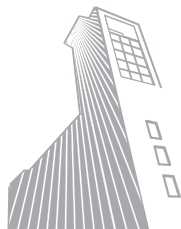


Can There Be Too Much Choice In a Retirement Savings Plan?

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Executive Summary

Conventional wisdom suggests that the more investment options a savings plan offers, the better. Conventional wisdom may be wrong. New academic research on participant decision-making raises important questions about the limits of expanded investment choice within retirement plans.

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Choice in consumer products. Earlier work with consumer products supports the notion of a “choice overload hypothesis.” Consumers find an extensive array of products initially appealing and stimulating; yet they also find it more difficult to make a decision when confronted with many choices.

Investment options in retirement plans. Researchers at Columbia University have now extended the choice overload hypothesis to retirement savings plans. The key finding: after controlling for the employer match, participant demographics, and other variables, the probability that an employee will join a savings plan decreases modestly as the number of options increases. Every additional 10 investment choices, on average, reduces predicted participation rates by 2%.

Familiarity effect. The research also shows that the choice overload phenomenon disappears for plans with company stock. This result is

preliminary evidence of a “familiarity effect,” wherein employees, confronted with many choices, choose their employer’s stock, an investment option they think they understand, over the other options in their plan.

Choice in context. The impact of the number of funds on participation is modest, and many other factors influence plan participation rates. These include employer matching contributions, participant demographics, workplace education, and the presence of other retirement plans. However, the Columbia research supports plan sponsors’ intuition that excessive choice and complexity inhibit, rather than enhance, plan participation.

Implications for plan design. This new research suggests that most plans should offer a limited investment menu to simplify employee decision-making or utilize a tiered investment menu to accommodate the demand for greater choice. It also raises a broader question about the types and numbers of choices that workers are offered in contemporary benefits packages.

Background

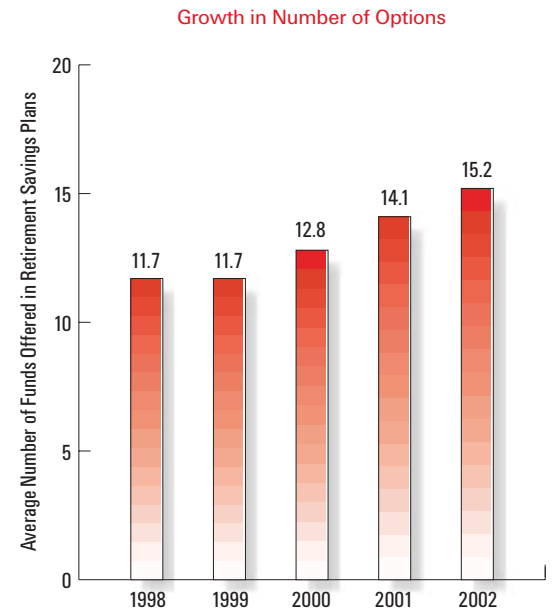
Defined contribution savings plans have steadily expanded the number of investment choices offered to workers. The earliest corporate savings plans offered a very limited investment menu—typically a guaranteed investment contract fund, company stock, a balanced fund, and a diversified equity fund.

Over the years, however, retirement plans have adopted an increasingly retail-oriented mode of operation (e.g., daily valuation, the use of mutual funds, and a shift to participant direction). Financial literacy has also grown among U.S. workers. Investment choice within workplace savings plans has grown rapidly in lockstep.

Today the typical Vanguard® defined contribution plan offers 15 investment options, up from 12 in only four years (see Figure 1). In 2002 nearly 60% of Vanguard recordkeeping plans offered more than 10 options. Despite the large number of options offered, few participants actually availed themselves of many choices. The typical participant invested in only 3 options, and more than 40% of participants invested in only 1 or 2 funds.

Daniel Proctor of Vanguard's Data Mining Team helped generate and analyze the data included in this report. Samuel Atlee, Suzanne Cionci, Brad Murphy, John Friel, Kelly Harrison, and Martha Witte assisted with the report's editing, design, and production.

Figure 1.



Source: The Vanguard Group, 2002.

A basic principle of economics underpins the growth of investment choice in savings plans—in simple terms, more choice is better. This principle is central to all consumer decisions in market-based economies. According to this assumption, the consumer is better off with a greater number of products and a wider array of choice. This principle is supported by psychological research, which reports that individuals with some choices feel better off than those who have none.

