

Data Point: Credit Card Revolvers

The Consumer Financial Protection Bureau's Office of Research

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1. Introduction

Credit cards are complex financial instruments that have become important as tools for managing household finances. They provide a safe and convenient method of paying for goods and services, at times with added benefits such as rewards. They also provide an open-ended line of credit from which to borrow, often at rates that are higher than other forms of available credit. At the end of each billing cycle, cardholders can repay their balances in full. In doing so, they are said to transact a balance. Alternatively, cardholders may choose to repay only a portion of their balance, borrowing the unpaid portion. In this case they are said to revolve a balance. Unlike more traditional fixed term installment loans, such as mortgages or auto loans, credit card revolvers may increase or decrease the balances they revolve over time. Repayments associated with any given balance can also vary greatly, with cardholders paying as little as the minimum payment due, or as much as the total outstanding balance as of the payment due date. As a result, cardholders may revolve for short periods or for many months or years.

This report studies patterns of revolving and repayment of credit card accounts in the United States. Using data from the Consumer Financial Protection Bureau's (CFPB) Credit Card Database (CCDB), it examines how often balances are revolved on an account, or borrowed, how long balances are revolved, and how regularly they are paid down. Previous CFPB reports have focused on the level and cost of outstanding credit card debt. This current report focuses on the duration of credit card indebtedness and the manner by which credit card debt is repaid. The analysis shows that about two thirds of actively used credit card accounts carry a revolving balance. Once consumers pay less than the balance due and begin to revolve on an account, they do so continuously for about 10 months on average, with approximately 15 percent revolving continuously for two years or more on that account. The longer a balance is revolved, the higher the chances that the consumer will continue to revolve a balance on the account.

Accounts also show variation in their repayment patterns. Some revolvers appear to take on debt and then make regular payments on this debt. Others show signs of revolving a more-or-less constant amount for long periods with little pay down until a lump-sum payment of the balance in full. Still others show an increase in balances over the length of their revolving debt, with rapid pay down just prior to complete repayment. These revolver types are found among prime and subprime cardholders. This suggests there may be a variety of factors underlying revolving decisions among households; furthermore, the variation in repayment profiles is observed for both high and low credit score accounts, which implies that repayment is not easily predicted by cardholders' credit score at the outset of revolving.

Finally, a cursory look at borrowing patterns across the United States reveals substantial geographic variation in both revolving rates and the duration of sustained debt periods. This

variation endures after accounting for differences credit scores just prior to revolving and is stable over time. This suggests that perhaps factors other than risk or market structure, such as for example preferences or local norms, may play a role in how and why individuals choose to revolve balances on their credit cards.

2. Data

The data used in this analysis comprise a panel of de-identified account-level information from a sample of large banks' credit card portfolios between April 2008 and April 2016. These data are derived from the Consumer Financial Protection Bureau's (CFPB) Credit Card Database (CCDB). The database contains information on the full consumer and small business credit card portfolios of large credit card lenders and covers approximately 85 percent of all credit card accounts in the United States. Information on each account in the panel was updated monthly during the period being analyzed here.² Accounts in the database cannot be tied to any particular consumer or household, nor can multiple accounts in the database that may belong to a single consumer or household be linked. This means that if a consumer transfers a balance from one account to another, all that can be observed is the repayment and not the reborrowing.

This analysis focuses on general-purpose card accounts, the bulk of issuers' credit card business.³ For every account-month pair, the data contain information on the balance at the end of the billing period for that month (end of cycle balance), total payments made, and the associated cardholders' credit score. As a result, the analysis can trace movements within accounts over time in both balances and posted payments. This makes it possible to disentangle balances that are transacted from those that are revolved and therefore construct periods of continuous revolving, or borrowing, by cardholders on their account.

² The CCDB included data collected by the Office of the Comptroller of the Currency and shared with the CFPB pursuant to a Memorandum of Understanding and data collected by the CFPB. In 2016 these data collections ended. Beginning in 2017, the Bureau has received similar data from the Board of Governors of the Federal Reserve System. For details see CFPB, *Sources and Uses of Data* pp. 57-58 (2018).

