Do Consumers Rely More Heavily on Credit Cards While Unemployed?

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Abstract:

Leading up to the Great Recession, households increased their credit card debt by over 16 percent ($121 billion) during the five-year period from 2004 to 2009. The unemployment rate simultaneously began to rise in 2008, increasing from 5.0 percent in January 2008 to a high of 10.0 percent in October of 2009. During the recovery, from 2009 to 2014, credit card debt fell by more than 25 percent, as the unemployment rate returned to near pre-recession levels. These coincident developments have led to speculation that consumers facing unemployment or job uncertainty may have increased their reliance on credit cards.

Using panel data from the Survey of Consumer Payment Choice (SCPC), we analyze consumers' adoption and use of credit cards, along with other payment instruments, among consumers during periods of unemployment. We compare this behavior with that of their employed peers, and we track the same people over time to test whether credit card behavior changes with employment status. Using descriptive statistics and regression analysis, we find the following: 1) Respondents who were unemployed at some point during the sample period are demographically distinct from the average respondent: they are significantly younger, have lower incomes, are less likely to be married, and are less likely to be white; 2) Respondents who were unemployed at some point during the sample period adopted a different set of payment instruments than the average respondent: they were significantly less likely to have had a bank account and significantly less likely to have had a credit card; 3) Respondents who were unemployed at some point during the sample period had a significantly lower share of credit card payments as a percentage of overall payments, meaning they used credit cards less intensively than the average respondent; 4) There is some evidence that respondents decrease their credit card use during a period of unemployment. Thus, we do not find evidence that consumers increase their reliance on credit cards during spells of unemployment. On the contrary, the SCPC data indicate that consumers may, in fact, decrease their reliance on credit cards while unemployed.

Keywords: Consumer payment choice, consumer behavior, unemployment, credit cards, consumer preferences, Survey of Consumer Payment Choice

JEL codes: D12, D91, J6

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Introduction

Previous literature has shown that a consumer's payment preferences are correlated with his/her demographic profile and finances. Age, education, employment status, income, credit limits, asset holdings, and a variety of other factors can all contribute to a consumer's payment choices (Stavins 2016, Zinman 2009, Souleles and Gross 2002). Additionally, there is evidence that expectations about the future state of these factors can contribute to a consumer's use of available payment instruments (Borzekowski, Kiser, and Shaista 2008). In this report, our goal is to assess how households change their use of credit cards specifically during periods of unemployment.

This issue has important policy implications. The way individual households manage their finances during unemployment can affect their long-term financial health. Recently, credit card debt has begun to rise after having fallen by more than 25 percent from 2009 to 2014.[1] If consumers rely too heavily on credit cards without paying off their credit card debt, this can increase their debt and cause further deterioration in their financial situation. If credit card debt increases with unemployment, overall debt may increase as well. If, instead, consumers decrease credit card use when unemployed, their debt will likely be lower and they might be able to restore their normal consumption level sooner after returning to work. Thus, credit card behavior also has implications for the overall health of the economy. A better understanding of when in the business cycle and why consumers may rely more heavily on credit cards is potentially useful to policymakers in their assessment of the economic outlook.

Literature review and background

The prevailing theories regarding consumption smoothing have been well explored in the literature.[2] Households use a variety of methods to protect against changes to their income so they can maintain a certain level of consumption even when income decreases. This aligns with the permanent income/life-cycle (PILC) hypothesis and extensions thereof. These theories are based both on actual changes to income and on expectations about changes to income.[3] Some literature (Herkenhoff 2014, Borzekowski, Kiser, and Shaista 2008) demonstrates that one of the

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[1] http://www.wsj.com/articles/balance-due-credit-card-debt-nears-1-trillion-as-banks-push-plastic-1463736600.

[2] See Attanasio and Pavoni (2011) and Sullivan (2008) for more discussion of consumption smoothing and detailed reviews of the literature.

[3] It is important to distinguish expectations from observations, as the analysis in this paper is limited to actual observed changes in employment status. We cannot determine from the survey whether individuals expected to become unemployed; thus behavior may diverge from what is observed in the literature regarding expectations.

most common ways to smooth consumption is by using revolving credit card debt.[4] Simultaneously, precautionary savings theory asserts that households facing uncertainty will save more and shy away from taking on additional debt (Carroll and Samwick 1998). How a household behaves in the face of such income uncertainty is highly variable and often depends on household members' income level, age, and expectations about the future, with some studies showing that consumers use credit cards more heavily during unemployment and others showing that they rely more heavily on payment instruments linked to liquid assets such as cash and debit cards (Carroll and Samwick 1998, Borzekowski, Kiser, and Shaista 2008, Sanchez and Helu 2016).

Several past surveys and resulting studies regarding payment behavior in relation to income shocks have attempted to reconcile these theories, examining how people actually behave in the face of unemployment or uncertainty about their future employment situation. They have produced mixed conclusions. Expectations about losing a job are often correlated with more debit card use. Borzekowski, Kiser, and Shaista (2008) used data from the Michigan Survey of Consumers in 2004 to show that consumers with negative expectations about the future are more likely to use debit cards instead of credit cards. Similarly, using data from the 1995–2001 Survey of Consumer Finance (SCF), Klee (2006) finds that an unstable employment situation may shift consumers toward debit card use and away from being even convenience users of credit cards. Using data from 1999–2011 from the Panel Study of Income Dynamics (PSID), Cooper (2013) finds that households most likely to be impacted by the recession tended to shift assets to liquid forms. This trend is present in some studies that look at behavior following an actual income shock as well. Ganong and Noel (2016) use bank-account-level data from 2012–2015 to show that consumers almost always draw upon liquid assets when faced with an unemployment shock. Again using the SCF data from 1995–2004, Zinman (2009) shows that consumers who face credit limit constraints are more likely to use debit cards versus credit cards or cash, suggesting that debit cards can be a strong substitute for both of these other payment instruments.

On the other hand, several other studies have found a preference for credit cards among constrained households and households that expect to be constrained. With regard to expectations, research that finds a preference for credit cards in the face of income uncertainty is less prevalent than the findings mentioned above that show a correlation with debit card use. Ambrose, Agarwal, and Lui (2006) use credit-line-level data from a large financial institution to find that borrowers who expect their financial situation to worsen utilize more credit in order to preserve future financial flexibility. Research that examines behavior in response to an income

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[4] That is, a consumer does not pay off his/her credit card balance each month. Consumers can also be "convenience users" of credit cards and not incur debt, meaning the consumer pays the balance in full each month. This is an important distinction, as being only a convenience user does not imply the use of debt to fund consumption.

shock after the fact often finds a preference for credit cards. In addition to the aforementioned conclusion, Borzekowski, Kiser, and Shaista's (2008) findings also show that households with recently bad financial outcomes (households whose current financial situation is worse than it was one year ago) are more likely to substitute credit cards for debit cards. Using the PSID, Sullivan (2008) reached a similar conclusion, but showed that this tendency may be limited to high-asset households because low-asset households are often locked out of such borrowing markets.

