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The 2009 Survey of Consumer Payment Choice

Kevin Foster, Erik Meijer, Scott Schuh, and Michael A. Zabek

Abstract:

This paper presents results of the *2009 Survey of Consumer Payment Choice* (SCPC), along with revised 2008 SCPC data. In 2009, the average U.S. consumer held 5.0 of the nine payment instruments available, including cash, and used 3.8 of them during a typical month. Between the 2008 and 2009 surveys, a period that includes the trough of the latest recession, consumers significantly increased their use of cash and close substitutes for cash, such as money orders and prepaid cards. At the same time, consumers reduced their use of credit cards and (to a lesser extent) debit cards, as well as payments made using a bank account number. Weaker economic conditions, new government regulations, and bank pricing of payment card services all likely contributed to the shift back toward cash. However, it is difficult to determine how much each of these factors contributed, and whether the shift is transitory or permanent, without more data and research on consumer payment choice. In 2009, one in three consumers had a prepaid card and nearly as many had a nonbank payment account online, while 3 percent made a mobile payment. By focusing on payments by consumers only, the SCPC complements the recent 2010 Federal Reserve Payment Study, which describes the entire noncash payments economy.

JEL Classifications: D12, D14, E42

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This paper, which may be revised, is available on the web site of the Federal Reserve Bank of Boston at http://www.bostonfed.org/economic/ppdp/index.htm.

Complete and detailed acknowledgments appear on the first page of this paper. The primary authors are responsible for any errors that may remain.

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The first SCPC was developed in 2003 by Boston Fed staff members Marques Benton, Krista Blair, Marianne Crowe, and Scott Schuh, and was implemented with a convenience sample of Bank employees (see Benton, Blair, Crowe, and Schuh 2007). Thanks are due to Boston Fed employees for supporting and participating in that voluntary effort. The second SCPC was implemented in 2004 by the same Boston Fed team with a convenience sample of Federal Reserve System employees. Thanks are due to the System employees for supporting and participating in that voluntary effort.

A limitation of early versions of the SCPC was their reliance on convenience samples of Federal Reserve System employees. In 2006, the AARP and Woelfel Research implemented a revised version of the 2004 SCPC survey instrument with a random sample of U.S. consumers. The CPRC worked closely with the AARP to revise and improve the survey instrument. We thank S. Kathi Brown, Sharon Hermanson, and the rest of the AARP for their contributions to the SCPC program and for providing the data from their 2006 version of the survey.

Building on the AARP model and its success, the CPRC undertook a major redesign of the SCPC, which was implemented with U.S. consumers in 2008 and 2009. CPRC contributors to the surveys were: Krista Becker, Tamas Briglevics, Margaret Carten, Charles Choi, Marianne Crowe, David DeRemer, Kevin Foster, Sergei Koulayev, Benjamin Levinger, Nanqian Liu, Nasreen Quibria, Sarojini Rao, Heather Roberts, Scott Schuh (Director), Oz Shy, Joanna Stavins, Caroline Theoharides, Michael A. Zabek, Hanbing Zhang, and Jeffery Zhang.

The Roybal Center for Financial Decision Making of the RAND Corporation worked with the CPRC to revise and implement the 2008 and 2009 SCPC with RAND's American Life Panel of consumers. Roybal Center contributors to the surveys were: Sandy Chien, Tim Colvin, Jeffrey Dominitz, Tania Gutsche, Arie Kapteyn (Director), Erik Meijer, Julie Newell, Matthias Schonlau, and Albert Weerman.

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I. Executive Summary

The 2009 SCPC is the second in a series of annual studies conducted by the Federal Reserve Bank of Boston to comprehensively estimate and study the cash and noncash payment behavior of U.S. consumers. This study contains estimates of adoption rates, incidence of use, and number of payments per month by consumers for nine common payment instruments: cash, checks, money orders, travelers checks, debit cards, credit cards, prepaid cards, online banking bill payments, and bank account number payments. The study also contains a wide range of estimates of consumer activity related to banking, cash management, and payments, along with a rich set of consumer characteristics. The main findings for 2009 are:

- The average consumer held 5.0 payment instruments and used 3.8 of them during a typical month. Both numbers are slightly lower than in 2008 (5.1 and 4.2, respectively), yet they still reflect broad diversity in consumer adoption of payment instruments associated with the long-run transformation from paper instruments to cards and electronic payments. **[Tables 8, 26]**

- Fewer consumers held debit and credit cards than in 2008: 77.0 percent had a debit card (down from 80.2 percent) and 72.2 percent had a credit card (down from 78.3 percent). Electronic payment instruments were also popular—48.8 percent had set up online banking bill payment and 56.3 percent had used bank account number payments—but these percentages are also lower than in 2008. The noncash payment instrument still held by the most consumers was checks (85.4 percent). **[Table 4]**

- The average U.S. consumer[1] made 64.5 payments in a typical month. Debit cards were the most commonly used payment instrument (19.0 payments per month) and cash the second most (18.4). Credit cards (11.2) and checks (8.2) were also commonly used. Most of the remaining payments were made by electronic means, and a small number were made by other means. **[Table 20]**

- The time between the 2008 and 2009 surveys includes the trough of the latest recession, which was relatively severe. During this time, total consumer payments per month declined by 4.2 percent and consumers shifted toward making more payments by cash and close cash substitutes. Cash payments increased by 26.9 percent; cash holdings and

[1] Throughout this paper, "the average consumer" refers to the average in terms of the statistic being discussed. Thus, in this case, it means the average in terms of number of payments per typical month.

total monthly withdrawals of the average consumer also increased similarly (26.5 percent and 29.2 percent, respectively). At the same time, consumers reduced their payments by credit card (21.9 percent), bank account number (26.1 percent), check (14.0 percent), and even debit card (10.0 percent). **[Tables 20, 9]**

- Several factors likely played a role in the shift of consumer payments back toward cash and related instruments. Weaker economic conditions probably encouraged a shift away from credit card payments, for both supply and demand reasons, and perhaps toward cash because it helps some consumers cut costs and improve budgeting. However, changes in government regulations toward credit and debit cards and bank pricing of payment card services during 2008–2009 may have contributed as well. Consumers' assessments about the security of electronic payments worsened too.

- At this time, it is very difficult to assess how much each factor contributed to the shift back toward cash, and whether the shift will be transitory or permanent. However, the fact that consumers continue to tend to rate cash highest in virtually every payment characteristic (acceptance, convenience, cost, and security) suggests that consumer demand for cash is unlikely to disappear any time soon. **[Tables 28A, 28B]**

- Nevertheless, signs of the ongoing long-term transformation of payments from paper instruments to cards and electronics remain evident. About one in three consumers (32.3 percent) had at least one of the many forms of prepaid card, and nearly as many (30.0 percent) had a nonbank payment account, such as PayPal or Google Checkout. Mobile payments also gained a foothold in the United States, with 3.0 percent of consumers having made one in the past 12 months. **[Tables 1, 4, and 13]**

The 2010 SCPC was conducted in 2010:Q4 with approximately 2,000 respondents, including panelists who also participated in the 2008 and 2009 surveys.[2] In October 2010, the Consumer Payments Research Center (CPRC), which develops and manages the SCPC, also conducted a pilot study of daily consumer payments using a new *Diary of Consumer Payment Choice (*DCPC*)*. Results of the 2010 SCPC and DCPC will be published later in 2011. These results will provide evidence on how permanent the consumer shift toward cash payments in 2009 is likely to be, as well as insights into the effects on consumer payment choice of recent policy interventions in payment card markets.

[2] See Appendix D for important information about the longitudinal aspect of the SCPC.

II. Introduction

The *2009 Survey of Consumer Payment Choice* (SCPC) provides an improved and expanded snapshot of the payment choices of U.S. consumers. Together with revised data from the 2008 SCPC, the surveys also measure changes in consumer payment choices over time, in this instance around the trough of a severe recession. The SCPC reveals that, from late 2008 to late 2009, U.S. consumers significantly increased the number of payments they made using cash and close substitutes for cash payments. Whether this consumer shift toward cash payments was a transitory response to business cycle conditions or a more permanent response to other factors, such as new government policies toward payment cards, cannot be determined at this point without more data and research. The 2010 SCPC, scheduled for publication later in 2011, should cast additional light on these issues.

The SCPC is produced by the Consumer Payments Research Center (CPRC) of the Federal Reserve Bank of Boston. It is an effort to develop nationally representative, high-quality, timely, comprehensive, and publicly available data on consumer payment behavior. The survey measures the adoption and use of nine common methods, or payment "instruments," including cash, by which U.S. consumers initiate payment. It also measures related consumer banking and payment practices. In October 2010, the CPRC implemented a pilot version of a new *Diary of Consumer Payment Choice (*DCPC*)*, which will complement the SCPC by tracking the daily payments of U.S. consumers.[3] Results of the DCPC pilot will also be published later in 2011.

The primary purpose of this paper, like that of its predecessor (Foster, Meijer, Schuh, and Zabek 2009), is to publish and document the aggregate statistics obtained from the 2009 SCPC and compare them with those of the revised 2008 SCPC. The statistics appear in a series of tables later in this paper. More detailed supporting documents and information, including

[3] The Federal Reserve Banks of San Francisco and Richmond co-sponsored the DCPC pilot; the Board of Governors of the Federal Reserve System also provided technical assistance.

the survey itself and tables of standard errors, may be obtained from the Consumer Payments Research Center (CPRC) at the Federal Reserve Bank of Boston.[4] A secondary purpose of this paper is to provide a high-level, nontechnical interpretation of the key results for general readership. We discuss the most salient facts for 2009 and provide an economic assessment of how the results fit into the long-run transformation of consumer payments from paper-based instruments to payment cards and electronic payments over the last three decades. This year, for the first time, we also provide an economic interpretation of the annual change in consumer payment behavior during 2008–2009.

Because the SCPC is in the early stages of development, it is important for readers and users of the SCPC data to be aware of two details about the survey program. First, the measurement of consumer payment choice is a relatively new field of economic statistics, so the survey itself is undergoing continual modification to improve the measurement and data. As a result, some of the 2008 estimates are not comparable with the 2009 estimates of the same concept. In these cases, the 2008 estimate is shown in *italics*. Furthermore, the changes between concepts that are not comparable and therefore not valid are indicated by dashes. Second, the calendar timing of the 2008 and 2009 SCPC is crucial to the interpretation of the results. The surveys are conducted in the fourth quarter of each year and do not represent the full calendar year. So, the 2008 and 2009 surveys were conducted in the wake of a financial crisis and following the trough of a major economic recession, both of which almost surely influenced consumer payment behavior.

Once again, the RAND Corporation administered the internet-based SCPC in 2009 to a sample of more than 2,000 U.S. consumers—twice as many as in 2008. About 40 percent of the 2009 SCPC respondents also took the 2008 SCPC, and these continuing SCPC participants will be used to construct a longitudinal panel of consumers for research purposes. Individual consumer responses from the 2008 SCPC are available to the public on the CPRC web site, and the individual responses from the 2009 SCPC will be released to the public later in 2011.

[4] For more information about the CPRC and SCPC, visit http://www.bostonfed.org/economic/cprc/index.htm.

The 2009 SCPC statistics released in this paper are preliminary; both 2008 and 2009 statistics are subject to revision. Missing values due to item nonresponse have been excluded from the calculation of certain statistics in the tables rather than imputed. As a result, some statistics that should equal the sum of other statistics in theory may differ from the actual sum of their components reported in the tables. Further evaluation and imputation of the data are likely, in which case the statistics reported in this document will be revised.

III. Overview of Methodology

The 2009 SCPC was administered online to a random sample of 2,173 U.S. consumers by the RAND Corporation as a module of the American Life Panel (ALP). The size of the 2009 SCPC sample was more than double that of the 2008 SCPC sample, yielding greater precision. Survey responses were weighted to match national population estimates from the Census Bureau's *Current Population Survey*. Each year, the SCPC is fielded in the fall (roughly September through December). Thus, the SCPC results for a particular year represent data for a "typical month" reported at the end of the year, rather than data for the entire calendar year. Changes in SCPC data from 2008 to 2009 are best interpreted as changes over the five quarters from 2008:Q3 to 2009:Q4. The mismatch in calendar timing may introduce a seasonal component to the estimated changes and growth rates, as discussed in more detail in Section VI.

The ALP is an access panel that recruits participants from other survey programs and pays them small stipends to complete surveys. The SCPC participants are primarily recruited from the *Michigan Survey of Consumers*, with a substantial addition of respondents from the *Stanford Face-to-Face Recruited Internet Survey Platform* (FFRISP) in 2009. Michigan randomly selects U.S. consumers using telephone random digit dialing (RDD), whereas the Stanford sample was obtained with a multistage method based on address lists.[5]

[5] For more information about the composition of the ALP sample, see https://mmicdata.rand.org/alp/index.php/Sample_composition. For more information about the *Michigan Survey of Consumers* see http://www.sca.isr.umich.edu/. The Stanford FFRISP was supported by NSF Grant 0619956. For more information about FFRISP, see Yeager, Larson, Krosnick, and Thompson (2011) and Yeager and Krosnick (2010).

Most 2008 respondents also completed the 2009 survey, but there are more than 1,000 new respondents in 2009. Data from the 876 continuing respondents will be used to begin building a longitudinal panel that will continue in 2010 as well. The SCPC longitudinal panel will offer data and research opportunities that are not available from any other source. Comparisons between two subsamples from 2009—the longitudinal panels that also responded in 2008, and the new 2009 respondents—offers researchers the possibility of identifying the effects of prior survey experience (learning) on survey responses. Proper sampling weights for the longitudinal panelists have not been constructed yet; they should be available later in 2011. Please see Appendix D for important information on the longitudinal panel.

The SCPC was developed by the Consumer Payments Research Center (CPRC) and administered online by RAND with respondents viewing it using a computer or Web TV.[6] On average, it took respondents about one-half hour to complete. Survey responses were reviewed and tabulated by the CPRC in consultation with RAND. To the extent possible, the CPRC verified the average Survey responses, and in some cases the Survey response distributions, by comparing them with actual transactions data from depository institutions and payments companies (where available) or with other consumer payment surveys. A very small number of outlier responses were replaced with values representing the mean responses of consumers with similar demographic characteristics. See **Appendix B** for more details about the survey methodology underlying the 2008 and 2009 SCPC.

IV. Changes in Content

This section briefly summarizes the changes to the economic definitions and scope of the SCPC questionnaire. The 2009 SCPC is the second in a series of annual studies conducted by the Federal Reserve Bank of Boston to comprehensively estimate and study the cash and noncash

[6] For copies of the questionnaire, go to http://www.bostonfed.org/economic/cprc/scpc/index.htm.

payment behavior of U.S. consumers, and the fifth version overall.[7] The 2009 survey is very similar to its 2008 predecessor (see Foster, Meijer, Schuh, and Zabek 2009), except for some important improvements in the economic definitions and scope of the questionnaire. The field of consumer payment surveys is relatively new and there are many unresolved questions about definitions and methodology, so there are benefits to making ongoing improvements. However, an important objective is to estimate changes in U.S. consumer payment behavior (trends). Since survey changes are costly because they disrupt the comparability of data over time, the SCPC attempts to balance the benefits of survey improvements with the cost of survey changes.

Because a payment instrument is the central concept in the SCPC and in its measurement of consumer payment behavior, the most important change to the questionnaire in 2009 was an improvement in its definition of electronic payments. First, electronic payment instruments were defined as intangible methods that consumers use to initiate or authorize payments. Payment cards, which are usually made of plastic, are not called electronic payments even though the payment is cleared over electronic networks.[8] Second, the 2008 payment instrument "electronic bank account deduction" (EBAD) was redefined and renamed in 2009 as "bank account number payment" (BANP).

There were two reasons for the latter change. First, the EBAD terminology was potentially unclear, especially for sophisticated consumers who may have thought about how payments clear and may have mistakenly considered a debit card payment an EBAD. Second, the term BANP emphasizes more clearly the fact that the consumer is using and disclosing his or her bank account number (possibly both the bank routing number and the actual account number) to a third party when using this payment method. Thus, BANP is distinctly different

[7] For more information about the 2003–2004 SCPC, see Benton, Blair, Crowe, and Schuh (2007). For more information about the 2006 version of the survey, see AARP and Woelfel Research (2007), which implemented a modified version of the earlier surveys with assistance from the Boston Fed.

[8] In contrast, the *Federal Reserve Payment Studies* (FRPS) classify payment cards as electronic payments. The difference in treatment arises because the SCPC and FRPS approach the measurement of payments from opposite sides of the market. The FRPS looks at payments from the supply side (banks and other payment service providers) and hence focuses on the type of payment network. The SCPC looks at payments from the demand side (consumers) and hence focuses on the type of instrument used to make the payment. For most consumers, it seems more natural to think of payment cards as "plastic" rather than "electronic."

from online banking bill payment (OBBP), which is initiated from inside the bank's online banking feature and does not require disclosure of personal account information to a third party. Consumers can initiate BANP automatically by pre-authorizing a recurring payment, such as a monthly bill, or by authorizing a one-time, non-recurring payment, which can be made at the web site of a company to pay a bill or for an internet purchase. Both types of authorization can occur in one of several ways—in writing, by telephone, or online.

A number of additional improvements were made to the design and methodology of the questionnaire in 2009. The main changes pertained to:

- *Bank and payment accounts* – Savings account and bank account access definitions were expanded. Holdings of online payment service provider (OPSP) accounts were added (see Section VIII for more details).
- *Payment instruments* – The nine instruments are the same, but improvements were made in defining several of them.[9] Use of cash was enhanced to clarify cash adoption; having blank checks was added to properly define check adoption (as distinct from checking account adoption); and credit card and prepaid card categories were revised and expanded to clarify and enhance the concept of adoption of those cards. The concept bank account number payments (BANP) was modified, as described earlier.
- *Cash withdrawals* – Consumers were asked to specify the number and frequency of cash withdrawals in the primary place that they withdraw cash, as well as all other locations. Additionally, locations where consumers can withdraw cash were clarified.
- *Mobile banking and payments* – Several questions were added or revised to better measure and track emerging developments in this area. Cell phone adoption is new,

[9] The case for expanding the number of payment instruments strengthened in 2009, for at least two reasons. First, prepaid cards are becoming more widespread and diverse. Second, the emergence of mobile payments raises questions about the nature and definition of payment instruments as distinct from other payment methods, venues, networks, and technologies that involve the instruments.

and adoption and use of mobile banking activity has been improved. Incidence of mobile payments by contactless and text/SMS methods is now included.

- *Use of payment instruments* – The section of the survey measuring how consumers use their payment instruments was expanded and revised in several ways. The categories of payment transactions made in person were changed to better identify person-to-person (P2P) payments. The number and types of payment instruments accepted in each transaction category were expanded to better match actual market conditions. The incidence of use of nondurable payment instruments like cash was added to improve the concept of adoption.
- *Characteristics of payment instruments* – Because of significant expansion in other areas of the survey (especially adoption and use of bank accounts and payments instruments), the number of characteristics was reduced from eight to four to meet the survey time limit. Five of the payment characteristics consumers were asked about in 2008 concerned various aspects of convenience; these were replaced with one catchall characteristic called "convenience."

For complete details about all of the survey changes between 2008 and 2009, see **Appendix C**. To obtain the actual questionnaires for 2008 and 2009, go to the CPRC web site.[10]

V. Summary of Key Results

Explanation of Tables

Tables 1–32 provide an extensive set of detailed results from most of the questions in the SCPC for all U.S. consumers.[11] The tables are grouped into four categories:

- Adoption of bank or payment accounts and payment instruments (Tables 1–12)
- Use of payment instruments, by incidence and frequency (Tables 13–26)
- Characteristics of payment instruments (Tables 27–28)

[10] Go to http://www.bostonfed.org/economic/cprc/scpc/index.htm.

[11] For an analysis of these results by consumer demographic characteristics, see Mann (2011).

- Consumer demographics and miscellaneous concepts (Tables 29–32)

Each table contains a column (or several columns) of estimates for 2008 (based on 1,010 observations) and a column (or several columns) of estimates for 2009 (based on 2,173 observations). Where reasonable, the tables include a column of estimated changes from 2008 to 2009. Estimates are intended to represent the domestic, noninstitutional population of adult U.S. consumers (ages 18 years and older), and the figures expressed in terms of percentages can be read as representative. However, we recommend that readers do not convert the levels estimates in these tables into numbers for the entire U.S. economy by multiplying them by an estimate of the adult population until we have completed our comprehensive benchmarking of the SCPC results to other data on consumers and households (forthcoming in 2011). For more details about this issue, see **Appendix D**.

Readers should be aware of some special notation in the tables. The notation "na" indicates that the estimate is not available. Numbers in *italics* in 2008 indicate estimates that are not comparable to the 2009 estimates as a result of changes in the survey. In rows where these italicized estimates appear, the change (if reported) is suppressed with a hyphen (–) to remind the reader that the change is not valid.

Consumer Payments in 2009

In 2009, U.S. consumers continued to have nine common payment instruments to choose from: four types of paper instruments—cash, check, money order, and travelers check; three types of payment cards—debit, credit, and prepaid; and two electronic instruments—online banking bill payments (OBBP) and bank account number payments (BANP).[12] The average consumer held 5.0 of these nine instruments and used 3.8 of those instruments in a typical month. Some consumers (2.5 percent) held eight or more instruments. The diversity of consumer holdings of payment instruments reflects the ongoing, long-term transformation from paper instruments to cards and electronics.