And yet, in retirement savings plans, as with consumer decision-making generally, an increasing number of options obviously comes at some cost. More choice means more information to digest and more comparisons to make; more choice demands more subtle decision-making skills and additional expertise to differentiate among the available options. In short, more choice can mean greater confusion and complexity.



As is the case with many consumer products and services, consumers quickly develop various problem-solving shortcuts to cope with a wide array of choices. For example, in choosing from among the hundreds of types of automobiles in the marketplace, consumers quickly narrow their choices with a few key decisions—price, body style, color, and preferred brands. If they are still undecided, they can test-drive a car. Most consumers have a high level of familiarity with automobiles; many make frequent purchase decisions regarding cars throughout their lives. Even with this extensive experience, many consumers still make their final decision with the assistance of a salesperson.

By comparison, decisions regarding the selection of investment options in a savings plan are far more daunting. Brand familiarity is generally a weak guide to purchase behavior, both because an employer has preselected the investment brands, and because the key decision must be made using the risk-and-return characteristics of a specific fund. Most workers come to the decision-making process with limited experience purchasing mutual funds, or without the technical knowledge

needed to make an informed choice. Buying an investment is strictly a cerebral decision—there are no tactile inputs as when buying a car. Plan education materials steer clear of recommending specific funds to avoid being classified as investment advice under ERISA. And, finally, there is no high-paid, commission-driven salesperson in the mix to encourage a decision.

Given these features of investment decision-making, it is not surprising that many sponsors, consultants, and plan providers have been increasingly concerned about the trend toward greater choice in retirement plans. After all, choosing investments is a complex process. The daunting task of differentiating between 20 or 40 choices is hard enough for the sponsor, let alone the employee. Intuitively, it seems likely that there are marginally declining benefits from expanded choice—each additional choice is likely to offer less value than the prior one. In general, more choice would appear to make it harder for most workers to construct a basic retirement portfolio.

Despite the huge number of options offered, few participants actually availed themselves of many choices. The typical participant invested in only three options, and more than 40% of participants invested in only one or two funds.



Despite the demand for more choice in both consumer products and the investment world, there has been surprisingly little research on whether extensive choice is in fact valuable. Most decision-making research has focused on situations where individuals have no choices versus some. In this report, we summarize recent academic research that examines situations where individuals have extensive choices versus limited ones. The results suggest, contrary to popular belief, that more choice is not always better.

This report summarizes research on choice with consumer products conducted by Sheena Iyengar of Columbia University and Mark Lepper of Stanford University (Iyengar and Lepper, 2000). It also summarizes new research involving choice in retirement savings plans conducted by Iyengar with Wei Jiang and Gur Huberman of Columbia University (Iyengar, Jiang, and Huberman, 2003).

Jams and Chocolates

The initial research by Iyengar and Lepper involved experiments with two consumer products—specialty jams and chocolates. Two experiments were designed to test the choice overload hypothesis, which asserts that when confronted with an extensive menu of choices, consumers find it difficult to make decisions and fail to act.

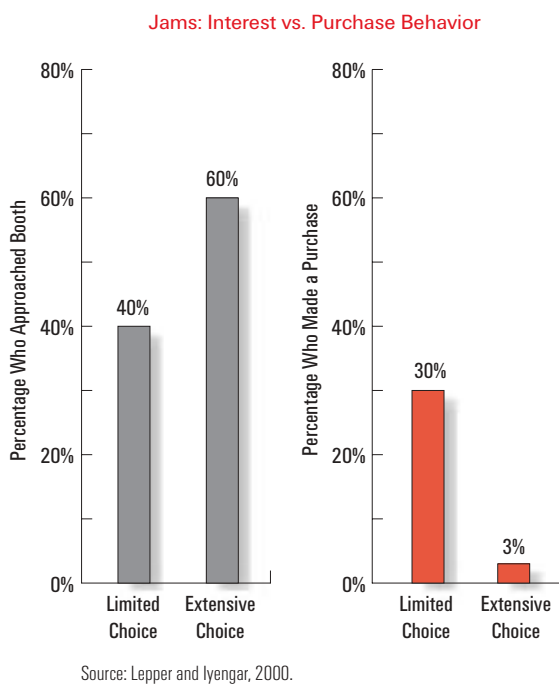
The first experiment was conducted in an upscale supermarket, where a booth was set up promoting specialty jams. Some days the booth contained 6 options—the “limited choice” model. On other days the booth contained 24 specialty jams—the “extensive choice” option. In both cases, the researchers eliminated common types of jams (e.g., grape or strawberry) and focused on exotic flavors to avoid any high degree of product familiarity.