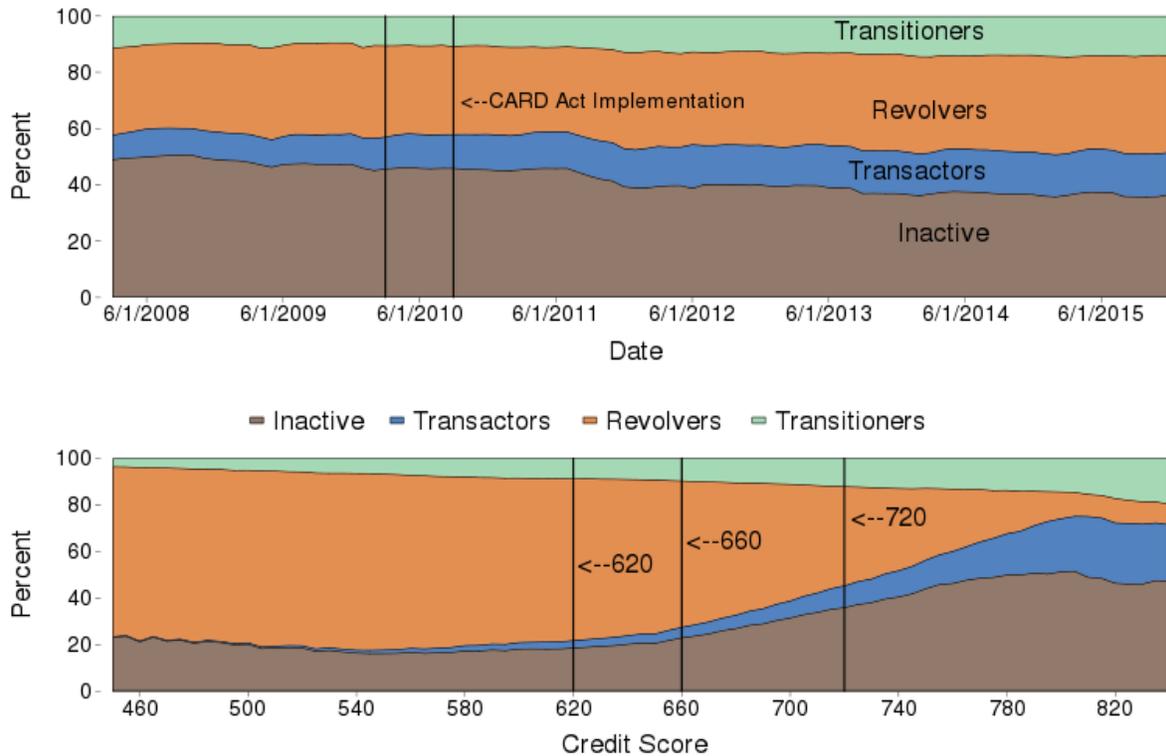
³ In general, small business and/or private label card accounts are markedly different products. The latter, for example, is in large part used in deferred interest promotions. Moreover, borrowing decisions by small business account holders may substantially differ from general interest card accounts. The report thus refrains from including these in the analysis. Lastly, the report does not focus on account attrition through charge-off. As such these are excluded.

3. Revolving Rates and Borrowing Duration

Figure 1 shows trends in account holders' propensity to hold and transition in and out of debt revolving behavior over time (top panel) and across credit scores (bottom panel). At any given month, accounts are sorted into four groups: (1) Inactive (2) Transactors (3) Revolvers (4) Transitioners. An account is categorized as *inactive* if, as of any given month, there are no purchases, balances, or payments made on it in that billing cycle and the prior billing cycle. Similarly, an account is categorized as *transacting* if, as of any given month, any balance on it is paid in full for that cycle and one preceding cycle. *Revolvers* are those who, as of any given month, carry a positive balance, net of payments, in that cycle and the preceding cycle. This definition of revolving follows the one used in previous CFPB reports on the credit card market.⁴ All remaining accounts, or those that transition between the above categories from one month to the next, are categorized as "*transitioners*".