[12] BANP is new terminology in 2009 that replaces electronic bank account deductions (EBAD) used in 2008.

Most consumers (93.6 percent) have at least one bank account—either checking (91.8 percent) or savings (76.3 percent)—that allows them to fund payments using these payment instruments.[13] Consumers with a bank account held an average of 5.2 payment instruments. Having a bank account is a necessary precondition for having several of the payment instruments, such as a debit card or OBBP, and the average consumer without a bank account held only 2.2 payment instruments. Nearly one in three consumers (30.0 percent) had a nonbank payment account, such as PayPal or Google Checkout. Essentially all of these payment account holders also had a bank account.

Consumer adoption of individual payment instruments varied widely in 2009, as shown in Figure 1. Adoption of some form of paper instrument is essentially universal. Cash is assumed to be held or used by all consumers.[14] The most widely held noncash payment instrument in 2009 was still paper checks, as 85.4 percent of consumers had blank checks or had used a check in the past 12 months. Interestingly, 6.4 percent of consumers had a checking account but did not have any blank checks. This share of consumers who have checking accounts but do not have blank paper checks, which was estimated for the first time in 2009, may grow as check use continues to decline. More than one in five consumers used a money order in 2009.

[13] The SCPC estimate of the "unbanked" (6.4 percent of consumers) is comparable to the analogous estimate from the more comprehensive *Survey of Consumer Finance* (see Section VII for more on the SCF). However, the SCPC and SCF may not completely reach certain hard-to-identify segments of the population such as the homeless and illegal aliens, so the actual percentage of unbanked consumers is likely to be higher. Note also that the SCF measures households, and the SCPC measures individual consumers. The FDIC estimates the unbanked at 7.7 percent of the U.S. population. For more information on the unbanked, see http://www.fdic.gov/householdsurvey/.

[14] The estimated rate of cash adoption is 99.8 percent.

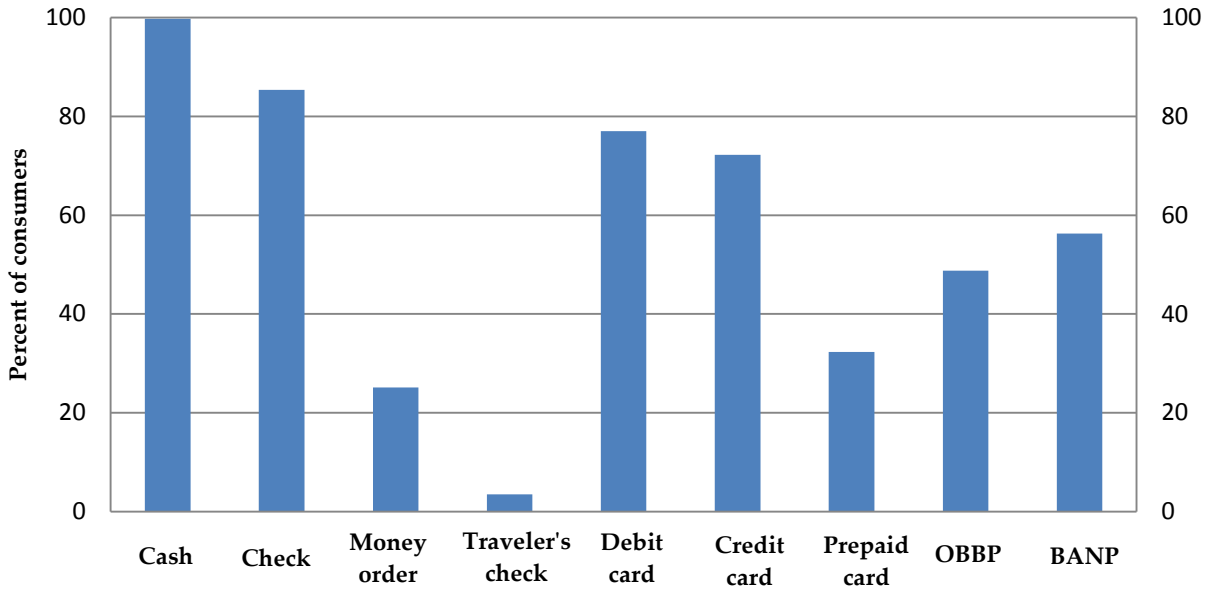

Figure 1: Adoption of Payment Instruments, 2009
Source: *2009 Survey of Consumer Payment Choice*, Table 4.
Notes: Cash adoption is 100 percent by assumption; estimated cash adoption is 99.8 percent.

Most cash was held by relatively few consumers. The average consumer held $291 in cash in 2009; only $69 was held on his or her person (in a pocket, purse, or wallet), most likely for daily transactions.[15] However, the median consumer cash holding was only $78 (both in person and on property). This large difference between average and median cash holdings suggests that a relatively small number of consumers held unusually large amounts of cash. The average consumer cash withdrawal was $434 in a typical month, via 5.1 occurrences averaging $119 each. The average amount of cash withdrawn per month ($434) does not equal the product of the average number of withdrawals (5.1) and the average amount of withdrawal ($119), which is $607. The reason is that consumers who tend to withdraw larger amounts of cash also

[15] Of course, not all cash held by consumers is for payments. Some cash may be held as precautionary saving or even as a store of value (investment) in periods where deflation may be expected. The average amount of cash held by consumers on their property ($229 in 2009) is probably held for unexpected payments or as precautionary saving.

tend to make fewer withdrawals, and this negative correlation affects the arithmetic relationship among the averages.[16]

The vast majority of consumers (94.4 percent) had some kind of payment card in 2009, and most consumers (73.3 percent) also had an electronic payment instrument. More consumers had a debit card (77.0 percent) than a credit card (72.2 percent). Thus, 14.8 percent of consumers had a checking account but not a debit card (91.8 percent minus 77.0 percent).[17] One in three consumers (32.3 percent) had some kind of prepaid card. The average adopter of payment cards had 1.3 debit cards, 3.7 credit cards, and 2.3 prepaid cards. About half of consumers had adopted either OBBP (48.8 percent) or BANP (56.3 percent).

The average consumer made 64.5 total payments in a typical month[18] in 2009 and relied most heavily on debit cards and cash to make those payments, as shown in Figure 2. Consumers made 19.0 payments per month by debit card on average and 18.4 payments by cash—together totaling more than half of all their payments. Consumers made nearly one-third of their payments with two other payment instruments: credit cards (11.2 per month per consumer) and checks (8.2 per month). Electronic payment instruments (OBBP and BANP combined) accounted for about one-tenth of consumer payments (6.2 per month). Prepaid card payments (0.8 per month) are still relatively rare, and money orders and travelers checks (0.5 per month) account for an even smaller percentage of overall payments.

[16] Mathematically speaking, the average of the (consumer-level) products does not equal the product of the averages when the variables being multiplied are correlated with each other across consumers. However, for each individual consumer, the amount of cash withdrawals per month does equal the product of the number of withdrawals times the amount of withdrawal.

[17] Although this estimate may seem high, it is considerably lower than the estimate of 22.7 percent (89.77 percent minus 67.0 percent) in 2007 for households from the *Survey of Consumer Finances*, as shown in Section VII.

[18] The standard error for this estimate is 1.8 payments.

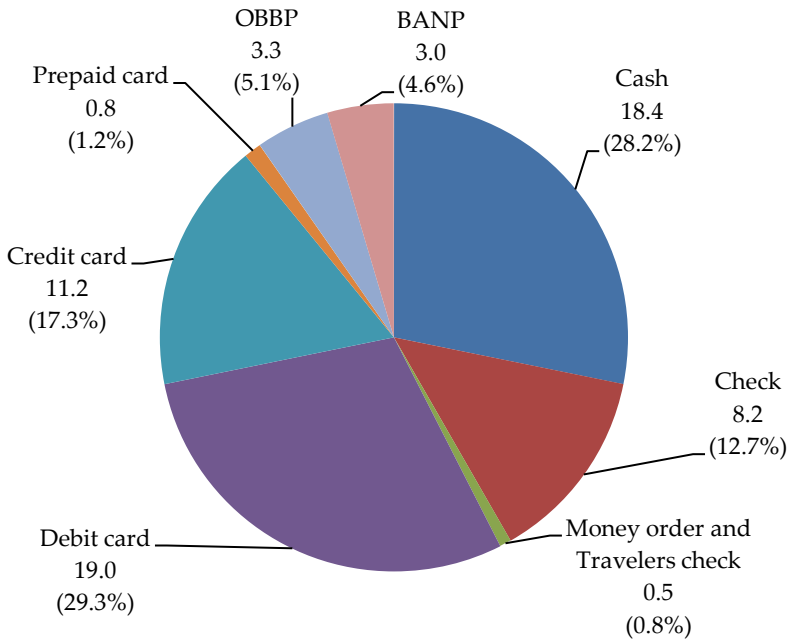

Figure 2: Number of Payments per Month per Consumer, 2009
Source: 2009 Survey of Consumer Payment Choice, Table 20.

The SCPC measures three types of transactions: bill payments; online nonbill payments; and in-person, nonbill payments. Within the in-person, nonbill payments category, three types of transactions are measured: payments for retail goods, payments for services, and person-to-person payments. Consumers still made most of their payments in person in 2009. Nearly two-thirds of (64.1 percent) of consumer payments were made in person for retail goods (39.4 percent), services (19.7 percent), or person-to-person (P2P) payments (5.0). Cash was the most common instrument for in-person payments (40.5 percent of in-person payments), but debit cards were popular as well (32.0 percent). Bill payments accounted for more than one in four (28.1 percent) consumer payments in 2009. The most common payment instrument for bills was the debit card (25.2 percent of bill payments), but paper check and OBBP—conceptually an "electronic check"—together were popular instruments for paying bills (35.0 percent) as well. Online payments for purchases (excluding bills) were still a small portion of consumer

payments (7.8 percent); the debit card was the most commonly used instrument for these (36.0 percent).

Changes in Consumer Payments, 2008–2009

In 2009, the SCPC results provide for the first time a glimpse of the trends in aggregate consumer payment behavior through estimates of changes (or growth rates) from 2008 to 2009. A few important caveats should be highlighted before proceeding. First, one-year changes do not necessarily indicate trends, which are longer-run phenomenon. Second, the changes in 2009 are less statistically precise than the 2009 levels because the changes are based on data from the 2008 SCPC, which had a sample size half as large as the 2009 sample. Third, the composition of the ALP sample changed in 2009. Although we found no statistical evidence that this compositional change significantly affects our weighted estimates of changes (or growth rates) for 2009, it is possible that undetected sample selection effects on the estimates may exist. If so, data derived from the longitudinal panel (once appropriate weights become available) may provide more accurate estimates of actual aggregate consumer payment behavior, so more research is needed in this area. See Appendices B and D for more details.

The number of payment instruments commonly available to consumers and tracked in the SCPC (nine) did not change in 2009. However, the proliferation of types of prepaid cards and the emergence of mobile payments did raise questions about whether the SCPC should define and include additional instruments; see Section VIII for more discussion of the issues pertaining to mobile banking and mobile payments. The number of payment instruments held by the average consumer was essentially unchanged (5.0 in 2009 and 5.1 in 2008), but the number of those instruments used in a typical month dropped by 0.4 (from 4.2 in 2008 to 3.8 in 2009).

Although improvements to the survey limit the comparability of the adoption rates of some payment instruments between 2008 and 2009, it is reasonably clear that fewer consumers had credit and debit cards and electronic payments in 2009 than in 2008. Between the 2008 and 2009 surveys, the adoption rates of these instruments declined 6.1 percentage points for credit

cards (from 78.3 percent to 72.2 percent), by 3.2 percentage points for debit cards (from 80.2 percent to 77.0 percent), and by 3.7 percentage points for OBBP (from 52.5 percent to 48.8 percent). The definitions of these three instruments were similar in the two years, so these changes in adoption rates are probably accurate. The adoption rate for BANP fell by 17.0 percentage points (from 73.4 percent to 56.3 percent) between 2008 and 2009. Because the definition of BANP was revised and improved in 2009, the decline in the BANP adoption rate may be overstated, but other measures of BANP activity seem to corroborate a significant shift away from this instrument.[19]

In contrast to their use of payment cards and electronic payments, consumers significantly increased their cash holdings and withdrawals in 2009. In nominal terms (not adjusted for inflation), total cash holdings of the average consumer increased by 26.5 percent from 2008 to 2009 (from $230 to $291), while cash holdings of the median consumer increased by 13.0 percent (from $69 to $78). Total cash withdrawals in a typical month increased by 29.2 percent (from $336 to $434). The average cash withdrawal increased by 16.7 percent (from $102 to $119), and the frequency of cash withdrawals increased by 18.6 percent (from 4.3 per month to 5.1 per month).

The number of payments made by the average consumer in a typical month declined by 4.2 percent from 2008 to 2009, as indicated in Figure 3 (red dashed line).[20] During this period of relatively severe economic slowdown, consumers not only got and held more cash, but they also shifted toward using cash and related instruments for more of their monthly payments. The number of cash payments by consumers increased by 26.9 percent; the number of money order payments by consumers—although tiny compared to cash—grew at a similar rate (23.6 percent).

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[19] The average number of payment cards per consumer was essentially unchanged in 2009. However, the types of payment card categories available to the survey respondent did change significantly, so estimates of the number of payment cards per consumer are probably not comparable between years.

[20] This growth rate would likely be lower after correcting for possible seasonal factors. See Section VI for details.

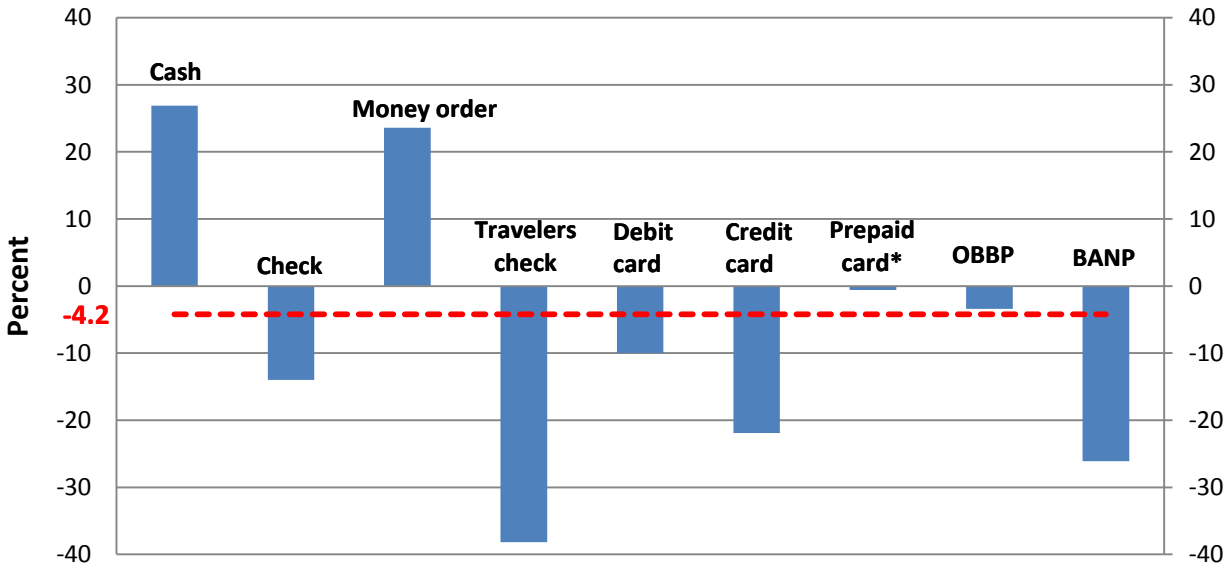

Figure 3: Growth in Number of Payments per Month, from 2008 to 2009
Source: *2009 Survey of Consumer Payment Choice*, Table 20.
Notes: * The percentage change in prepaid card use is based on adopters only. The red dashed line represents the growth rate of total consumer payments across all instruments. See Appendix B for information about the statistical significance of these point estimates.

At the same time as consumers shifted toward cash payments in 2009, they also reduced their use of payment cards by 13.2 percent and of electronic payments by 15.1 percent, faster than the 4.2 percent decrease in total payments. As a result, the share of noncash instruments in consumer payments fell by 7.4 percentage points from 79.2 percent to 71.8 percent (and the cash share increased by the same amount, from 20.8 percent in 2008 to 28.2 percent in 2009). The decline in card payments by consumers occurred only in credit cards (21.9 percent) and debit cards (10.0 percent). The number of prepaid card payments by consumers appears to have decreased slightly overall (by about -0.6 percent) and thus to have increased relative to other payments, which decreased more rapidly (by -4.2 percent), although changes in the survey questions preclude drawing a firm conclusion on this point.[21] The largest contraction in electronic payments occurred in BANP, which declined by 26.1 percent—even more sharply

[21] The estimated adoption rate of prepaid cards increased from 17.2 percent in 2008 to 32.3 percent in 2009 because of improved definitions of prepaid cards; this estimated increase probably caused the estimated increase in total payments per month (78.9 percent) to overstate the actual increase.

than credit cards. Online banking bill payments (OBBP) declined by only 3.4 percent, roughly the same rate of decline as total payments, implying little change in the share of OBBP payments by consumers.

This high-frequency shift toward cash contrasts sharply with the ongoing, long-run transformation of payments from paper to cards and electronics, which is documented in data from the *Federal Reserve Payment Study* (2007, 2010 (FRPS)), *Survey of Consumer Finances* (SCF), and elsewhere. However, consumer payments by check fell by 14.0 percent in 2009, which is roughly in line with the trend decline in check use since the mid-1990s shown in the FRPS. A large contraction in the use of credit cards during a relatively severe recession is intuitively plausible for both supply and demand reasons. However, the relative declines in consumer use of debit cards and BANP are surprising, especially in light of the very strong trend growth in debit card payments during the past decade shown in the FRPS. Sections VI and VII offer explanations for these results.

Characteristics of Payment Instruments

Consumers rated cash very highly in all four characteristics asked about in the 2009 SCPC. When asked to rate payment instruments in terms of acceptance for payment, cost, security, and convenience, a larger share of consumers gave cash the highest rating (5) than accorded this distinction to other payment instruments. In terms of acceptance for payment, 76.7 percent said cash is "almost always accepted"; for cost, 71.9 percent said cash is "very low cost"; and for security, 31.0 percent said cash is "very secure."[22] With respect to convenience, cash was rated the highest by about the same percentage of consumers (56.6 percent said "very easy to use") as granted this rating to credit cards (57.3 percent) and debit cards (54.5 percent). Combining the top two rating categories (4 and 5) for each characteristic reveals a similarly favorable view of cash by consumers.

[22] Oddly, more consumers also gave cash the lowest security rating (33.4 percent said "very risky"). Possible explanations are that consumers may think they are more vulnerable to being robbed if they carry cash or that they are more likely to lose cash than other instruments.

VI. Interpretations of the Key Results

The 2009 SCPC was in the field for data collection during a period of economic conditions that was unusual in three respects. First, the U.S. economy was in the midst of a severe recession following a serious financial crisis centered on the banking sector. Second, new legislation and regulation pertaining to credit card and debit card markets emerged, at least in part from concerns about banks' provision of payment services. Third, the transformation of the payments system from paper to electronic methods was in high gear, bringing a proliferation of new technology and financial innovations that gave consumers a wide range of payment choices.

All three of these factors are crucial in interpreting the SCPC results. Ideally, an econometric model would aid in disentangling the impact of these factors on consumer payment choice. Unfortunately, no suitable, complete theory exists on which to base such a model and, even if a suitable theory did exist, the time-series data in the SCPC (and elsewhere) are currently too short to enable estimation of such a model. Consequently, this section provides a qualitative discussion of the economic factors that likely influenced the key results.

Business Cycle Effects

To begin, consider the economic conditions surrounding the 2008 SCPC and 2009 SCPC. Figure 4 depicts the timing of the surveys in relation to the business cycle. The shaded region represents the official period of recession as determined by the National Bureau of Economic Research (NBER). Peak to trough, the level of gross domestic product (GDP) declined by 4.3 percent and the personal saving rate increased by about 4 percentage points (from about 2 to 6 percent of disposable income).