We find this discrepancy between the apparently contradictory preferences for debit cards versus credit cards troublesome. When individuals or households have negative expectations about the future, there are several possible explanations for their preference for debit cards. One theory is that consumers use debit in order to preserve their credit line. Another is that consumers use debit cards as a self-control mechanism to help avoid incurring credit card debt prior to an income shock. However, the results are inconclusive regarding what consumers actually do when their negative expectations are met. We seek to contribute to the discussion and help to address this gap. Evidence suggests that the most recent economic downturn may have had a unique and lasting effect on consumer finances as well as on attitudes and expectations about consumers' economic well-being (Cooper 2013, Dynan 2012, Board of Governors of the Federal Reserve 2014). Thus, preferences may have shifted from findings in the previous literature. We contribute new insights using a publicly available, nationally representative survey on payment choices and consumer payment behavior. Our unique panel dataset, described in detail in the next section, provides us the opportunity to view individuals over time and track respondents going in and out of unemployment, adding a new dimension to the existing debate.

Data description and methodology

In this report, we use seven years of survey data from the Survey of Consumer Payment Choice (SCPC) (2008–2014). The SCPC uses a nationally representative sample and asks about individual payment behavior and the demographic characteristics of the respondents.[5] We exploit the panel nature of the data to view individuals over time. We have 2,737 panelists for whom we have at least two years of data. Of these, 2,281 were active in the labor force at some point and 352 had experienced at least one job loss, where job loss is defined as either of the following:

- A respondent reports being unemployed or temporarily laid off in the current year and reported being employed in the previous year

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[5] See Angrisani, Foster, and Hitczenko (2016). for a more detailed description of the survey methodology.

- An unmarried respondent answers "yes" to the survey question asking consumers whether they had experienced the loss of their primary job in the past 12 months.[6]

We examine differences between two groups: those who had experienced unemployment at some point during the sample period and those who had not. We are interested in demographics as well as payment behavior, and we analyze the differences using significance testing.

We then analyze within-person changes over time for those who were unemployed at some point in the sample period. Of the 352 individuals who experienced job loss during the sample period, we observe 315 of these individuals in the year prior to their unemployment. This allows us to view any changes in behavior from year to year that may be associated with job loss. We investigate these changes using significance testing as well as regression analysis.

The unemployed: Who are they?

One might expect individuals who were unemployed for at least one year during the sample period to differ from the rest of the individuals in the sample. Employment may be correlated with age, education, geography, and a variety of other factors (Shimer 2001). In order to better understand our sample, we closely analyze the demographics of those who experienced unemployment.

When comparing those who were unemployed at some point during 2008–2014 with those who were not unemployed at any time during the same period, several demographic differences are evident (See Appendix Table 1 for a more detailed demographic comparison). The unemployed are typically younger, lower-income, less likely to be married, and less likely to be white, (see Figure 1). Many of these factors have been shown to be associated with adoption and use of payment instruments (Schuh and Stavins 2010), and are therefore important to consider in our analysis.

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[6] This is limited to single respondents because, in the case of married respondents, we are unable to distinguish whether it was the respondent or the spouse who experienced the job loss.
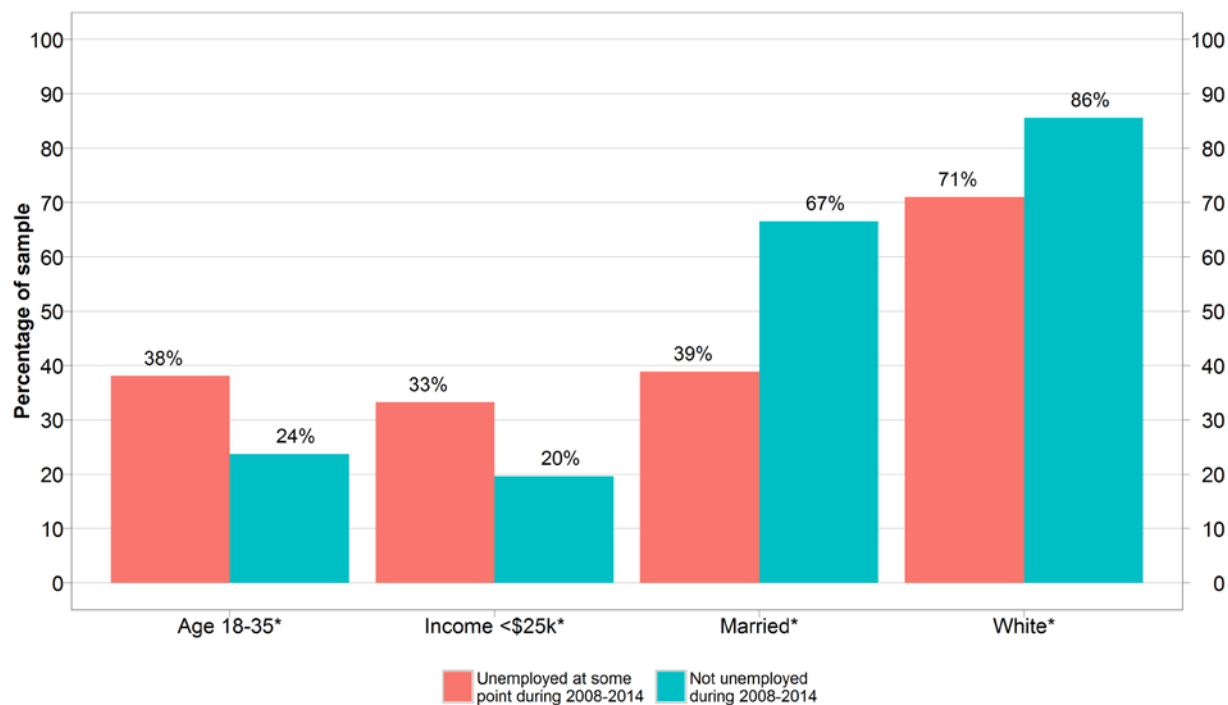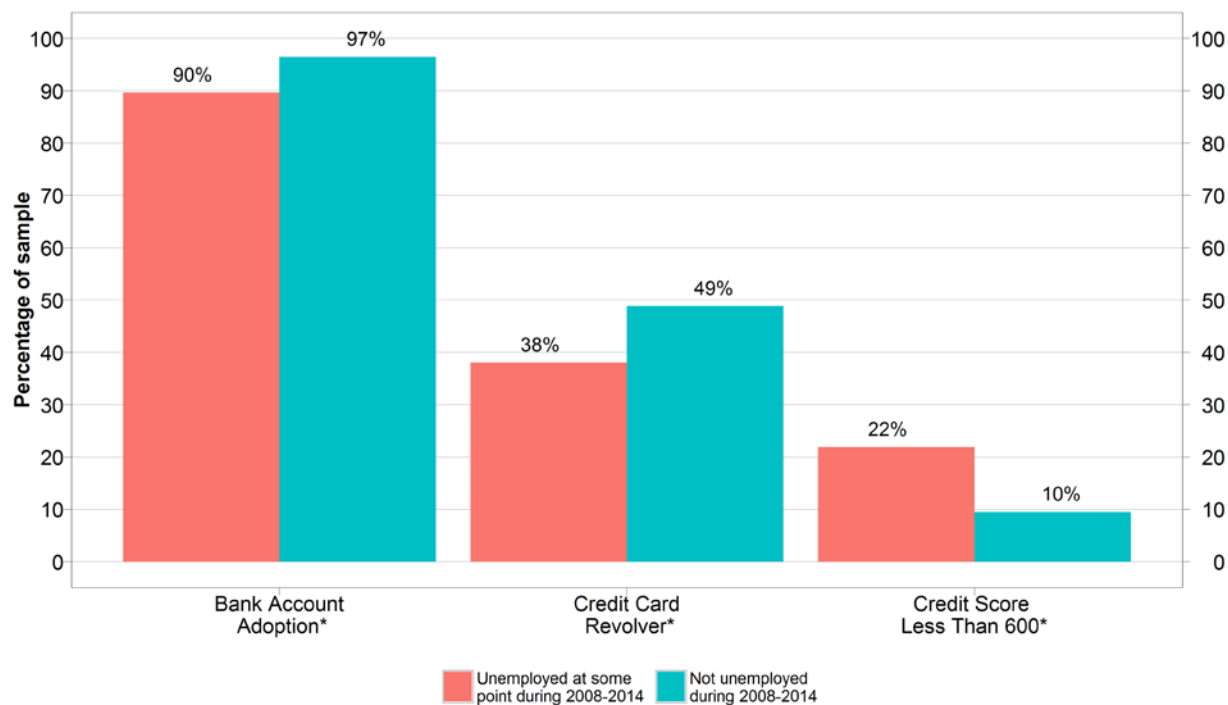
Note: "*" indicates significant difference between those who were unemployed at some point during the sample period (coral bars) and those who were not unemployed during the sample period (blue bars), at the 5 percent level.

