PERVERSE NUDGES: MINIMUM PAYMENTS AND DEBT PAYDOWN IN CONSUMER CREDIT CARDS

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In their 2008 book *Nudge*, Richard Thaler and Cass Sunstein lay out a framework for “libertarian paternalism,” a policy approach that seeks to improve consumers’ decisions without restricting their freedom to choose.

Smart choice architectures have been shown to yield remarkable improvements in retirement savings, organ donation, and health and environmental decisions. But nudges don’t always work, and sometimes well-intended policies can have perverse effects. Our recent research uncovers evidence of perverse nudges in the context of consumer credit cards.1

With about $700 billion in total outstanding balances and 400 million open accounts, credit cards are the fourth largest source of household borrowing in the United States after mortgages, student loans, and auto loans.2 In the aftermath of the financial crisis, the industry underwent the most expansive regulatory change in its history with the Credit Card Accountability Responsibility and Disclosure Act of 2009 ("CARD Act"). And in 2011, the industry received a new regulator with the creation of the Consumer Financial Protection Bureau (CFPB) following the Dodd-Frank Wall Street Reform and Financial Protection Act of 2010. But despite the prevalence of credit card debt and recent regulatory attention, there is surprisingly little systematic evidence about how consumers choose to pay down their credit card debt and what factors promote versus hinder debt reduction.

Minimum payments are present on all monthly credit card statements, and represent the minimum amount a consumer must pay in order to stay current on her account and avoid late fees and other penalties. The median minimum payment is 3 percent of a

BRIEF IN BRIEF

- Credit card minimum payments can act as an “anchor” that causes consumers to pay less of their debt than they otherwise would, leading to higher balances and interest costs, lower credit card scores, increased bankruptcy risks, and in the aggregate, suboptimally high levels of debt in the macro-economy.

- Policy “nudges,” which aim to increase the monthly amount that individuals pay on their credit card debt, have had mixed results.

- While raising required minimum payment levels encouraged consumers with low credit card balances to pay a larger fraction of their debt, it also nudged some high-balance borrowers to pay less than they previously did.

- Similarly, new disclosure requirements, including late payment and minimum payment warnings, in some cases caused borrowers who had been paying their monthly balances in full, to pay less.

- While policy nudges can work, policymakers must take into account their potentially disparate impacts in order to achieve the results they are seeking.
consumer’s total balance. Despite a median APR of 17 percent, one third of credit card accounts are regularly paid with just the minimum amount, and minimum payers carry typical balances of nearly $3000. Over five years, a minimum payer with a typical balance and purchases would see her balance more than triple and pay over $2300 in interest charges. Previous research suggests that consumer impatience may contribute to high levels of credit card borrowing, and that high levels of household leverage are associated with the more severe impacts of the Great Recession. Experimental research also suggests that minimum payments may act as an “anchor” that causes consumers to pay less of their debt than they otherwise would in the absence of the suggested payment amount. If anchoring is an important factor in practice, it could cause individual consumers to carry too much debt and pay too much in interest costs given their limited ability to manage their debt. Anchoring may also suggest that minimum payments may be an especially salient anchor for consumer choices.

In their landmark study, Amos Tversky and Daniel Kahneman proposed that “anchoring” can cause an individual’s decisions to be significantly influenced by irrelevant starting values. In their original experiment and subsequent studies, subjects latch onto an initial uninformative value (such as the last four digits of their phone number or social security number) as a decision-making heuristic. As a result, experimenters find consistent patterns when paying down a credit card account. About one third of account holders are “full payers,” and they pay their balances in full 90 percent of the time. For full payers, credit cards are used more as a convenience vehicle than a credit product. Another third are “minimum payers,” and pay close to the minimum 77 percent of the time. About one third of these minimum payers pay exactly the minimum payment, and the remainder pays within 50 percent of the minimum. In their study, Tversky and Kahneman found that subjects’ responses to general knowledge questions such as the percentage of African countries in the United Nations are significantly biased in the direction of that initial, irrelevant starting value.