The SCPC surveys were conducted around the trough of the business cycle, which occurred in 2009:Q2. The 2008 SCPC was conducted primarily in September of 2008, in 2008:Q3 (three quarters before the trough); the 2009 SCPC was conducted primarily in November and December of 2009, in 2009:Q4 (two quarters after the trough). As a result of this timing, SCPC

estimated changes and growth rates for 2008–2009 partly reflect seasonal differences between the third and fourth quarters.[23] For example, U.S. retail sales were 5.0 percent higher in the fourth quarter than in the third quarter from 1992 to 2010, so seasonally adjusted growth in the total number of payments per month was probably even less than –4.2 percent. Unfortunately, however, we are not aware of data that would provide estimates of the seasonal component of spending by payment instrument. Mitigating this possible problem, one feature of the questionnaire likely reduces the effects of seasonal factors. When asking respondents about their frequency of use of payment instruments, the SCPC requests an estimate for a typical month to smooth unusual events, such as Christmas shopping or vacations. Therefore, respondents may be reporting payment use that includes information from one or even two quarters prior to the actual quarter when the survey was implemented.[24]

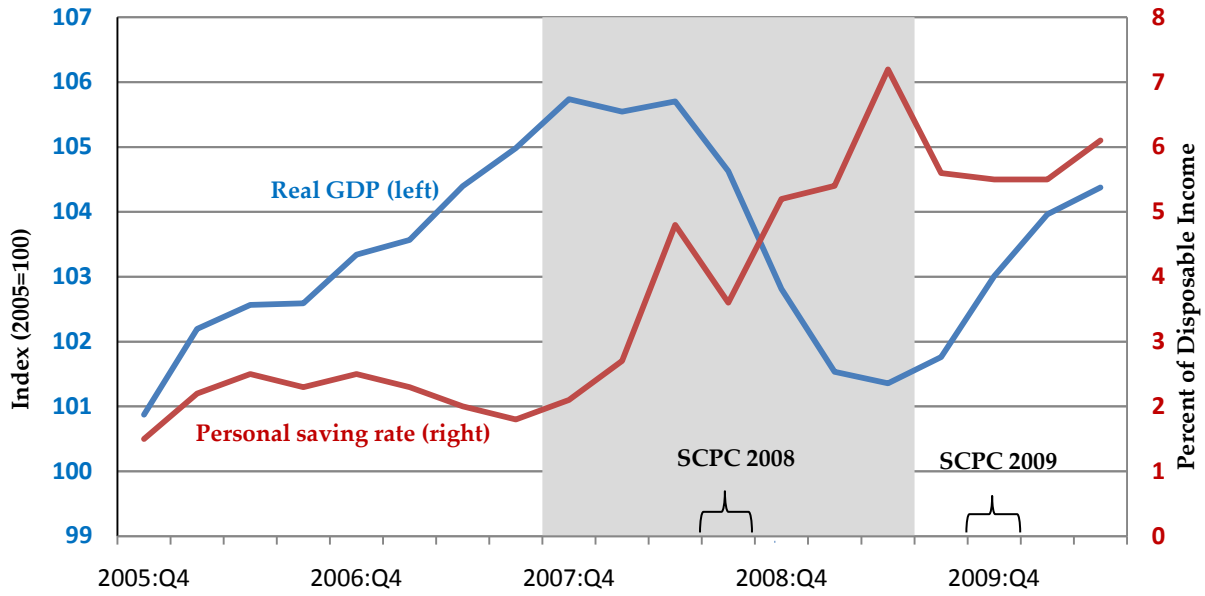

Figure 4: SCPC Surveys and the Business Cycle
Source: Haver Analytics/Bureau of Economic Analysis

[23] Our intent is to conduct the SCPC during the same calendar period each year (roughly October) to minimize seasonal influences on the data. In 2009, however, improvements to the questionnaire delayed implementation and thus there was no overlap in the calendar periods of the 2008 and 2009 SCPC.

[24] The CPRC and RAND are in the process of conducting joint research to compare and contrast the effects of using a "typical period" versus an exact calendar period for consumer reporting of payment use. The CPRC's new *Diary of Consumer Payment Choice* will also provide valuable insight into this measurement methodology.

As noted earlier, the total number of payments made by the average consumer in a typical month (consumer payments per capita) declined by 4.2 percent, from 67.4 in 2008 to 64.5 in 2009; given the actual calendar timing of the surveys, the decline is best dated between 2008:Q4 and 2009:Q4.[25] By comparison, real consumption spending (inflation adjusted, consumption per capita) in the National Income and Product Accounts (NIPA) fell by 0.7 percent during this same period, reflecting the slowdown in economic activity. However, although related, consumer payments per capita (SCPC) and real consumption per capita (NIPA) are not the same for at least two reasons. First, they likely have different trends, as real consumption trends upward due to economic growth while the number of payments a consumer makes cannot grow indefinitely because of time limits on consumer shopping. Second, real consumption measures the quantities (number) of actual goods and services bought by consumers, as well as the imputed service flows of durable goods like housing. Aside from imputed service flows, the number of payments measures the number of times a consumer pays for consumer goods and services, either for a single good (or service) or for a basket of goods (or services).[26] In the extreme but unrealistic case where a consumer buys each good or service one at a time, real consumption and payments would be perfectly correlated, except for growth in the quality of consumption, imputed service flows, and debt-financed purchases.[27]

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[25] It is possible that the preceding four-quarter period (2008:Q3–2009:Q3) better represents respondents' payment activity because the survey asks them to report their payments in a "typical period" and they may be thinking back over the previous month or quarter. But it is hard to determine the dates respondents had in mind, so we use the actual survey period to date the payment activity.

[26] The SCPC contains self-reported consumer payments and thus includes only the number, not their value. Ideally, the SCPC would include the value of consumer payments as well as the number of payments. Resource constraints (respondent burden and survey budget) also limit the SCPC content.

[27] A few simple equations make the point concrete. Let C denote consumption, and p and Q denote the price and quantity of a good (or service), respectively, with subscripts $i = \{1, 2, \ldots, N\}$ indicating the goods (or services). Then nominal (dollar value of) consumption is $C^{\$} = p_1 Q_1 + p_2 Q_2 + \ldots + p_N Q_N$, and the real (quantity of) consumption is $C = Q_1 + Q_2 + \ldots + Q_N$ (note that these formulas abstract from the details of chain-weighted pricing). Now let T denote the number of transactions, or payments. The number of payments is $T = t_1 + t_2 + \ldots + t_M$ and each transaction (payment) t_i contains a bundle of some quantity of the goods (or services). For example, if $Q_1 = Q_2 = 1$ then $C = 2$, and $T = 1$ if $t_1 = Q_1 + Q_2$ but $T = 2$ if $t_1 = Q_1$ and $t_2 = Q_2$.

On the second point about differences between consumption and payments, some examples are instructive. In general, one can think of real consumption of goods as the actual goods in a shopping basket at the supermarket and payments as the shopping basket (or trip) itself. The typical consumer makes one payment for the basket (trip), regardless of how many goods are in it. So, if a consumer bought two goods on two separate days one month and then bought two goods identical to the first set as a single purchase on one day the next month, the number of payments would decline from two to one but real consumption would be unchanged. Bills for credit-financed goods have a related but different distinction between the concepts, as illustrated by the process of buying a car. The consumer can pay cash and make one payment, or finance the car and make multiple payments over time. In the latter case, the number of payments would be greater, but again, real consumption would be the same.

Therefore, although the SCPC number of payments and NIPA real consumption spending are related, they should not be expected to be perfectly correlated over time, even after controlling for trends (taking growth rates, for example). In fact, business cycle conditions may provide an economic incentive for consumers to alter the relationship between the two concepts. For example, if shopping becomes more costly to consumers as a result of increases in relative fuel prices, then consumers may have an incentive to economize on shopping trips to save money during recessions, or to buy in bulk to obtain price discounts. These effects would tend to reduce the number of payments consumers make per month, even if they did not change the goods they bought. On the other hand, if they needed to replace essential big-ticket items, consumers might have a greater tendency to finance such purchases in hard times, and this could result in increasing the number of payments relative to consumption spending. To capture these effects, the SCPC would have to collect data on the dollar value of payments.

In addition to the effect on total payments, weaker economic conditions in 2008 and 2009 likely affected consumers' choices of specific payment instruments. Perhaps the most obvious cyclical effect is consumers' shift away from credit card payments (a decline of 21.9 percent). During the recession, the unemployment rate about doubled from 5 percent to 10 percent and consumers roughly tripled their rate of personal saving from about 2 percent of disposable

income to about 6 percent, as shown in Figure 4.[28] Higher personal saving may reveal a decline in consumer demand for credit. Indeed, consumer revolving credit outstanding fell from 8.8 percent of disposable income to 7.8 percent between the two surveys (and further to 7.1 percent in 2010:Q3), although part of this decline probably reflects a contraction in the supply of revolving credit to consumers by banks (more on this in the next subsection). Nearly halfof consumers with credit cards use them to access revolving credit, so the decline in the demand for credit almost surely contributed to a decline in the number of credit card payments.

The economic slowdown probably encouraged consumers to shift toward cash and close substitutes for cash, and indeed the similarity of increases in cash payments (26.9 percent), cash holdings (26.5 percent), and cash withdrawals (29.2 percent) is striking. One motivation for holding more cash is that the opportunity cost of doing so, either in currency or in another non-interest bearing asset (no-interest checking account, money order, or balance on a prepaid card), fell during the recession, as shown in Figure 5.[29] Short-term interest rates available to consumers, represented by the rate on 1-month certificates of deposit, fell from about 5 percent before the recession to almost zero.[30] This decline significantly reduced the nominal cost (forgone interest, not adjusted for inflation) of holding liquid assets in non-interest bearing forms like cash. Core inflation also fell but only moderately, so the *ex post* real rate of interest (interest rate minus actual inflation) also declined between the 2008 and 2009 surveys, and even turned negative. But, with nominal interest pegged near zero, there was little consumers could do to offset the loss of value through inflation of safe, liquid assets like cash.

[28] Bricker et al. (2011) show that most families reported increased levels of desired buffer stock savings from 2007 to 2009, as well as declines in wealth stemming from the financial crisis.

[29] The SCPC does not collect data on balances in checking accounts, money orders, or prepaid cards so we cannot tell whether the change in the opportunity cost had a similar effect on these non-interest bearing assets.

[30] Interest rates on even more liquid assets, such as consumer checking accounts, are lower than the 1-month CD rate, and the rates on these more liquid assets also declined during this time.

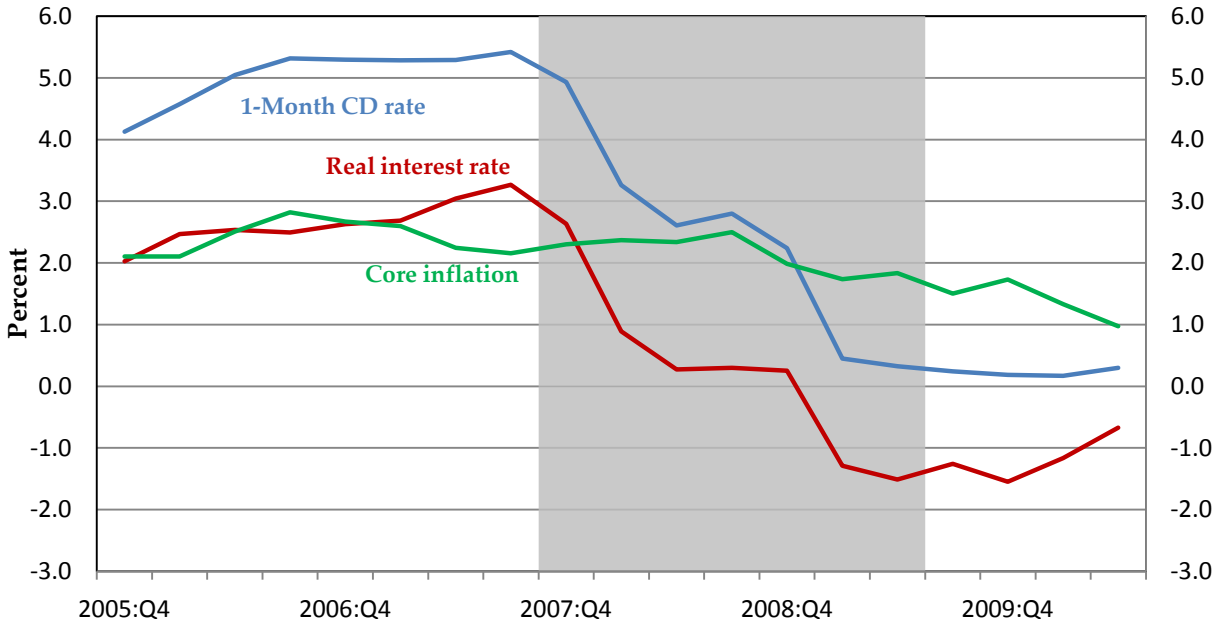

Figure 5: The Opportunity Cost of Holding Cash
Source: Haver Analytics/ Federal Reserve Board, Bureau of Labor Statistics; authors' calculations.

Two other economic incentives may have induced consumers to shift toward cash. First, some merchants, such as gas stations, sometimes offer price discounts to consumers who pay with cash rather than with a payment card. Also, businesses pay merchant discount fees on credit and signature debit cards to their banks that are about 2 percent of sales. Merchants' opposition to these fees has increased in recent years, and some merchants have tried to steer consumers toward lower cost payments like cash or PIN debit cards.[31] Second, some consumers find that cash and related payment instruments provide better budgeting and spending control, which is beneficial during tight economic times.[32]

[31]See bankrate.com http://www.bankrate.com/finance/personal-finance/pay-cash-and-ask-for-a-discount-1.aspx.
[32] Prelec and Simester (2001) found that college students were willing to pay twice as much for basketball tickets with a credit card as with cash. Some financial advisors still recommend the traditional "envelope method" of budgeting in which consumers place predetermined amount of cash in envelopes designated for specific spending items and stop spending when the cash runs out (see Ramsey 2009).

Bank Payment Services and Government Policy Intervention

During the financial crisis and recession, fees for payment services provided by banks came under increasing scrutiny and criticism that eventually resulted in new federal legislation and regulations. In particular, new restrictions were imposed on banks and payment card networks in 2008 and 2009 that affected their pricing and provision of credit and debit card services; the highlights of these restrictions are shown in the timeline of Figure 6. This policy intervention was not directly related to the business cycle, but, like the recession, it probably affected consumer demand for payment instruments.

Credit card spending has long been a controversial subject because of the danger to consumers of acquiring large amounts of high-interest revolving debt, and such concerns intensified in the wake of the financial crisis. One of the most significant developments was the introduction the Credit Cardholder's Bill of Rights (HR 5244) in February 2008. Though never enacted, this initial legislation formed the basis of the Credit Card Accountability, Responsibility, and Disclosure Act of 2009, which was passed by Congress and signed into law by President Obama in May 2009. In the meantime, the Federal Reserve proposed new rules for Regulation AA (Unfair or Deceptive Acts or Practices, or UDAP) on May 2, 2008, "…to prohibit unfair practices regarding credit cards and overdraft services." The new rules are intended to "protect consumers from unexpected increases in the rate charged on pre-existing credit card balances."[33]

[33] For the full press release, see http://www.federalreserve.gov/newsevents/press/bcreg/20080502a.htm.

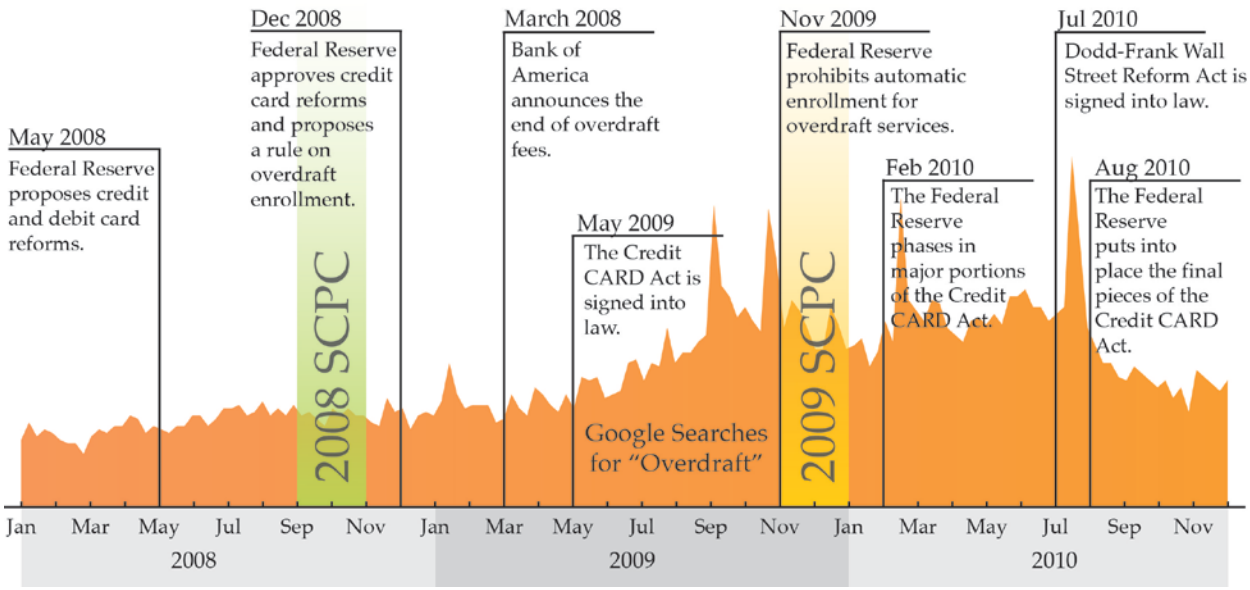

Figure 6: Timeline of Reforms and Google Keyword Searches for "Overdraft"

Source: Google search data are publicly available via Google Insights (http://www.google.com/insights/search).

Notes: The graph of the Google search data for the term "overdraft" shows the weekly number of search queries made by Google users in the U.S. Note that less than 6 percent of respondents completed the 2009 SCPC after December 2009.

The Fed's final policy reforms to the credit card market were approved on December 18, 2008, and contained many key protections for consumers.[34] Among other things, the final Regulation AA rules were designed to do the following:

- Protect consumers from unexpected interest charges, including increases in the rate during the first year after account opening, and from increases in the rate charged on pre-existing credit card balances.
- Forbid banks from imposing interest charges using the "two-cycle" billing method.
- Require that consumers receive a reasonable amount of time to make their credit card payments.
- Prohibit the use of payment allocation methods that unfairly maximize interest charges.
- Address subprime credit cards by limiting the fees that reduce the amount of available credit.

The legislative reforms appearing in the CARD Act were similar to these Fed regulatory changes. However, the Fed rules were not scheduled to take effect until July 1, 2010, so the passage of the CARD Act accelerated the implementation of the new policies. A few CARD Act

[34] For details, see http://www.federalreserve.gov/newsevents/press/bcreg/20081218a.htm. These rules "…were adopted under the Federal Trade Commission Act, and are being issued concurrently with substantially similar final rules by the Office of Thrift Supervision and the National Credit Union Administration."

reforms were implemented in August 2009, but the bulk of them were implemented on February 22, 2010—essentially after the 2009 SCPC was completed.

Individually and collectively these legislative and regulatory consumer protections affected banks' ability to price their credit card services and raise revenues from such services. Therefore, this policy intervention in the credit card market may have adversely affected banks' willingness to supply credit card services and revolving credit to consumers beyond any effects of lower consumer creditworthiness induced by the recession and rising unemployment. If these credit supply effects began to occur at the time the policies were announced and approved (2008:Q4 or earlier) in anticipation of their being implemented, then these effects would have influenced consumer credit card use during the period between the 2008 SCPC and the 2009 SCPC.

It is difficult to know how these new consumer protections impacted consumer demand for credit card payments. On one hand, the new policy intervention may have increased consumer awareness of the economics of using credit cards or motivated banks to alter their pricing and provision of credit card services in ways that were disadvantageous to consumers. Both of these effects likely would have reduced consumer demand for credit card payments and revolving credit. On the other hand, the reforms may have led consumers to feel more protected from banks' pricing and practices in the provision of credit card services, which would increase consumer demand for credit card payments and revolving credit. Either way, the impact of these policies on consumer behavior was probably greatest between the 2008 and 2009 surveys. Much more research is needed to answer these difficult questions.

The potential effects of recent policy interventions in debit card markets are more nuanced and even more difficult to identify than the effects on credit cards. Debit card spending is a relatively new payment option that does not involve the extension of credit (beyond a day or two), and it raises very different policy issues than credit cards. According to the *Federal Reserve Payment Study* (2007, 2010 (FRPS)), payments by debit card from 2000 to 2009 grew faster than payments by any other noncash payment instrument. Not surprisingly, debit card spending became an increasingly large source of potential revenue for banks. One revenue

source in particular—fees from overdrafts of consumer checking accounts—became a particularly controversial issue in recent years by reaching $32 billion, about $20 billion of which was attributable to the use of debit cards.[35] Not only were many consumers finding themselves subject to fees of $35 or even $50 per overdraft occurrence, but researchers such as Campbell, Martinez-Jerez, and Tufano (2008) found that the bulk of these fees fell on consumers with lower incomes, less education, and poor financial literacy, heightening the case for policy intervention.

Policy intervention related to debit cards occurred primarily through new restrictions on overdraft fee rules proposed for Federal Reserve Regulation E, which implements the Electronic Fund Transfer Act.[36] Prior to these changes, banks tended to automatically enroll customers in overdraft protections that would trigger a fee whenever a debit card payment overdrew the consumer's demand deposit account. Consumers had the right to "opt out" of this overdraft protection, but many did not know about this right or take advantage of it. Many consumers also did not know much about the electronic mechanics of debit card transactions and the timing of postings to their accounts, or the dangers of letting their balances get too close to zero. Together, these shortcomings in public policies and consumer financial literacy probably led some consumers to experience overdraft fees.

Under the new rules, banks were required to disclose overdraft policies to their customers and ask them to "opt in" to overdraft protection in advance. In the rule announcement Fed Governor Elizabeth Duke said, "Our rule will help consumers better understand the terms and conditions of overdraft services and will give them an opportunity to

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[35] See "Bank of America to End Debit Overdraft Fees" by Andrew Martin, *New York Times*, March 9, 2010 at: http://www.nytimes.com/2010/03/10/your-money/credit-and-debit-cards/10overdraft.html?_r=1. Another source of bank revenue from debit cards is interchange fees, which are obtained from the use of debit cards for payment and which have increased in recent years. However, consumers generally do not see the interchange fees or pay them directly, so interchange fees probably did not directly affect debit card payments by consumers.

