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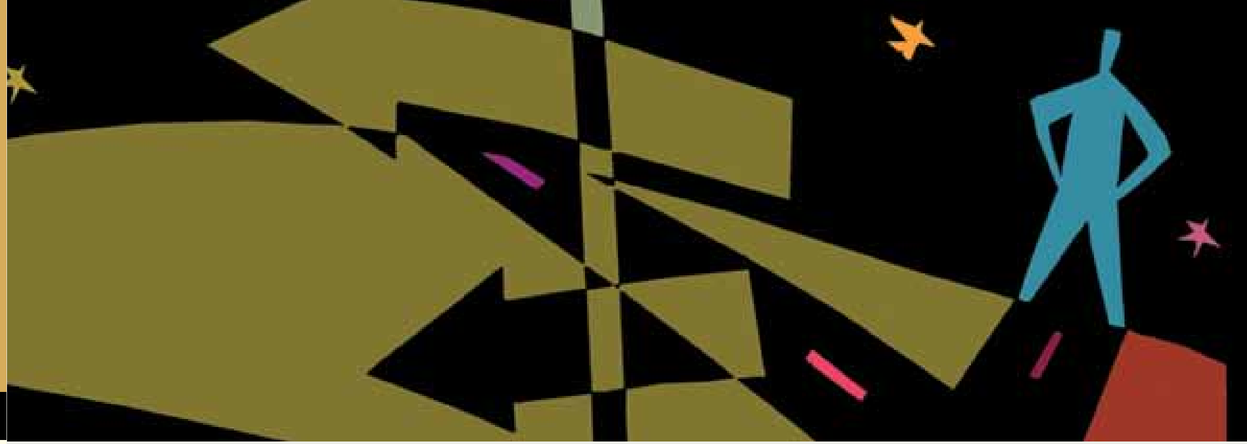
Consumer Decisionmaking: Insights from Behavioral Economics



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The increased complexity of the financial markets has made it difficult for consumers to choose products that best serve their interests. Behavioral economists explore consumers' psychological process in making decisions, such as immediate gratification, overconfidence, inertia or a lack of cognitive ability to understand the costs and benefits of financial services. They use experiments to examine "irrational" behaviors that contribute to less-than-optimal outcomes.

In April 2010, the Federal Reserve Bank of Dallas, in partnership with the University of Texas at Dallas, hosted a conference on behavioral economics research with particular focus on low- and moderate-income (LMI) consumers. This issue of Banking and Community Perspectives *reviews the behavioral economics concepts presented at the conference and discusses application of the behavioral research findings to developing products, services and policies to help consumers make better financial decisions.*

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Consumer Decisionmaking: Insights from Behavioral Economics

By Wenhua Di and Jim Murdoch

The recent economic recession has called attention to the role psychology plays in the economy. In the opening address of the Dallas Fed conference "Consumer Decisionmaking: Insights from Behavioral Economics," George A. Akerlof, the 2001 Nobel laureate in economics, talked about the noneconomic motives behind irrational economic behavior. Akerlof expounded on his 2009 book: *Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism*.[1]

When individuals or businesses act on confidence or trust, instead of rational prediction of the future, Akerlof said, they are often overly optimistic. This leads to too much demand for certain financial assets. Then, unregulated financial markets overproduce to respond to the demand as long as they can make profits. People tend to believe only information consistent with their beliefs, which further drives up the prices of these assets. However, when confidence in the asset appreciation is destroyed, demand plunges and bubbles burst.

Another conference speaker, Chris Foote from the Boston Fed, echoed Akerlof's point by drawing examples from the mortgage crisis. Mortgage borrowers were not necessarily all steered into the subprime market. Many chose to take higher-priced loans with higher loan-to-value ratios, hoping to gain from future home appreciation. When the market was booming, capital gains made expensive houses cheaper because the appreciation in value helped mitigate the higher housing cost. Regions with housing prices going up most rapidly also experienced the sharpest drop in housing prices. When there was no confidence in the housing market, even prime borrowers lost their homes to foreclosures, and adjustable-rate mortgages defaulted even before resets happened.