Not surprisingly, more consumers were drawn to the extensive product array (see Figure 2). Sixty percent of consumers stopped by the booth when it was set up with 24 options; only 40% did so when it offered 6. Yet there was a dramatic difference in purchase behavior—30% of those who saw the limited menu made a purchase, compared with 3% of those surveying the extensive menu.

This initial research confirmed two aspects of the choice overload hypothesis. First, consumers are readily attracted by variety. A wide array of choices seems stimulating and appealing. Secondly, while enjoying the variety of an extensive menu, consumers struggle with a purchase decision when confronted with too many choices.



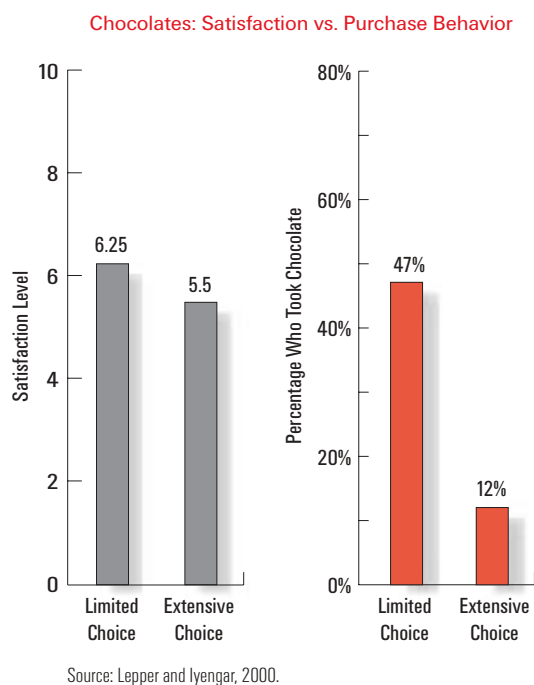
Figure 2.



The researchers' second experiment involved a selection of gourmet chocolates. Test subjects were invited into the research venue and told to choose a favorite chocolate—in one case, they chose from among 6 chocolates, and in another case, among 30 chocolates. After they made their choice, they were asked to rate their level of satisfaction on a scale of 1 to 10.

Interestingly, the test subjects were more satisfied when they chose from a limited menu of options—their satisfaction level was 6.25 for a limited set of choices, versus 5.5 for an extensive number of choices (see Figure 3). This confirms other work by Iyengar that illustrates decision-makers are generally more satisfied with their selections when they have a manageable set of choices. Making a decision from among many choices may leave one with a certain sense of regret or error—that with so many choices, you may have made a mistake in selecting the one you did.

Figure 3.



After completing the evaluation of the chocolates, the test subjects were offered a reward for participating in the experiment. They could either receive \$5 or a box of chocolates. Again, those who had been offered a limited set of choices were more likely to take the chocolate over the money. Forty-seven percent of those with a limited menu of choices took the chocolate as their reward, while only 12% with an extensive menu did so.



The probability of a worker participating in a savings plan declines with the number of investment options offered.

New Research

One question prompted by the Iyengar and Lepper research was whether its conclusions would hold in the case of more significant purchase decisions. As with many consumer choices, selecting among jams or chocolates is a relatively simple task. The outlay is modest and satisfaction is determined by one's sense of taste. Too, the risks to one's financial well-being are insignificant.

More recently, Iyengar, assisted by Jiang and Huberman, tested the choice overload hypothesis in a more consequential setting, examining the choices among investment options within a retirement savings plan. Specifically, they sought to analyze how the number of options within the plan influenced participation rates in retirement savings plans. What they found was that the probability of a worker

participating in a savings plan declines with the number of investment options offered—confirmation that the choice overload hypothesis applies in the investment world as well.

Their analysis was based on administrative data drawn from Vanguard recordkeeping systems (see Figure 4). The data, drawn from calendar year 2001, included information on nearly 650 qualified plans, including 401(k), 401(k)/profit-sharing, and 403(b) plans. Nearly 800,000 employees were participants or eligible nonparticipants in these plans. Approximately 71% of the employees were participants. Their average deferral rate was just more than 5% (a figure which includes a 0% savings rate for nonparticipants). The typical plan offered 15 funds, ranging from a low of 2 funds to a high of 60.

The average age of employees in these plans was 43. Their median annual income was about \$47,000. All of the employees included in the research were older than 18, with at least one year of tenure with their employers.

