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THE EFFECTS OF CHOICE PROLIFERATION ON RETIREMENT SAVINGS BEHAVIOR

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EXECUTIVE SUMMARY

Increasing the number of options available to an individual is generally seen as beneficial since it increases individuals' ability to find one that matches their preferences. However, sufficiently large choice sets can also cause individuals to focus on all the things that can go wrong, lose the ability to distinguish between options, and otherwise negatively impact the choosing process. If these adverse effects outweigh the positive ones, individuals can be faced with "too much choice." Applied to 401(k) and similar defined contribution plans, this implies potential adverse effects on participation and asset allocation decisions.

Research has found a negative effect of the number of offered funds on 401(k) participation rates. Further analysis has revealed that as the number of funds rises, participants become more likely to avoid stocks in favor of money market and bond funds. Additionally, employees do not take advantage of a higher number of options when deciding how many total funds to split their contribution among. Research in which participants could choose among several gambles with different sets of payoffs has found that as the number of options increase, people show a preference not just for less risky options (a sure bet), but for simpler ones It appears likely that when faced with a large number of funds, the

majority of which are specialized stock funds, employees are drawn to the (seemingly) simpler bonds and money markets, even when they yield lower returns.

How then to help individuals better educate themselves on investment options, thus increasing their ability to understand and choose from large choice sets? Ongoing research suggests that "tiering" an investment menu—e.g. initially presenting employees with a subset of general-purpose options while giving them the ability to see the full fund list if they desire—could make the choice seem less overwhelming to novice investors while still offering experienced investors the ability to take advantage of a rich set of options.

INTRODUCTION

How much money do people need to save in order to retire comfortably? That's a question most people ask themselves every day. What if there was a system that allowed individuals to allocate more than $15,000 of their annual pre-tax salary for their retirement savings? What if that money was not only exempt from all income tax until the time of its withdrawal but would also be doubled at no expense to the individual? Imagine a system that gives individuals anywhere from tens to hundreds of options for investing their retirement savings, including, for example, Federal Money Market Funds, Global Equity Funds, and Corporate Fund Investor Shares, all of which range broadly from high risk to low. Imagine a system so financially sound that, even if people simply roll the dice on their choice of investment plan, they would still earn more money in returns than they would if they didn't participate in the system at all.

That system is the 401(k) plan and its equivalents, which are available to millions of eligible employees. In today's financial environment, the benefits described above—compound interest, deferred taxation, and employer contribution—provide considerable incentives for individuals to participate in the 401(k) retirement savings plan. Even as coverage has expanded to a greater number of people, however, participation rates in 401(k) pans permitting elective deferrals dropped ten percentage points between 1999 and 2005, to 70 percent. Those who do participate contribute on average less than seven percent of their pre-tax salary, well below the recommended contribution of ten percent or more, and only one participant in ten contributes the maximum amount allowed. Combined with decreases in coverage by traditional pension plans and increased life expectancy, this under-utilization of 401(k) plans threatens to lead to a financial crisis for many older Americans.

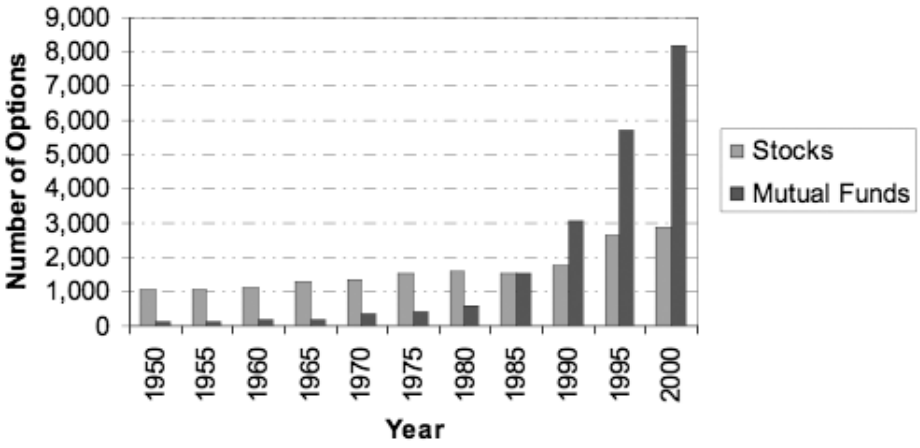
Given the benefits of 401(k) plans, why are participation rates so low? There are undoubtedly many reasons, including the increased cost of other benefits such as health insurance and a general decline in personal saving rates. Another surprising potential contributor is the increasing number of investment options in the average 401(k) plan.