Consumer Decisionmaking Website

Conference presentations, videos and information about the speakers can be found on the Dallas Fed website at www.dallasfed.org/news/ca/2010/10consumer.cfm.

The irrational financial behavior of consumers and institutions makes it extremely difficult to predict asset price. The decisions on investment in a project, a business or a home are often based on emotional urge or unverifiable forecast models and, therefore, are not necessarily in the decisionmaker's best interest.

A Primer on Behavioral Economics

Behavioral economics is an area of study examining economic behavior while acknowledging the limitation of human rationality. By understanding how suboptimal choices are made, behavioral economics has the potential to offer insights to improve consumers' financial decisions. Table 1 lists several commonly used behavioral economics terms related to consumer finance.

Traditional economics makes assumptions about people's preferences and relies on mathematical tools to solve for utility maximization problems. In contrast, behavioral economists use incentivized experiments to discover important aspects of preferences and look at how the preferences influence choices and judgments people make. They collect data in a "laboratory," where participants gather to perform various tasks. Catherine Eckel from the University of Texas at Dallas opened the morning session of the conference by giving an example of the methodology. She conducted an experiment testing the risk preferences of the conference audience (*see box on page 5*, *"Measuring Risk Preference in a Laboratory"*). Likewise, Jeffrey Carpenter from Middlebury College discussed experiments he performed in Latin America testing whether people's risk preferences correlate with a variety of measures of well-being.

Understanding the Limitations of Consumer Decisionmaking

Sendhil Mullainathan, the conference luncheon speaker from Harvard University, articulated four insights from behavioral economics that are most relevant to consumer finance:

First, attention is scarce, and people do not consciously allocate their attention. Finding the right financial product or service can be complicated and requires concentrated effort. People may intentionally delay attention to complex high-stake decisions, while paying a similar amount or even more attention to easier choices or products that are heavily marketed. Creditors regularly remind borrowers of paying back loans, but depository institutions rarely remind account owners of saving money.

Second, intention does not translate into action because humans are inherently inconsistent. Public assistance programs, such as the earned income tax credit (EITC) program and loan modification program, could benefit participants but have low take-up rates. One possible explanation is that consumers would like to enroll but do not get immediate assistance on how to do so when they learn

Table 1

Key Behavioral Economics Concepts Related to Consumer Finance

Term	Definition	Examples
Anchoring	Decisions are influenced by initial information.	Individuals unfamiliar with banks hear about "high bank fees" from relatives and neighbors and become especially sensitive to potential fees. Looking at the fee disclosures for an ordinary bank checking account would reinforce the anchor even though most fees only apply to certain circumstances. Homebuyers rarely shop around for mortgages. They usually work with the first lender they find or rely on the first mortgage broker they talk to. Credit card users pay the minimum amount due every month because it used to be the default payment amount on the bill.
Bracketing	Decisions are influenced by grouping choices more narrowly or broadly.	Consumers looking for auto insurance tend to buy more financial products when the agent brings up life insurance and retirement planning. Black Friday shoppers tend to buy more than they need because the sales are storewide and advertised to last only a short time.
Framing	Decisions are influenced by how alternatives are presented.	Persuasive advertising contents, such as photos and examples, could substantially increase or decrease the use of a financial product.
Hyperbolic discounting (immediacy effects)	Using higher discount rates the shorter the time frame.	Consumers prefer to rent to own furniture, appliances, automobiles or jewelry instead of saving money to buy at a much lower price because they highly discount the value of consumption in the future. Food stamp recipients buy and eat relatively more food at the beginning of the benefit month.[1] Payday loan borrowers habitually return to get costly loans because they highly discount the future bad outcome of falling into a debt trap.
Loss aversion	From a reference point, losses hurt more than equivalent gains help.	Presenting financial products in a way that directly stresses potential gains may be less attractive than presenting the same product in a way that stresses avoiding potential losses.
Self-herding	Relying on previous actions in future decisions.	Clients of payday lenders or check cashers return to get the services because they have used the services before.
Social identity	Identifying individuals with various groups and group behaviors.	Soup kitchen patrons prompted to tell successful stories about themselves became more affirmative and were more likely to accept information about the earned income tax credit and free tax preparation services than patrons who were asked to talk about their eating habits. The self-affirmation helps overcome the uneasiness of being associated with the poor identity.[2]
Social norming	Conforming to behaviors of social peers.	A congregant at the neighborhood church may feel obligated to seek financial advice from a fellow member and use a loan product or mortgage broker that other church members choose. Business owners tend to locate where other firms do. When asked about avoiding locating in a particularly poor neighborhood, most responded that the crime rate was too high, even though the actual crime rate for that neighborhood was not different from most other areas. Areas without a lot of business activities will tend to stay that way.[3]