Figure 1: Selected demographics of SCPC respondents, by employment status during 2008–2014

We are also interested in the details of how households manage their finances, specifically their use of credit cards and borrowing experience. We look at selected variables related to financial literacy and debt management: bank account adoption, credit card debt, and self-reported credit score (see Figure 2). Respondents who experienced unemployment are less likely to have had bank accounts, had lower self-reported credit scores, and were less likely to be credit card debt revolvers (largely because these respondents were less likely to be adopters of credit cards).[7]

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[7] Credit card debt revolvers are calculated as a percentage of all consumers. If we calculate the same measure for credit card adopters only, those who were unemployed at some point during the sample period revolved 60.8 percent of the time and those who were not unemployed during the sample period revolved 57.0 percent of the time. This difference is not statistically significant.

Source: Author's calculations based on the 2008–2014 SCPC.

Note: "*" indicates significant difference between those who were unemployed at some point during the sample period (coral bars) and those who were not unemployed during the sample period (blue bars), at the 5 percent level.

Figure 2: Financial management behavior of SCPC respondents, by employment status

The unemployed: How do their payment habits differ from those of the employed?

Those who were unemployed at some point during the sample period also exhibited different payment behavior from that of respondents who were not unemployed in the same time span. As mentioned above, the unemployed are less likely to adopt bank accounts; this inherently affects their downstream payment behavior, as those who do not adopt bank accounts have fewer payment options available.[8] For this discussion, we look at three groups of observations:[9]

1. Our sample of individuals who were unemployed when responding to the survey (n=474),[10]

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[8] Checks, debit cards, online banking bill payment, and bank account number payment may be adopted only if one has a bank account.

[9] Reported averages are weighted at the individual level within each group.

[10] This is more instances than the 352 individual instances noted in the previous section because some individuals experienced more than one instance of unemployment.

2. Our sample of individuals who were employed when responding to the survey, but unemployed at some other point during the sample period,

3. Our sample of respondents who did not experience unemployment during the sample period (n=10,809).

Payment instrument adoption

In Figure 3, we display the adoption rate of each payment instrument in the SCPC, as well as the rate of bank account adoption. In general, adoption of each instrument was similar among individuals who experienced unemployment at some point during the sample period, regardless of their current working status at the time of the survey; that is, between groups 1 and 2 as defined above (shown as shades of red in the figures). The differences between these respondents and those who were not unemployed during the sample period (the red bars compared with the blue bar), however, are larger. Those who were not unemployed during the sample period adopted checks, credit cards, and bank account number payment at significantly higher rates and adopted money orders at significantly lower rates than those who experienced unemployment during the sample period.[11]

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[11] Differences are statistically significant at the 5 percent level.
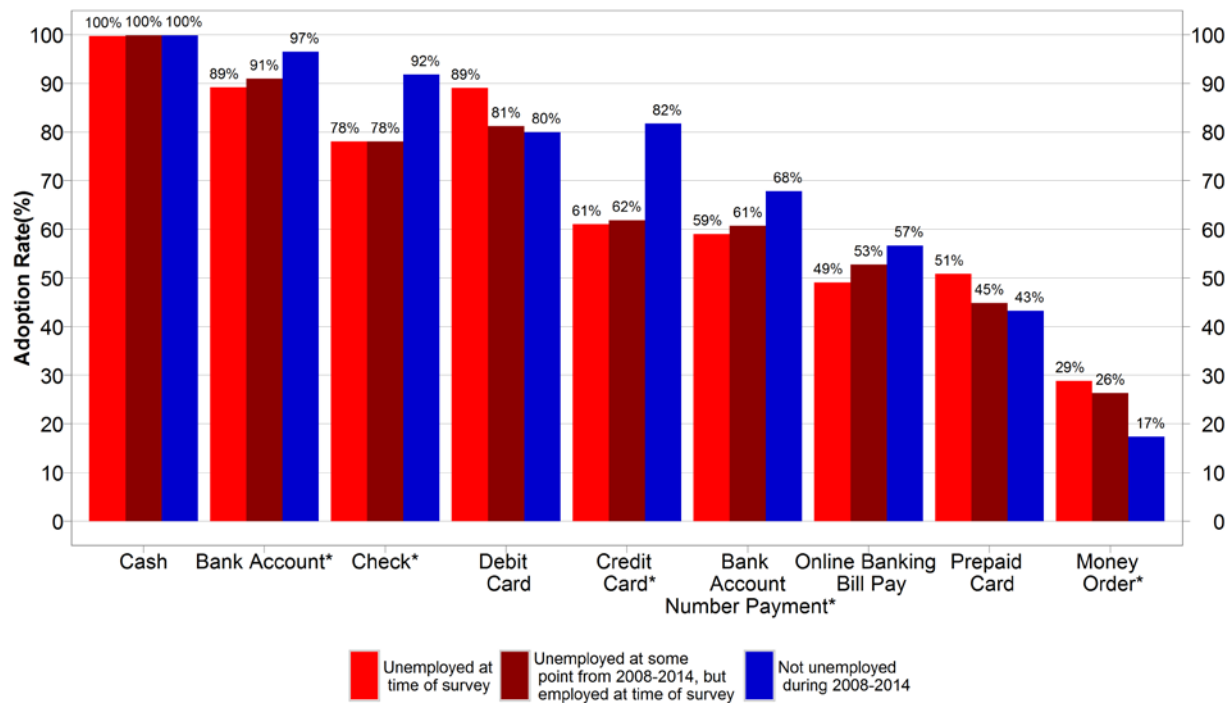
Source: Author's calculations based on the 2008–2014 SCPC.

Note: "*" indicates significant difference between those who were not unemployed during the sample period (group 3, blue bars) and those who were unemployed at the time of the survey (group 1, light red bars), at the 5 percent level.