[36] For details, see http://www.federalreserve.gov/newsevents/press/bcreg/20091112a.htm. The 2010 Dodd-Frank Consumer Financial Protection Act gave the Federal Reserve Board authority to regulate the interchange fee on debit cards. This new regulatory authority has garnered much attention, and the Fed issued proposed rules in December 2010. However, this controversial policy intervention almost surely had no effect on debit card use reported in the 2009 SCPC because it did not arise until U.S. Senator Richard Durbin proposed an amendment with the regulatory authority in May 2010, well after the 2009 survey had ended.

avoid fees when these services do not meet their needs." Of course, the overdraft policies themselves, and the related information that was disclosed to consumers, may not have influenced debit card behavior if consumers had already altered their behavior as a result of experiencing the burden of the fees.

In any case, the likely effect of these developments was to reduce consumer demand for debit card payments, and the 2009 SCPC probably reflects these effects. Although the final rule changes to Regulation E were announced on November 12, 2009, just after the 2009 SCPC began, and although these rules were not scheduled to officially take effect until July 1, 2010, the issue of overdraft fees was fresh in the minds of consumers long before that. In December 2008, the Fed proposed changes to overdraft rules. In March 2009, Bank of America—under much criticism and pressure for collecting stiff overdraft fees—announced that it would no longer charge its customers overdraft fees.[37] From that time until the 2009 SCPC, the number of Google searches for the term "overdraft" grew steadily (see Figure 6), probably reflecting an increase in consumer awareness of the issue.

Characteristics of Payment Instruments

Economic theory suggests that consumer demand for any product depends on the price of the product, consumer income, and the prices of substitute products. In markets with differentiated products, the nonpecuniary characteristics of the products (for example, size, color, durability, etc.) may also influence consumer demand. Consumer demand for payment instruments also seems to be influenced by the characteristics of the instruments. For example, Schuh and Stavins (2010) found that changes in the relative cost and convenience of checks can explain part of the observed decline in U.S. check use.

The persistent use of cash for payments and the increase in cash payments from 2008 to 2009 may be surprising to observers and analysts who advocate the use of electronic payments. But the staying power of cash probably does not surprise consumers, who tend to adopt and

[37] Again see "Bank of America to End Debit Overdraft Fees" by Andrew Martin, *New York Times*, March 9, 2010 at: http://www.nytimes.com/2010/03/10/your-money/credit-and-debit-cards/10overdraft.html?_r=1.

use the payment instruments with the characteristics most important to them. In both 2008 and 2009, consumers had a relatively favorable view of cash, as discussed in Section V. Consumers' ratings of cash characteristics also increased in 2009. The percentage of consumers who rated cash low cost or very low cost (top two ratings) rose from 75.2 percent to 81.9 percent, and the percentage of consumers who rated cash secure or very secure rose from 30.8 percent to 41.4 percent.[38] These improvements in consumers' rating of the characteristics of cash may have contributed to the shift to cash from 2008 to 2009.

Changes in the ratings of payment instrument characteristics may have influenced consumer demand for other instruments as well. In particular, consumers' rating of the security of payments made using their bank account numbers (BANP) appears to have dropped significantly in 2009, although it is difficult to be sure by how much. In 2008, characteristics ratings were obtained for only one electronic payment instrument called "electronic bank account deductions" (EBAD), whereas in 2009 ratings were obtained separately for BANP and OBBP, so it is uncertain whether 2008 respondents were rating only BANP or an average of BANP and OBBP. In 2008, 47.9 percent of consumers rated EBAD as secure or very secure (top two ratings). In 2009, this percentage was lower for both BANP (21.1 percent) and OBBP (41.5 percent), so it is likely that the security rating of BANP fell, even if the 2008 rating of EBAD represents a combination of BANP and OBBP ratings. It is hard to know the exact cause(s) of this decline in security rating, but regardless of the reason, it may help to explain the 26.1 percent drop in BANP use in 2009.

The cost rating of prepaid cards also increased substantially (indicating consumer perception of an improvement toward lower cost). In 2009, 45.6 percent of consumers rated prepaid cards low cost or very low cost (top two categories), up from 36.0 percent in 2008. Although the cost varies widely across types of prepaid cards, the change in this rating suggests that consumers have found prepaid cards cheaper on average. This improvement in cost rating may have contributed to the relative increase in the use of prepaid cards (a decline of only 0.6

[38] It is possible that this improvement reflects a change in consumers' assessments of the security of cash relative to other payment instruments whose security ratings declined, rather than an increase in consumers' assessments of the absolute security of cash.

percent in prepaid payments per adopter in 2009, compared with a decline of 4.2 percent in total payments).

This subsection raises at least two important questions that have not yet been answered in the existing research on the cross-sectional effects of payment characteristics on consumer demand for payment instruments. First, what are the determinants of the changes in consumers' assessments of payment characteristics over time? Second, what is the relationship and direction of causality between changes in characteristics and changes in payment demand? More research is needed to address these and related questions.

VII. Comparison with Related Data

The SCPC fills a niche left by other sources of data on consumer payment behavior. The Federal Reserve System produces two main sources of payments data that are available to the public: the *Federal Reserve Payments Study* (FRPS) and the *Survey of Consumer Finances* (SCF). The two main advantages of the SCPC are: (1) it is higher frequency (annual instead of triennial) and thus provides more timely information on payment trends; and (2) it contains a more comprehensive assessment of consumer payment behavior. Firms in the private sector and nonprofit institutions also produce data, some of which are quite similar to those in the SCPC. The two main advantages of the SCPC over the industry and nonprofit data sources are: (1) it is available at no cost and with no restrictions on use; and (2) it provides comprehensive and detailed documentation of all the survey methodology, data development, and underlying research. The remainder of this section compares and contrasts the SCPC with each of these alternative data sources.

Federal Reserve Payment Study (FRPS)

The FRPS is the premier source of U.S. data on the number and volume of U.S. payments made by all sectors of the economy—households (consumers), businesses, and governments—but it does not track the adoption or acceptance of payment instruments. The FRPS is a

comprehensive study of payments conducted by surveying deposit institutions and other payments providers working to supply payment services in the market. Every three years, the FRPS collects data on the number and dollar value of all noncash payments. The FRPS has estimates of the number and value of check payments by consumers, but this is the only aspect of the FRPS that identifies consumer payment behavior separately from all payments. For more information about the FRPS, see Federal Reserve System (2010) and Gerdes (2008).

The SCPC complements the FRPS several ways. First, as an annual data source, the SCPC provides more up-to-date information on payment trends. Second, it includes cash payments, whereas the FRPS covers only noncash payments. Third, the SCPC focuses on payments by consumers only, collecting data that are generally not available from the FRPS. While the supply of payment services is important, basic economic theory suggests that consumer (household) demand also is an important aspect of markets. In the long run, financial service providers will succeed only to the extent that they meet the needs and demands of final users of payment instruments and systems, so it is important to measure and study consumer payment behavior. Fourth, the SCPC estimates both adoption and use of payment instruments, which is important because not all consumers have all of the payment instruments, nor do all merchants always accept all payment instruments. The difference between consumer payment instrument adoption and consumer use of these payment instruments is an important distinction in understanding payment systems and behavior.

It is important to note that the SCPC has at least two notable limitations relative to the FRPS. First, the SCPC samples a relatively small number of consumers, whereas the FRPS typically obtains data from a very large sample of depository institutions and other financial service providers. In some cases, the FRPS data are based on what is essentially a census—data collected from all entities that process financial payment transactions; in these cases there is minimal or no error in the estimate. Second, the SCPC relies on consumer recall of payment behavior, which can be unreliable, whereas much of the FRPS is based on actual transaction records kept by the depository institutions and financial service providers it surveys. For these reasons, the FRPS data are likely to be more precise and reliable than the SCPC data.

On December 8, 2010, the Federal Reserve released preliminary estimates of U.S. payments in 2009 (data for 2000, 2003, and 2006 are available also). Exhibit 1 below reports FRPS and SCPC estimates of annual growth in the number of payments by payment instrument. The estimates are not exactly comparable for two main reasons. The FRPS estimates are average annual rates for three years (2006–2009), whereas the SCPC estimates are for one year (2008–2009). Second, the FRPS estimates are for all payments in the economy, while the SCPC estimates cover only consumer payments; the sole exception is that the FRPS does provide estimates of check payments by consumers. Juxtaposing the FRPS and SCPC estimates helps the reader compare and contrast the two data sources.

	FRPS Average, 2006-2009		**SCPC** 2008:Q4-2009:Q4	**FRPS – SCPC** Difference
	All	*Consumers*	*Consumers*	
TOTAL			–4.3	
CASH & RELATED			26.7	
Cash			26.9	
Money order			23.6	
Travelers check			–38.2	
NONCASH	4.6		-13.3	17.9
Check	–7.2	**–8.7**	**–14.0**	6.8
Debit card	14.8		–10.0	24.8
Credit card	–0.2		–21.9	21.7
Prepaid card	21.5		–0.6	22.1
ACH	9.3			
Converted checks	6.0			
Other (OBBP+BANP)	10.1		–15.1	25.2

Exhibit 1–Annual Percentage Change in Number of Payments: FRPS and SCPC

Controlling for business cycle effects, which tend to make the SCPC estimates (2008–2009) lower than the FRPS (2006–2009) estimates, and for the scope of measurement (all payments versus consumer payments), the FRPS and SCPC appear to give broadly similar views on check payments. Total check use, which had been declining since the 1990s, fell another 7.2 percent per year from 2006 to 2009. Consumer check use (bold face entries in Exhibit 1) is the only estimate with comparable scope in the FRPS and SCPC. Consumer check use

declined by 8.7 percent per year from 2006 to 2009 (FRPS) and by 14.0 percent from 2008 to 2009 (SCPC). Presumably, the latter estimate reflects the negative effects of the recession on check use and would be roughly consistent with an FRPS estimate for 2008 to 2009 if one were available.

For all other noncash payment instruments, the difference between the FRPS and SCPC growth rates is quite similar (approximately 22 to 25 percentage points). This result suggests that the combined effects of differences in business cycle timing (2006–2008 versus 2008–2009) and scope (all payments versus consumer payments) is about the same across payment instruments, except for checks. The FRPS and SCPC both reveal a decline in credit card use both in absolute terms and relative to the growth in other noncheck payments.

Although the business cycle, bank business practices, and policy intervention probably inhibited the use of debit cards for payment by consumers, the SCPC estimated decline in debit card spending is surprising when compared with the FRPS estimate of +14.3 percent annual growth in total debit card payments from 2006 to 2009. Even in relative terms, growth in consumer debit card payments is estimated to have been 5.8 percentage points lower than growth in all payments (–4.2 percent versus –10.0 percent). Such a relative decline seems hard to square with the strong trend growth in debit card spending, but three explanations may fit:

- The SCPC may have underestimated growth in debit card payments between 2008 and 2009 as a result of sampling error. Compared with the other payment instruments, measurement of the level of debit card payments is relatively imprecise.[39] Statistically speaking, one cannot reject the hypothesis that the 2009 SCPC estimate of debit card payments per month (19.0 per consumer) is the same as the 2008 estimate (21.2 per consumer). Thus, it is statistically possible that the actual growth rate in debit card payments may have been higher than the estimated growth of –10.0 percent. In fact, actual debit card growth may have been higher than the –4.2 percent growth rate of all payments, hence increasing in relative terms, and perhaps even unchanged (zero percent).

[39] In contrast, the estimated growth rates of most other payments between 2008 and 2009 are more precise and significantly different from zero percent at standard confidence levels (10 percent level or less).

- The actual growth rate of debit card payments may have varied significantly over the years between 2006 and 2009. If debit card payments increased in 2007 and 2008 more rapidly than the FRPS three-year trend estimate (14.8 percent) in each year, then the growth rate in 2009 would have been lower and hence closer to the SCPC estimate. On an annual basis, the year-to-year fluctuations may not have been enough to produce a negative growth rate for 2009. However, given the severity and suddenness of the financial crisis and recession, the four-quarter growth in debit card payments may have been even lower—perhaps even negative—for certain periods such as 2008:Q4 to 2009:Q4, when the surveys were conducted.
- Debit card spending by consumers may have declined while at the same time debit card spending by businesses increased. The SCPC does not provide hard estimates of business debit card spending and the FRPS does not distinguish between consumers and businesses. However, sources in the payment industry have reported that business debit card spending, which was a very small portion of total debit card spending prior to the 2008 SCPC, has been growing very quickly since then and may now represent 10 percent or more of total debit card spending. Given strong growth in total debit card spending, extraordinarily rapid growth in business debit card spending could help to explain a small decline in consumer debit card spending.

This comparison highlights several key points. First, it is important to have annual data, like the SCPC data, because consumer demand for payments and payment industry innovations seems to fluctuate at higher frequencies than three-year periods. Second, it would be helpful for the FRPS to collect and publish data by sectors, such as consumer (household), business, and government. And third, ultimately it would be best to have actual transactions data from banks and other payment service providers rather than survey data.

Survey of Consumer Finances (SCF)

The SCF is the premier source of U.S. data on financial behavior in the household sector of the economy (consumers) but it has only limited information about consumer payments.[40] The Federal Reserve conducts the SCF every three years, and the most recent data available are for 2007.[41] In 2007, the SCF was based on 4,422 interviews with respondents who were asked about the finances of their entire households. The SCPC is conducted with individual consumers only and does not include information about households except for household income and a relative rating of responsibilities in the household. Consequently, comparison of the SCF and SCPC data is difficult for many data concepts.

Regarding payments, the SCF contains data on consumer adoption and use of a subset of the payment instruments and practices tracked by the SCPC. The SCF has adoption of three noncash payment instruments: credit cards, debit cards, and checks. As in the 2008 SCPC, the SCF measure of check adoption is inferred from adoption of a checking account; the 2009 SCPC improves this measure by asking consumers specifically whether they have blank checks. The SCF also includes adoption of "automatic bill payment" (ABP), which technically is not a payment instrument as defined by the SCPC but rather a method of payment that can be used with multiple instruments. In the SCF, ABP appears to include only bills paid by BANP, but the definition is imprecise.[42] In the SCPC, the closest concept to the SCF ABP data concept is the ABP portion of BANP, which is used here for comparison purposes. However, the SCPC ABP and BANP concepts are both much broader; in the SCPC, ABP also can be accomplished by credit card, debit card, or OBBP, and BANP also can be made for bills that are not automatic or for online payments for internet purchases.

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[40] For more information about the SCF, go to http://www.federalreserve.gov/pubs/oss/oss2/2007/scf2007home.html; see also Bucks, Kennickell, Mach, and Moore (2009).

[41] The latest version of the SCF was conducted in 2010, but the data will not be available until 2012. For more details, see http://www.federalreserve.gov/newsevents/press/other/20100419a.htm.

[42] Automatic bill payments are defined somewhat differently in the SCF than in the SCPC. The SCF asks whether consumers have payments "automatically deducted from [their] accounts" without further specifying which accounts in particular. Furthermore, it excludes automatic payroll deductions. The SCPC includes payroll deductions and specifies payment instruments that consumers use for this purpose. For more information see the *2007 SCF Codebook*, available at http://www.federalreserve.gov/Pubs/OSS/oss2/2007/scf2007docs.html.

The annual SCPC estimates of consumer adoption of payment instruments and practices align well with the lower frequency estimates from the SCF, as can be seen in Figure 7. To enhance comparison, the figure includes 2006 estimates from the SCPC that was implemented by the AARP with the assistance of the CPRC.[43] For each of the four concepts, the SCPC estimate is roughly in line with the level and trend of the corresponding SCF estimate. Thus, with regard to adoption rates of payment instruments and practices, it appears that the difference between a consumer-based survey (SCPC) and a household based survey (SCF) is not problematic.

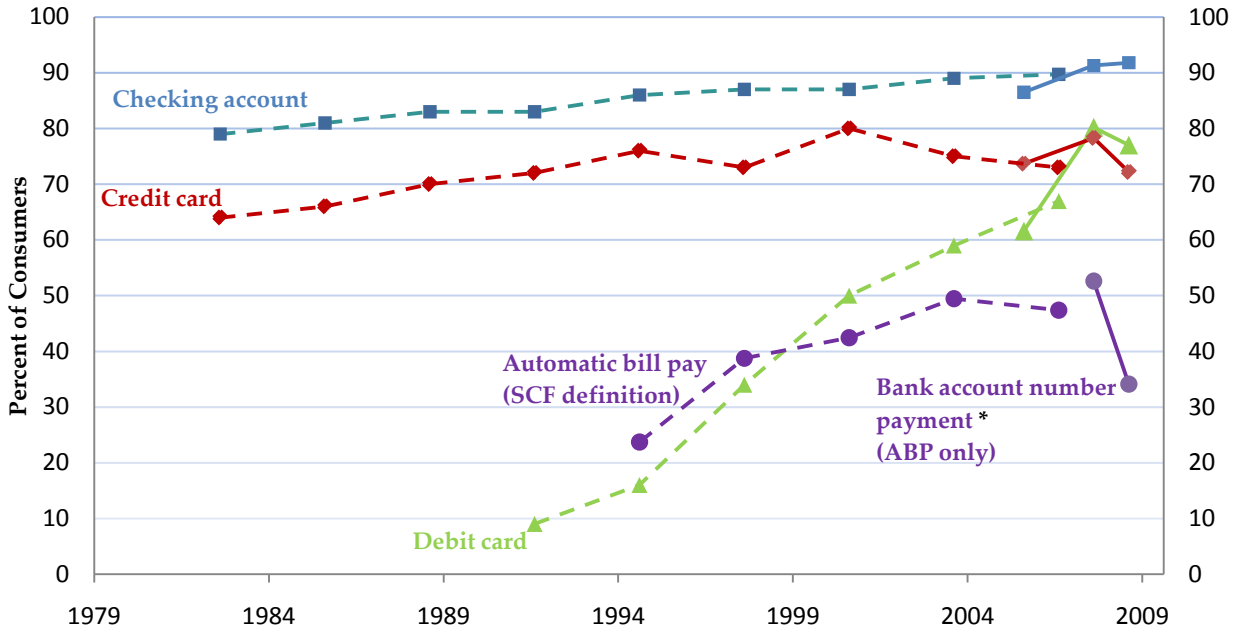

Figure 7: Adoption of Payment Instruments
Source: 1983–2007 *Survey of Consumer Finances*; 2006, 2008, and 2009 *Survey of Consumer Payment Choice*.
Notes: Dashed lines are SCF data, and solid lines are SCPC data.
*This represents the portion of BANP that occurs through automatic bill payments only.

The similarity between SCPC and SCF adoption rates motivates a comparison of the average number of payment instruments held by consumers. Two measures shown in Figure 8

[43] For more information about this survey, see AARP (2007). The 2006 estimates came from a representative sample of consumers drawn by a private survey firm, not from the RAND American Life Panel; therefore, the sampling precision and properties are not exactly comparable to those of the *SCPC* in 2008 and later.

are worth examining. One is the average number of payment instruments held by consumers, constructed with the four instruments common to the two data sources: credit card, debit card, check, and the ABP portion of BANP. Once again, the SCPC estimates (solid lines) are roughly in line with the level and trend of the SCF estimates (dashed lines). According to this measure, the number of payment instruments held by the average consumer approximately doubled in the past 20 years, from 1.5 to 3. A second measure is the average number of payment instruments held by consumers, constructed with the nine SCPC concepts, for 2008–2009 only. According to this measure, the number of payment instruments held by the average consumer is about 5.

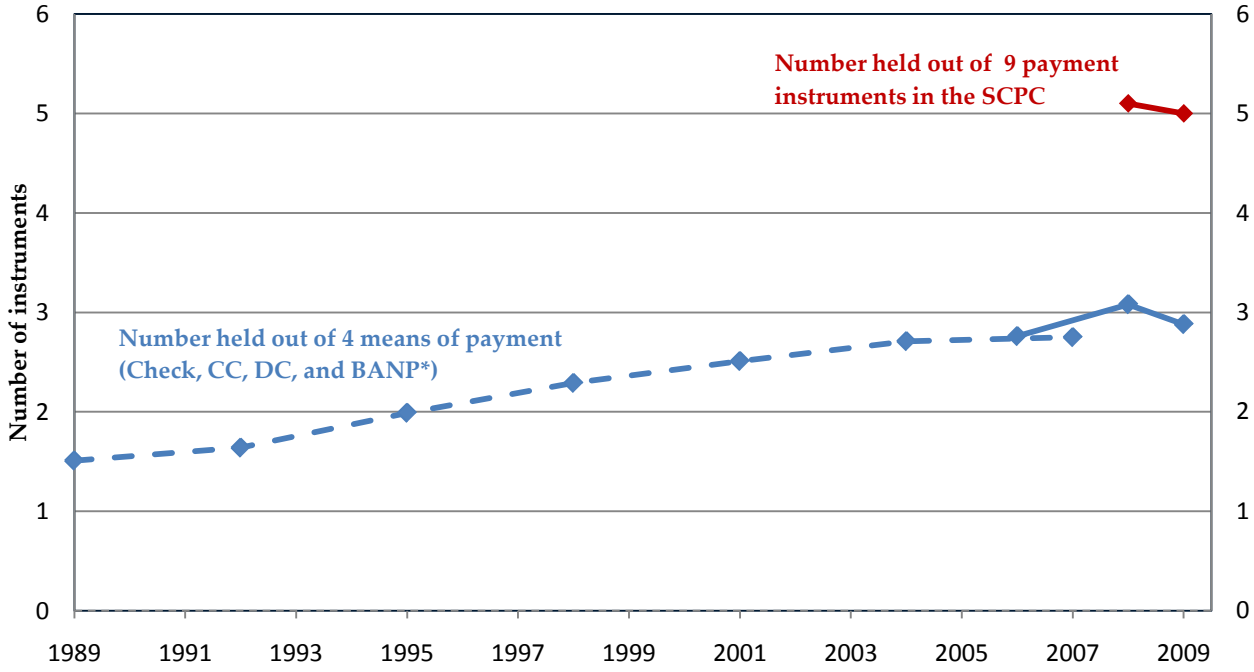

Figure 8: Number of Payment Instruments per Consumer
Source: 1983–2007 *Survey of Consumer Finances*; 2008 and 2009 *Survey of Consumer Payment Choice*.
Notes: Dashed lines are SCF data, and solid lines are SCPC data.
*This represents the portion of BANP that occurs through automatic bill payments only.