Notes

[1] For more information, see "The First of the Month Effect: Consumer Behavior and Store Responses," by Justine Hastings and Ebonya Washington, *American Economic Journal: Economic Policy*, vol. 2, no. 2, 2010, pp. 142–62.

[2] The actual experiment is available on the Corporation for Enterprise Development (CFED) blog: "The Power of Affirmation," by Crystal Hall, www.cfed.org/programs/innovation/mhernandez/can_combating_self-perceived_stereotypes_change_behavior.

[3] For more information, see "Success from Satisficing and Imitation: Entrepreneurs' Location Choice and Implications of Heuristics for Local Economic Development," by Nathan Berg, University of Texas at Dallas, September 2010, www.utdallas.edu/~nberg/Berg_ARTICLES/BergLocationChoiceByEntrepreneurs.pdf.

about the programs.

Financial education often has similar limitations. The "current self" taking the classes is different from the "future self" applying the knowledge learned in the classroom to making real financial decisions. If individuals cannot open an account or enroll in an assistance program on the spot, they may never do it because the delay reduces the value of these interventions. However, payday lenders work hard on the action side by providing convenient services at locations that consumers frequent. Bad consequences in the future get discounted because of the same hyperbolic discounting mechanism.

Third, making sense of numbers is a fundamental problem in consumer finance. Units and numbers are meaningless to most people if presented without context or references. Consumers show different preferences when given different information about the products or programs. Interest rate information is generally more difficult to understand than the dollar amount.

A study of effective payday loan disclosure forms found that borrowers are less likely to take further loans if they are presented the full dollar cost of a payday loan rather than the annual percentage rate (APR) compared with that of credit cards.[2] Signe-Mary McKernan from the Urban Institute, who presented an empiri-

cal study of rent-to-own customers, also found that full-cost disclosure reduced rent-to-own activities more effectively than APR disclosures.[3] Stephan Meier from Columbia University presented a study showing that people who are not sophisticated in dealing with numbers are more likely to be delinquent on their mortgage or even in foreclosure.[4]

Fourth, consumer preferences are malleable. Information disclosure can never be neutral and can shape consumer choices. In addition to loan terms, persuasive advertising, framing, anchoring and simplifying complex decisions all influence consumers' choices on loans.[5] Businesses compete not only on prices, but also on other marketing strategies. Individuals typically associate with some social identity and do not feel comfortable either acting like members of a certain group with a negative stereotype or deviating from groups with positive stereotypes. It is possible to motivate individuals to protect their feelings of self-worth by an approach called self-affirmation.[6]

Mullainathan also pointed out the profound differences between higher-income and lower-income consumers, or essentially, what it means to be poor.

Plenty of evidence shows that lower-income consumers are not necessarily less rational or more myopic about spending than higher-income consumers. In some circumstances, people with little means are forced to make more calculations because they have to be more cautious about what to give up for something they buy. Higher-income consumers usually do not have budget constraints on small spending.

However, Mullainathan added that people tend to pay more attention to things they are lacking. Lower-income consumers experiencing scarcity and instability worry more about their next rental payment or food for the dinner table than unfamiliar programs or financial products and services. They either intentionally or passively ignore things presented to them because of these constraints.