EFFECTS OF "TOO MUCH CHOICE"

My research over the years has focused on effects of choice set size, and the counterintuitive idea that greater choice can make people worse off. Increasing the number of options available is generally seen as beneficial, since it increases individuals' ability to find one that matches their preferences. However, sufficiently large choice sets can also cause individuals to focus on all the things that can go wrong, lose the ability to distinguish between options, and otherwise negatively impact the choosing process. If these adverse effects outweigh the positive ones, individuals can be faced with "too much choice."

In my research with Mark Lepper, I examined these effects of large choice sets by offering shoppers the chance to sample from either six or 24 exotic jams at tasting booths in a local grocery store. While 60 percent of passers-by sampled from the larger assortment, compared to only 40 percent for the smaller one, ten times as many chose to actually buy after sampling from the smaller assortment. As a result, the display that was four times smaller proved to be over six times more effective at selling the product to consumers. This finding holds significant implications for choices in other contexts, including investment. For instance, while the number of companies listed on the New York Stock Exchange underwent a fairly modest increase from 1,057 in 1950 to 2,682 in 2000, during that same period the number of mutual funds skyrocketed from 98 to 8,155, with the majority of the growth occurring since 1980 (see figure 1). Could it also be possible to offer too much choice to employees investing for their futures?

FIGURE 1

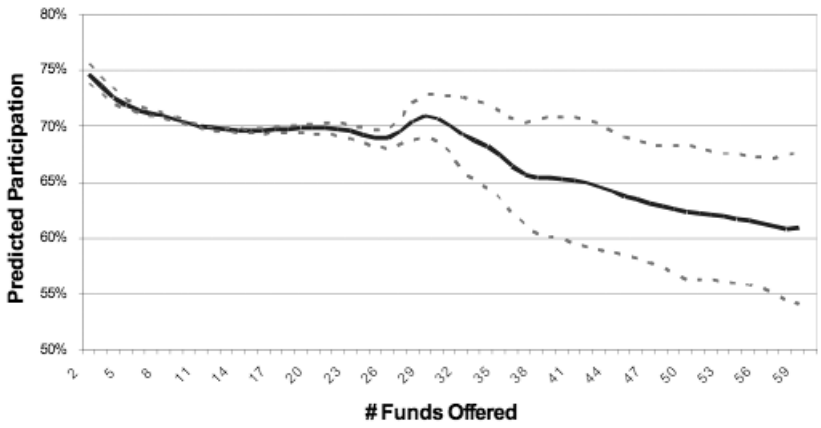


Along with my collaborators Wei Jiang and Gur Huberman, I tested this question by examining 401(k) participation rates among clients of Vanguard. We received records of contributions to 647 different 401(k) plans at both the plan and individual levels for the year of 2001. In addition to contributions, the data included information on individual employees' gender, age, tenure, compensation, and wealth. At the plan level, it included information on employer match, the presence of company stock and defined benefit plans, average characteristics of employees, and most importantly the number of funds employees

could invest in, which ranged from two to 59. After excluding from the data any employees hired after January 1, 2001, younger than 18 years of age, or whose annual salary was less than $10,000 or above $1,000,000, we were left with a total population of 793,794 people who were eligible to contribute to their employers' plans. It was the largest set of retirement savings data ever studied to date.

In our analyses we examined the effect of the number of offered funds on employees' likelihood of participating in 401(k) plans and found a negative effect. Participation rates reached a peak of 75% when only two funds were available and dipped to a low of approximately 60% when 59 funds were available. The majority of plans included in the population data offered between ten and 30 options of funds, but the plans that offered less than ten funds had significantly higher participation rates among employees. Although only a few plans contain more than 30 options, a distinctive trend in the data suggests the decline in participation rates not only continues but also worsens as fund options are increased further (see figure 2). Controlling for individual and plan-level factors, every ten funds added to a set of plan options caused on average a two percent drop in participation rates.

FIGURE 2



Note: Dotted lines represent 95% confidence intervals.