Figure 3: Adoption rates by SCPC respondents of payment instruments and bank accounts, by employment status

Payment instrument use

We also look at the number of payments each respondent made. These measures reveal larger differences between groups 1 and 2 than the adoption rates. The contrast between those who were not unemployed during the sample period (group 3) and the other groups continues to be significant as well (see Figure 4). Respondents in group 3 made significantly more payments overall: 73 per month compared with 63 per month for the unemployed at the time of the survey (group 1). When it comes to credit cards, those who were not unemployed during the sample period (group 3) also made significantly more credit card payments per month than those who were unemployed at the time of the survey (group 1): 18 versus 11, respectively.
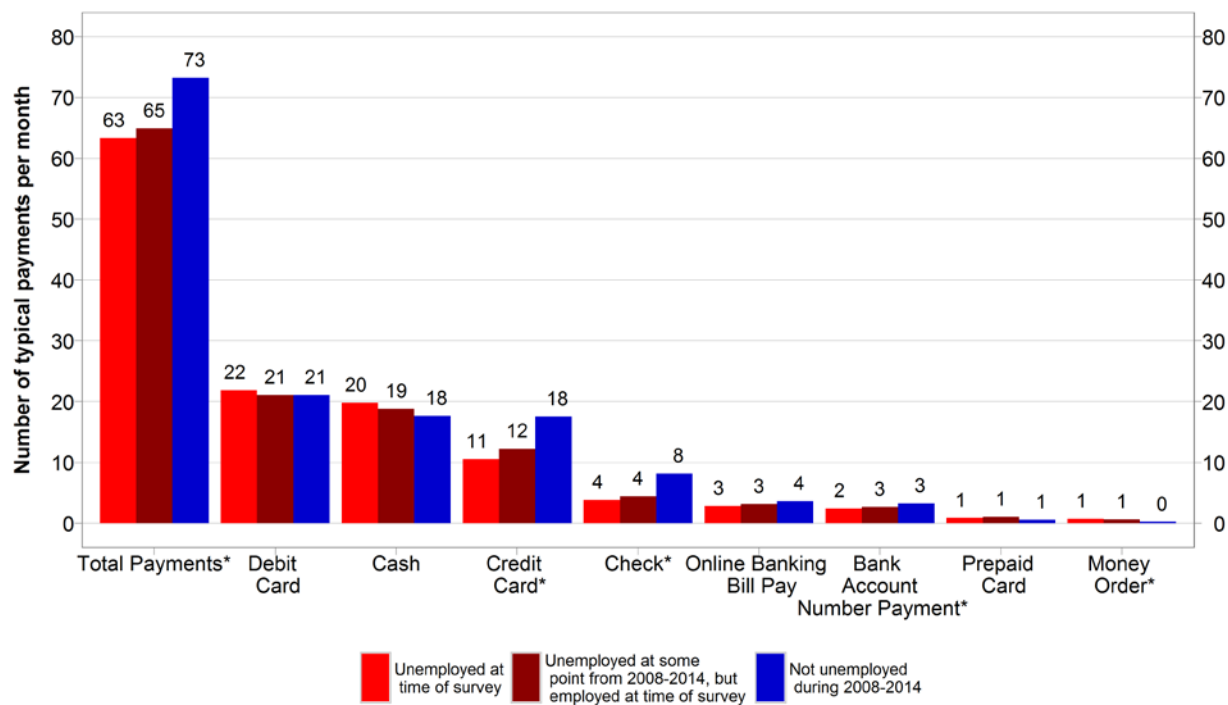
Note: "*" indicates significant difference between those who were not unemployed during the sample period (group 3, blue bars) and those who were unemployed at the time of the survey (group 1, light red bars), at the 5 percent level.

Figure 4: Typical number of payments per month by SCPC respondents, by payment instrument and employment status

Keeping in mind that respondents who did not experience unemployment during the sample period made more payments overall, we are also interested in how individuals distribute their payments among instruments and whether their payment composition changes with employment status. We measure this with the concept referred to as shares of use of each payment instrument, calculated as follows:

$$S_{i,j,t} = \left(\frac{n_{i,j,t}}{N_{i,t}} \right).$$

$S_{i,j,t}$ is the ratio of the number of payments consumer i made using payment type j in period t divided by the total number of payments consumer i made in period t using all payment instruments; $N_{i,t} = \Sigma n_{i,j,t}$ is the total number of payments made by consumer i in period t using all j payment instruments, and $n_{i,t,j}$ is the number of payments consumer i made with payment instrument j in period t.

We show shares of use in Figure 5. Again, we see some large differences between both subsets of those who were unemployed at some point in the sample period (groups 1 and 2) as well as between those who were unemployed at some point in that period and the respondents who did not experience unemployment during the sample period (group 3). Unemployed people who were not currently working made a significantly larger share of their payments in cash (33 percent) than people who were unemployed at some point in the sample period but were working at the time of the survey (29 percent), and even more when compared with those who did not experience unemployment during the sample period (24 percent). The same ordinal comparison is true for debit card payments. On the other hand, when we look at credit card shares, those who did not experience unemployment during the sample period (group 3) made a significantly larger proportion of their payments with credit cards: 25 percent versus 15 percent for the unemployed at the time of the survey (group 1). Those who were unemployed at some point during the sample period but employed at the time of the survey (group 2) also made a significantly larger share of their credit card payments while working than during unemployment: 20 percent versus 15 percent.
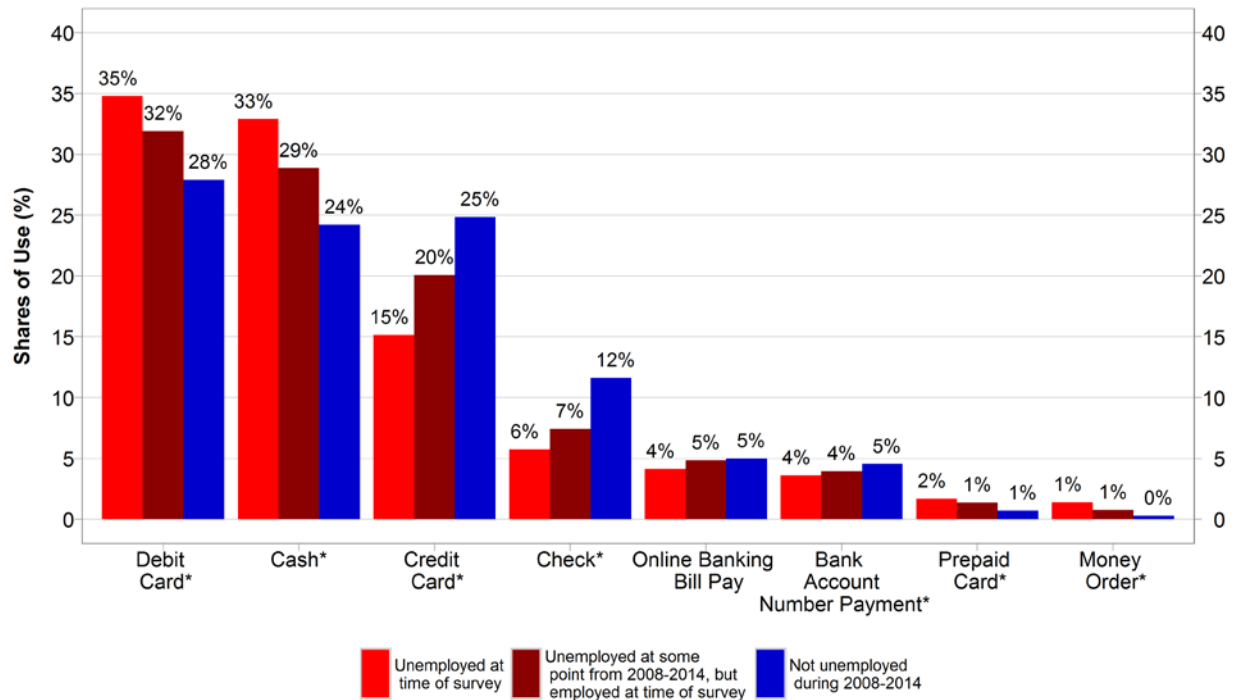
Source: Author's calculations based on the 2008–2014 SCPC.