The way people deal with money is analogous to how they deal with time. Mullainathan illustrated this point by a lab experiment asking student subjects to play a multistage game in which time is crucial

Measuring Risk Preference in a Laboratory

A common task in an experimental economics lab measures people's risk preference. Catherine Eckel of the University of Texas at Dallas demonstrated one such experiment. Each participant picks one lottery to play out of six scenarios. The first lottery involves a sure payoff of $80. Lotteries 2 through 6 each have a 50/50 chance of a low or high payoff (*see Figure 1*).

These lotteries have an increasing expected payoff in numerical order.[1] However, the risk of the lottery—that is, the variability of the payoffs indicated by the standard deviation—also increases.[2] More risk-averse participants would pick low-risk, low-return lotteries; risk-neutral participants would pick lottery 5 or 6, which have the highest expected payoffs; risk-seeking participants would prefer lottery 6 to 5.

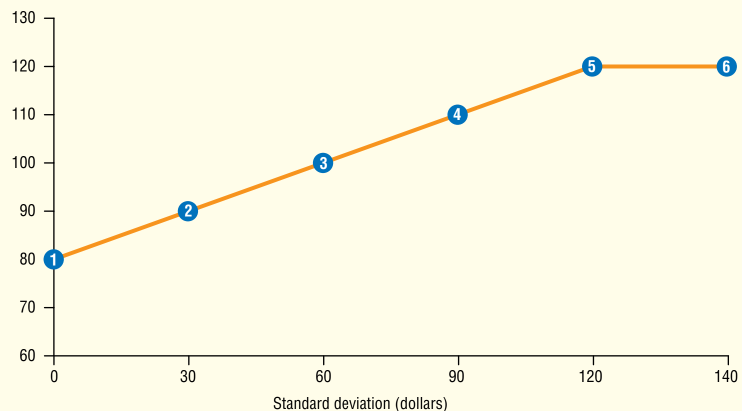
No one would lose money because everyone gets paid $20 for participating. The participants have the incentive to specify their true choice because they get paid in cash the amount equal to the outcome of the lottery.

Figure 1

Decision Sheet for Risk Preference Experiment

Lottery	Low payoff (dollars)	High payoff (dollars)	Expected payoff (dollars)	Standard deviation (dollars)
1	80	80	80	0
2	60	120	90	30
3	40	160	100	60
4	20	200	110	90
5	0	240	120	120
6	–20	260	120	140

Risk and Return



Notes

[1] The expected payoff is the probability-weighted sum of the possible values of the payoffs. In this example, it is the average of the high and low payoffs. For example, for lottery 3, it is $\frac{1}{2} \times 40 + \frac{1}{2} \times 160 = 100$.

[2] The standard deviation shows how much dispersion there is from the average of the outcomes. It is the square root of the sum of the squared differences of the payoffs from the average. For example, for lottery 3, it is $\sqrt{\frac{1}{2}[(40 - 100)^2 + (160 - 100)^2]} = 60$.

for success. The experiment suggested that students given more time to do the game (the "rich") were judicious with their decisions on borrowing time from the future stage of the game and would not borrow much when the interest rate was high (that is, adding time to the current game reduces time for the future game by much more). The students given less time to play the game (the "poor") borrowed time from the future game regardless of the interest rate because they often found that time was short and it was hard not to borrow. The "poor" typically got stuck in a debt trap, running out of time quicker with the borrowing option, while the "rich" became richer (having more and more time to play).

Regardless of whether it is lack of time or lack of money, consumers with liquidity constraints tend to overborrow. However, this behavior increases the dependence of low- and moderate-income (LMI) consumers on higher-priced financial products, which leaves them more financially vulnerable.

Applying Behavioral Economics in Consumer Finance

Behavioral economics helps explain why consumers are likely to be confused by unfamiliar financial products, self-oriented to financial service providers that they are first introduced to or others use, and enticed to spend or borrow for immediate satisfaction. While not all of these limitations in rationalities can be addressed with psychological interventions, behavioral economics research has offered some insights on helping consumers make better decisions.

