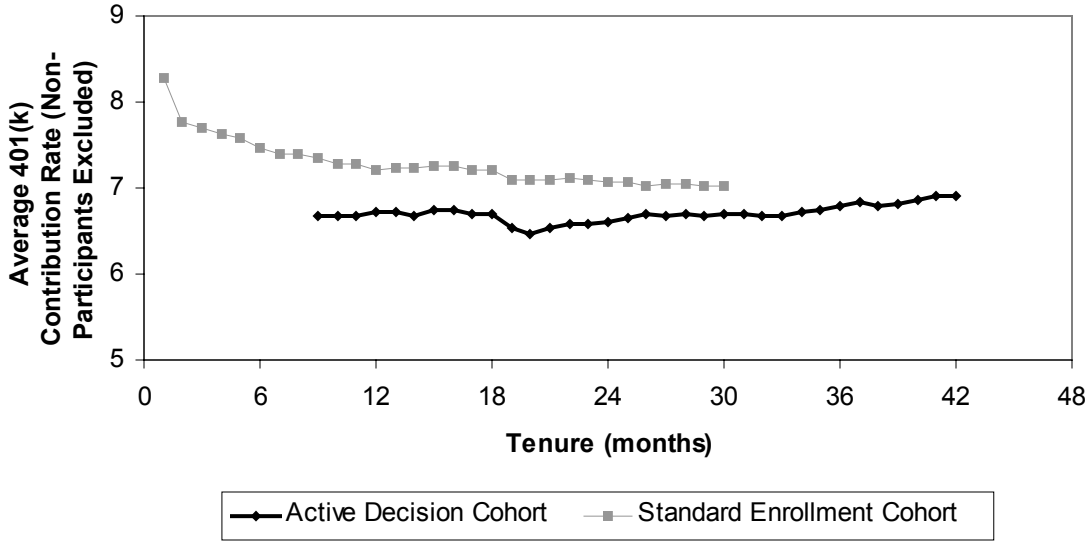

FIGURE 7B. Average 401(k) Contribution Rate Conditional on Participation by Tenure

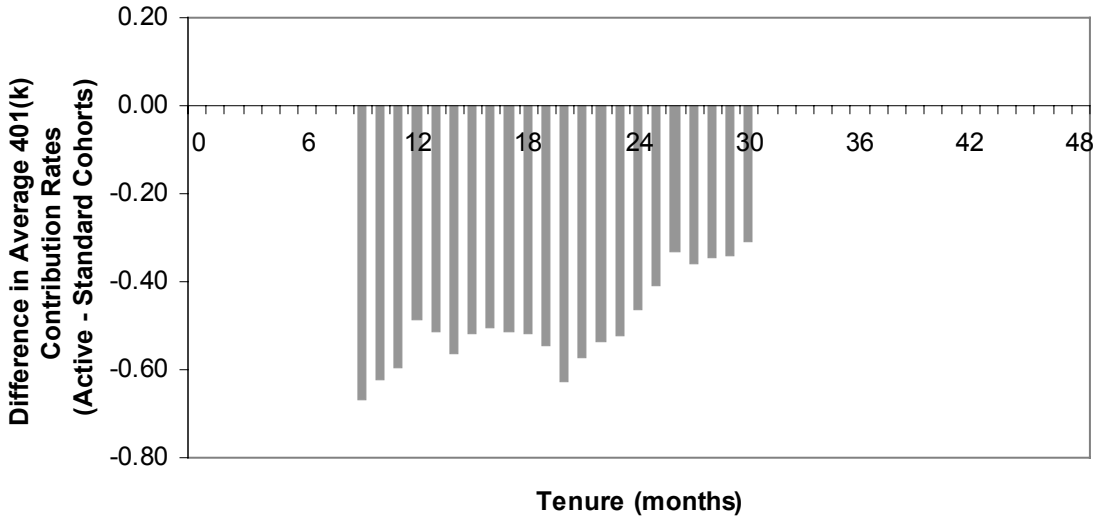

FIGURE 8. The Relationship Between 401(k) Participation and the Average 401(k) Contribution Rate