Note: "*" indicates significant difference between those who were not unemployed during the sample period (group 3, blue bars) and those who were unemployed at the time of the survey (group 1, light red bars), at the 5 percent level.

Figure 5: Shares of use by SCPC respondents, by payment instrument and employment status

Impact of bank account adoption

As mentioned previously, some payment instruments are available only to bank account adopters (checks, debit cards, online banking bill pay, and bank account number payment). As a result, whether or not a respondent has a bank account inherently affects his/her payment choices. For robustness, we also examine payment behavior for only those individuals with a bank account. Although the levels are different in some cases, we observe similar differences between the unemployed and those who did not experience unemployment during the sample period. Respondents who were unemployed at some point but employed when taking the survey were significantly less likely to adopt credit cards and checks, even when controlling for bank account adoption (see Appendix Figure 1). They were also significantly higher adopters of debit cards. For number of payments, those who did not experience unemployment during the sample period again made more credit card, check, and bank account number payments, and used fewer money orders (see Appendix Figure 2). For shares of use, respondents who were unemployed at some point again used cash, debit cards, prepaid cards and money orders more intensively, and use credit cards, checks, and bank account number payments less intensively (see Appendix Figure 3). This analysis finds that the two samples are different in their payments behavior, even when controlling for adoption of bank accounts.[12]

Credit card adopters only

Because we are particularly interested in credit card behavior, we also look at use of selected payment instruments for credit card adopters only. The difference in shares of use is smaller; however, it is still statistically significant (see Figure 6). Respondents who did not experience unemployment during the sample period (group 3) made a higher proportion of their payments using credit: 28 percent versus 23 percent for group 1. Members of group 3 who did not experience unemployment during the sample period also made a lower proportion of their payments using cash and debit than those members of group 1 or group 2. There are also still small differences between these two groups of respondents who were unemployed during the sample period, depending on their current working status at the time of the survey, although these differences are not statistically significant.

These results indicate that those who were unemployed at some point made different payment choices than those who were consistently employed during the sample period, regardless of their current working status at the time of the survey. This finding corresponds with the demographic differences that we observe as well. The question remains whether individuals changed their payment behavior specifically in response to becoming unemployed, or whether the observed differences were present regardless of current employment status. We examine this in the next section.

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[12] All differences discussed in this paragraph are significant at the 5 percent level.
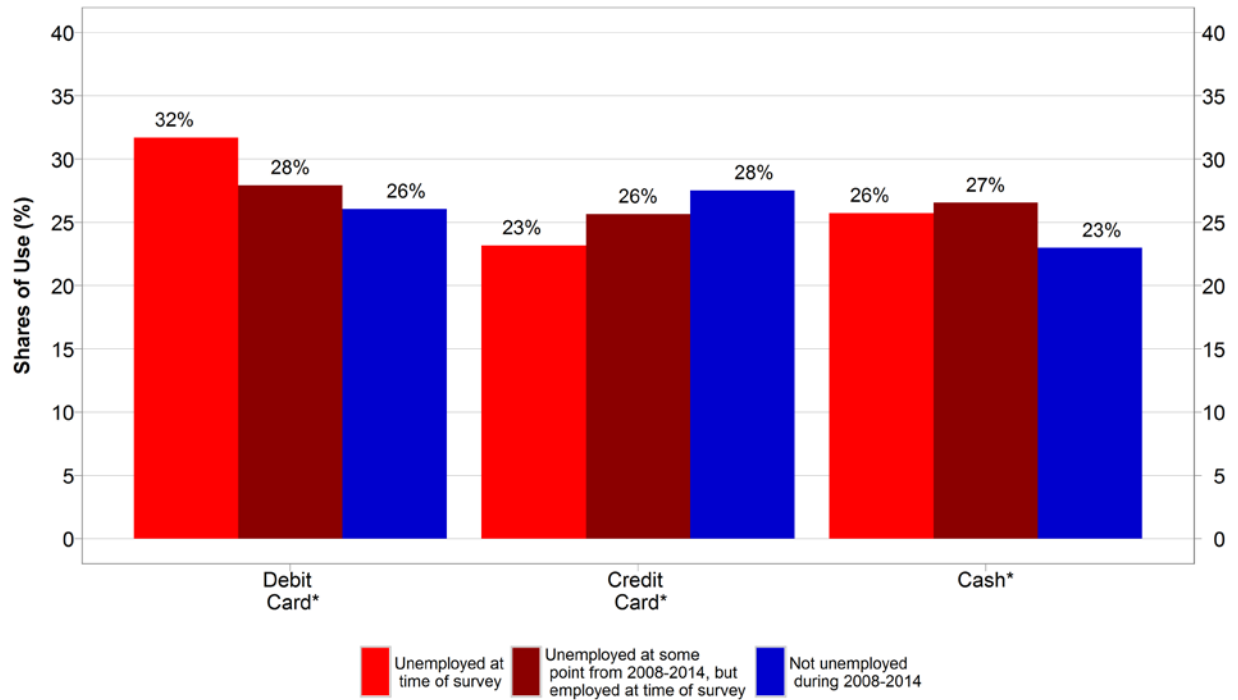
Note: "*" indicates significant difference between those who were not unemployed during the sample period (group 3, blue bars) and those who were unemployed at the time of the survey (group1, light red bars), at the 5 percent level.

Figure 6 : Share of use by SCPC respondents, by selected payment instrument and employment status, credit card adopters only

Individual changes in behavior over time

In order to assess the impact of a spell of unemployment, we limit our analysis to the respondents of our panel who switched from being employed to being unemployed at some point during the sample period. With the critieria for unemployment given above, we observe 315 respondents during a year when they became unemployed after having been employed in the previous year. Looking at the same measures of payment behavior discussed in the previous section, we see no significant differences in payment behavior between the year of employment and the year of unemployment. Adoption rates, typical number of payments made in a month, and shares of use remained stable within individuals (see Appendix Table 2). This is also the

case when we look at adopters of credit cards only,[13] with shares of use for credit cards remaining stable at 26 percent prior to and during unemployment spells.

These results suggest that payment behavior is fairly static among individuals over time, a finding that is supported by previous research (Stavins 2016). However, given the descriptive statistics in the previous sections and the vast discussion in the literature regarding behavioral changes that result from income shocks, this uniformity is somewhat surprising. Since we know that many other factors are correlated with payment behavior, we also perform a regression analysis to test whether payment behavior changes when controlling for other factors, such as demographic characteristics. We limit the regression analysis to our payment instrument of interest, credit cards.