Figure 4.

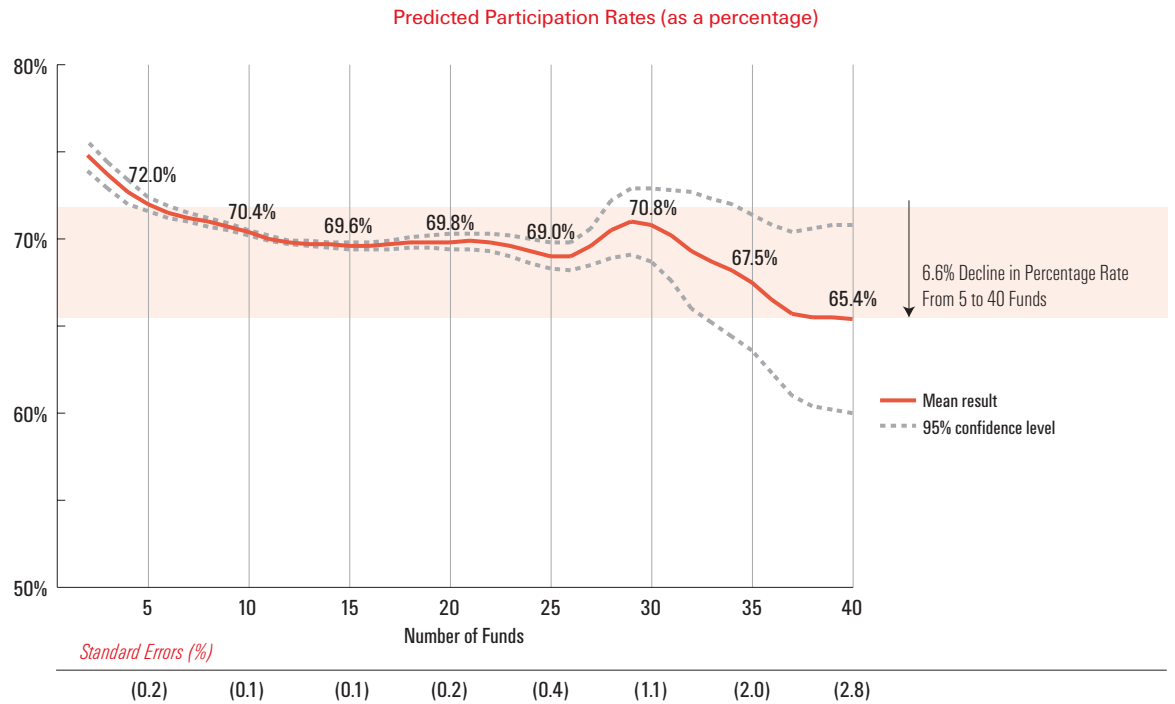
Data Characteristics

Period	2001
Plans	647 qualified plans in 69 industries
Employees	793,794 (participants and eligible nonparticipants)
Percentage of employees participating	71%
Average employee deferral rate	5.17% (includes 0% for nonparticipants)
Number of funds offered	15 median (range from 2 to 60)
Additional employee characteristics	
Mean age	43.1
Income	\$61,150 mean; \$47,430 median
Other	One-year tenure; at least 18 years old

Source: The Vanguard Group.



Figure 5.



Source: Iyengar, Jiang, and Huberman, 2003.

Impact of Choice on Participation

Using the Vanguard recordkeeping data, Iyengar, Jiang, and Huberman constructed a model to forecast the probability of a worker participating in a workplace savings plan (see Iyengar, Jiang, and Huberman, 2003, for details).

Because participation rates are influenced by so many factors, a large number of control variables were used in the model, including:

- *Employer matching contributions.* Participation rates are higher depending on whether the employer offers a match.
- *Participant demographics.* A participant's decision to join is influenced by personal factors such as income, age, or job tenure.
- *Plan design.* If an employer offers another retirement plan besides the savings plan, it tends to reduce employee participation in the savings plan.

The results of this research are consistent with the choice overload hypothesis. The chance of a worker participating in a savings plan declines as the number of funds increases—after controlling for other variables that might influence participation (see Figure 5). For example, an employee with 5 funds in his or her plan has a predicted participation rate of 72%, while one with 35 funds in the plan has a predicted participation rate of 67.5%. On average, predicted plan participation declines by 2% for every 10 options added to a plan.