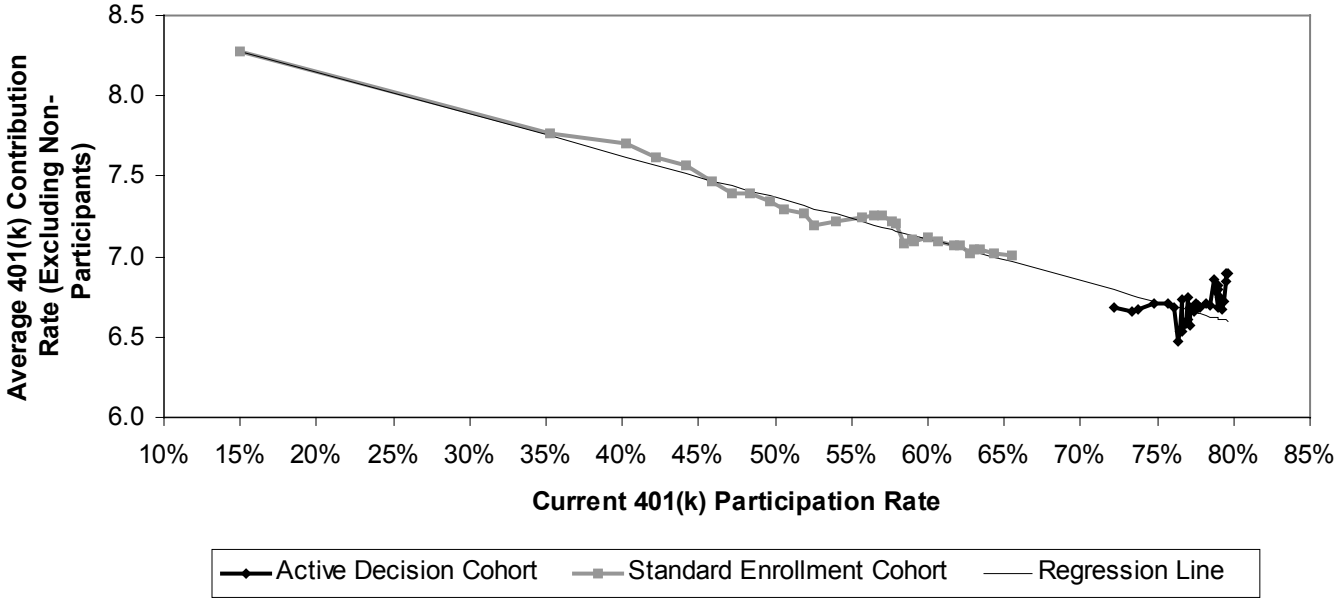

FIGURE 9. 401(k) Contribution Rates at Different Contribution Rate Percentiles

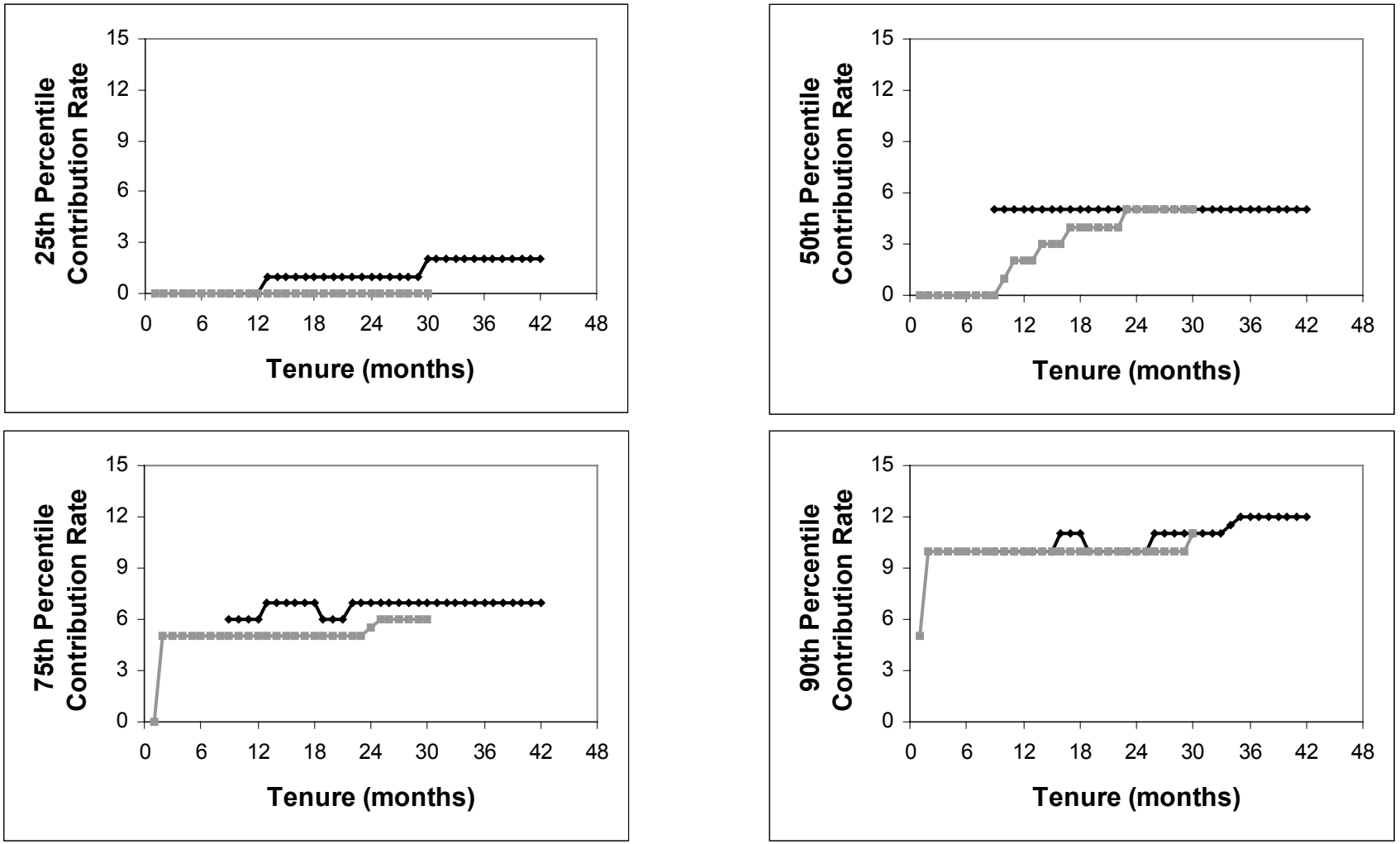