Model

We use a pooled probit regression for credit card adoption and a pooled random effects regression for credit card use, with the entire panel of respondents in the labor force.[14,15] The regression specifications are as follows:

Adoption

$$A_{i,t} = A(RCHAR_{i,t}, DEM_{i,t}, Y_t, U_{i,t})$$

$$A_{i,t} = \begin{cases} 1 \ if \ consumer \ i \ has \ adopted \ a \ credit \ card \ in \ year \ t \\ 0 \ otherwise \end{cases}$$

Share of Use

$$S_{i,t} = S(RCHAR_{i,t}, DEM_{i,t}, Y_t, \Lambda_t, U_{i,t})$$

$$S_{i,t} = \left(\frac{n_{i,t}}{N_{i,t}}\right).$$

$RCHAR_{i,t}$ is a vector of average relative characteristic rankings for credit cards including convenience, cost, records, acceptance, security, and setup, as perceived by consumer i in year t.[16] $DEM_{i,t}$ is a vector of demographic variables for consumer i in year t that includes age, gender, education, income, race, nationality, marital status, household size, financial

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[13] When we include only credit card adopters, the sample size decreases from 315 to 212.
[14] See Wooldridge (1995) for more details on the pooled random effects approach and Stavins (2016) for an application of the approach in the context of payment behavior.
[15] Respondents were included only if they were working or looking for work at some point during the panel.
[16] See Schuh and Stavins (2010) for details on the calculation of relative characteristic ratings.

responsibility within the household, financial experience, and geographical region of residence. Y_t is a set of yearly dummy variables excluding 2008, and Λ_t is a set of inverse mills ratios calculated at the year level using probit regressions for adoption in year t. Lastly, our variable of interest, $U_{i,t,}$ is a dummy equal to 1 if consumer i became unemployed in year t.

Results

In the adoption regression, our variable of interest is not significant in this specification: being unemployed does not significantly change the probability of holding a credit card. Credit card adoption is significantly predicted by many of our other variables, including assessment of payment instrument characteristics, age, race, education, and income (see Appendix Table 3, Column 1).

The dummy for unemployment is significant at the 10 percent level in our regressions for share of use of credit cards (see Appendix Table 4, Column 1). It is a negative predictor of credit card use: the share of credit card payments is 1.4 percent lower during the period of unemployment when controlling for demographics, characteristic ratings of credit cards, and year effects. Other demographic variables that are significant predictors of credit card use include age, education, race, and income. Even when controlling for these factors, job loss has a negative and significant effect on credit card use.

Robustness tests

For robustness, we also include an alternate specification that replaces the dummy variable indicating unemployment, $U_{i,t,}$ with a discrete variable that measures the number of years that the respondent has been unemployed.[17] The regression results are shown in column 2 of Appendix Table 3 (adoption) and column 2 of Appendix Table 4 (shares of use). In the probit specification for adoption, the number of years unemployed is a significant negative predictor of credit card adoption. That is, the longer a person has been unemployed, the less likely he/she is to have a credit card, when controlling for demographics, characteristic ratings of credit cards, and year effects. The variable is not significant in our specification for share of use: length of unemployment does not significantly change the share of use of credit cards.

During our analysis, we explored several other specifications based on the literature on this topic. We looked at changes based on the respondent's income rank in the household, the respondent's actual change in income during the year of unemployment, and age. We found no evidence that income rank in the household or change in income has an influence on our results.[18]

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[17] The average length of unemployment was 1.54 years.
[18] Regression results available upon request.

Some research has suggested that credit card debt during the Great Recession was primarily driven by older age groups.[19] Jiang and Sanchez (2016) find that 50 percent of the increase in credit card balances from 2004 to 2008 was due to individuals older than 56 years of age. On the other hand, they found that individuals younger than 46 were responsible for 68 percent of credit card debt deleveraging after the recession, from 2008 to 2015. Those authors propose that one possible explanation for this is that younger individuals had poorer job prospects following the recession and thus may have deleveraged in order to minimize debt and increase saving. To investigate these possible age effects, we ran our regressions on two separate samples: one sample of those aged 46 and younger and one sample of those aged 56 years and older. The results are somewhat contradictory. First, our pooled random effects regression for credit card share of use show that becoming unemployed in a given year actually had a small but positive effect on credit card share for those in the younger age group (see Appendix Table 5). This supports the notion that individuals may rely more on credit cards while unemployed; however, it contradicts our findings based on the entire sample. Yet the results also show that the number of years unemployed has a significant and negative effect on credit card use. While it is difficult to draw conclusions based on these findings, one possible explanation is that younger individuals are willing to take on more debt when they first become unemployed, but decrease their reliance on credit cards if they are unemployed for an extended period. These findings could also be affected by supply-side issues, as prolonged unemployment may affect credit availability. The results for those 56 and older were not significant.[20]

Overall, the evidence that individuals change their credit card use in direct response to becoming unemployed is weak. Our regression specifications show that unemployment has a marginally significant negative effect on credit card use and that prolonged unemployment may have a negative effect on credit card adoption. There is also some evidence that there may be distinct effects for different age groups.

Conclusion

During the recent recession, credit card debt declined by more than 25 percent, as the unemployment rate gradually returned to pre-2008 levels. The literature regarding consumption smoothing supports the notion that credit cards can be used to maintain a consumer's desired consumption level when income is lower than expected. However, no studies that we are aware of have tracked the same individuals' credit card behavior and employment status over time. We use panel data from the SCPC, a nationally representative survey that captures payment behavior from the beginning of the recession through the recent

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[19] https://www.stlouisfed.org/on-the-economy/2016/june/who-caused-credit-card-debt-rise-decline
[20] Regression results available upon request.

recovery and find some evidence that respondents may in fact decrease their use of credit cards during unemployment.

Although the evidence is not very strong, there are many possible extensions to this analysis that might yield more definitive conclusions. Given the nature of the survey, we can provide only limited insight into household balance sheets. In particular, the limited granularity regarding overall household debt, assets, and income leaves us unable to determine definitively whether unemployment constitutes an income shock for a given respondent.

Similarly, an analysis of credit card debt revolvers versus convenience users of credit cards (those who pay off the balance in full every month) may provide more insight into why a consumer is or is not choosing credit over other payment instruments. Again, without more details about an individual's assets we cannot determine whether the consumer is using a credit card as a debt instrument. Looking specifically at consumers who take on large amounts of debt with their credit cards might yield more robust results.

Furthermore, the literature confirms that behavior is often correlated as strongly with expectations as with actual events. Our analysis is limited to observed behavior and does not factor in the impact of expectations. Since consumers may preemptively change their behavior if they expect to lose a job, changes in payment behavior may occur before the actual shock. This is difficult to capture with our data, given that the survey is administered annually.

This issue is of interest to policymakers, as it pertains to individual households' financial health. Especially given that credit card debt is on the rise again, it is important to understand how households may increase or decrease their debt. Further research is needed on the changes in individual payment behavior, and subsequently in household balance sheets, that result when a consumer is faced with a spell of unemployment or with another event that leads to a substantial change in income.

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Appendix

Tables

Appendix Table 1 : Demographic comparison of SCPC respondents, by employment status, unweighted

	Unemployed sometime during 2008–2014	Not unemployed during 2008–2014
	Pooled	Pooled
N[a]	352	2384
Gender		
Male..	43.2	45.0
Female...	56.8	54.4
Age		
18–24...	12.8	5.2
25–34...	25.3	18.5
35–44...	16.5	15.7
45–54...	26.4	23.0
55–64...	18.2	22.0
65 and older....................................	0.9	22.3
Race		
White..	71.0	85.6
Black...	18.2	7.1
Asian...	1.1	2.1
Other..	9.7	7.1
Ethnicity		
Non-Hispanic or Non-Latino........	84.4	89.1
Hispanic or Latino.........................	15.6	8.3
Nationality		
Born In United States.....................	92.6	98.0
Immigrant..	7.4	6.8
Education		
No high school diploma................	3.4	3.0
High school......................................	17.3	15.8
Some college....................................	42.0	37.4
College..	24.7	24.5
Post-graduate study.......................	12.5	19.3
Marital Status		
Married..	38.9	66.5
Divorced..	9.4	13.6
Separated..	0.6	2.1
Widowed...	1.7	4.4
Never Married...................................	49.4	14.5
Household income		
Less than $25,000.............................	33.2	19.7
$25,000–$49,999................................	31.8	24.6
$50,000–$74,999................................	19.9	23.9
$75,000–$99,999................................	8.0	15.7
Greater or equal to $100,000............	7.1	16.6

Sources: Survey of Consumer Payment Choice, 2008–2014.