⁴ Consumer Financial Protection Bureau. 2013. "CARD Act Report: A Review of the Impact of the CARD Act on the Consumer Credit Card Market." Available Online at: http://files.consumerfinance.gov/f/201309_cfpb_card-act-report.pdf.

FIGURE 1: REVOLVING PROPENSITIES AND TRANSITION DYNAMICS



As is shown in the top panel of the Figure 1, at any point in time, nearly half of credit card accounts are inactive. Among active accounts, two of every three are revolvers. Further, transitions in and out of credit card debt are somewhat rare, occurring among only in 1 in 10 accounts each month. Overall, revolvers are likely to continue borrowing on their card, transactors are unlikely to start revolving, and inactive accounts mostly remain unused.

The years covered by the period of analysis were marked by the Great Recession, the subsequent recovery, and the passing of the Credit Card Accountability Responsibility and Disclosure (CARD) Act, the most comprehensive regulatory effort of this market in decades. Nevertheless, as the top panel of Figure 1 illustrates, revolving patterns have remained fairly stable. One notable change is a reduction in the proportion of inactive accounts in the middle of 2011, which is likely driven by lenders' increased closures of unused credit lines and more stringent underwriting standards during the recession. As evidence of this assertion, note that the decrease in inactive accounts is absorbed proportionally by the three remaining categories. Netting out inactivity, consumers' revolving patterns remain largely unchanged over this tumultuous period.

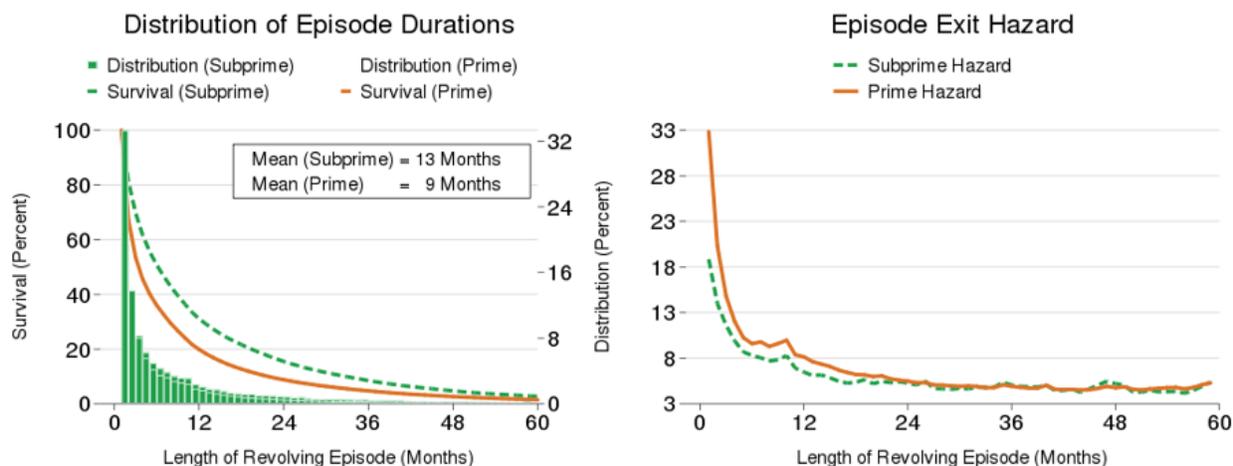
The bottom panel of Figure 1 examines revolving patterns across accounts with differing

default risk, as measured by their current credit score. The vertical lines in the panel separate accounts into four risk categories: (1) Deep-Subprime, with credit scores below 620 (2) Core-Subprime, with credit scores between 620 and 660 (3) Core-Prime, with credit scores between 660 and 720 (4) Super-Prime, with credit scores greater than 720. Among accounts held by Deep-Subprime borrowers, the vast majority, or about 85 percent, revolve. Nearly no accounts are classified as transactors, and only 1 in 10 are inactive. There is also a great persistence in revolving status among accounts in this category, with only 1 in 20 accounts transitioning in any given month.