Automatic Savings

A possible solution to attention scarcity is to remove hassles and simplify the process of financial decisionmaking. The most prominent example is the gentle intervention or "nudge" for retirement savings by setting a default savings rate or investment strategy.[7] Employers' defined-contribution plans, such as 401(k) plans, used to leave the decisions of whether to contribute, how much to contribute and how to invest to employees. Due to inertia or lack of investment experience and skills, employees often procrastinate or become overwhelmed by investment choices. Many end up not signing up or keeping all the savings in the default investment choice, usually a stable value fund or the company stock, with the investment risk not necessarily consistent with individuals' risk preferences. Brigitte Madrian from Harvard University presented work on the intervention of switching 401(k) defaults to a preselected contribution rate and a balanced asset allocation. The researchers found that the switch increased both rates of participation and contribution.[8]

In recent years, more and more plans have set the initial enrollment to be automatic with an opt-out option. Some even set automatic escalation of the deferral rate over time. In addition, the qualified default investment alternative (QDIA) regulations established by the Pension Protection Act of 2006 have driven the adoption of automatically balanced, age-based funds as the default investment strategy, further reducing the need for employees to monitor and rebalance their portfolios. Participants are free to transfer their investment from the QDIA to other funds available in the plans. Employees can participate in the plan and invest in a diversified portfolio even without taking initial action.

The simple modifications of default settings have helped employees overcome barriers to saving for retirement. A Vanguard 2010 report shows that the participation rate of plans with automatic enrollment has increased substantially, particularly among lower-income, younger and newly hired employees (*Table 2*).[9] However, not all employers offer a defined-contribution retirement plan, and lower-wage employees do not necessarily benefit from the tax sheltering features of 401(k) or similar plans. Moreover, people have numerous shorter-term needs other than retirement, such as paying bills, children's education and unexpected expenses. It is especially crucial for LMI individuals or families to save part of their after-tax income so they can access it quickly and stay financially stable at difficult times. Having a savings account also helps consumers build relationships with mainstream financial service providers and protects them from being victimized by higher-cost alternative financial products.

Conference speaker Alejandra Lopez-Fernandini from the New America Foundation discussed the challenges of designing and implementing an automatic nonretirement saving product. The AutoSave program is a nationwide pilot that allows employees to opt-in to automatic deposits of a small amount of their salary into a savings account. The product involves more legal issues than "nudge" for a retirement plan and cannot be set up as "opt-out" because the accounts did not exist previously. The key is to make the enrollment process fairly easy but the savings account difficult to access. The payroll system has to allow electronic deposit, and a special savings account needs to be set up with employees' consent. The direct deposit is preferably split between the savings and checking accounts, which makes it inconvenient for the account owners to transfer money out of the savings account.[10]

While automatic enrollment expands participation, the default savings rate may not reflect every individual employee's preference.[11] Low-wage earners may still find it difficult to save consistently. Some depository institutions may lose incentives to provide a savings product for lower-wage workers because of the perceived financial risks and small profits. In addition, individuals inexperienced with bank accounts may find it hard to manage and fully benefit from the product. This may necessitate offering workforce financial education when promoting an automatic savings product, in order to achieve the potential "win–win" outcome for both depository institutions and workers.

Disclosure in the Credit Market

A mild form of intervention such as switching the default setting can work effectively in the savings market because consumers' savings goal is largely in line with the interest of depository institutions. However, this may not be the case in the credit market. Prior to the recent financial crisis, some mortgage lenders had attempted to increase loan amounts or interest charges instead of providing the products and services that fit the need and affordability of the borrowers, especially when lenders did not bear much of the cost of loan failures. The products and services in the credit market are complicated, and more importantly, there is always

Table 2

Take-Up Rates of Vanguard Defined-Contribution Retirement Plans Under Different Designs