Appendix Table 2: Within-person payment behavior of SCPC respondents, based on employment status when surveyed

		Before Unemployment	During Unemployment
Adoption Rate	Cash	1.00	1.00
	Check	0.80	0.79
	Money Order	0.26	0.26
	Debit	0.82	0.83
	Credit	0.63	0.64
	Prepaid Card	0.41	0.53
	OBBP	0.54	0.50
	BANP	0.61	0.61
		Before Unemployment	**During Unemployment**
Typical Number of Payments	Cash	19.59	19.51
	Check	5.38	4.18
	Money Order	0.61	0.64
	Debit	22.06	23.36
	Credit	12.55	11.97
	Prepaid Card	0.88	0.97
	OBBP	3.22	3.11
	BANP	2.66	2.65
	Total	67.62	66.81
		Before Unemployment	**During Unemployment**
Shares of Use	Cash	0.29	0.29
	Check	0.08	0.06
	Money Order	0.01	0.01
	Debit	0.33	0.35
	Credit	0.19	0.18
	Prepaid Card	0.01	0.01
	OBBP	0.05	0.05
	BANP	0.04	0.04
		Before Unemployment	**During Unemployment**
Shares of Use (Credit Card Adopters Only)	Cash	0.26	0.24
	Check	0.08	0.07
	Money Order	0.00	0.01
	Debit	0.29	0.30
	Credit	0.26	0.26
	Prepaid Card	0.01	0.01
	OBBP	0.05	0.06
	BANP	0.04	0.04

Source: Author's calculations based on the 2008–2014 SCPC.

Appendix Table 3 : Pooled probit regression results

Dependent Variable: Credit Card Adoption Rate

Yearly unemployment dummy	-0.13815	N	0.00104
Number of years unemployed	N	-0.08747 **	-0.08787
Demographic Controls	**Y**	**Y**	**Y**
Gender	Y	Y	Y
Age	Y	Y	Y
Income	Y	Y	Y
Education	Y	Y	Y
Race	Y	Y	Y
Nationality	Y	Y	Y
Ethnicity	Y	Y	Y
Marital Status	Y	Y	Y
Geography	Y	Y	Y
Household Financial Responsibility	Y	Y	Y
Characteristic Rankings	Y	Y	Y
Observations	6472	6472	6472

Source: Author's calculations based on the 2008–2014 SCPC.

Note:* indicates ignificance at the 10% level; ** indicates ignificance at the 5% level; *** indicates significane at the 1% level.

Appendix Table 4 : Pooled random effects regression results

Dependent Variable: Credit Card Shares

Yearly unemployment dummy	-0.01395	*	N	-0.00644
Number of years unemployed	N		-0.00765	-0.00547
Demographic Controls	**Y**		**Y**	**Y**
Gender	Y		Y	Y
Age	Y		Y	Y
Income	Y		Y	Y
Education	Y		Y	Y
Race	Y		Y	Y
Nationality	Y		Y	Y
Ethnicity	Y		Y	Y
Marital Status	Y		Y	Y
Geography	Y		Y	Y
Household Financial Responsibility	Y		Y	Y
Characteristic Rankings	Y		Y	Y
Yearly Inverse Mills Ratios	Y		Y	Y
Observations	7691		7691	7691

Source: Author's calculations based on the 2008–2014 SCPC.

Note: * indicates ignificance at the 10% level; ** indicates ignificance at the 5% level; *** indicates significane at the 1% level.

Appendix Table 5: Pooled random effects regression results, sample aged <46

Dependent Variable: Credit Card Shares of Use

Yearly unemployment dummy	-0.00584		N		0.02029	*
Number of years unemployed	N		-0.01082	***	-0.01846	***
Demographic Controls	**Y**		**Y**		**Y**	
Gender	Y		Y		Y	
Age	Y		Y		Y	
Income	Y		Y		Y	
Education	Y		Y		Y	
Race	Y		Y		Y	
Nationality	Y		Y		Y	
Ethnicity	Y		Y		Y	
Marital Status	Y		Y		Y	
Geography	Y		Y		Y	
Household Financial Responsibility	Y		Y		Y	
Characteristic Rankings	Y		Y		Y	
Observations	3410		3410		3410	

Source: Author's calculations based on the 2008–2014 SCPC.