Even if the employees are simply waiting to decide on their plans, they are losing a considerable amount of money during the time they do not participate in the 401(k) program. Consider a 25-year-old median salary earner who chooses to postpone participating in a 401(k) plan for just one year. By the age of 60, assuming a 9 percent annual total return from a mix of stock and bond investment, this individual will have $18,540 less in their retirement savings account than an equal peer who participated in a 401(k) plan immediately. If employees continued to postpone participation beyond the timeframe examined in the study, their cumulative missed opportunities could be much greater.

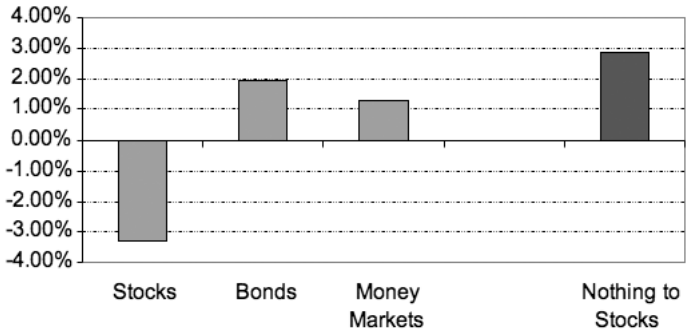
These findings, along with cases such as the 10% increase in sales of Head & Shoulders

shampoo after Proctor & Gamble halved the number of varieties for sale, provide real-world support for the idea that increased choice can actually dissuade some people who would otherwise have participated. But what of the people who do choose to participate? Do they experience the traditionally assumed benefits of greater choice?

Along with my collaborator, Emir Kamenica, I further analyzed the Vanguard data set to address these questions in the context of retirement saving. We again looked at the effect of the number of options in a plan, this time on the 588,926 participants' contributions to three categories of investments: money markets, bonds, and stocks (including active stock funds, indexes, and company stock.) Our analyses controlled for the same individual factors (e.g., gender, age, compensation) and plan-level factors (e.g. match rates, defined benefit plans, company stock) as in the investigation of participation rates.

Our findings revealed that as the number of funds rose, participants became more likely to avoid stocks in favor of money market and bond funds. Specifically, every ten funds added to a plan caused allocation to bond funds to increase by 1.98 percent, allocation to money market funds to increase by 1.3 percent, and allocation to stock funds to decrease by 3.28 percent. Every ten funds added to a plan also caused employees to be 2.87 percent more likely to contribute nothing at all to stocks (see figure 3). Additionally, employees did not take advantage of a higher number of options when deciding how many total funds to split their contribution among; most contributed to three or four funds regardless of the number of options in their plans.

FIGURE 3
ALLOCATION CHANGE PER +10 FUNDS



Given that the data is from 2001, a year in which stocks performed poorly, is it possible that these effects result from employees rationally choosing to shift their balances into bonds and money markets? This is unlikely, since differences in plan size were primarily driven by the addition of more stock funds. Rational investors should either be indifferent to these "extra" stocks or take advantage of them and as a result increase their percent allocations to stocks, rather than decrease them as observed. The long-term nature of retirement investing also makes such a pattern difficult to reconcile with informed and rational

behavior. As Warren Buffett said, "Only buy something that you'd be perfectly happy to hold if the market shut down for ten years." When dealing with mutual funds, almost any stock fund meets this criterion. Historically the stock market has outperformed the bond market, often dramatically, when looking at any ten-year period within the last fifty years. Not only did increasing the number of funds in a plan cause employees to avoid stocks, but this effect was just as strong for the youngest employees, for whom it is least advisable to sacrifice long-term returns in exchange for protection from short-term volatility.

At the other extreme, could employees be choosing based on criteria unrelated to the characteristics of the funds, such as choosing more from the top of the list, where money markets and bond funds are more likely to be found? In order to test these concerns, we ran a follow-up experiment in which we presented the funds in random order. Participating employees still increasingly preferred bonds and money markets as the total number of options in the plan rose higher. To investigate the reason behind this consistent pattern of results, we conducted additional follow-up experiments in which participants could choose among several gambles with different sets of payoffs. We found that as the number of options increased, people showed a preference not just for less risky options (a sure bet), but for simpler ones (a lottery with a 50/50 chance of $0 or $10 instead of a lottery with an even chance of six different payouts between $0 and $10.) It appears likely that when faced with a large number of funds, the majority of which were specialized stock funds, employees were drawn to the (seemingly) simpler bonds and money markets, even when they yielded lower returns.

