Short Report

The Cost of Anchoring on Credit-Card Minimum Repayments

Neil Stewart

University of Warwick

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 repayment of at least the interest accrued each month. Thus, people are protected from the effects of compounding interest. However, including minimum-repayment information has an unintended negative effect, because minimum repayments 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-repayment information, then people will repay less than they otherwise would and incur greater interest charges (Thaler & Sunstein, 2008, independently made the same suggestion). Here, I report results of a survey and experiment consistent with this hypothesis. Specifically, a survey of credit-card repayments showed a strong correlation between minimum repayment size and actual repayment size, and an experiment in which the inclusion of minimum-repayment information was manipulated demonstrated 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 repayment required. One hundred ninety-six respondents had nonzero balances (M = £1,284, Mdn = £516); of these, 113 paid the balance in full and 83 made a smaller repayment (M = 17% of the balance, Mdn = 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-repayment information (M = 6.4% of the balance, Mdn = 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 repayment 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 repayment 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 was partialed out (Spearman's $\rho = .42$, $n = 75$, $p = .0002$, $p_{rep} = .995$), when those who made only the minimum repayment were omitted (Spearman's $\rho = .57$, $n = 63$, $p < .0001$, $p_{rep} = 1.000$), and when those with balances less than £500 (who may have fixed-sum minimum repayments) were omitted (Spearman's $\rho = .48$, $n = 57$, $p = .0002$, $p_{rep} = .996$).

EXPERIMENT

To investigate the causality in the link between minimum-repayment information and smaller repayments, I ran a hypothetical bill-payment experiment manipulating the inclusion of minimum-repayment information.

Address correspondence to Neil Stewart, Department of Psychology, University of Warwick, Coventry, CV4 7AL, United Kingdom, e-mail: neil.stewart@warwick.ac.uk.

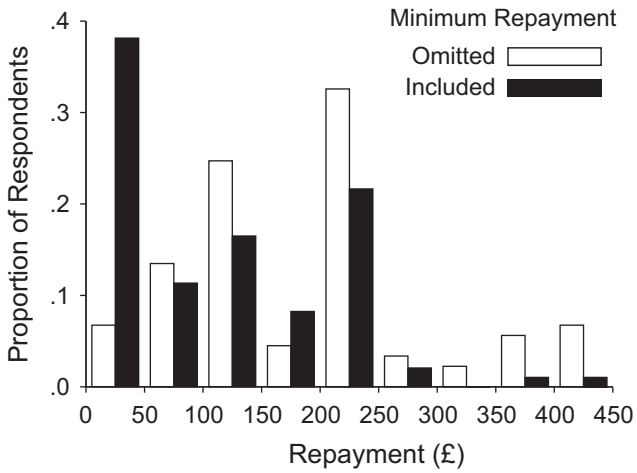

Fig. 1. Distribution of participants' repayment decisions in the credit-card experiment, in £50 bins. Results are shown separately for participants who responded to a bill that included minimum-repayment information and participants who responded to a bill that omitted this information.

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 repayment 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-repayment 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-repayment information was present, the distribution of partial repayments matched the real-world distribution from the survey. Removing minimum-repayment 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-repayment 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-repayment information.

A comparison of the distribution of repayments in the survey, the experiment, and industry statistics, and a quantile regression showing that minimum-repayment information reduces repayments of all sizes are included in the supporting materials available on-line (see p. 4).

DISCUSSION

The survey and experiment provide converging evidence that, although minimum-repayment information does not reduce the probability of paying the bill in full, minimum-repayment 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 repayments roughly quadruples interest charges: A first-quartile minimum repayment of 2.04% is associated with monthly repayments of $193 (4.08% of the balance), and monthly repayments of $193 lead to $762 of interest charges over the life of the debt. A third-quartile minimum repayment of 3.92% is associated with monthly repayments of $570 (14.24% of the balance), and monthly repayments of $570 lead to $197 of interest charges over the life of the debt (see the supporting materials available on-line). Generalizing the experiment to the same scenario predicts that including minimum-repayment information roughly doubles interest charges: with minimum-repayment information, repayments of $909 (23% of the balance) lead to $109 of interest charges. Without minimum-repayment information, repayments of $1,603 (40% of the balance) lead to $49 of interest charges. Though the two estimates are different (one is based on altering the minimum repayment and the other on omitting the minimum repayment), both suggest that anchoring on minimum-repayment information may be costly.

Warnings about the dangers of making only minimum repayments (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.

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