The only information on the use of payment instruments in the SCF is for credit cards. According to the SCF, the average U.S. household made $889 worth of credit card charges per month in 2007, which represented 12.7 percent of average household income. However, the SCF does not collect the number of credit card payments, and the SCPC does not collect the dollar

value of credit card payments, so credit card use by consumers is not comparable across the two data sources. The SCPC and SCF have other data on credit cards in common, such as credit card debt and the propensity to use revolving credit. When comparing these common variables, the reader should keep in mind the difference between estimates for households (SCF) and for consumers (SCPC).

Private and Nonprofit Data Sources

A number of private companies and nonprofit institutions also provide some data on consumer payment behavior. These sources include: the American Bankers Association in conjunction with Hitachi (formerly Dove Consulting), which contributed to the 2007 FRPS; Javelin Strategy & Research; McKinsey, which worked on the 2010 FRPS; the Ohio State University, which produces the *Consumer Finance Monthly*; Phoenix Marketing International; Synergistics Research Corp; the U.S. Postal Service Household Diary (NuStats); and Visa, Inc. Most of these data sources are proprietary and either unavailable to the public or prohibitively expensive. The details and methodology underlying these alternative data sources are often not stated clearly in published materials and are difficult to obtain. For these reasons, we do not compare the SCPC results with results from these surveys here.

A detailed comparison between the SCPC and other available data products would provide important information for users of any data on consumer payment behavior. The CPRC expects to release a research paper in 2011 with a detailed comparison and contrast of the SCPC with several of these alternative data sources, using 2008 data. Meanwhile, **Appendix D** provides some further information and suggestions about how (and how not) to convert and compare the statistics in this document with the comparable statistics in many other data releases, including the FRPS.

Standardizing and Expanding Payments Data

Together, the information in public and private sources of payments data overlaps a great deal. As a result, an opportunity exists to consolidate and streamline the data collection process into one publicly available, standardized, and consistent data source on consumer payment behavior. The SCPC offers that opportunity for consumer payments, and the CPRC welcomes partners in this endeavor. Toward that end, the CPRC maintains a Board of Advisors that includes representatives from industry, academia, and the public sector to provide input on the SCPC and help to develop a consolidated and standardized data source. See **Appendix E** for a list of the members of the 2010 Board.

VIII. Selected Results

This section contains a number of selected results on topics in consumer payment choice. Some topics were not covered elsewhere in the paper, while others are discussed more thoroughly here.

Cash Management

More than three quarters of consumers depended on banks to get cash in 2009. A small majority (50.8 percent) of consumers got their cash most often from an automated teller machine (ATM), and half as many (24.3 percent) got cash most often from a bank teller. About one in 10 consumers (9.9 percent) got cash most often as cash back from payments they made at a retail or grocery store. The remaining 15.0 percent of consumers most often got cash from a variety of other sources, including check cashing stores, employers, family or friends, and other sources.

The amount of cash obtained by consumers and the frequency of their withdrawals varied widely across locations in 2009. Consumers who got cash most often from an ATM withdrew an average of $91 each of the 3.8 times they withdrew cash in a typical month. The average consumer who got his or her cash most often from a bank teller withdrew an average of $184 and visited the teller 2.5 times in a typical month. Finally, consumers who relied primarily

on cash back at a retail or grocery store got an average of $33 each time and did so 4.2 times per month, essentially getting cash on a weekly basis.

Because prepaid cards are close substitutes for cash wherever they are accepted, reloading a prepaid card is similar to withdrawing cash from a bank account. Of the 32.2 percent of consumers who had a prepaid card in 2009, only 6.7 percent reloaded their prepaid cards with money that year. However, not all prepaid cards can be reloaded. Among the subset of prepaid card adopters who had reloadable cards, about one in five (20.8 percent) reloaded them. Prepaid card reloaders typically added $154 per reloading, and they reloaded their cards 1.8 times in a typical month. Thus, the average amount reloaded onto a prepaid card was larger and reloading occurred less frequently than the average cash withdrawal.

Payment Cards

In 2009, the SCPC expanded its measurement of credit cards, debit cards, and prepaid cards to better track the long-term substitution of payment cards for paper payment instruments. As noted earlier, the vast majority of consumers (94.4 percent) had at least one of these types of payment cards.

Of the 72.2 percent of consumers who had a credit card in 2009, the average adopter had 3.7 credit cards. In 2009, the SCPC measured holdings of three types of credit cards rather than holdings of total credit cards as in 2008. In 2009, the average credit card adopter had 2.1 general purpose cards, 0.4 charge cards, and 1.2 branded credit cards. An important determinant of the use of credit cards for payment is the possibility of receiving rewards, such as cash back, frequent flyer miles, or other incentives. Of the 3.7 credit cards held by the average adopter, 2.0 cards earned rewards and 1.8 cards did not. (These numbers do not sum exactly to 3.7, due to rounding error.)

Debit card adopters had an average of 1.3 debit cards and bank account adopters had an average of 1.5 checking accounts in 2009. These results imply that consumers held only 0.87 debit cards per checking account and some checking account adopters did not have a debit

card.[44] Of course, it is not necessary for checking account adopters to have a debit card, because they can get cash from the bank or an ATM card and they can make payments from the checking account with other payment instruments. Apparently, some consumers who do not use a debit card to make payments do not ask for one, discard the one they have, or perhaps think their debit card is only an ATM card. Of the 77.0 percent of consumers who had a debit card in 2009, 28.5 percent of them had a debit card that earns rewards.

Of the 32.3 of consumers who had a prepaid card in 2009, the average adopter had 2.3 prepaid cards. In 2009, the SCPC measured holdings of four types of prepaid cards rather than two (prepaid cards bought or sold) as in 2008. In 2009, the average prepaid card adopter had 1.0 general purpose cards, 1.0 specific purpose cards, 0.1 payroll cards, and 0.3 electronic benefit transfer (EBT) cards. Thus, one out of every 10 prepaid card adopters had a payroll card and about one out of every three prepaid adopters had an EBT card.

In 2009, nearly one in four consumers (24.0 percent) had a contactless payment card or similar device. Most contactless devices on consumers' payment cards were found on debit cards (11.3 percent) or credit cards (9.6 percent), and not many were on prepaid cards (2.6 percent). Electronic toll payments (8.2 percent) were also a relatively common form of contactless payment.

Mobile Banking and Payments

Mobile banking and mobile payments have grown rapidly in markets outside of the United States, but these practices are only now gaining a foothold in the United States.[45] The vast majority of U.S. consumers have some kind of cell phone (89.7 percent), so the U.S. market for mobile banking and payments would seem to be primed for development.

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[44] Some of the consumer bank accounts could be joint accounts with another consumer, such as a spouse, and there may be more than one debit card issued per account. However, the statistic in the text should still be valid because the SCPC is a consumer-based survey. If both spouses reply to the survey, each one should properly report the holding of a debit card and a checking account, leaving the ratio of debit cards to accounts unbiased.

[45] See Crowe, Rysman, and Stavins (2010) for a critical analysis of the state of U.S. mobile payments made by contactless technology. For examples of mobile banking and payments in other countries, see Bradford and Hyashi (2007).

Most new cell phones allow consumers to access the internet, either through a service plan or on a prepaid basis. Consumers who have online banking (65.7 percent of consumers) can log on with an internet enabled cell phone to access their bank's online features. Those who have set up online banking bill payment (48.8 percent of consumers) can also make such payments with their phones. However, the process of logging onto online banking via a cell phone is often more difficult than it is on a computer. Many smartphones offer mobile banking apps that make mobile banking significantly easier.

In 2009, 10.1 percent of U.S. consumers had set up mobile banking by downloading an app, having text message alerts from their bank sent to their phone, or logging onto online banking through the internet browser on their cell phone. Most consumers who set up mobile banking also used it (8.9 percent of all consumers). However, only 3.0 percent of consumers had made a mobile payment from their mobile phone either by sending a text message (2.0 percent) or by using an NFC (near field communication) chip installed in the phone (1.3 percent).

Mobile banking and mobile payments raise important questions about the definition and nature of payments. Although payments can be initiated by consumers using their mobile phones, the mobile devices themselves are not a payment instrument like the other nine payment instruments. Contactless mobile payments are typically linked to a traditional payment instrument, such as a debit or credit card or a bank account number payment. Some payments are made when consumers use a text/SMS message to authorize a bank account number payment or other bank payment to a third party. Still other payments can be made by online banking bill payment using a mobile phone analogously to the way OBBP is accomplished using a computer.

However, one type of mobile payment that may merit consideration as a new form of payment instrument is a text/SMS message that authorizes a nonbank third party, such as a cellular carrier, to make a payment for a consumer. For cell phones with monthly plans and bills, this type of mobile payment may involve short-term credit extended by a cellular carrier or another third party. In this regard, these kinds of payments are analogous to credit cards that

allow consumers to "buy now, pay later."[46] Given that such payments are still relatively rare, and are outside the legal and regulatory purview of the government, the SCPC does not yet include them as a payment instrument. However, mobile banking and mobile payments are complex and their paths uncertain, so they will be tracked carefully in the SCPC going forward, although their exact classification and definition will be postponed until later.

Nonbank Payment Accounts

U.S. consumers often use payment services provided by companies that are not banks, and the SCPC is beginning to monitor and track this phenomenon. In 2009, 30.0 percent of consumers had a payment account with an online payment service provider (OPSP), such as PayPal or Google Checkout, and the average OPSP account holder had 2.2 such accounts. During the 12 months preceding the fielding of the 2009 survey, 66.0 percent of consumers with an OPSP account had used these accounts; in contrast, 91.4 percent of consumers with a bank account used their accounts during the previous 12 months.

Nonbank payment accounts are neither bank accounts nor payment instruments. A consumer can create and use a payment account with a payment instrument, such as a payment card or bank account number payment, without actually depositing money with the payment service provider. However, some of these providers do accept deposits into accounts that are similar to, but not exactly the same as, regulated bank accounts.[47] Because the OPSP accounts are not payment instruments and because survey resources are limited, the SCPC has not, thus far, tracked these deposits or counted the number of payments made through an OPSP, but this would be a valuable area of expansion in the future.

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[46] Examples of such payments include those made to download cell phone apps and donations made by text message to support Haiti earthquake survivors.

[47] The funds in these payment service provider accounts may be held in actual commercial bank accounts by the payment service provider, and they may also afford consumers some of the same features and privileges as official bank accounts.

Another type of nonbank payment account available to consumers is a reloadable prepaid card account, such as those offered by Netspend or Green Dot.[48] At present, the SCPC implicitly includes these as prepaid cards. However, these types of payment cards are becoming increasingly flexible and work like a bank account in many ways, especially for those "unbanked" consumers who do not have a bank account. Future versions of the SCPC are likely to identify and track these cards and accounts separately and more carefully.

Discarding of Accounts and Instruments

The discard rate is the percentage of consumers who once owned or adopted a bank account or payment instrument but no longer have the account or instrument. It is derived from SCPC questions that ask respondents whether they have an account or instrument (current adoption) and whether they ever had an account or instrument (historical adoption). The discard rate is computed as the difference between historical adoption and current adoption. It reflects the minimum fraction of consumers who discarded an account or instrument over time, but it does not reflect the gross amount of discarding (and adoption) that may have occurred more than once over time. From the consumer's perspective, discarding may be done voluntarily or involuntarily, as when a supplier of accounts or instruments, such as a bank, closes a consumer's account or credit card even though the consumer would prefer to keep it.

Most consumers do not discard their bank accounts. In 2009, only 5.8 percent of consumers had discarded their sole bank account, and only 7.0 percent of consumers had discarded their checking account. However, savings accounts are less permanent: 20.3 percent of consumers had discarded one. Each of these discard rates increased by 2 or 3 percentage points in 2009, perhaps for reasons related to the banking and financial crisis. In 2009, discarding of online banking increased by 5.7 percentage points to 7.9 percent.

More consumers tended to discard their payment cards than to discard their bank accounts. In 2009, 9.0 percent of consumers had discarded one or more debit cards, 16.5 percent

[48] See https://www.netspend.com/ and https://www.mygreendot.com/greendot/.

had discarded at least one credit card, and 29.0 percent had discarded at least one prepaid card. The discard rate for credit cards increased by 2.5 percentage points, while the discard rate for debit cards increased by 3.1 percentage points. The increase in the discarding of credit and debit cards is consistent with the lower adoption and use of these cards in 2009 discussed earlier.

IX. Conclusion

This paper provides new estimates of U.S. consumer payment behavior in 2009 from the *Survey of Consumer Payment Choice* and compares them with estimates from 2008. In 2009, consumers had and used a wide variety of payment instruments, and they relied less on traditional paper instruments, such as cash and checks, than in the past. However, during and following the recent financial crisis and recession (2008–2009), consumers shifted back toward using cash for more of their monthly payments. Whether this shift was merely cyclical, whether it was related to long-lasting changes in consumer perceptions, or whether it was related to policy interventions in payment card markets, remains to be seen. Also by 2009, consumers were beginning to make use of emerging payments technologies such as mobile phones, and the pace of innovation in payments markets is likely to remain high. The Boston Fed's CPRC welcomes collaborators in developing the SCPC and partners in its broader research program of studying consumer payment behavior.

X. SCPC Tables

Table 1
Current Ownership of Deposit Accounts and Account Access Technologies
Percentage of consumers

	2008[r]	2009	Change
Bank accounts	**93.8**	**93.6**	**-0.2**
Checking	91.3	91.8	0.6
Savings	*78.0*	76.3	–
Traditional or passbook	na	71.3	na
Money market	na	28.8	na
Money market with check privileges	na	16.1	na
Nonbank payment accounts			
Online payment service provider	na	30.0	na
Bank account features			
Interest earned on primary checking account	49.1	46.9	-2.2
Overdraft protection	*54.5*	72.4	–
Information and communication access technologies			
Cell phone	na	89.7	–
Internet access at home	96.8	96.1	-0.7
Account access technologies			
Blank paper checks	na	85.4	na
ATM or debit card	84.9	84.0	-0.9
ATM card	*27.0*	35.9	–
Debit card	80.2	77.0	-3.2
Telephone banking	41.3	41.4	0.1
Online banking	70.7	65.7	-4.9
Mobile banking	8.2	10.1	2.0

NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 2
Historical Ownership and Discarding of Deposit Accounts and Account Access Technologies
Percentage of consumers

Ever Owned	2008[r]	2009	Change
Bank accounts	**97.5**	**99.4**	**1.9**
Checking	96.2	98.8	2.6
Savings	95.6	96.6	1.0
Traditional or passbook	na	96.0	na
Money market	na	40.8	na
Money market with check privileges	na	na	na
Nonbank payment accounts			
Online payment service provider	na	na	na
Bank account features			
Primary checking account bears interest	na	na	na
Overdraft protection	na	na	na
Bank account access technologies			
Blank paper checks	na	na	na
ATM or debit card	92.2	93.3	1.1
ATM card	*58.8*	68.6	–
Debit card	86.1	86.1	-0.1
Telephone banking	48.9	50.5	1.6
Online banking	72.9	73.7	0.8
Mobile banking	na	11.2	na

Discarded*	2008[r]	2009	Change
Bank accounts	**3.7**	**5.8**	**2.1**
Checking	4.9	7.0	2.1
Savings	17.6	20.3	2.8
Traditional or passbook	na	24.8	na
Money market	na	11.9	na
Money market with check privileges	na	na	na
Nonbank payment accounts			
Online payment service provider	na	na	na
Bank account features			
Primary checking account bears interest	na	na	na
Overdraft protection	na	na	na
Bank account access technologies			
Paper checks (blank)	na	na	na
ATM or debit card	7.2	9.4	2.2
ATM card	*31.7*	28.5	–
Debit card	5.9	9.0	3.1
Telephone banking	7.7	8.9	1.1
Online banking	2.2	7.9	5.7
Mobile banking	na	0.7	na

* "Discarded" refers to the difference between historical and current ownership rates.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 3
Primary Bank Account Holdings, by Type of Account and Financial Institution
Percentage of bank account adopters

	2008[r]	2009
Primary checking account		
Commercial bank	*76.7*	70.3
Savings and loan	*1.4*	7.3
Credit union	*20.3*	19.6
Brokerage	na	0.2
Internet bank	*0.6*	1.3
Other	*1.1*	1.3
Primary savings account		
Commercial bank	*61.9*	51.3
Savings and loan	*1.5*	7.3
Credit union	*32.4*	35.1
Brokerage	na	2.1
Internet bank	*2.7*	3.6
Other	*1.5*	0.7

NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 4
Current Adoption of Payment Instruments
Percentage of consumers

	2008[r]	2009	Change
Paper instruments	***98.3***	**99.8**	–
Cash†	*98.2*	99.8	–
Check†	na	85.4	na
Money order*	18.3	25.1	6.8
Travelers check*	4.7	3.5	-1.2
Payment cards	***93.4***	**94.4**	–
Debit	80.2	77.0	-3.2
Credit	78.3	72.2	-6.1
Prepaid	*17.2*	32.3	–
Electronic payments	**81.2**	**73.3**	**-7.9**
Online banking bill payment	52.5	48.8	-3.7
Bank account number payment*	73.4	56.3	-17.0

* Adoption means the consumer used the instrument in a given year.
† Adoption means the consumer had the instrument or used the instrument in a given year.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 5
Historical Adoption and Discarding of Payment Instruments
Percentage of consumers

Ever Adopted	2008[r]	2009	Change
Paper instruments			
Cash	na	na	na
Check	na	na	na
Money order *	na	79.7	na
Travelers check *	na	55.9	na
Payment cards			
Debit	86.1	86.1	-0.1
Credit	92.5	88.7	-3.7
Prepaid	*44.8*	63.7	–
Electronic payments			
Online banking bill payment	58.3	59.1	0.8
Bank account number payment *	na	na	na
Discarded†	**2008[r]**	**2009**	**Change**
Paper instruments			
Cash	na	na	na
Check	na	na	na
Money order *	na	54.5	na
Travelers check *	na	52.4	na
Payment cards			
Debit	5.9	9.0	3.1
Credit	14.0	16.5	2.5
Prepaid	*27.5*	29.0	–
Electronic payments			
Online banking bill payment	5.0	7.8	2.7
Bank account number payment *	na	na	na

* Adoption means the consumer used the instrument in a given year.
† "Discarded" refers to the difference between historical and current adoption rates.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 6
Current Adoption of Payment Instruments, by Instrument Features
Percentage of consumers

	2008[r]	2009	Change
Debit cards	**80.2**	**77.0**	**-3.2**
Rewards	23.4	22.0	-1.5
Credit cards*	**78.3**	**72.2**	**-6.1**
Rewards	59.6	53.7	-5.9
Nonrewards	53.9	42.5	-11.4
General purpose	na	67.3	na
Rewards	na	46.5	na
Nonrewards	na	33.6	na
Charge	na	15.8	na
Rewards	na	8.5	na
Nonrewards	na	6.0	na
Branded	na	40.0	na
Rewards	na	21.5	na
Nonrewards	na	19.8	na
Prepaid cards†	***17.2***	**32.3**	–
General purpose	na	19.7	na
Specific purpose	na	15.4	na
Payroll‡	na	2.0	na
Electronic benefits transfer (EBT)‡	na	7.2	na
Reloadable	na	15.0	na
Bought for own use	6.3	na	na
Received from others	13.6	na	na
Both bought and received	2.7	na	na
Contactless	***44.3***	**24.0**	–
Debit card	*21.7*	11.3	–
Credit card	*25.7*	9.6	–
Prepaid card	*4.4*	2.6	–
Electronic toll payment	*9.5*	8.2	–
Key fob	*1.7*	1.8	–

* General purpose credit cards have a network logo such as Visa, MasterCard, Discover, or American Express; charge cards require full payment of the balance at the end of each billing period. Branded cards have a merchant's logo on the card.
† General purpose prepaid cards have a credit card network or PIN network logo and can be used at any merchant or retailer that accepts cards from that network. Specific purpose prepaid cards, such as gift cards or public transportation cards, are limited in use to one or several merchants, retailers, or service providers.
‡ Payroll cards and EBT cards may also be general purpose cards.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 7
Number of Adopted Bank Accounts and Payment Cards
Number per adopter*

	2008[r]	2009	Change
Bank accounts	*2.8*	3.2	–
Checking	1.5	1.5	0.0
Savings	na	2.1	na
Traditional or passbook	1.6	1.6	-0.1
Money market	na	1.6	na
Money market with check privileges	na	na	na
Nonbank payment accounts			
Online payment service provider	na	2.2	na
ATM or debit cards	**1.7**	**1.8**	0.1
ATM	1.2	1.3	0.1
Debit	1.4	1.3	-0.1
Credit Cards**	***3.5***	**3.7**	–
Rewards	*2.3*	2.0	–
Nonrewards	*2.5*	1.8	–
General purpose	na	2.1	na
Rewards	na	1.3	na
Nonrewards	na	1.2	na
Charge	na	0.4	na
Rewards	na	0.2	na
Nonrewards	na	0.2	na
Branded	na	1.2	na
Rewards	na	0.6	na
Nonrewards	na	0.8	na
Prepaid cards†	***2.4***	**2.3**	–
General purpose	na	1.0	na
Specific purpose	na	1.0	na
Payroll‡	na	0.1	na
Electronic benefits transfer (EBT)‡	na	0.3	na
Bought for own use	0.7	na	na
Received from others	1.7	na	na

* Bold-face numbers are per adopter of the instrument. Numbers for sub-categories of each bold-face category are per adopter of the sub-category of the instrument.
** General purpose credit cards have a network logo such as Visa, MasterCard, Discover, or American Express; charge cards require full payment of the balance at the end of each billing period. Branded cards have a merchant's logo on the card.
† General purpose prepaid cards have a credit card network or PIN network logo and can be used at any merchant or retailer that accepts cards from that network. Specific purpose prepaid cards, such as gift cards or public transportation cards, are limited in use to one or several merchants, retailers, or service providers.
‡ Payroll cards and EBT cards may also be general purpose cards.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 8
Number of Adopted Payment Instruments, by Type of Adopter
Number of instruments per consumer

	2008[r]	2009	Change
Available number of payment instruments*	**9**	**9**	–
Actual number of payment instruments adopted	**5.1**	**5.0**	-0.1
Bank account nonadopters	1.3	2.2	0.9
Bank account adopters	5.4	5.2	-0.1
Checking and savings	5.5	5.4	-0.2
Checking, no savings	5.0	4.9	-0.1
Savings, no checking	3.1	3.6	0.5
Paper adopters	5.2	5.1	-0.2
Cash	5.2	5.1	-0.2
Check	5.4	5.3	-0.2
Money order	5.5	5.3	-0.1
Travelers check	6.7	6.5	-0.2
Payment card adopters	5.4	5.2	-0.2
Debit	5.6	5.5	-0.1
Credit	5.6	5.5	-0.1
Prepaid	6.0	5.8	-0.2
Electronic payment instrument adopters	5.7	5.7	0.0
Online banking bill payment	6.0	5.9	-0.1
Bank account number payment	5.7	5.8	0.1

* The nine instruments are cash, check, money order, travelers check, debit card, credit card, prepaid card, online banking bill payment, and bank account number payment (electronic bank account deduction in 2008). For this table only, check adoption is defined as having a checking account, to ensure comparability between 2008 and 2009.
NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values.