The propensity to revolve is associated with credit risk. The higher the credit risk, the higher the propensity to revolve. Among the lowest risk accounts, the Super-Prime segment, the propensity to revolve is substantially less. For example, active accounts whose associated cardholders have credit scores greater than 800 are 2.7 times less likely to revolve in a given month than an average account. Accounts belonging to consumers with high credit scores, e.g. in the Super-Prime category, are also substantially more likely to be unused or to be transitioners relative to the average. Still, the majority of active accounts with credit score greater than 660 carry revolving balances.

Figure 2 illustrates the duration of continuous revolving on an account. For this, we define a *revolving episode* as a sequence of months during which an account continuously revolves positive balances. The beginning of an episode is the first month in which a balance is revolved on an account. The end of an episode is the month in which an account holder repays the entire balance at the end of the billing cycle. Consistent with our definition of Revolver, our analysis of episodes only includes episodes of two months or more. Note that, over the analysis period, several episodes can pertain to a single account. Episodes can begin and/or end at different times. The analysis that follows is carried out at the episode level rather than at the account level.

FIGURE 2: SUSTAINED DEBT EPISODES



In the figure, episodes are categorized into (1) Sub-Prime, for cardholders with credit scores below 660 at the beginning of an episode, and (2) Prime, for cardholders with credit scores above 660 at the beginning of the episode.

The left panel of Figure 2 shows the distribution of episode lengths among revolvers. It also depicts the survival rate, or the percent of episodes that last at least a given number of months. For instance, the likelihood that a prime episode will last 6 months or more is 40 percent; whereas for the sub-prime episode it is over 50 percent. About 12 percent of prime and 20 percent of subprime episodes last for more than 2 years. On average, revolving episodes for prime and subprime accounts last for 9 and 13 months, respectively.

The right panel of Figure 2 plots the percent of surviving episodes that end in a given month. This is referred to as the exit hazard. As is shown in the figure, as an episode becomes more protracted, the chance that the cardholder stops borrowing in the next month consistently declines. In other words, cardholders that have held onto debt for longer are more likely to remain in debt. Our previous analysis revealed large differences in average revolving rates among prime and sub-prime account holders. However, once an account holder has been revolving for significant amount of time (two years or more), the chances of repaying the debt in the next month become quite similar between accounts that began revolving as a prime and those that began revolving as sub-prime.

This duration analysis does not weight episodes by balance. However, other available research finds that accounts holding debt for longer also carry larger balances.⁵ Specifically,

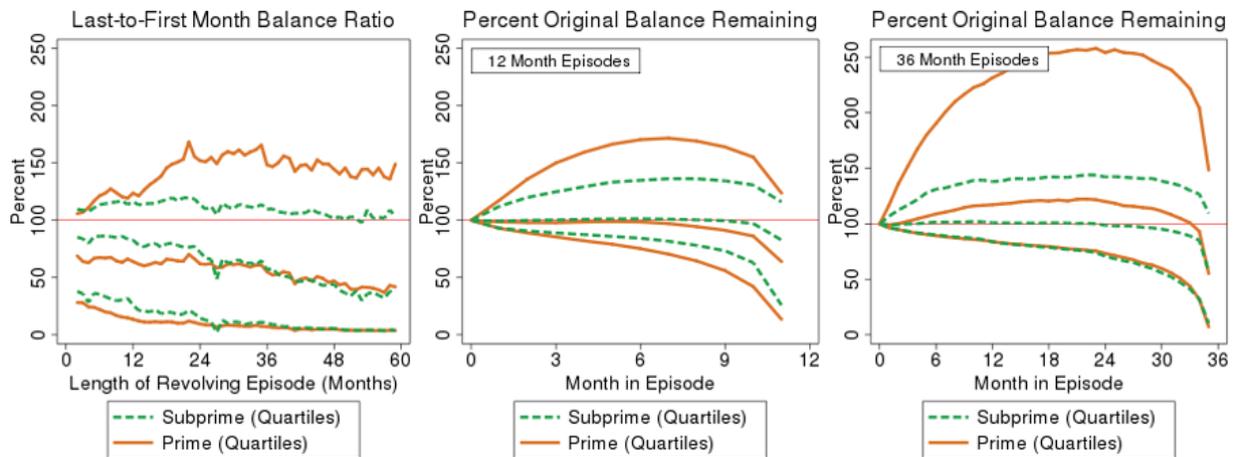
⁵ See, Grodzicki, Daniel and Koulayev, Sergei, “Sustained Credit Card Borrowing” (June 12, 2019). Available at SSRN: <http://ssrn.com/abstract=3493945>