In the study, the trend toward lower participation continues for plans with as many as 60 funds. However, the sample size was very limited for plans with a great many funds; as a result, the statistical validity of the results is weaker for plans with many options. This statistical uncertainty is reflected in Figure 5 by the dashed lines. While the decline in participation from 5 to 15 funds or from 5 to 25 funds is statistically significant, the move from 35 to 40 funds is not.



Company Stock: Pursuit of the Familiar?

The researchers found predictable relationships between the decision to participate and many of the control variables. For example, participation increases with an employer match, with the greatest impact occurring for lower-income employees. They also found that participation increases with income, job tenure, and gender (women were more likely to save than men). Participation declines if the employer offers another defined benefit or defined contribution plan, with this effect most pronounced among lower-income workers.

Iyengar, Jiang, and Huberman also observed that the presence of company stock modestly increased (by 2.5%) the probability that workers would join their savings plan. This observation led to a separate analysis of the choice overload hypothesis for plans that did and did not offer company stock.

The research found two distinct results (see Figure 6). Plans without company stock revealed the choice overload hypothesis directly—more funds reduced the probability of participating in the savings plan. For example, for plans without company stock, plans with 5 options had a predicted participation rate of 70.1%, while plans with 25 options had a predicted rate of 66.4%. On the other hand, plans with company stock that offered fewer than 25 funds failed to display a choice overload hypothesis. In fact, the predicted participation rate rose for plans with 5 options to those plans with 25 options. (For plans with 25 or more funds, the samples were not statistically significant.)

The researchers hypothesize that these results are preliminary evidence in support of a familiarity effect, as described by Huberman (2001). According to the familiarity effect hypothesis, investors choose to invest in “what they know.” The familiarity effect explains why many investors, for example, resist the call for international diversification; domestic capital markets are considered more familiar than foreign ones.

Figure 6.

The Impact of Company Stock

Number of Options

	5	10	15	20	25	30	35	40
Plans								
Without company stock	70.1%	68.6%	67.7%	66.9%	66.4%	67.0%	63.0%	57.5%
	(0.4)	(0.3)	(0.3)	(0.5)	(0.6)	(1.2)	(1.9)	(5.4)
With company stock	70.8%	71.3%	71.7%	72.5%	72.5%	70.4%	63.3%	61.2%
	(0.3)	(0.3)	(0.2)	(0.3)	(0.5)	(0.9)	(2.8)	(3.1)

Note: Standard errors (as percentages) are shown in parentheses. Because of sample sizes, comparisons are most meaningful for plans with 25 or fewer options. Source: Iyengar, Jiang, and Huberman, 2003.



In the case of retirement savings plans, employees confronted with a large number of choices appear to choose what seems most familiar to them—their employer’s company stock fund. Because of small sample sizes for the number of plans with company stock, however, no definitive conclusion can be drawn. The results only suggest a possible familiarity effect.

Implications for Sponsors

This research on consumer and investor decision-making has important implications for the design of retirement savings plans.

Choice overload hypothesis. The research confirms plan sponsors’ belief that more choice is not without its costs. The greater confusion and complexity that accompany extensive choice may hinder, rather than enhance, investment decision-making for many employees. That reduction is modest but statistically and practically meaningful.

This conclusion is supported by previous Vanguard research on participant “money attitudes” (Vanguard, 2002). In that research, we found that a large number of workers were disinterested in many aspects of financial and retirement planning. The workers we referred to as “planners” have a strong vision of the future and of retirement, and are thus motivated to learn more about investing and the options within their employer’s plan. Yet many workers do not conform to the “planner” model of participant behavior and decision-making, and are not particularly interested in money management concepts. It would not be surprising to find that such individuals choose not to participate in their plans when they are confronted with investment choices they don’t understand.

Tiering and education. One practical conclusion to draw from this research is that investment menus must be streamlined for the majority of workers. A menu with 10 choices is likely to be superior to one with 20 or 30 if one of the goals is to maximize participation. Certainly, the practice of presenting a laundry list of investment options—with 25, 50, or 100 different funds—would seem ill-advised.

Of course, sponsors will want to accommodate mainstream workers’ needs as well as the needs of the sophisticated or knowledgeable minority that exists in most plan populations. One strategy would be to present tiers of investment menus, with communications focused principally on the core choices, to emphasize the relative importance of these options.

Another option would be to present a limited menu of choices, such as 10 funds, with the “11th option” an extensive fund window or brokerage option. In this way, most participants would perceive that there is a limited and manageable number of options within their plan. Yet sophisticated participants could explore the “11th option” in greater detail for wider choice.