Note: * indicates ignificance at the 10% level; ** indicates ignificance at the 5% level; *** indicates significane at the 1% level.
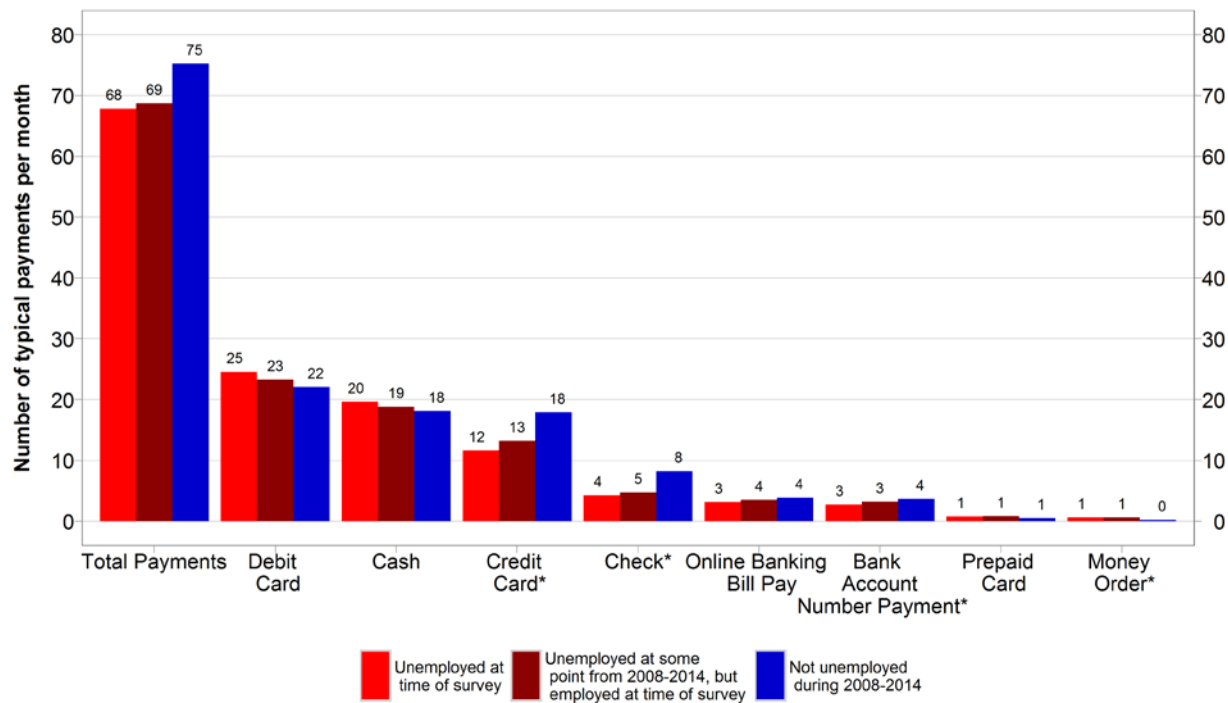
Figures
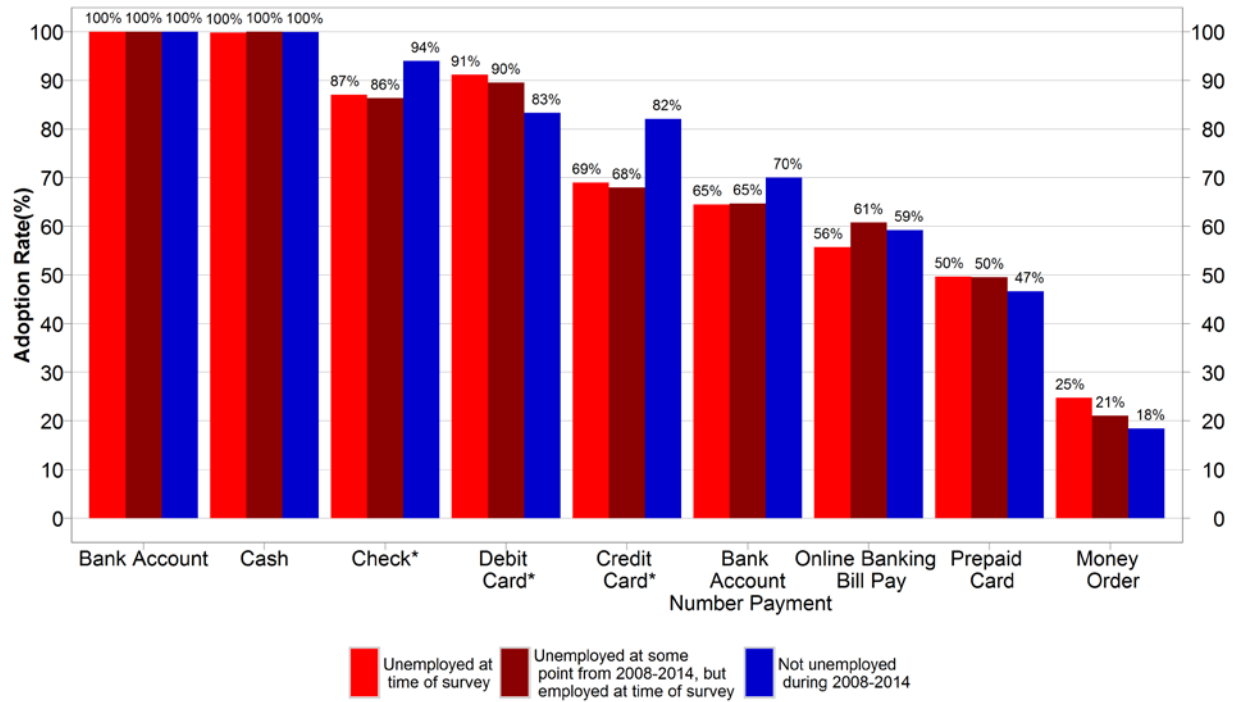
Source: Author's calculations based on the 2008–2014 SCPC

Note: "*" indicates significant difference between those who were not unemployed during the sample period (blue bars, group 3) and those who were unemployed at the time of the survey (light red bars, group 1), at the 5 percent level.
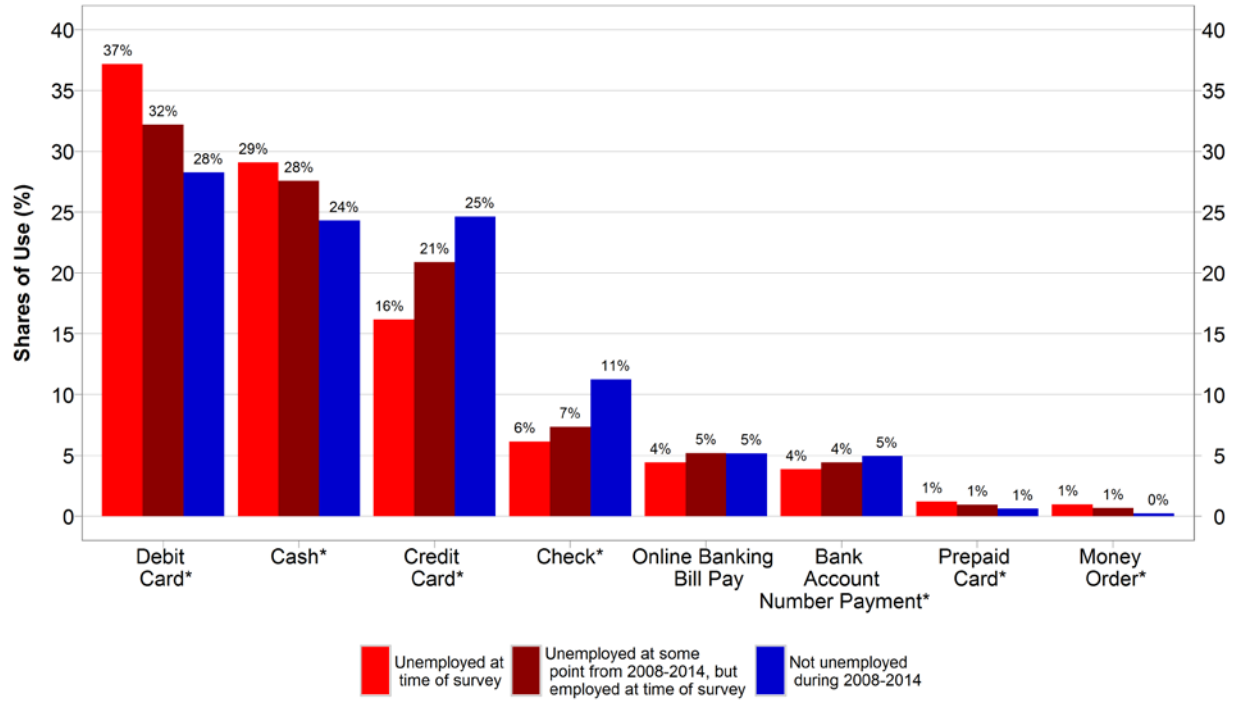
Appendix Figure 1: Adoption rates by SCPC respondents of payment instruments and bank accounts, by employment status, bank account adopters only

Note: "*" indicates significant difference between those who were not unemployed during the sample period(bluebars, group 3) and those who were unemployed at the time of the survey (light red bars, group 1), at the 5 percent level.

Appendix Figure 2: Typical number of payments per month, by SCPC respondents, by payment instrument and employment status, bank account adopters only

Source: Author's calculations based on the 2008–2014 SCPC*Note*: "*" indicates significant difference between those who were not unemployed during the sample period(blue bars, group 1) and those who were unemployed at the time of the survey (light redbars, group1), at the 5 percent level.

Appendix Figure 3 : Share of use by SCPC respondents, by payment instrument and employment status, bank account adopters only