Table 9
Cash Holdings, Withdrawals, and Prepaid Card Reloadings
Dollars, except as noted

	Mean		Median	
	2008[r]	2009	2008[r]	2009
Cash holdings	**230**	**291**	**69**	**78**
On person	79	69	28	34
On property	157	229	14	19
Cash withdrawals				
All locations *				
Total per month †‡	336	434	179	217
Amount per withdrawal	102	119	50	60
Withdrawals (number per month)	4.3	5.1	2.9	3.9
Primary location				
Total per month †	na	345	na	196
Amount per withdrawal	na	124	na	58
Withdrawals (number per month)	na	3.5	na	2.0
Secondary location				
Total per month †	na	91	na	0
Amount per withdrawal	na	55	na	4
Withdrawals (number per month)	na	1.6	na	0.1
Prepaid card reloadings per month				
Reloaders, percentage of prepaid card adopters	5.3	6.7	na	na
Reloaders, percentage of reloadable prepaid card adopters	31.0	20.8	na	na
Typical dollar amount per reloading, reloaders only	na	154	na	47
Number of reloads, reloaders only	1.1	1.8	0.0	0.0

* Estimates for 2009 cash withdrawals at all locations are derived from the survey variables for cash withdrawals at primary and secondary locations.
† The SCPC questionnaire asks respondents "what amount [of cash] do you get most often?" If the amount of cash consumers get most often is different from the average amount, then the computed total amount of cash that the consumer gets per month will differ from the actual amount. Also, the total amount per month does not necessarily equal the amount per withdrawal times the number of withdrawals, because the amounts and withdrawals are negatively correlated across consumers.
‡ In 2008, this number is the typical amount per withdrawal. In 2009, this number is the withdrawal-weighted average of typical amounts per withdrawal from the primary and secondary locations.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 10
Cash Holdings, by Adoption of Bank Accounts and Payment Instruments
Dollars per consumer

Adopters	Mean		Median	
	2008[r]	2009	2008[r]	2009
Bank account				
Total	230	294	72	79
On person	77	67	29	34
On property	158	235	16	19
ATM or debit card				
Total	215	278	59	73
On person	68	63	24	30
On property	152	222	10	18
Credit card				
Total	252	306	80	99
On person	81	72	30	39
On property	177	241	18	22
Prepaid card				
Total	*212*	353	*80*	89
On person	*64*	67	*30*	34
On property	*154*	295	*39*	28
Money order				
Total	241	215	60	69
On person	124	76	29	28
On property	124	144	18	18
Nonadopters	**Mean**		**Median**	
	2008[r]	2009	2008[r]	2009
Bank account				
Total	238	245	52	57
On person	116	104	11	34
On property	136	141	0	11
ATM or debit card				
Total	316	363	114	147
On person	141	101	50	50
On property	186	266	40	45
Credit card				
Total	153	252	35	49
On person	73	60	16	20
On property	84	198	0	5
Prepaid card				
Total	*234*	262	*66*	78
On person	*82*	70	*25*	34
On property	*158*	198	*9*	15
Money order				
Total	225	316	73	80
On person	69	67	25	35
On property	161	257	10	18

NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values.

Table 11
Cash Withdrawals, by Most Frequent Location*
Dollars, except as noted

	Mean		Median	
	2008[r]	2009	2008[r]	2009
ATM				
Total per month†	na	310	na	183
Amount per withdrawal	na	91	na	54
Withdrawals (number per month)	na	3.8	na	3.0
Cited as most frequent location (percent)	53.5	50.8	na	na
Bank teller				
Total per month†	na	387	na	214
Amount per withdrawal	na	184	na	97
Withdrawals (number per month)	na	2.5	na	1.6
Cited as most frequent location (percent)	22.6	24.3	na	na
Check cashing store				
Total per month†	na	947	na	696
Amount per withdrawal	na	414	na	342
Withdrawals (number per month)	na	2.4	na	1.6
Cited as most frequent location (percent)	1.8	2.2	na	na
Retail or grocery store				
Total per month†	na	127	na	83
Amount per withdrawal	na	33	na	20
Withdrawals (number per month)	na	4.2	na	2.5
Cited as most frequent location (percent)	9.0	9.9	na	na
Employer				
Total per month†	na	878	na	559
Amount per withdrawal	na	252	na	125
Withdrawals (number per month)	na	5.8	na	4.1
Cited as most frequent location (percent)	5.3	4.6	na	na
Family or friend				
Total per month†	na	159	na	82
Amount per withdrawal	na	60	na	20
Withdrawals (number per month)	na	2.7	na	1.9
Cited as most frequent location (percent)	2.7	6.1	na	na
Other				
Total per month†	na	502	na	116
Amount per withdrawal	na	260	na	118
Withdrawals (number per month)	na	2.1	na	0.8
Cited as most frequent location (percent)	0.3	2.2	na	na

* Total per month for each location is the dollar amount of withdrawals by consumers who named that location as their most frequent location.
† The SCPC questionnaire asks respondents "what amount [of cash] do you get most often?" If the amount of cash consumers get most often is different from the average amount, then the computed total amount of cash that the customer gets per month will differ from the actual amount. Also, the total amount per month does not necessarily equal the amount per withdrawal times the number of calculated for withdrawals, because the amounts and withdrawals are negatively correlated across consumers.
NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 12
Cash Withdrawals, by Adoption of Bank Accounts and Payment Instruments
Dollars per month, except as noted

Adopters	Mean		Median	
	2008[r]	2009	2008[r]	2009
Bank account				
Total per month*	328	419	184	217
Amount per withdrawal*	99	115	50	60
Withdrawals (number per month)	4.3	5.0	2.9	3.9
ATM or debit card				
Total per month*	313	417	173	217
Amount per withdrawal*	92	109	45	59
Withdrawals (number per month)	4.3	5.2	4.0	3.9
Credit card				
Total per month*	332	395	185	211
Amount per withdrawal*	97	119	57	60
Withdrawals (number per month)	4.3	4.7	2.8	3.0
Prepaid card				
Total per month*	*309*	436	*188*	208
Amount per withdrawal*	*107*	114	*54*	60
Withdrawals (number per month)	*3.9*	5.0	*2.5*	3.9
Money order				
Total per month*	385	560	218	319
Amount per withdrawal*	120	145	49	75
Withdrawals (number per month)	4.6	6.0	4.0	3.9
Nonadopters	**Mean**		**Median**	
	2008[r]	2009	2008[r]	2009
Bank account				
Total per month*	446	648	87	300
Amount per withdrawal*	146	195	26	79
Withdrawals (number per month)	3.6	5.9	1.1	3.3
ATM or debit card				
Total per month*	462	520	197	272
Amount per withdrawal*	156	179	90	100
Withdrawals (number per month)	4.3	4.3	1.9	2.0
Credit card				
Total per month*	349	533	170	260
Amount per withdrawal*	120	119	37	59
Withdrawals (number per month)	4.0	6.0	3.6	4.1
Prepaid card				
Total per month*	*341*	432	*174*	220
Amount per withdrawal*	*101*	122	*49*	60
Withdrawals (number per month)	*4.3*	5.1	*3.0*	3.3
Money order				
Total per month*	325	391	174	200
Amount per withdrawal*	98	111	49	60
Withdrawals (number per month)	4.2	4.7	2.6	3.0

* The SCPC questionnaire asks respondents "what amount [of cash] do you get most often?" If the amount of cash consumers get most often is different from the average amount, then the computed total amount of cash that the consumer gets per month will differ from the actual amount. Also, the total amount per month does not necessarily equal the amount per withdrawal times the number of withdrawals, because the amounts and withdrawals are negatively correlated across consumers.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values.

Table 13
Incidence of Bank Account Access and Other Practices
Percentage of consumers and adopters*

Percentage of consumers	Monthly		Annual	
	2008[r]	2009	2008[r]	2009
Bank account access	**na**	**na**	**na**	**91.4**
Bank branch visit	na	na	na	77.4
ATM use	na	na	na	69.0
Telephone banking	na	na	na	32.4
Online banking	na	na	na	61.4
Mobile banking	na	na	na	8.9
Other				
Cash withdrawals	92.4	90.6	96.7	98.0
Online payment service provider	na	na	na	19.8
Prepaid card reloading	na	4.2	na	6.2
Mobile payments	na	na	na	3.0
Text/SMS	na	na	na	2.0
Contactless	na	na	na	1.3
Percentage of adopters	**Monthly**		**Annual**	
	2008[r]	2009	2008[r]	2009
Bank account access	**na**	**na**	**na**	**97.7**
Bank branch visit	na	na	na	82.7
ATM use	na	na	na	81.6
Telephone banking	na	na	na	78.2
Online banking	na	na	na	93.4
Mobile banking	na	na	na	88.0
Other				
Cash withdrawals, cash adopters only	na	90.8	na	98.2
Online payment service provider, adopters only	na	na	na	66.0
Prepaid card reloading, reloaders only	na	63.1	na	93.4
Mobile payments, cell phone adopters only	na	na	na	3.3
Text/SMS	na	na	na	2.3
Contactless	na	na	na	1.5

* In each case in the adopters panel, the row refers to adopters of that technology or payment practice.
NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 14
Incidence of Use of Payment Instruments
Percentage of consumers or adopters

Percentage of consumers	Monthly		Annual	
	2008[r]	2009	2008[r]	2009
Paper instruments	**94.9**	**94.2**	**96.2**	**96.9**
Cash	85.9	88.5	88.4	92.2
Check	82.4	70.2	87.4	76.1
Money order	8.6	9.5	18.3	25.1
Travelers check	0.5	0.1	4.7	3.5
Payment cards	**89.1**	**88.8**	**90.2**	**89.8**
Debit	66.6	65.5	68.8	67.6
Credit	68.5	55.5	72.6	60.8
Prepaid	*5.7*	8.5	*8.6*	12.6
Electronic payments	**73.9**	**63.5**	**76.3**	**68.0**
Online banking bill payment	33.7	34.2	35.5	36.0
Bank account number payment	*70.6*	49.8	*73.4*	56.3
Direct deduction from income	**18.6**	**15.1**	**19.4**	**15.9**

Percentage of adopters*	Monthly		Annual	
	2008[r]	2009	2008[r]	2009
Paper instruments	**96.8**	**94.7**	**97.7**	**96.5**
Cash	87.7	88.7	89.9	92.3
Check	85.6	82.4	90.5	89.4
Money order†	48.4	38.3	na	57.1
Travelers check†	11.5	2.2	na	77.8
Payment cards	**95.1**	**94.1**	**96.2**	**95.1**
Debit	83.3	85.3	86.0	88.0
Credit	87.7	77.3	92.9	84.7
Prepaid	*33.8*	27.7	50.5	41.4
Electronic payments	**91.7**	**87.8**	**94.7**	**94.0**
Online banking bill payment	67.0	70.9	70.6	74.7
Bank account number payment	96.3	88.3	100.0	100.0
Direct deduction from income	**95.9**	**94.8**	**100.0**	**100.0**

* Per adopter estimate is included due to changes in the survey design that affected the rates of adoption of payment instruments (see Table 4), making the per consumer estimates not comparable across years. Estimates are calculated using only adopters of that payment instrument, not all consumers.
† Comparison between 2008 and 2009 is not valid for annual incidence of use because adoption is defined by annual incidence of use in these payment instruments, and thus is equal to 100%.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values.

Table 15
Incidence of Transactions
Percentage of consumers

	Monthly		Annual	
	2008[r]	2009	2008[r]	2009
Bill payments	**95.5**	**95.4**	**95.7**	**96.6**
Automatic	56.7	52.9	57.2	53.6
Online	65.5	63.6	70.2	68.0
By mail or in person	82.3	79.2	88.5	86.3
Online payments, excluding bills	**61.1**	**58.6**	**78.6**	**73.2**
In-person payments, excluding bills	**96.3**	**96.0**	**96.3**	**96.4**
Retail goods	95.5	95.3	95.8	95.9
All other	86.6	85.1	89.5	90.3
Services	na	81.8	na	89.1
Person to person payments	na	43.4	na	54.7

NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 16
Incidence of Use of Payment Instruments, by Type of Transaction
Percentage of consumers

Monthly incidence	Bill payments		Online payments		Retail, services, and person to person*	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**78.0**	**75.4**	**32.2**	**28.7**	**90.3**	**90.0**
Cash	22.3	28.8	na	na	86.3	87.8
Check or money order	73.5	63.4	32.2	28.7	59.4	51.4
Check	na	58.4	na	26.0	na	50.1
Money order	7.9	8.4	na	4.8	4.6	3.7
Travelers check	na	na	na	na	na	na
Payment cards	**72.7**	**62.5**	**47.7**	**42.4**	**88.1**	**84.2**
Debit	58.1	43.3	30.1	26.0	64.2	61.9
Credit	57.6	33.1	30.8	24.6	64.4	49.3
Prepaid	2.2	2.6	2.5	3.2	5.3	6.9
Electronic payments	**70.8**	**61.6**	**35.0**	**19.7**	**na**	**na**
Online banking bill payment	33.7	34.0	na	na	na	na
Bank account number payment	62.9	45.4	35.0	19.7	na	na
Direct deduction from income	**18.6**	**15.1**	**na**	**na**	**na**	**na**

Annual incidence	Bill payments		Online payments		Retail, services and person to person*	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**85.8**	**84.7**	**38.9**	**36.7**	**93.3**	**92.8**
Cash	25.8	36.1	na	na	89.1	91.6
Check or money order	81.8	73.6	38.9	36.7	69.8	63.3
Check	na	68.0	na	33.3	na	61.5
Money order	13.7	11.7	na	8.1	18.3	7.3
Travelers check	na	na	na	na	na	na
Payment cards	**75.7**	**67.2**	**65.2**	**58.7**	**89.1**	**85.8**
Debit	61.2	45.8	39.5	35.6	66.6	64.2
Credit	62.8	38.4	46.4	38.4	69.9	55.5
Prepaid	2.7	4.8	3.4	6.1	8.1	11.1
Electronic payments	**73.6**	**64.3**	**42.5**	**28.3**	**na**	**na**
Online banking bill payment	35.5	35.5	na	na	na	na
Bank account number payment	65.6	49.5	42.5	28.3	na	na
Direct deduction from income	**19.4**	**15.9**	**na**	**na**	**na**	**na**

* Adjusted for changes from 2008 to 2009 in the survey definition of transaction categories.
NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 17
Incidence of Use of Payment Instruments, by Type of Bill Payment
Percentage of consumers

Monthly incidence	Automatic		Online		By mail or in person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Any instrument	**56.7**	**52.9**	**65.5**	**63.6**	**82.3**	**79.2**
Excluding online banking bill pay*.....	56.7	49.5	na	na	na	na
Paper instruments	**na**	**na**	**na**	**na**	**78.0**	**73.7**
Cash.....	na	na	na	na	22.3	28.8
Check or money order.....	na	na	na	na	73.5	63.4
Check.....	na	na	na	na	na	58.4
Money order.....	na	na	na	na	na	8.4
Travelers check.....	na	na	na	na	na	na
Payment cards	**38.3**	**32.6**	**43.3**	**41.6**	**38.5**	**37.8**
Debit.....	21.4	19.0	30.8	30.2	27.3	26.6
Credit.....	27.9	21.0	22.1	19.6	20.5	18.2
Prepaid.....	na	na	na	na	2.2	2.6
Electronic payments	**51.3**	**42.1**	**55.4**	**49.7**	**na**	**na**
Online banking bill payment.....	na	20.9	33.7	30.0	na	na
Bank account number payment.....	51.3	31.0	40.8	32.5	na	na
Direct deduction from income	**18.6**	**15.1**	**na**	**na**	**na**	**na**

Annual incidence	Automatic		Online		By mail or in person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Any instrument	**57.2**	**53.6**	**70.2**	**68.0**	**88.5**	**86.3**
Excluding online banking bill pay*.....	57.2	50.3	na	na	na	na
Paper instruments	**na**	**na**	**na**	**na**	**85.6**	**82.8**
Cash.....	na	na	na	na	25.8	36.1
Check or money order.....	na	na	na	na	81.8	73.6
Check.....	na	na	na	na	na	68.0
Money order.....	na	na	na	na	na	11.7
Travelers check.....	na	na	na	na	na	na
Payment cards	**40.7**	**34.1**	**48.7**	**47.7**	**43.6**	**45.1**
Debit.....	22.8	19.6	34.7	33.9	29.4	31.1
Credit.....	30.9	23.1	28.0	24.5	25.9	23.8
Prepaid.....	na	na	na	na	2.7	4.8
Electronic payments	**52.6**	**43.7**	**60.1**	**53.0**	**na**	**na**
Online banking bill payment.....	na	22.0	35.5	31.6	na	na
Bank account number payment.....	52.6	34.1	44.7	36.8	na	na
Direct deduction from income	**19.4**	**15.9**	**na**	**na**	**na**	**na**

* Online banking bill pay is excluded to show direct comparison between 2008 and 2009 estimates for automatic bill payments.
NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 18
Incidence of Use of Payment Instruments, by Type of Retail Goods
Percentage of consumers

Monthly incidence	Total		Essential goods*		Nonessential goods*	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Overall	**95.5**	**95.3**	**93.2**	**na**	**78.9**	**na**
Paper instruments	**88.0**	**81.6**	**77.6**	**na**	**55.3**	**na**
Cash	85.2	81.6	74.7	na	48.8	na
Check or money order	45.8	30.6	29.1	na	22.2	na
Check	45.8	30.8	29.1	na	22.2	na
Money order	na	2.4	na	na	na	na
Travelers check	na	na	na	na	na	na
Payment cards	**86.8**	**81.4**	**84.1**	**na**	**68.1**	**na**
Debit	63.7	59.6	62.0	na	46.5	na
Credit	63.6	46.0	55.4	na	45.4	na
Prepaid	4.9	5.9	5.0	na	2.4	na
Electronic payments	**na**	**na**	**na**	**na**	**na**	**na**
Online banking bill payment	na	na	na	na	na	na
Bank account number payment	na	na	na	na	na	na

Annual incidence	Total		Essential goods*		Nonessential goods*	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Overall	**95.8**	**95.9**	**94.6**	**na**	**91.8**	**na**
Paper instruments	**89.8**	**85.8**	**87.5**	**na**	**73.1**	**na**
Cash	87.1	85.8	84.4	na	68.0	na
Check or money order	53.2	39.3	42.5	na	41.0	na
Check	53.2	38.9	42.5	na	41.0	na
Money order	na	4.6	na	na	na	na
Travelers check	na	na	na	na	na	na
Payment cards	**88.0**	**83.6**	**86.5**	**na**	**83.2**	**na**
Debit	66.0	62.5	65.0	na	58.7	na
Credit	68.8	52.1	64.0	na	63.3	na
Prepaid	7.8	10.3	7.8	na	4.6	na
Electronic payments	**na**	**na**	**na**	**na**	**na**	**na**
Online banking bill payment	na	na	na	na	na	na
Bank account number payment	na	na	na	na	na	na