FIGURE 10. Average 401(k) Contribution Allocations

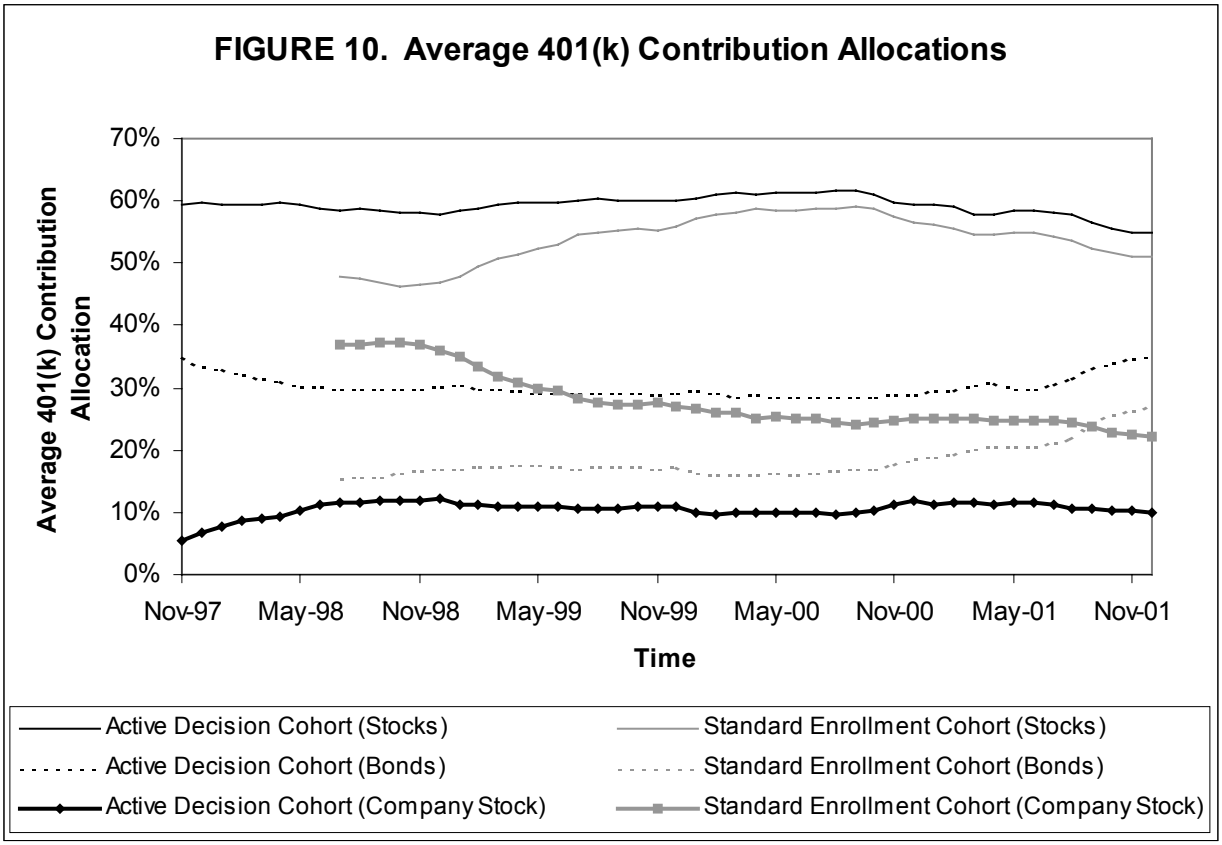

FIGURE 11A. Average Balance-to-Pay Ratio by Tenure