in an average month, nearly 82 percent of outstanding balances are revolved. Approximately 70 percent revolved balances, or 70 cents of each dollar borrowed, accrue to accounts revolving continuously for a year or more.

3.1 Repayment

Figure 3 shows patterns of repayment among revolvers. The left panel of the figure plots the 25th, 50th and 75th percentiles, or quartiles, of the last-to-first month balance ratio, prior to episode exit, across episodes of varying lengths. To the extent that consumers make regular payments on their initial balances, as they would for an installment loan, the last-to-first month balance ratio would be lower for longer episodes. Indeed, for about half of revolving accounts this is the case: the 50th percentile is declining with episode length for both prime and subprime episodes. The 25th percentile of this ratio is half as large for episodes lasting 2 years than for those lasting 2 months. On the other hand, among revolvers in the 75th percentile, particularly in the prime category, there is a slow but consistent rise in debt levels over an episode prior to repayment.

FIGURE 3: PATTERNS OF REPAYMENT



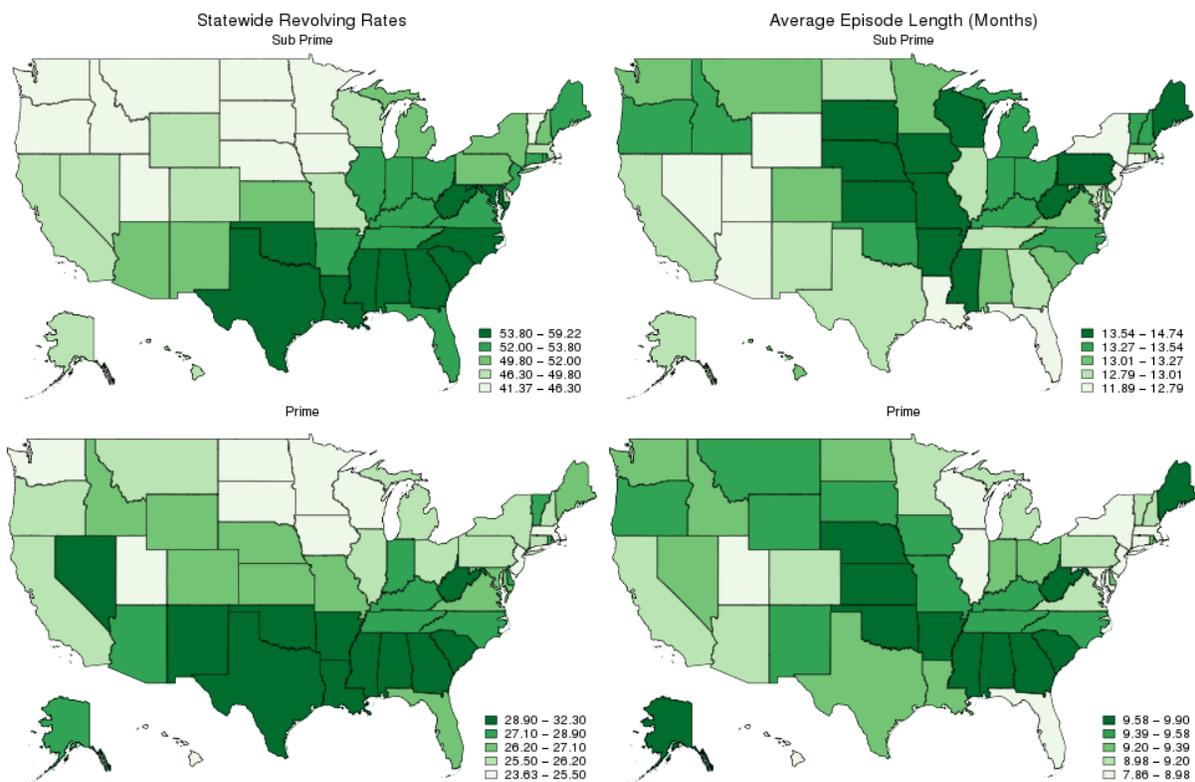
To provide further insight into changes of balances within a revolving episode, the middle and right panels of the figure show monthly repayment patterns, measured as the percent of original balance remaining, for episodes lasting 12 and 36 months, respectively. As shown in these panels, there is significant variation in repayment. At the lowest quartile of remaining balances there is clear evidence of cardholders regularly paying down their loans. In contrast, at 50th percentile (median), revolvers sustain their initial balance throughout