* For definitions of essential and nonessential goods, see Appendix A.5 in Foster, Meijer, Schuh, and Zabek 2009.
NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 19
Incidence of Use of Payment Instruments, by Type of Nonretail, In-Person Transactions*
Percentage of consumers

Monthly incidence	Total		Services and other		Person to person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Overall	**86.6**	**85.1**	**na**	**81.8**	**na**	**43.4**
Paper instruments	**75.7**	**75.1**	**na**	**66.9**	**na**	**38.9**
Cash	62.1	65.1	na	56.1	na	34.9
Check or money order	47.1	43.1	na	37.1	na	15.6
Check	na	42.4	na	37.5	na	15.2
Money order	na	2.6	na	2.0	na	1.3
Travelers check	na	na	na	na	na	na
Payment cards	**63.1**	**63.8**	**na**	**63.4**	**na**	**8.3**
Debit	41.3	43.6	na	43.5	na	6.3
Credit	39.6	35.2	na	34.9	na	3.9
Prepaid	1.8	3.6	na	3.6	na	na
Electronic payments	**na**	**8.2**	**na**	**na**	**na**	**8.2**
Online banking bill payment	na	4.4	na	na	na	4.4
Bank account number payment	na	5.8	na	na	na	5.8

Annual incidence	Total		Services and other		Person to person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Overall	**89.5**	**90.3**	**na**	**89.1**	**na**	**54.7**
Paper instruments	**81.9**	**83.7**	**na**	**78.0**	**na**	**50.5**
Cash	67.3	76.4	na	68.2	na	46.0
Check or money order	57.8	58.0	na	51.4	na	27.7
Check	na	56.7	na	51.5	na	27.0
Money order	na	5.8	na	4.3	na	3.2
Travelers check	na	na	na	na	na	na
Payment cards	**73.1**	**74.0**	**na**	**73.8**	**na**	**12.1**
Debit	50.2	51.7	na	51.7	na	8.7
Credit	55.7	46.3	na	46.1	na	6.6
Prepaid	3.7	6.0	na	6.0	na	na
Electronic payments	**na**	**12.5**	**na**	**na**	**na**	**12.5**
Online banking bill payment	na	6.2	na	na	na	6.2
Bank account number payment	na	9.6	na	na	na	9.6

* Adjusted for changes from 2008 to 2009 in the survey definition of transaction categories. These adjustments make the two years directly comparable.
NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 20
Use of Payment Instruments in a Typical Month, by Type of Instrument
Number per consumer and percent share per consumer

	Number per consumer			Percent Share	
	Mean		Percentage change		
	2008[r]	2009		2008[r]	2009
Total payments	**67.4**	**64.5**	**- 4.2**	***100.0***	**100.0**
Paper instruments	**24.1**	**26.7**	**10.8**	***35.4***	**41.8**
Cash	14.5	18.4	26.9	*20.8*	28.2
Check or money order	10.0	8.7	-13.1	*14.6*	13.5
Check	9.6	8.2	-14.0	*13.9*	12.7
Money order	0.4	0.5	23.6	*0.6*	0.8
Travelers check	0.0	0.0	-38.2	*0.0*	0.0
Payment cards	**35.4**	**30.7**	**-13.2**	***52.5***	**47.8**
Debit	21.2	19.0	-10.0	*30.8*	29.3
Credit	14.4	11.2	-21.9	*21.1*	17.3
Prepaid	*0.4*	0.8	–	*0.6*	1.2
Prepaid, per adopter†	2.6	2.6	- 0.6	–	–
Electronic payments	**7.4**	**6.2**	**-15.1**	***10.9***	**9.7**
Online banking bill payment*	3.4	3.3	- 3.4	*3.1*	5.1
Bank account number payment*	4.1	3.0	-26.1	*7.9*	4.6
Bank account number payment, per adopter†	7.3	5.4	-26.5	–	–
Direct deduction from income	**0.8**	**0.6**	**-31.4**	***1.1***	**0.8**

* Adjusted for changes from 2008 to 2009 in the survey definition of transaction categories.
† Estimates for this row are calculated using only adopters of a payment instrument, not all consumers. Per adopter estimate is included due to changes in the survey design that affected the rates of adoption of payment instruments (see Table 4), making the per consumer estimates not comparable across years.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values.

Table 21
Transactions in a Typical Month
Number per consumer and percent share per consumer

	Number per consumer			Percent Share	
	Mean		Percentage change		
	2008[r]	2009		2008[r]	2009
Total	**67.4**	**64.5**	**-4.2**	***100.0***	**100.0**
Bill payments	**19.6**	**18.0**	**-8.2**	***29.1***	**28.1**
Automatic	*6.0*	4.6	–	*8.7*	7.2
Direct deduction from income	*0.8*	0.6	–	*1.1*	6.3
Other automatic	*5.1*	4.0	–	*7.6*	0.9
Online	6.4	5.5	-13.2	*9.4*	8.5
By mail or in person	7.4	7.9	7.2	*11.0*	12.4
Online payments, excluding bills	**6.6**	**5.0**	**-23.7**	***9.7***	**7.8**
In-person payments, excluding bills	**41.2**	**41.0**	**-0.4**	***61.1***	**64.1**
Retail goods	*28.6*	25.2	–	*42.5*	39.4
All other	*12.6*	15.8	–	*18.6*	24.7
Services	na	12.6	na	na	19.7
Person to person payments	na	3.2	na	na	5.0

NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 22
Use of Payment Instruments in a Typical Month, by Type of Transaction
Number per consumer and percent share per consumer

Number	Bill payments		Online payments		Retail, service and person to person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**5.1**	**5.5**	**1.6**	**1.4**	***17.9***	**20.1**
Cash	1.2	2.1	na	na	*13.6*	16.6
Check or money order	4.1	3.4	1.6	1.4	*4.5*	3.9
Check	3.9	3.2	na	1.3	*4.3*	3.8
Money order	0.2	0.3	na	0.1	*0.2*	0.2
Travelers check	na	na	na	na	na	na
Payment cards	**7.9**	**7.1**	**3.7**	**3.0**	***23.9***	**20.8**
Debit	4.6	4.5	2.1	1.8	*14.8*	13.1
Credit	3.6	2.6	1.6	1.2	*9.4*	7.6
Prepaid	0.0	0.1	0.1	0.1	*0.3*	0.5
Electronic payments	**6.0**	**5.2**	**1.4**	**0.7**	**na**	**0.4**
Online banking bill payment	2.2	3.1	na	na	na	0.2
Bank account number payment	4.0	2.1	1.4	0.7	na	0.2
Direct deduction from income	**0.8**	**0.6**	**na**	**na**	**na**	**na**

Percent	Bill payments		Online payments		Retail, service and person to person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**7.4**	**8.3**	**2.3**	**2.2**	***25.7***	**31.3**
Cash	1.5	3.0	na	na	*19.3*	25.2
Check or money order	5.9	5.3	2.3	2.2	*6.4*	6.1
Check	5.6	4.9	na	2.0	na	5.8
Money order	0.3	0.4	na	0.2	*0.3*	0.3
Travelers check	na	na	na	na	na	na
Payment cards	**11.6**	**11.0**	**5.5**	**4.6**	***35.4***	**32.2**
Debit	6.4	6.8	3.0	2.7	*21.3*	19.8
Credit	5.1	3.9	2.3	1.8	*13.6*	11.6
Prepaid	0.0	0.2	0.1	0.2	*0.5*	0.8
Electronic payments	**9.0**	**8.0**	**1.9**	**1.0**	**na**	**0.6**
Online banking bill payment	3.1	4.8	na	na	na	0.3
Bank account number payment	5.9	3.3	1.9	1.0	na	0.3
Direct deduction from income	**1.1**	**0.8**	**na**	**na**	**na**	**na**

NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. The bold numbers in the percent share section add up to the share column in Table 20. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 23
Use of Payment Instruments in a Typical Month, by Type of Bill Payment
Number per consumer and percent share per consumer

Number	Automatic		Online		By mail or in person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**na**	**na**	**na**	**na**	**5.1**	**5.3**
Cash	na	na	na	na	1.2	2.1
Check or money order	na	na	na	na	4.1	3.4
Check	na	na	na	na	na	3.2
Money order	na	na	na	na	0.2	0.3
Travelers check	na	na	na	na	na	na
Payment cards	**2.9**	**2.1**	**2.7**	**2.5**	**2.4**	**2.7**
Debit	1.6	1.2	1.7	1.9	1.4	1.7
Credit	1.4	0.9	1.1	0.7	1.2	1.0
Prepaid	na	na	na	na	0.0	0.1
Electronic payments	**2.3**	**2.1**	**3.8**	**3.1**	**na**	**na**
Online banking bill payment*	1.3	1.1	2.2	2.0	na	na
Bank account number payment	1.1	1.0	1.8	1.2	na	na
Direct deduction from income	**0.8**	**0.6**	**na**	**na**	**na**	**na**

Percent	Automatic		Online		By mail or in person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**na**	**na**	**na**	**na**	**7.4**	**8.3**
Cash	na	na	na	na	1.5	3.0
Check or money order	na	na	na	na	5.9	5.3
Check	na	na	na	na	na	4.9
Money order	na	na	na	na	0.3	0.4
Travelers check	na	na	na	na	na	na
Payment cards	**4.2**	**3.1**	**3.8**	**3.8**	**3.6**	**4.1**
Debit	2.3	1.7	2.3	2.7	1.9	2.4
Credit	1.9	1.4	1.5	1.1	1.7	1.5
Prepaid	na	na	na	na	0.0	0.2
Electronic payments	**3.4**	**3.2**	**5.6**	**4.8**	**na**	**na**
Online banking bill payment	1.8	1.7	3.1	3.0	na	na
Bank account number payment	1.6	1.5	6.4	1.7	na	na
Direct deduction from income	**1.1**	**0.8**	**na**	**na**	**na**	**na**

NOTES: Superscript "r" denotes revised. The bold numbers in the percent share section add up to the bill payments column in Table 22. Numbers may not sum exactly due to rounding or missing values.
*The 2008 automatic bill payment number for online banking bill payment is derived from the ratio of total electronic automatic bill payments to total number of online banking bill payments in the 2009 SCPC. The notation “na” indicates that the estimate is not available.

Table 24
Use of Payment Instruments in a Typical Month, by Type of Retail Goods*
Number per consumer and percent share per consumer

Number	Total		Essential goods†		Nonessential goods†	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**11.2**	**11.3**	**7.4**	**na**	**3.9**	**na**
Cash	9.7	10.0	6.5	na	3.2	na
Check or money order	1.7	1.8	1.0	na	0.7	na
Check	na	1.8	na	na	na	na
Money order	na	0.1	na	na	na	na
Travelers check	na	na	na	na	na	na
Payment cards	**17.8**	**14.1**	**11.9**	**na**	**5.9**	**na**
Debit	11.5	8.9	7.9	na	3.8	na
Credit	6.6	5.3	4.4	na	2.3	na
Prepaid	0.3	0.4	0.2	na	0.1	na
Electronic payments	**na**	**na**	**na**	**na**	**na**	**na**
Online banking bill payment	na	na	na	na	na	na
Bank account number payment	na	na	na	na	na	na

Percent	Total		Essential goods†		Nonessential goods†	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**16.1**	**17.6**	**10.5**	**na**	**5.6**	**na**
Cash	13.7	14.8	9.2	na	4.6	na
Check or money order	2.4	2.7	1.4	na	1.0	na
Check	na	2.7	na	na	na	na
Money order	na	0.1	na	na	na	na
Travelers check	na	na	na	na	na	na
Payment cards	**26.5**	**21.8**	**17.7**	**na**	**8.8**	**na**
Debit	16.5	13.4	11.2	na	5.4	na
Credit	9.6	7.9	6.3	na	3.3	na
Prepaid	0.4	0.5	0.3	na	0.1	na
Electronic payments	**na**	**na**	**na**	**na**	**na**	**na**
Online banking bill payment	na	na	na	na	na	na
Bank account number payment	na	na	na	na	na	na

* Adjusted for changes from 2008 to 2009 in the survey definition of transaction categories.
† For definitions of essential and nonessential goods, see Appendix A.5 in Foster, Meijer, Schuh, and Zabek 2009.
NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 25

Use of Payment Instruments in a Typical Month, by Type of Nonretail, In-Person Transactions*

Number per consumer and percent share per consumer

Number	Total		Services and other		Person to person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**6.8**	**8.8**	**na**	**6.5**	**na**	**2.3**
Cash	4.0	6.9	na	5.2	na	1.9
Check or money order	2.9	2.1	na	1.6	na	0.5
Check	na	2.1	na	1.6	na	0.5
Money order	na	0.1	na	0.1	na	0.0
Travelers check	na	na	na	na	na	na
Payment cards	**6.1**	**6.7**	**na**	**6.2**	**na**	**0.5**
Debit	3.4	4.3	na	3.9	na	0.4
Credit	2.9	2.5	na	2.4	na	0.1
Prepaid	0.1	0.2	na	0.2	na	na
Electronic payments	**na**	**0.4**	**na**	**na**	**na**	**0.4**
Online banking bill payment	na	0.2	na	na	na	0.2
Bank account number payment	na	0.2	na	na	na	0.2

Percent	Total		Services and other		Person to person	
	2008[r]	2009	2008[r]	2009	2008[r]	2009
Paper instruments	**9.6**	**12.7**	**na**	**10.1**	**na**	**3.6**
Cash	5.6	9.6	na	7.6	na	2.8
Check or money order	4.0	3.4	na	2.5	na	0.8
Check	na	3.2	na	2.4	na	0.7
Money order	na	0.2	na	0.1	na	0.1
Travelers check	na	na	na	na	na	na
Payment cards	**9.0**	**8.3**	**na**	**9.5**	**na**	**0.8**
Debit	4.8	5.2	na	5.8	na	0.6
Credit	4.1	3.1	na	3.5	na	0.2
Prepaid	0.1	0.3	na	0.3	na	na
Electronic payments	**na**	**0.5**	**na**	**na**	**na**	**0.5**
Online banking bill payment	na	0.2	na	na	na	0.2
Bank account number payment	na	0.3	na	na	na	0.3

* Adjusted for changes from 2008 to 2009 in the survey definition of transaction categories.

NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 26
Payment Instruments Used in a Typical Period, by Type of Instrument and Transaction
Number per consumer

Typical Month	2008[r]	2009
All payments (9 instruments)	**4.2**	**3.8**
Paper instruments	1.8	1.7
Payment cards	1.4	1.3
Electronic payments	1.0	0.8
Bill payments (8 instruments)	**3.1**	**2.6**
Paper instruments	1.0	0.9
Payment cards	1.1	0.8
Electronic payments	0.9	0.8
Online payments (6 instruments)	**1.2**	**1.0**
Paper instruments	0.3	0.3
Payment cards	0.6	0.5
Electronic payments	0.3	0.2
In-person payments (8 instruments)	**2.8**	**2.6**
Paper instruments	1.5	1.4
Payment cards	1.3	1.2
Electronic payments	na	0.1
Typical Year	**2008[r]**	**2009**
All payments (9 instruments)	**4.5**	**4.2**
Paper instruments	2.0	1.9
Payment cards	1.5	1.4
Electronic payments	1.1	0.9
Bill payments (8 instruments)	**3.4**	**2.9**
Paper instruments	1.2	1.1
Payment cards	1.2	0.9
Electronic payments	1.0	0.8
Online payments (6 instruments)	**1.6**	**1.4**
Paper instruments	0.4	0.4
Payment cards	0.9	0.8
Electronic payments	0.4	0.3
In-person payments (8 instruments)	**3.2**	**3.0**
Paper instruments	1.7	1.6
Payment cards	1.4	1.3
Electronic payments	na	0.2

NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values. Numbers are derived from incidence of use statistics. The notation “na” indicates that the estimate is not available.

Table 27
Assessments of Characteristics of Payment Instruments
Percentage of consumers

	Most important	2nd most important	3rd most important	Least important
2009				
Instrument characteristic rating				
Acceptance for payment	22.2	23.8	26.0	27.6
Cost	25.5	27.2	21.4	25.5
Convenience	27.7	25.2	25.4	21.1
Security	54.9	25.7	13.6	5.2
2008[r]				
Instrument characteristic rating				
Acceptance for payment	*8.6*	na	na	*7.6*
Acquisition and setup	*0.4*	na	na	*41.3*
Control over payment timing	*10.9*	na	na	*18.1*
Cost	*10.1*	na	na	*5.5*
Ease of use	*28.7*	na	na	*4.7*
Payment records	*5.8*	na	na	*4.1*
Payment speed	*4.0*	na	na	*17.9*
Security	*31.6*	na	na	*0.8*

NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 28A
Assessments of Payment Instruments, by Characteristic
Percentage of consumers

Acceptance for payment	Rarely accepted	Occasionally accepted	Often accepted	Usually accepted	Almost always accepted
Cash					
2008[r]	1.9	2.3	7.9	11.6	76.3
2009	2.5	1.7	7.3	11.7	76.7
Check					
2008[r]	1.6	11.3	31.5	36.3	19.3
2009	3.8	16.1	27.7	33.5	19.0
Debit card					
2008[r]	1.4	1.6	12.4	36.6	47.9
2009	2.0	0.7	12.6	32.0	52.8
Credit card					
2008[r]	1.7	0.1	7.1	31.8	59.3
2009	2.0	0.8	7.2	29.5	60.5
Prepaid card					
2008[r]	*3.8*	*10.2*	*22.9*	*28.9*	*34.2*
2009	3.7	6.7	24.2	31.8	33.6
Bank account number payment*					
2008[r]	*13.5*	*19.3*	*26.3*	*19.4*	*21.5*
2009	30.4	22.5	21.4	13.1	12.5
Online banking bill payment*					
2008[r]	*13.5*	*19.3*	*26.3*	*19.4*	*21.5*
2009	9.2	9.7	26.3	26.8	27.9

Cost	Very high cost	High cost	Neither high nor low cost	Low cost	Very low cost
Cash					
2008[r]	1.8	4.1	18.9	8.3	66.9
2009	1.2	2.7	14.2	10.0	71.9
Check					
2008[r]	2.1	12.4	21.8	40.9	22.8
2009	1.5	7.7	21.5	38.8	30.5
Debit card					
2008[r]	2.5	9.2	25.2	30.0	33.2
2009	2.1	7.9	23.1	30.1	36.7
Credit card					
2008[r]	20.2	31.3	17.0	18.2	13.3
2009	23.1	32.1	15.2	14.2	15.3
Prepaid card					
2008[r]	*5.2*	*15.5*	*43.4*	*17.3*	*18.7*
2009	4.4	13.8	36.2	23.2	22.4
Bank account number payment*					
2008[r]	*3.1*	*10.2*	*31.3*	*22.6*	*32.8*
2009	4.3	5.9	34.8	24.7	30.3
Online banking bill payment*					
2008[r]	*3.1*	*10.2*	*31.3*	*22.6*	*32.8*
2009	2.7	6.9	26.8	25.0	38.6

* In 2008 respondents were asked to assess "electronic deduction." We substituted the rating of electronic deduction for "bank account number payment" and "online banking bill payment" in this table.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values.

Table 28B
Assessments of Payment Instruments, by Characteristic
Percentage of consumers

Convenience	Very hard to use	Hard to use	Neither hard nor easy to use	Easy to use	Very easy to use
Cash					
2008[r]	na	na	na	na	na
2009	3.1	5.6	13.7	20.9	56.6
Check					
2008[r]	na	na	na	na	na
2009	4.0	16.7	27.8	31.0	20.5
Debit card					
2008[r]	na	na	na	na	na
2009	1.7	2.1	12.2	29.6	54.5
Credit card					
2008[r]	na	na	na	na	na
2009	2.0	2.0	9.5	29.2	57.3
Prepaid card					
2008[r]	na	na	na	na	na
2009	4.8	9.3	30.8	25.2	29.9
Bank account number payment*					
2008[r]	na	na	na	na	na
2009	12.7	21.4	31.1	19.5	15.4
Online banking bill payment*					
2008[r]	na	na	na	na	na
2009	5.6	7.5	24.9	27.9	34.1
Security	**Very risky**	**Risky**	**Neither risky nor secure**	**Secure**	**Very secure**
Cash					
2008[r]	41.5	14.1	13.6	8.4	22.4
2009	33.4	12.1	13.0	10.4	31.0
Check					
2008[r]	11.9	33.4	19.7	24.4	10.6
2009	11.5	32.4	17.9	30.6	7.6
Debit card					
2008[r]	13.3	30.0	18.7	27.9	10.0
2009	14.1	28.6	19.2	26.6	11.6
Credit card					
2008[r]	15.4	27.8	14.6	28.9	13.3
2009	17.2	27.3	15.9	27.3	12.2
Prepaid card					
2008[r]	*25.1*	*22.3*	*24.8*	*16.7*	*11.2*
2009	21.1	19.1	25.3	19.9	14.5
Bank account number payment*					
2008[r]	*10.4*	*19.4*	*22.2*	*25.8*	*22.1*
2009	31.7	29.5	17.6	14.2	6.9
Online banking bill payment*					
2008[r]	*10.4*	*19.4*	*22.2*	*25.8*	*22.1*
2009	16.4	22.2	19.9	26.2	15.3

* In 2008 respondents were asked to assess "electronic deduction." We substituted the rating of electronic deduction for "bank account number payment" and "online banking bill payment" in this table.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 29
Demographics: Gender, Age, Race, and Education*
Percentage of consumers

	2008[r]	2009
Gender		
Male	48.3	48.3
Female	51.7	51.7
Age		
18–24	13.0	12.7
25–34	17.8	18.3
35–44	19.4	18.2
45–54	19.3	19.9
55–64	14.6	14.5
65 and older	15.8	16.4
Race		
White	76.7	74.1
Black	11.5	12.0
Asian	4.8	3.3
Other	7.0	10.6
Ethnicity		
Hispanic or Latino	13.5	14.9
Education		
No high school diploma	7.1	6.1
High school	38.2	39.0
Some college	26.5	27.8
College	19.2	18.0
Post-graduate study	9.1	9.1

* Tables of unweighted sample demographics available upon request.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values.

