The Cost of Anchoring

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Short Report

The Cost of Anchoring on Credit-Card Minimum Payments

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About three quarters of credit-card accounts attract interest charges. In the United States, credit-card debt is $951.7 billion of a total of $2,539.7 billion of consumer credit. In the United Kingdom, credit-card debt is £55.1 billion of £174.4 billion of consumer credit. The 2005 U.S. Bankruptcy Abuse Prevention and Consumer Protection Act and the 2003 United Kingdom Treasury Select Committee's report require lenders to collect a minimum payment of at least the interest accrued each month. Thus, people are protected from the effects of compounding interest. However, including minimum-payment information has an unintended negative effect, because minimum payments act as psychological anchors.

In anchoring, arbitrary and irrelevant numbers bias people's judgments (Tversky & Kahneman, 1974) and decisions (Ariely, Lowenstein, & Prelec, 2003), even when participants know that anchors are random or implausible (Chapman & Johnson, 1994). Meaningful anchors also bias judgments (e.g., Mussweiler & Strack, 2000). If decisions about credit-card repayments are anchored upon minimum-payment information, then people will repay less than they otherwise would and incur greater interest charges (Thaler & Sunstein, 2008, independently made the same suggestion). Consistent with this hypothesis, I found a strong correlation between minimum payment size and actual repayment size in a survey of credit-card payments. Here, I present an experiment that demonstrates a causal link.

SURVEY

Two hundred forty-eight United Kingdom credit-card holders (50% male, 50% female; age range = 18–65 years) reported their outstanding balance, their most recent repayment,

and the size of minimum payment required. One hundred ninety-six respondents had non-zero balances (mean = £1,284, median = £516); of these, 113 paid the balance in full and 83 made a smaller payment (mean = 17% of the balance, median = 8%), including 13 who made only the minimum repayment. The proportions making full, partial, and minimum repayments match United Kingdom credit-card industry statistics quite closely. One hundred sixty-five respondents reported the presence of minimum-payment information (mean = 6.4% of the balance, median = 3.3%).

Logistic regression found, unsurprisingly, that smaller balances are more likely to be repaid in full, $\chi^2(1) = 33.26$, $p < .0001$, $p_{rep} = 1.000$, $R^2 = .78$. However, minimum payment size did not further predict the probability of making a full repayment, $\chi^2(1) = 0.00$, $p = 1.000$, $p_{rep} = .509$, change in $R^2 = .00$.

For those making partial repayments, there was a significant positive correlation between the minimum payment and the actual repayment (with both as a fraction of the overall balance; Spearman's $\rho = .57$, $n = 75$, $p < .0001$, $p_{rep} = 1.000$). The correlation remained significant when the size of the balance is partialled out (Spearman's $\rho = .42$, $n = 75$, $p = .0002$, $p_{rep} = .995$), those who made only the minimum payment were omitted (Spearman's $\rho = .57$, $n = 63$, $p < .0001$, $p_{rep} = 1.000$), and those with balances less than £500 (who may have fixed-sum minimum payments) were omitted (Spearman's $\rho = .48$, $n = 57$, $p = .0002$, $p_{rep} = .996$).

EXPERIMENT

To investigate the causality in the link between minimum-payment information and

smaller repayments, I ran a hypothetical bill-payment experiment manipulating the inclusion of minimum-payment information.

Method

Similar data are collapsed across 97 campus visitors, 215 Web page visitors, and 101 participants recruited by a market research company (54% female, 46% male; age range = 18–68 years). Participants received a mock credit-card statement with a balance of £435.76. They were asked to imagine that the bill had arrived that morning, to consider how much they could afford to pay, and then to state how much they would pay. Participants saw either a statement that included a minimum payment of £5.42 or an otherwise identical statement that omitted this information.