	Voluntary enrollment (percent)	Automatic enrollment (percent)	All (percent)
All	59	86	69
Income			
<$30,000	28	81	52
$30,000–$49,999	52	84	66
$50,000–$74,999	62	88	73
$75,000–$99,999	77	91	82
$100,000+	87	94	89
Age			
<25	23	80	45
25–34	49	84	63
35–44	60	85	70
45–54	66	87	75
55–64	67	87	74
65+	58	82	66
Gender			
Male	58	86	71
Female	60	86	70
Job tenure (years)			
0–1	33	77	49
2–3	50	87	64
4–6	59	85	69
7–9	67	85	75
10+	72	88	79

SOURCE: "How America Saves 2010, A Report on Vanguard 2009 Defined-Contribution Plan Data," The Vanguard Group, July 2010, p.24, https://institutional.vanguard.com/iam/pdf/HAS.pdf.

room for businesses to manipulate consumer choices.[12] Preventing unscrupulous behavior that exploits or misleads consumers requires other, possibly stronger, forms of intervention than "nudge."

Information disclosure has been an important part of consumer protection policy because it can improve comprehension by correcting consumer bias due to anchoring or framing. Janis Pappalardo from the Federal Trade Commission and Jeanne Hogarth from the Federal Reserve Board presented their findings on consumer testing of disclosure rules at these two agencies in the past several years. The testing integrates insights from behavioral economics and compares consumer understanding of the existing and prototype disclosures. Quantitative and qualitative information has been collected to gauge the effectiveness of disclosures for credit cards and privacy notices. Additional qualitative testing has been conducted for disclosures for mortgages, home equity lines of credit, student loans and overdraft services.[13]

In general, providing additional price anchors by showing the range of market interest rates helped consumers analyze mortgage offers. In certain circumstances, it is helpful to identify key mortgage features (rate adjustments, prepayment penalties, balloon payments) to alert borrowers to risky elements that they may not fully understand. However, mortgage products have become quite complex as the market evolves. Traditional products are not necessarily the best choice for all consumers, and oversimplified solutions may stifle innovation and competition.

Credit card users are sometimes tempted to spend beyond the amount they can repay for immediate gratification. They also tend to choose the minimum amount to pay, an amount that is featured on their monthly bill. The Credit Card Accountability, Responsibility and Disclosure Act of 2009 mandated disclosure in plain language on the interest charges, late fees, over-the-limit fees, the time required to pay off the debt with the minimum monthly payment, as well as an alternative amount to pay the debt in three years.[14]

Simple disclosure improves consumer comprehension; however, not all disclosures can be simplified. Hogarth emphasized the importance of thorough understanding of consumers' preferences in order to develop good disclosures. She gave an example of making rules on the overdraft protection privacy notice. Consumer testing suggested that people prefer having overdraft coverage for checks and automatic payments, but not for automated teller machine (ATM) and debit card purchases. Therefore, the overdraft notice informs consumers that they can opt-in to overdraft protection on ATM and debit card purchases, but banks may provide standard overdraft protection for checks and automatic payments. The disclosure is complicated but is more consistent with consumers' preferences.

General Consensuses on Moving Forward

Consumers have limited capacity to process information and cannot always be expected to make correct judgments or find the optimal solutions. In terms of general policy interventions to help consumers avoid choices with severe consequences, several consensuses emerge among the conference speakers and other behavioral economics researchers and policymakers.

First, the lack of ability to comprehend complicated financial products and services is universal and not an issue only relevant to low income or low education. But lower-income consumers have more liquidity constraints and less experience with financial institutions. They are more vulnerable to fi-

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nancial difficulties; therefore, they may benefit from more assistance and affordable products designed to suit their needs.

Second, interventions to help consumers make better financial decisions are tricky because consumer preference varies. Products that are bad for some consumers may be beneficial for others. Some consumers take out a high-cost payday loan or a subprime mortgage or choose to rent a durable good to own because they do not have better alternatives. But some consumers do so simply because they find it convenient. Some others do not fully understand the costs involved. Policies should be developed to address different needs. Simply eradicating these products or imposing caps on prices may limit the options for some individuals and shift the businesses to unregulated territories. Consumer protection policies implemented without considering the market responses may not be effective.