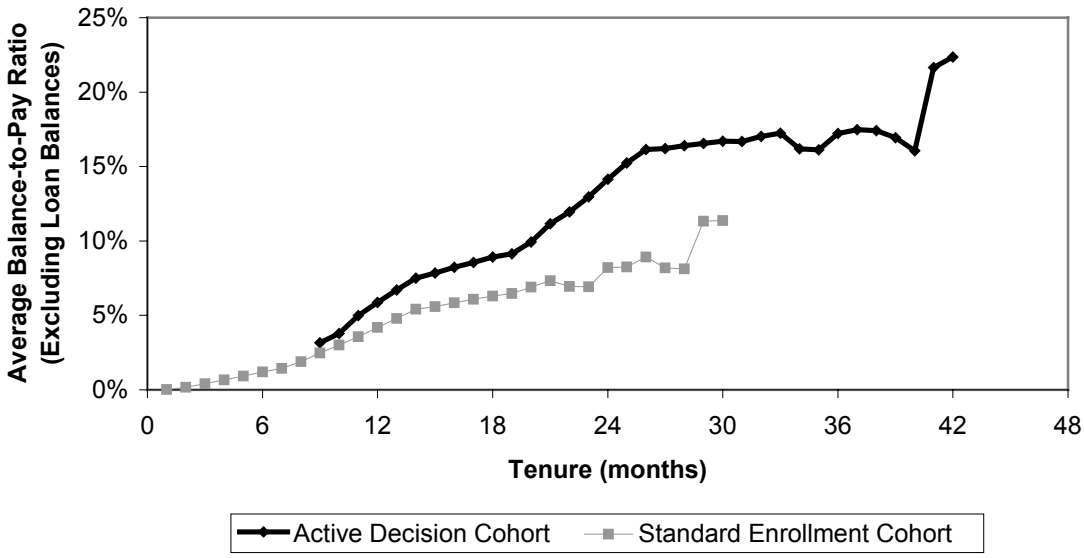

FIGURE 11B. Average Balance-to-Pay Ratio by Tenure

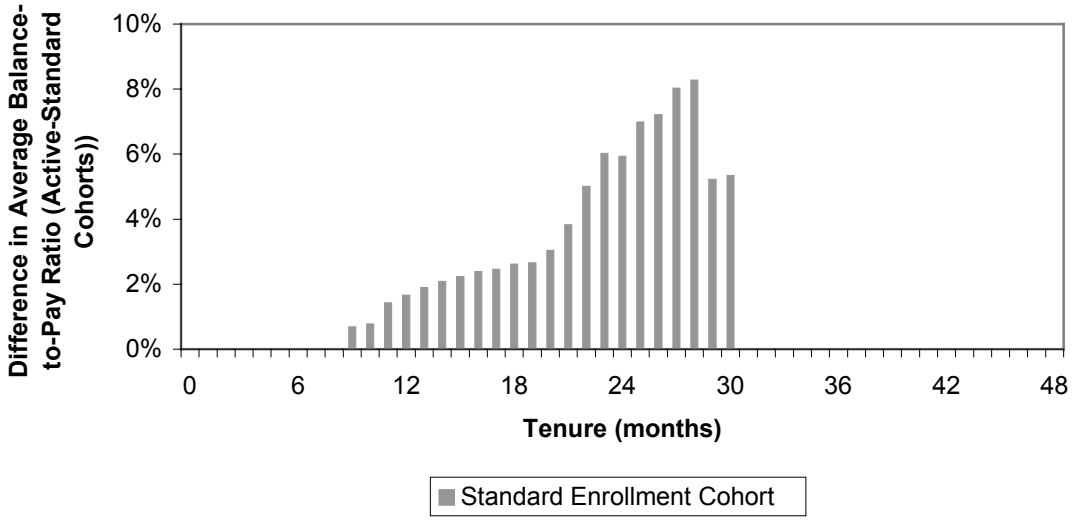

FIGURE 12A. Fraction of Employees with a 401(k) Loan by Tenure