The complexity of the participation decision. It should also be clear what the researchers are *not* saying: They are *not* saying that the participation decision can be largely explained by the number of funds offered by a plan. There are many critical variables that influence participation rates. For example, an employer who provides no match, has a low-income, high-turnover workforce, and offers no regular education program will struggle with plan participation regardless of the number of funds offered.



Employers attempting to improve employee use of their company's savings plan should recognize that these variables would likely have a greater impact than simply re-engineering the plan investment menu. In general, boosting plan participation rates requires a multidisciplinary, multifaceted approach, focusing on the presence and size of the employer match, and the extent of employee education.

Company stock. Although company stock was not the focus of the choice research, the new findings add to the questions surrounding participants' general misunderstanding of the risks of company stock. Mitchell and Utkus (2002), using Vanguard and John Hancock survey results, report that participants view company stock as safer than diversified options. Benartzi (2001) has shown that participants appear to erroneously extrapolate past performance when investing in company stock. In the current research, there is some indirect evidence of the familiarity effect hypothesis—that participants, when confronted with many choices, choose company stock because it is familiar to them.

Some plan sponsors are responding to this research, and to the associated fiduciary risks surrounding company stock, by loosening plan restrictions on company stock and improving education programs. Legislation pending in Congress would change the rules on participant diversification of employer stock contributions; it would also mandate frequent risk disclosures.

The broader benefits menu. The trend toward increased choice is not related to retirement plans alone. Expanded choice and individual decision-making are trends common to all employee benefits programs. Annual benefits enrollments, flexible spending accounts, health care options and consumer health care plans, DB pension choices, 529 savings plans in the workplace—all of these options present employees with an expanding list of decisions to make. Some analysts¹ have suggested that benefits law should be completely overhauled to further expand the range of choices available to workers. Armed with a given benefits budget, an employee of the future might decide whether to use these funds for a DB plan, a DC plan, a health care program, legal services, extra take-home pay—or any combination of the above.

While the choice research did not examine the larger issues relating to employee benefits, it does suggest that the trend toward ever-increasing choice should be considered with some caution. Fewer choices drawn from a limited menu seem a better way to tackle decision-making than the provision of “unlimited” choice. The notion of the worker as a highly informed, motivated financial decision-maker seeking ever-increasing financial choices seems at odds with the current research. Far from shifting all choices to the worker, the plan sponsor must play an important role in assuring that decision-making is streamlined and that critical choices are presented in a form that is easy for employees to comprehend.

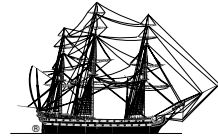
¹ See Macey and Young, 2002, for example, for a discussion of benefits law reform and a framework for extended participant choice.



References

- Benartzi, Shlomo. 2001. "Excessive Extrapolation and the Allocation of 401(k) Accounts to Company Stock." *Journal of Finance*. LVI (5). October: p. 1,747–1,764.
- Huberman, Gur. 2001. "Familiarity Breeds Investment." *Review of Financial Studies*. 14(3). p. 659–680.
- Huberman, Gur, Sheena S. Iyengar, and Wei Jiang. "Defined Contribution Pension Plans: Determinants of Participant and Contribution Rates." Working paper. May 2003.
- Iyengar, Sheena S. and Mark Lepper. 2000. "When Choice Is Demotivating: Can One Desire Too Much of a Good Thing?" *Journal of Personality and Social Psychology*, 76: p. 995–1,006.
- Iyengar, Sheena S., Wei Jiang, and Gur Huberman. 2003. "How Much Choice Is Too Much? Determinants of Individual Contributions in 401(k) Retirement Plans." Working paper presented at the Wharton Pension Research Council. April 2003.
- Macey, Scott and Gretchen Young. 2002. "The Future of Employee Benefits: A Call for Reform." *Employee Benefit Plan Review*. October. p. 25–30.
- Mitchell, Olivia S. and Stephen P. Utkus. 2002. "Company Stock and Retirement Plan Diversification." Wharton Pension Research Council working paper. 2002–2004. <http://rider.wharton.upenn.edu/%7Eprc/PRC/WP/WP2002-4b.pdf>.
- Vanguard. 2002. Using "Money Attitudes" to Enhance Retirement Communications. Vanguard Center for Retirement Research. http://institutional.vanguard.com/Institutional/retirement_research.html





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