In the context of credit cards, the minimum payment may be a particularly potent anchor because failing to pay at least that amount may trigger a late fee and penalty interest rate. Thus, a borrower may perceive being in good standing with the lender—and on track for future financial well-being—as long as she pays at least that amount. Along with the full balance, the minimum payment is the most prominent payment option shown on monthly statements. The contrast between the full balance, which is typically thousands of dollars, and the minimum, which is often as low as $15 or $20, can make the minimum seem like an attractive option for cash-strapped consumers. All of these factors could make the minimum payment an especially salient and influential anchor for consumer choices.

**HOW DO CONSUMERS REPAY CREDIT CARD DEBT?**

Using a new dataset from the CFPB covering a large share of credit card accounts in the United States, we find evidence that minimum payments play a significant role in consumer debt payments. To understand consumer payment behavior, we classified accounts based on whether the account holder consistently paid in full or paid the minimum at least 50 percent of the time. As shown in Figure 1, consumers exhibit consistent patterns when paying down a given credit card account. About one third of account holders are “full payers,” and they pay their balances in full 90 percent of the time. Another third are “minimum payers,” and pay close to the minimum 77 percent of the time. One third of these minimum payers pay exactly the minimum payment, and the remainder pays within 50 percent of the minimum. The final group of “mixed payers” varies less than minimum, full, and intermediate

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1. This brief draws heavily on a working paper by Benjamin J. Keys and Jialan Wang, “Perverse Nudges: Minimum Payments and Debt Paydown” (2014).
3. Author’s calculations based on the sample from Keys and Wang (2014).
8. Our data come from the CFPB credit card database (KCCDB), which contains credit card accounts from large U.S. credit card issuers, covering a large fraction of total outstanding balances in the market between 2008 and 2012. The statistics presented in this brief are derived from a subsample of issuers. The KCCDB is confidential supervisory information, and the statistics presented in

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**FIGURE 1:** COMPOSITION OF CREDIT CARD ACCOUNTS BY PAYER TYPE

<table>
<thead>
<tr>
<th>Min Payer</th>
<th>Mixed Payer</th>
<th>Full Payer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min Exact</td>
<td>Min + 50</td>
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amounts, and constitutes 35 percent of credit card accounts.

Despite the mix of payment patterns, the vast majority of payments consist of either the full balance or an amount close to the minimum. As shown in Figure 2, all three groups display strongly bimodal payment patterns. Even mixed payers typically pay close to the minimum, which is generally less than 10 percent of the balance. Strikingly, fewer than 10 percent of all payments fall between 20 and 99 percent of the balance. Even high-income borrowers do not always pay off their credit card balances in full, choosing instead to revolve debt at substantial annual interest rates.12

Low repayments contribute to consumers carrying significant levels of debt compared to their income. The median ratio of total balance to monthly income is 64 percent for minimum payers and 42 percent for mixed payers.13 Since minimum payments and monthly interest charges are only a small fraction of the total balance, most households can afford the costs of debt servicing. But as the calculation above shows, paying only the minimum while continuing to finance purchases leads to growing debt balances that can become difficult to repay in the long run. The one percent of U.S. households that file for bankruptcy each year typically have tens of thousands in credit card debt accumulated through a combination of high purchases and low payments.

Standard economic models would suggest that borrowers who accumulate large debt balances would choose to gradually pay down their debt over time as a share of their income, rather than paying only the minimum for a period of time and then paying off the entire balance as a lump sum.14 The bimodal pattern is consistent with borrowers anchoring on the minimum payment when faced with a large credit card bill, so that consumers who would otherwise have paid an intermediate proportion, such as 30 percent or 50 percent of their balance, instead choose lower amounts close to the minimum.15

**WHAT HAPPENS WHEN ISSUERS RAISE THE REQUIRED MINIMUM PAYMENT?**

The first set of policies we examine is a series of changes in issuers’ minimum payment formulas. In the time period we examine between 2008 and 2012, all of the changes in issuer formulas resulted in increases in the required minimums. For affected issuers, minimum payments increased by an average of $18, or about 5 percent of the balance, for account months with positive balances.