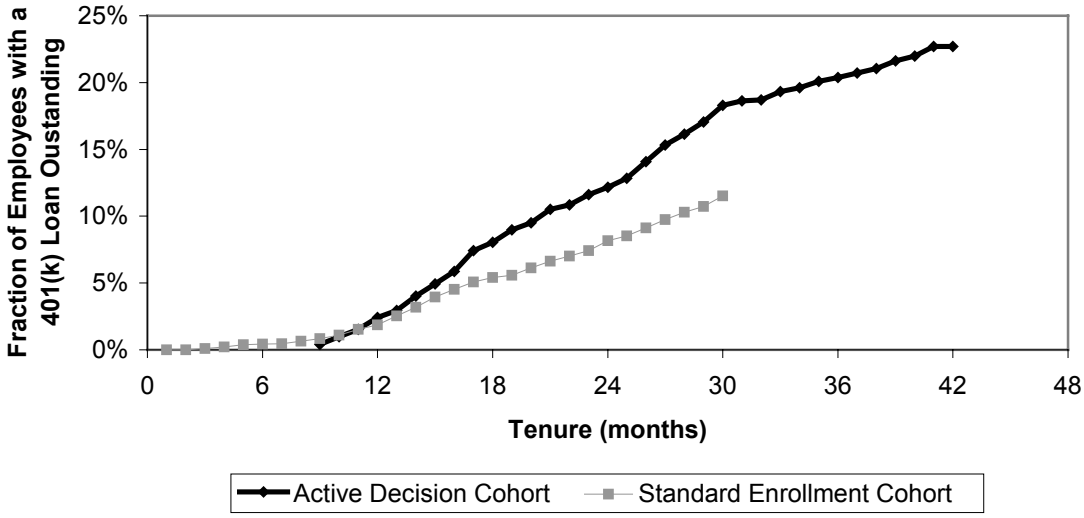

FIGURE 12B. Fraction of Employees with a 401(k) Loan by Tenure

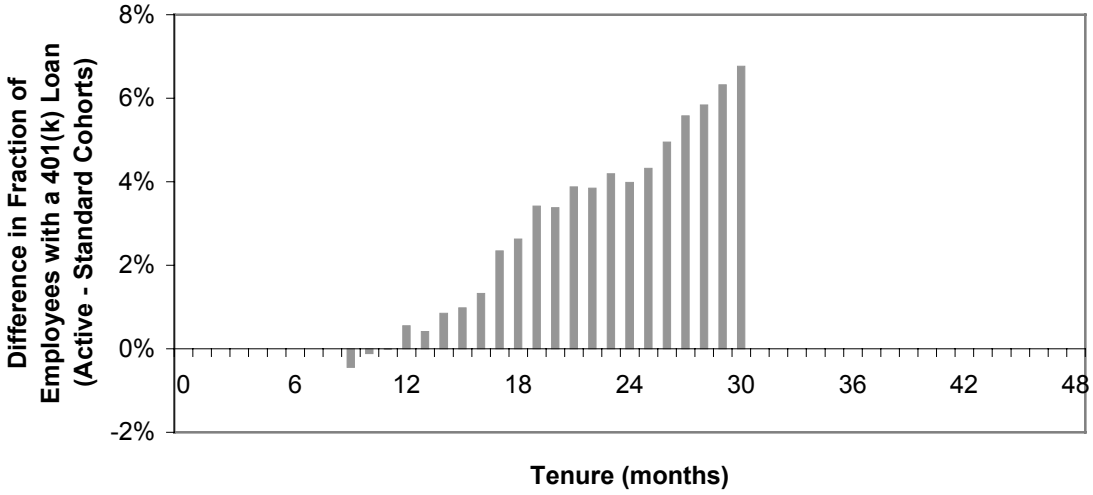