Third, disclosure policy is necessary but not always sufficient in protecting consumers. Some products and services are simple, which makes simple and salient disclosure possible, but others are complicated. Some consumers are naïve, while others are savvy. Some take the disclosure literally, while others never read it. No standardized disclosure can fit the need of all. In many circumstances, disclosure has to be combined with financial education and other forms of regulation.

Notes

[1] In *The General Theory of Employment, Interest and Money* (published in 1936), John Maynard Keynes explained how "animal spirits," or psychological motives, resulted in economic booms and busts, a view that had been deemphasized over decades.

[2] See "Information Disclosure, Cognitive Biases and Payday Borrowing," by Marianne Bertrand and Adair Morse, *The Journal of Finance* (forthcoming), available at http://faculty.chicagobooth.edu/marianne.bertrand/research/PayField091008.pdf.

[3] See "Empirical Evidence on the Determinants of Rent-to-Own Use and Purchase Behavior," by Signe-Mary McKernan, James M. Lacko and Manoj Hastak, in *Economic Development Quarterly*, vol. 17, no. 1, 2003, pp. 33–52.

[4] See "Financial Literacy and Subprime Mortgage Delinquency: Evidence from a Survey Matched to Administrative Data," by Kristopher Gerardi, Lorenz Goette and Stephan Meier, Federal Reserve Bank of Atlanta Working Paper No. 2010-10, April 2010, www.frbatlanta.org/pubs/wp/working_paper_2010-10.cfm.

[5] For more information, see "What's Advertising Content Worth? Evidence from a Consumer Credit Marketing Field Experiment," by Marianne Bertrand et al., *Quarterly Journal of Economics*, vol. 125, no. 1, 2010, pp. 263–305.

[6] See "The Power of Affirmation," by Crystal Hall, Corporation for Enterprise Development blog, www.cfed.org/programs/innovation/mhernandez/can_combating_self-perceived_stereotypes_change_behavior/index.html.

[7] See *Nudge: Improving Decisions About Health, Wealth and Happiness*, by Richard H. Thaler and Cass R. Sunstein, New York: Penguin Books, 2009.

[8] See "The Importance of Default Options for Retirement Savings Outcomes: Evidence from the United States," by John Beshears, James J. Choi, David Laibson and Brigitte C. Madrian, in *Lessons from Pension Reform in the Americas*, Stephen J. Kay and Tapen Sinha, ed., Oxford: Oxford University Press, 2008, pp. 59–87.

[9] See "How America Saves 2010, A Report on Vanguard 2009 Defined-Contribution Plan Data," The Vanguard Group, July 2010, https://institutional.vanguard.com/iam/pdf/HAS.pdf.

[10] See "Automating Savings in the Workplace, Insights from the AutoSave Pilot," by Alejandra Lopez-Fernandini and Caroline Schultz, New America Foundation, Jan. 15, 2010, www.newamerica.net/publications/policy/automating_savings_in_the_workplace.

[11] According to the Vanguard 2010 report, the majority of the automatic retirement plan set the default deferral rate to be 3 percent or lower, which partly leads to the decline in the overall contribution rates. The AutoSave pilot gives suggestions of small-dollar amounts to be saved per pay period, which may not be suitable for employees making higher wages. For more information, see https://institutional.vanguard.com/iam/pdf/HAS.pdf.

[12] See "Behaviorally Informed Financial Services Regulations," by Michael S. Barr, Sendhil Mullainathan and Eldar Shafir, New America Foundation, October 2008, www.newamerica.net/files/naf_behavioral_v5.pdf.

[13] For more information, see "Consumer Protection," testimony by Federal Reserve Board Governor Elizabeth A. Duke before the Subcommittee on Domestic Monetary Policy and Technology, Committee on Financial Services, U.S. House of Representatives, Washington, D.C., July 16, 2009, www.federalreserve.gov/newsevents/testimony/duke20090716a.htm.

[14] For more information, visit the Board of Governors of the Federal Reserve System's Consumer's Guide on Credit Cards at www.federalreserve.gov/creditcard.