We find that raising the required minimum payments had no net impact on overall consumer payments, resulting from a combination of two offsetting effects. The policy changes had very different impacts for borrowers with different balance amounts. As shown in Figure 3, raising the minimum payment increased the average fraction of the balance paid by 1 percent for accounts with less than $1000 outstanding. The leftmost set of columns shows this average effect. As shown in the remaining columns, this effect is mechanically driven by minimum payers who move to the new, higher minimum amounts to avoid late fees. More surprisingly, we find that consumers with balances over $3000 reduced the average fraction of the balance they paid by roughly 2 percent. For this latter group, the change in the minimum represented a negligible fraction of their balances, and they reacted in the opposite direction of the policy change. Furthermore, the response of these high-balance accounts is entirely driven by borrowers shifting from paying off their cards in full to paying only the minimum.16 Our results suggest that the new, higher minimum payments anchored low-balance consumers at a slightly higher default payment amount, but in the process nudged some high-balance borrowers in the wrong direction toward lower payments.

**DID THE CARD ACT HELP CONSUMERS PAY DOWN DEBT?**

In addition to looking at changes in credit card issuers’ minimum payment formulas, our research examines changes initiated...
by the CARD Act of 2009. The CARD Act included a broad range of provisions designed to make credit card pricing fairer and more transparent to consumers, including limitations on interest rate changes, fees, restrictions for late payments and overlimit transactions, and changes in billing and payment allocation practices. One study shows that these provisions have saved U.S. consumers $12.6 billion per year, and the 2013 CARD Act Report also estimates a decline in the total cost of credit charged to consumers.

In addition to directly changing the way credit card fees are assessed, the CARD Act also mandated four distinct new disclosure requirements to help consumers better understand the impacts of their payment choices on the costs of borrowing. The CARD Act disclosures comprise the second set of policies we look at in our study of credit card payments.

The four disclosures took effect in February of 2010. A late payment warning was required on all statements, such as: “Late Payment Warning: If you do not receive your minimum payment by the date listed above, you may have to pay a $35 late fee and your APRs may be increased up to the Penalty APR of 28.99 percent.” Most statements were also required to include a general minimum payment warning, stating: “Minimum Payment Warning: If you make more than the minimum payment each period, you will pay less in interest and pay off your balance sooner.” Instead of this standard minimum payment warning, consumers whose stated minimum payments did not amortize their balance received a more drastic warning: “Minimum Payment Warning: Even if you make no more charges using this card, if you make only the minimum payment each month we estimate you will never pay off the balance shown on this statement because your payment will be less than the interest charged each month.”

Finally, the majority of statements also were required to include a comparison between the payment duration and interest costs of paying only the minimum versus paying an amount that would amortize the loan amount, without additional purchases, in three years. An example of this disclosure is shown in Figure 4.

Since different combinations of disclosures were shown to different sets of consumers based on specific eligibility rules, we were able to disentangle their individual effects. In contrast to the minimum formula changes discussed above, the disclosures did not change the economic incentives around credit card payments. Instead, the new disclosures simply presented information a distinct test of the potential anchoring effects of minimum payments and of consumer understanding.

We find that overall, the disclosures increased payments by $19 per account-month, resulting from consumers changing their payment behavior in at least 2-4 percent of accounts per month. The results confirm that purely informational nudges have impacts on consumer choices. The results described in this paragraph are based on regression analysis that controls for characteristics of cards, issuers, consumers, and account usage to isolate the impacts of the minimum payment changes. See Kays and Wang (2014) for more details.

The bimodal pattern we observe could result from consumers paying down multiple cards at a time with different interest rates, and we will explore this possibility in future work. The bimodal pattern could also be rationalized if consumers pay the minimum because of 0% APR promotional offers. However, we find that the same pattern remains even after excluding those with promotional offers.