ADDRESSING "TOO MUCH CHOICE"

What remedies might potentially be applied to these problems of under-utilization and sub-optimal contributions in 401(k) plans? One approach that has shown great promise in recent studies by leading academics such as David Laibson, Richard Thaler, Cass Sunstein, and Shlomo Benartzi is automatic enrollment. By making participation in a 401(k) plan the default option, employers redirect their employees' inaction (including inaction resulting from being overwhelmed by a large number of options) to a positive end. Despite its potential, automatic enrollment is not a panacea however. The choice of default option can be an ethical and pragmatic balancing act: automatically enrolled employees may blame their employers if their portfolios lose value, but a safe default such as a money market is little better than nothing. It also does nothing to increase investors' understanding of their options, and may even diminish it by removing the minimal motivating factor of needing to know enough to choose a fund or funds for oneself.

Another possibility, usable in conjunction with automatic enrollment or other policies, would be to help individuals better educate themselves on investment options, increasing their ability to understand and choose from large choice sets. My ongoing research suggests several ways in which this could be achieved. In one recent experiment, I found that dividing a large assortment into several categories increased peoples' ability to choose well, even when the categorization scheme itself provided no additional information. This suggests that "tiering" a 401(k) plan—e.g. initially presenting employees with a subset of general-purpose options while giving them the ability to see the full fund list if they desire—

could make the choice seem less overwhelming to novice investors while still offering experienced investors the ability to take advantage of a rich set of options. Another of my recent findings is that people choose better when they are first presented with small assortments and then large ones, compared to making the same choices but in the opposite order of larger to smaller. An implication for 401(k) investing is that adding additional funds to a current participant's plan may be beneficial even when exposing new potential enrollees to the full set all at once is not.

CONCLUSION

One avenue for future research would be to conduct studies in order to discover how such findings can be applied to the context of 401(k) plans. Another would be to obtain resources that would make it possible to address questions beyond the scope of the dataset described in this paper. For example, data on individuals' investment decisions across an extended period of years would offer many new possibilities for analysis. Potential lines of inquiry include: Do people adjust over time to the presence of a large number of options, or are their decisions largely fixed once they have been made? What type and amount of information works best for informing consumers about fund options without overwhelming them? Do those individuals who opt out of automatic enrollment programs remain vulnerable to the effects of too much choice? The answers to these questions would benefit our understanding of retirement savings in general and help us improve the behavior of individuals concerning their retirement savings in particular.

ABOUT THE AUTHOR

Sheena S. Iyengar has been a professor in the Management Division of Columbia University Business School since 1998, and also holds an adjunct appointment in the Psychology Department. She has previously taught Leading and Managing in Organizations, Entrepreneurial Creativity, Managerial Decision-Making, and (as a visiting professor at London Business School) Developing Effective Managers and Organizations, as well as doctoral seminars in organization behavior and research methods. She was recently selected by the Columbia University's President's Office to be an instructor at the World Economics Forum in Geneva, Switzerland.

Professor Iyengar received a dual degree from the University of Pennsylvania in 1992, consisting of a B.S. in Economics from the Wharton School of Business and a B.A. in psychology with a minor in English from the College of Arts and Sciences. In 1997 she completed her Ph.D. in social psychology from Stanford University. Her dissertation, entitled "Choice and its Discontents," received the prestigious Best Dissertation Award for 1998 from the Society of Experimental Social Psychology. She received the Presidential Early Career Award from the National Science Foundation in 2001, and in 2005 was invited to serve as a fellow at the Institute for Advanced Study at Princeton. She was recently selected as a TIAA-CREF Institute Fellow and as an Academic Member of the Behavioral Finance (BeFi) Forum. Throughout her career, her research has not only appeared in many respected academic journals but is also regularly cited in the media, including periodicals such as *Fortune* and *Time* magazines, the *New York Times* and the *Wall Street Journal,* on National Public Radio, and in popular books including *Blink* by Malcolm Gladwell and *The Paradox of Choice* by Barry Schwartz.