the length of the episode. At the top quartile, revolving balances rise for the majority of the spell with some indication of pay down prior to elimination of the balance.

3.2 Geographic Patterns in Revolving Behavior

Figure 4 looks at revolving rates and indebtedness duration across the United States. As shown in the figure, revolving behavior varies substantially across geographic regions. Statewide revolving rates, as a percentage of all accounts in the CCDB, range from 41 to 59 percent among subprime accounts and from 24 to 32 percent among prime accounts. High rates of revolving are heavily concentrated in the Southern states, while lower revolving rates are apparent in the West and Northwest. As compared to the Northwest, revolving rates in the South are up to 50 percent higher. Moreover, these patterns are consistent for prime and subprime revolvers, suggesting that disparities in revolving rates across states are not well explained by differences in consumer default risk across states.

FIGURE 4: GEOGRAPHIC DISTRIBUTION OF REVOLVING ACTIVITY



The data also reveal meaningful geographic variation in the length of revolving episodes. Average episode lengths vary from 12 to 15 months among subprime revolvers and from 8 to 10 months among prime revolvers. For the most part, states with high revolving rates correspond to states in which revolving episodes are longer lasting. Nevertheless, there are notable differences. For example, longer episodes, although still abounding in Southern states are especially pronounced in Central and Midwestern states. Conversely, in Southwestern states, in which revolving rates are high, sustained debt periods on average tend to be relatively shorter. As for revolving rates, geographic variation in the length of revolving episodes persists when controlling for consumer risk.

4. Conclusions

Credit cards provide a safe and convenient means of paying for goods and services, but they can also be used to borrow. This report has investigated the manner by which individuals use their credit cards as a means of borrowing. It found that more often than not those using their cards borrow on them, and that this revolving state is persistent. Revolvers sustain positive balances on their account for nearly a year on average, and a substantial proportion for 2 years or more. Moreover, these patterns are remarkably stable throughout the analysis periods, which includes the onset of the Great Recession, the subsequent recovery, and the implementation of the CARD Act.

In addition, this report finds evidence that many revolvers do not regularly pay down their credit card debt. Although a large portion of revolvers regularly pay down balances over a revolving episode, a significant number sustain balances for long periods or show a surge in revolved balances over an episode. Finally, the data show substantial agglomeration in revolving behavior across regions in the United States. These differences are not well explained by heterogeneity in consumer default risk. Moreover, there is no clear geographic relationship between revolving propensities and the extent to which revolvers sustain debt. Combined with the extreme persistence of revolving behavior exhibited over the analysis period, these trends suggest a scope for studying the role of local preferences or norms as potential determinants of how and why consumers choose to borrow on their credit cards.