We also find that the most significant correlate of payment behavior is a consumer’s credit score, which is a measure of past payment behavior. While economic fundamentals such as incomes and interest rate are not strongly correlated with payment behavior, the importance of credit score and consistency of payment patterns for a given consumer over time provides further evidence that behavioral factors may drive payment choices.

The results described in this paragraph are based on regression analysis that controls for characteristics of cards, issuers, consumers, and account usage to isolate the impacts of the minimum payment changes. See Kays and Wang (2014) for more details. The CARD Act Study (2014), between 25-38 percent of consumers make credit card payment online. The majority of these consumers do not access their electronic statements before making payments, and
three different combinations of disclosures that consumers received had very different impacts. Accounts receiving the non-amortization warning and 3-year calculation saw payments increase by $24 per month, and had a small but insignificant increase in the average fraction paid. In contrast, those receiving the minimum payment warning and 3-year payment calculation increased payments by only $4 per month.

In the absence of a strongly-worded warning against non-amortizing payments, the 3-year payment calculation amount appeared to cause borrowers who were paying in full to pay less, possibly as a result of a new anchoring effect. In addition, the 3-year calculation slightly raised the payments of those who were previously paying low amounts and moved them towards the higher anchor. Because the perverse nudge effect dominates, accounts receiving the 3-year calculation and standard minimum payment warning saw a 0.6 percent overall reduction in the fraction of balances paid and a 1.4 percent decline in the account-months paid in full.

**POLICY IMPLICATIONS**

Our work is part of a growing body of research documenting the mixed consequences of nudges in a diverse set of policy domains. In a well-known example, late pickups by parents actually increased at an Israeli preschool after fines were imposed.\(^\text{19}\) Automatic enrollment in 401(k) plans is one of the most successful examples of nudges at work. Nonetheless, while automatic enrollment helps most consumers save more, it may decrease savings among some consumers who would have enrolled on their own.\(^\text{20}\) Research has also found that “break-even” framing may lead to early claiming of Social Security benefits,\(^\text{21}\) that peer-based nudges decrease energy consumption among liberal households, but increase consumption among conservatives,\(^\text{22}\) and that calorie information may cause dieters to eat more.\(^\text{23}\)

Similarly, we find that introducing higher suggested payment amounts leads to two countervailing effects on consumer credit card payments. Issuers that raised the required minimum payment saw small increases in payment amounts among low-balance accounts paying the minimum. But the changes also nudged high-balance consumers in the wrong direction, decreasing the fraction of accounts paid in full. A disclosure mandated by the CARD Act resulted in similar offsetting effects for different groups of accounts. Although the CARD Act had positive overall impacts on consumers, the payment amount suggested on the three-year payment amount disclosure may have been too low to effectively increase consumer payments.

Our results suggest that in order to be effective, future credit card nudges should encourage payment amounts high enough such that any offsetting effects lead to greater payments overall. Our current research shows that suggested payment amounts should be greater than the $20 average minimum payment increases and the 3-year suggested payment amounts in the policies we studied. Furthermore, since increasing **required** minimums forces some consumers to become delinquent and suffer late fees and potential default, making the suggested payment amount an option rather than a requirement can help preserve flexibility while encouraging repayment.

In future work, we hope to evaluate the impact of higher repayment options through randomized control trials. While our current work only explores the impacts of low suggested payment amounts that we find to be ineffective, the results of these future trials could yield evidence of successful payment disclosures.

Our results also offer broader lessons for policymakers. One lesson is that purely informational nudges do work, consistent with prior research. Of equal importance, our results emphasize that changes in choice architecture affect not only the intended recipients of a nudge, but everyone who is subject to the change. A beneficial choice for one consumer may be detrimental for another, depending on what their choices would have been in the absence of the nudge. These disparate impacts should be taken into account when weighing the overall welfare implications of any policy change.

The views expressed are those of the authors and do not necessarily reflect the opinions of the Consumer Financial Protection Bureau, its director, or its staff.
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