Results

The proportion of people making full repayments was not significantly affected by including minimum-payment information (54.8% without vs. 55.1% with, two-tailed Fisher's exact $p = 1.000$, $p_{rep} = .500$, effect size $w = .003$). When minimum-payment information was present, the distribution of partial repayments matched the real-world distribution from the survey. Removing minimum-payment information had a dramatic effect (Fig. 1): mean repayments rose by 70%, from £99 (23% of the balance) to £175 (40% of the balance), Wilcoxon rank $p < .0001$, $p_{rep} = 1.000$, Cliff's effect size $d = 0.51$. Minimum-payment information reduced repayments of all sizes. For example, the peak in the £200–250 bin, caused by a preference to make round repayments of £200, was reduced by minimum-payment information.

A comparison of the distribution of repayments in the survey, the experiment, and

industry statistics, and a quantile regression showing that minimum-payment information reduces repayments of all sizes are included in the supplementary materials available on-line.

DISCUSSION

The survey and experiment provide converging evidence that, although minimum-payment information does not reduce the probability of paying the bill in full, minimum-payment information does reduce the size of partial repayments. Generalizing the survey to a typical scenario of an average debt of $4,000 and an annual percentage rate of 20% shows that a 2% reduction in minimum payments roughly quadruples interest charges: A first-quartile minimum payment of 2.04% is associated with repayments of $193 (4.08% of the balance) and $762 of interest charges. A third-quartile minimum payment of 3.92% is associated with a repayment of $570 (14.24% of the balance) and $197 of interest charges (see the supplementary materials available on-line). Generalizing the experiment to the same scenario predicts that including minimum-payment information roughly doubles interest charges: with minimum-payment information, repayments of $909 (23% of the balance) lead to $109 of interest charges. Without minimum-payment information, repayments of $1603 (40% of the balance) lead to $49 of interest charges. Though the two estimates are different (one is based on altering the minimum payment and the other on omitting the minimum payment), both suggest that anchoring on minimum-payment information may be costly.

Warnings about the dangers of making only minimum payments (as discussed by the United Kingdom Treasury Select Committee and the U.S. Senate Committee on

Banking, Housing, and Urban Affairs) are likely to lead to disengagement rather than behavior adjustment (cf. Loewenstein & O'Donoghue, 2006). Warnings about anchoring are ineffective in other domains (Wilson, Houston, Etling, & Brekke, 1996) and may fail here. Understanding of compound interest is poor (Lee & Hogarth, 1999), but manipulations that reduce uncertainty also reduce anchoring (Mussweiler & Strack, 2000), so methods like providing a table of alternative repayment scenarios should attenuate anchoring.

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REFERENCES

Ariely, D., Loewenstein, G., & Prelec, D. (2003). "Coherent arbitrariness": Stable demand curves without stable preferences. *Quarterly Journal of Economics, 118,* 73–105.

Chapman, G.B., & Johnson, E.J. (1994). The limits of anchoring. *Journal of Behavioral Decision Making, 7,* 223–242.

Lee, J., & Hogarth, J.M. (1999). The price of money: Consumers' understanding of APRs and contract interest rates. *Journal of Public Policy & Marketing, 18,* 66–76.

Loewenstein, G., & O'Donoghue, T. (2006). "We can do this the easy way or the hard way": Negative emotions, self regulation, and the law. *University of Chicago Law Review, 73,* 183–206.

Mussweiler, T., & Strack, F. (2000). Numeric judgments under uncertainty: The role of knowledge in anchoring. *Journal of Experimental Social Psychology, 36,* 495–518.

Thaler, R., & Sunstein, C. (2008). *Nudge: Improving decisions about health, wealth, and happiness.* New Haven, CT: Yale University Press.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185,* 1124–1130.

Wilson, T.D., Houston, C.E., Etling, K.M., & Brekke, N. (1996). A new look at anchoring effects: Basic anchoring and its antecedents. *Journal of Experimental Psychology: General, 125,* 387–402.

Fig. 1. Distribution of subjects' payment decisions in the credit-card experiment, in £50 bins. Results are shown separately for subjects who responded to a bill that included minimum-payment information and subjects who responded to a bill that omitted this information.

Supplementary Material

The following supplementary material is available for this article:

Supporting Materials

This material is available as part of the on-line article from http://blackwell-synergy.com/doi/full/10.1111/XXXXXXXXX (this link will take you to the article's abstract).