FIGURE 13A. Non-loan 401(k) Participation Rate by Tenure

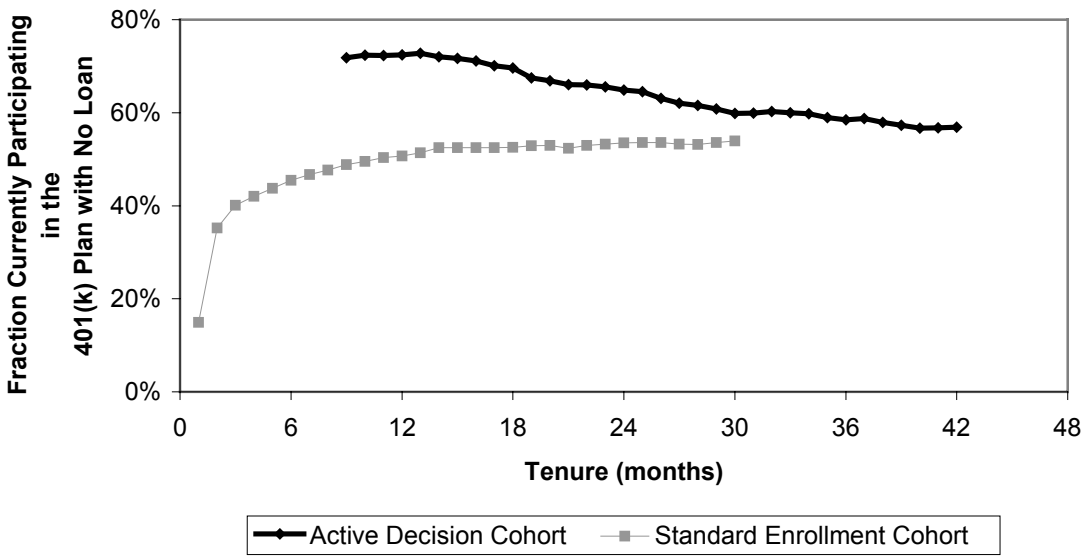

FIGURE 13B. Non-loan 401(k) Participation Rate by Tenure