Table 30
Income and Labor Force Status*
Percentage of consumers

	2008[r]	2009
Household income		
Less than $25,000	17.5	18.3
$25,000–$49,999	33.1	33.7
$50,000–$74,999	21.6	23.4
$75,000–$99,999	*14.2*	12.4
$100,000–$124,999	*6.3*	4.8
$125,000 or more	*7.0*	7.3
$125,000–$199,999	na	5.0
$200,000 or more	na	2.3
$75,000 or more, breakdown not specified	*0.2*	na
Respondent income		
Highest in household	53.3	48.3
About equal with highest	13.9	12.1
2nd highest	24.6	25.4
3rd highest or lower	8.2	14.2
Labor force status		
Working now	70.5	77.2
Unemployed and looking for work	2.3	1.2
Temporarily laid off, on sick or other leave	0.1	0.2
Disabled	3.5	2.8
Retired	17.3	14.3
Homemaker	4.4	2.8
Other	2.0	1.4

* Tables of unweighted sample demographics available upon request.
NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values. The notation “na” indicates that the estimate is not available.

Table 31
Consumers' Financial Responsibility in the Household
Percentage of consumers

Task	2008[r]	2009
Budgeting		
All	46.4	43.5
Most	12.6	12.7
Shared equally	21.4	22.7
Some	13.2	10.0
None	6.4	11.1
Bill payment		
All	50.3	47.6
Most	9.7	10.5
Shared equally	17.2	13.9
Some	12.5	13.6
None	10.4	14.5
Shopping		
All	40.1	38.4
Most	13.3	13.2
Shared equally	25.7	23.8
Some	16.1	18.5
None	4.8	6.1
Asset management		
All	40.2	36.8
Most	11.7	9.8
Shared equally	23.4	21.2
Some	9.7	9.6
None	14.9	22.5

NOTES: Superscript "r" denotes revised. Numbers may not sum exactly due to rounding or missing values.

Table 32
Selected Assets and Liabilities
Percentage of consumers, except as noted

	2008[r]	2009	Change
Credit card debt			
Carried unpaid balance at any time during the past 12 months	56.3	40.3	-15.9
Credit card balance unpaid, previous month (dollars)			
Per credit card adopter	3,396	4,244	848
Per revolver	6,052	7,654	1,602
Change in unpaid balance since a year ago			
Much lower	19.6	13.2	-6.5
Lower	25.9	25.9	0.0
About the same	28.8	30.5	1.7
Higher	16.2	19.1	2.9
Much higher	9.5	11.3	1.8
Home ownership			
Home ownership rate	71.1	68.1	-2.9

NOTES: Superscript "r" denotes revised. Numbers in italics are not comparable across years due to changes in the survey. Numbers may not sum exactly due to rounding or missing values.

Appendix A: Definitions

This appendix contains the definitions of concepts used in the *2009 Survey of Consumer Payment Choice* and associated tables of statistics. The SCPC measures the payment choices of consumers, so the survey concepts and definitions are constructed from the perspective of a typical consumer. This demand-side approach to payments helps to fill a gap in knowledge about consumer payment behavior. It also provides the information needed to understand payment trends and to develop optimal public policies toward payments.

The consumer-oriented concepts and definitions sometimes differ from the terminology and perspectives of the supply side of the payment system, especially in the area of electronic payments. For example, the supply-side perspective (banks, the Federal Reserve System, nonbank payment service providers and consultants, and merchants who accept payment from consumers) focuses on the network on which payments are settled.[49] In contrast, the SCPC looks at payments from the perspective of how a consumer initiates the payment.

A.1 Definitions of Banking Concepts

Most consumer payments involve some form of depository or banking institution. The SCPC asks questions about two types of depository accounts (checking and saving) and about the type of banking institution where consumers have their primary accounts (commercial bank, saving and loan, credit union, internet bank, and other). Collectively, these institutions are referred to as "banks" for simplicity. The SCPC also asks questions about numerous technologies consumers use to access their bank accounts for making payments and for other purposes. **Appendix Table A.1** contains the definitions of banking concepts.

[49] For example, see the *2010 Federal Reserve Payment Study* Federal Reserve System (2010).

Table A.1 – Definitions of Banking Concepts

Concept	Definition
Assets	Items of monetary value, such as bank accounts, real estate, stocks, bonds, annuities, retirement accounts, motor vehicles, jewelry, rare or collectable goods, and personal or household goods.
Automated teller machine (ATM)	A machine that allows customers to use an ATM card, debit card, or credit card to withdraw cash, make deposits, view account balances, transfer money across accounts at the customer's bank, and make other banking transactions.
ATM card	A card used at an ATM to access one's bank account in order to deposit or withdraw cash and/or to transfer funds across one's accounts at the same bank, but that cannot be used for purchases or making payments.
Bank	An institution that accepts deposits and offers checking accounts or savings accounts, including regular or internet-based commercial banks, credit unions, and savings and loans.
Checking account	A demand deposit account at a bank from which you can make an essentially unlimited number of withdrawals or payments by check, among other methods.
Mobile banking	A method of accessing one's bank account using a mobile device. This can be done by accessing the bank's web page through the web browser on a mobile device, via text messaging or SMS, or by using a downloadable application on a mobile device.
Nonbank online payment account	A payment service provided by a company that is not a bank. These services allow a consumer to send and receive money online. Examples of nonbank online payment services include PayPal, Google Checkout, and Amazon Payments.
Online banking	A transaction conducted on the website of a bank, including viewing account balances, making transfers between accounts at the bank, or paying bills electronically (see Bank account number payment for additional definitions).
Savings account	A time deposit account at a bank from which a customer can make a limited number of withdrawals or payments each month by a variety of methods other than by check.
Telephone banking	A method of accessing one's bank account by calling a phone number that the bank has provided. The customer interacts with the system using voice commands, a phone's numeric keypad, or by speaking with a live customer service representative.

A.2 Definitions of Payment Instruments

The central focus of the SCPC is on measuring consumer choices about payment instruments. The 2009 SCPC asks questions about nine payment instruments commonly available to consumers: four types of paper instruments—cash, checks, money orders, and travelers checks; three types of payment cards—debit, credit, and prepaid; and two types of electronic payment instruments—online banking bill payment (OBBP) and bank account number payments (BANP); the latter was called "electronic bank account deduction" (EBAD) in 2008.[50]

The BANP instrument is a prime example of how the consumer perspective on payments differs from the supply-side perspective. BANP is any electronic payment in which a consumer gives his or her bank account number to a third party who then uses the number to obtain payment from the consumer's bank. In a sense, it is an electronic check. Payments made by consumers using their OBBP function are similar to electronic checks, except that the consumer's bank does not disclose the bank account number (or other personal information) to a third party, unless the bank actually issues a paper check (which occurs sometimes). Yet viewed from the supply side of payments, both OBBP and BANP consumer payments settle on the Automatic Clearing House (ACH) network and thus are often combined and classified collectively as a single "ACH payment" instrument, as done in the *Federal Reserve Payment Studies* (for example, Federal Reserve 2007, 2010). **Appendix Table A.2** contains the definitions of payment instruments.

[50] The 2008 SCPC used the terminology "electronic bank account deduction" (EBAD) to refer to what is now called BANP. However, the term EBAD was not entirely satisfactory, partly because OBBP also is an "electronic bank account deduction," strictly speaking. BANP is a more accurate term because these are payments in which consumers use their bank account (and bank routing) numbers in a way they do not with OBBP or any other payment instrument.

Table A.2 – Definitions of Payment Instruments

Concept	Definition
Bank account number payment	A payment made by providing one's bank account number to a third party, such as an employer or a utility company. The number can be provided on websites, paper forms, etc. One does not have to visit the bank's website to make these payments.
Cash	Coins and paper bills.
Check	A written order directing a financial institution to pay a specific amount of money to a person or business.
Credit card	A card that allows the cardholder to make a purchase that will be paid back to the credit card company later.
Debit card	Also called a check card. A card that allows the cardholder to make purchases or payments in addition to allowing access to the cardholder's bank accounts through an ATM.
Money order	A written order that can be purchased from a bank or other institution and allows the individual named on the order to receive a specified amount of cash on demand.
Online banking bill payment	An electronic payment made directly from a bank's online banking website. This payment does not require the customer or the bank to disclose the customer's bank account number to a third party.
Prepaid card	A card that has money stored or loaded onto it. Also known as a stored value card or gift card.
Travelers check	A written order, similar to a check, that is signed by the buyer both when purchased and again in the payee's presence at the time of cashing. A travelers check is protected against loss or theft. Travelers checks are purchased in advance and issued for a specific amount of money.

A.3 Definitions of Adoption

Consumers make three basic choices about payment instruments: (1) whether to get, or "adopt," them; (2) whether to use them (incidence of use); and (3) how often to use them (frequency of use, or simply "use"). The SCPC measures consumers' adoption of payment instruments, as well as various banking and other payments practices of consumers. **Appendix Table A.3** contains the definitions of adoption.

Table A.3 – Definitions of Adoption

Concept	Consumer Behavior that Defines Adoption
ATM card*	Has a bank account and an ATM card.
Bank account	Has at least one checking account, savings account, or money market account.
Cash	Has used cash to make a payment at least once in the past 12 months, holds cash (on person or on property), gets cash on a regular basis, or uses cash in a typical year.
Cell phone	Has a cell phone.
Check	Has a checking account and blank paper checks.
Checking account	Has at least one checking account.
Credit card*	Has a credit card.
Current adoption	The percentage of consumers who own a bank account or have a payment instrument, for example, at the time of the survey.
Debit card*	Has a bank account and a debit card.
Discarding rate	The difference between historical and current adoption or ownership rates. It measures the minimum percentage of consumers who owned a bank account or had a payment instrument, for example, but discarded it and therefore do not own or have it now.
Bank account number payment (BANP)	Makes an electronic bank account number payment in a typical year.
Historical adoption	The percentage of consumers who have ever owned a bank account or had a payment instrument, for example, at any time (currently or in the past).
Mobile banking	Has a bank account, has a cell phone, and has set up mobile banking.
Money market account	Has at least one money market account.
Money order	Has used a money order in the past 12 months.
Nonbank online payment account	Has at least one nonbank online payment account.
Online banking bill payment* (OBBP)	Has a bank account, has set up online banking, and has set up access to the online bill payment function.

* In a small number of cases where respondents did not answer the adoption question for this concept, additional information from other questions was used to infer adoption in a manner consistent with the primary definition.

Table A.3 – Definitions of Adoption (continued)

Concept	Consumer Behavior that Defines Adoption
Online banking*	Has a bank account and has set up online banking.
Ownership	Equivalent to adoption for bank accounts.
Prepaid card*	Has a prepaid card of any type.
Savings account	Has at least one savings account.
Telephone banking*	Has a bank account and has set up telephone banking.
Travelers check	Has used a travelers check in the past 12 months.

* In a small number of cases where respondents did not answer the adoption question for this concept, additional information from other questions was used to infer adoption in a manner consistent with the primary definition.

A.4 Definitions of Use

The SCPC also measures the use of payment instruments by incidence (the percentage of consumers who use them) and frequency (the number of payments made by consumers).[51] Most SCPC results concerning use are reported in terms of a typical month, but survey respondents were allowed to respond in terms of a frequency of their choice (typical week, month, or year). **Appendix Table A.4** contains the definitions of payment use.

Table A.4 – Definitions of Payment Use

Concept	Consumer Behavior that Defines Use
Frequency of use	See "Use."
Incidence of use	The percentage of consumers who used a particular payment instrument at least once during a typical period of time.
Incidence of use, annual	The percentage of consumers who used a particular payment instrument at least once in a typical year.
Incidence of use, monthly	The percentage of consumers who used a particular payment instrument at least once in a typical month.
Use	The number of times consumers use a particular instrument for payment during a typical month (use for a typical week or year was converted to a typical month for comparability).
Typical period	A recent week, month, or year when the consumer did not experience any unusual payments or other related events. Consumers choose the reporting frequency they prefer most. The most recent period is implied and assumed but not stated explicitly in the survey questions.

[51] Ideally, the SCPC would also measure use of payment instruments by the dollar value of payments, but the 2009 survey did not provide enough time to include both measures (number and dollar value). Number of payments was chosen, rather than dollar value, based on the assumption that consumer recall would be easier and more accurate for the number of payments than for the dollar value of payments.

A.5 Definitions of Transactions

Consumers use their payment instruments for various types of transactions. The 2009 SCPC asks questions about seven types of payment transactions: three types of bill payments—automatic, online, and in person/by mail; one type of nonbill online payment; and three types of in-person, nonbill payments—retail goods, services and other, and person-to-person payments. For each of the seven transaction types, the SCPC asks questions about the number of payments made with each payment instrument that can be used for that type of transaction. **Appendix Table A.5** contains the definitions of types of transactions.

Table A.5 – Definitions of Transaction Types

Concept	Definition
Automatic bill payment	A bill payment set up to occur on a regularly scheduled basis, typically monthly. Once set up, it does not require any additional effort on the consumer's part. It can be processed via bank account deductions, debit card transactions, or credit card charges, or paid directly from income.
Bill payment	A payment made to a company or person at a date after the time when the company or person provided goods or services to a consumer. Examples include a payment to a utility company for energy services provided during a month or a payment to service a loan, such as a mortgage. Most bill payments occur at regular frequencies such as weekly, monthly, or yearly.
In person/By mail bill payment	A bill payment made in person or through the mail.
Online bill payment (OBP)	A bill payment made using the internet, either via the website of a bank, company, or other institution that sent the bill, or via a payment intermediary such as PayPal. Consumers make an OBP at their discretion and as needed, not automatically. An OBP can be made via bank account number payment (BANP), online banking bill payment (OBBP), or debit or credit card.

Table A.5 – Definitions of Transaction Types (continued)

Concept	Definition
Online payment (OP)	A payment (other than payment of a bill) made for an online transaction or transfer of funds. The purchase or transfer is initiated either via the website of a seller of goods and services or other institution, or via a payment intermediary, such as PayPal. Consumers make an OP at their discretion and as needed. Included in this concept are payments made via check or money order (sent by mail) as well as payments made via debit or credit card or via bank account number payment (BANP), if the payment is made in connection with a transaction initiated online.
Person-to-person payment	Transfers or transactions made between two private individuals. Examples include payments for babysitting or allowances, paying a person for something that is not business related, and account-to-account payments from one person's bank account to another person's bank account.
Retail payment	A payment made while shopping in person to buy basic goods from retail outlets, including food and grocery stores, restaurants; superstores, warehouses, and club stores; drug or convenience stores; gas stations; department stores; electronics, hardware and appliance stores; home goods and furniture stores.
Services and other payments	A payment made in person by a consumer for services such as transportation and tolls; medical, dental, health and fitness; education and child care; personal care (for example, hair care); recreation, entertainment, and travel; maintenance and repairs; other professional services (business, legal, etc.); charitable donations.

A.6 Definitions of Characteristics of Payment Instruments

Payment instruments have characteristics that are important to consumers who choose among the available instruments.[52] The 2009 SCPC asks respondents to rate four types of payment instrument characteristics—acceptance for payment, convenience, cost, and security. The survey obtains these ratings for each of seven payment instruments—cash, check, debit card, credit card, prepaid card, bank account number payment, and online banking bill payment. **Appendix A.6** contains the definitions of payment instrument characteristics.

Table A.6 – Definitions of Payment Instrument Characteristics

Characteristic	Text from SCPC Questions
Acceptance for payment	Please rate how likely each payment method is to be accepted for payment by stores, companies, online merchants, and other people or organizations. *Examples: none*
Convenience	Please rate the convenience of each payment method. *Examples: speed; record keeping; control over payment timing; ease of use; effort to carry, get, or set up; ability to keep or store.*
Cost	Please rate the cost of using each payment method. *Examples: Fees, penalties, postage, interest paid or lost, subscriptions, or materials raise the cost; cash discounts and rewards (like frequent flyer miles) reduce the cost.*
Security	Suppose a payment method has been stolen, misused, or accessed without the owner's permission. Rate the security of each method against permanent financial loss or unwanted disclosure of personal information. *Examples: none*

[52] For example, see the paper by Schuh and Stavins (2009).

A.7 Definitions of Miscellaneous Payment Practices and Concepts

In order to construct a broad overview of consumer payment choice, the 2009 SCPC asks about several miscellaneous payment practices or concepts. **Appendix A.7** contains definitions of many of the terms used in the survey.

Table A.7 – Definitions of Other Terms and Concepts

Concept	Definition
Contactless payment technology	Allows the consumer to make a payment by tapping or waving a card or other device near a special electronic reader without swiping, signing, or entering a personal identification number.
Electronic toll payment	A contactless payment technology allowing motor vehicle drivers to drive through a toll without stopping and have the toll automatically billed to them, rather than stopping to pay. Examples are EZ-Pass, I-Pass, Smart Lane, and Smart Tag. The payment can be made from a bank account, by credit card, and sometimes by other means.
Identity theft or fraud	All types of crime in which someone uses (or attempts to use) someone else's personal information or data without the owner's permission to purchase goods or services, make payments, steal money, set up accounts, or commit fraud. Examples of information used include name and address, Social Security number, credit card or debit card number, and other related financial information.
Key fob	A contactless payment technology that attaches to a key chain. Key fobs are branded by gas stations and credit card companies such as American Express, Visa, and MasterCard. An example is the Mobil Speedpass.
Overdraft protection	A service that a bank provides when a customer makes a transaction that exceeds his or her account balance. It covers the difference between the transaction amount and the account balance, and thereby enables the customer to avoid a fee from the retailer or merchant for having insufficient funds. Overdraft protection can be activated by linking a savings account or credit card to a checking account, or through overdraft insurance.
Overdraft	Withdrawal of more money from a bank account than is currently in the account (also termed "insufficient funds"). Overdraft may occur, for example, when paying with a check, debit card, or electronic deduction.

Table A.7 – Definitions of Other Terms and Concepts (continued)

Concept	Definition
Paid directly from income	A payment made for a consumer by an employer or other income provider directly from the consumer's wages or salary or from other income payments (such as interest and dividends, Social Security payments, retirement plan distributions, alimony, child support, welfare, trust fund distributions, and/or from other money received).
Reward	Any type of benefit given to payment cardholders when they use their cards to make purchases or other payments. A reward is usually proportional to the dollar value of the purchase or payment. Examples include: cash back (a percentage of the dollar value), frequent flyer miles (airlines), frequent stay points (lodging), college tuition funding, and shopping network points.

Appendix B: Survey Methodology

American Life Panel

The RAND Corporation administered the 2008 and 2009 SCPC modules with the American Life Panel (ALP). In the fall of 2009, the ALP contained approximately 2,500 individuals from U.S. households who respond to internet-based surveys either by using their own computers or by using a Web TV device that gives internet access via a television.[53] Web TV allows respondents who lack regular internet access to participate in the ALP and browse the internet or use email. Approximately 7 percent of ALP respondents use Web TV.

Participants in the ALP are invited simultaneously to complete survey modules on a first-completed, first-included basis. About twice a month, respondents receive an e-mail message with a request to visit the ALP URL and fill out questionnaires on the internet. Typically an interview will take no more than 30 minutes. Respondents are paid an incentive of about $20 per 30 minutes of interviewing (and proportionately less if an interview is shorter). Once the desired sample size for a survey module is reached, RAND closes the survey.

Official participants in the ALP are recruited from survey programs that collect representative samples of U.S. consumers. At the time of the 2008 SCPC, participants in the ALP were recruited from among individuals ages 18 years and older who had responded to the *Monthly Survey* (MS) of the University of Michigan's Survey Research Center (SRC).[54] Each month, the MS interviews approximately 500 households, of which 300 are a list-assisted random-digit-dial (RDD) sample and 200 are re-interviewees from the RDD sample of six months earlier. The 200 re-interviewees were referred to RAND each month. Through August 2008, about 51 percent of these referrals from the six-months-ago survey agreed to be considered for the ALP, and about 58 percent of them actually participated in at least the

[53] For more details about Web TV, see http://www.webtv.com/pc/.

[54] The MS is a consumer sentiment survey that incorporates the long-standing *Survey of Consumer Attitudes* (SCA) and produces, among other outputs, the widely used Index of Consumer Expectations. For more details, see http://www.src.isr.umich.edu/.

household characteristics module of the ALP. Thus, about 30 percent (51 percent × 58 percent) of the Michigan recruits participated in the ALP during the recruitment period.

Originally, the ALP included only respondents 40 years of age and older. However, since November 2006, the ALP has included respondents 18 years of age and older. Because the SCPC target population is adults of ages 18 years and older, the ALP sample of respondents in the 2008 SCPC was restricted to include only individuals recruited after November 2006. The 2009 SCPC attempted to obtain maximum sample size and therefore also included the pre-November 2006 cohorts of members. As in the 2008 SCPC (and all surveys that aim to be nationally representative), sampling weights were used to correct for differences between the sample composition and the target population, so adding these members to the sample does not bias the results.

In 2003, RAND received a five-year grant from the National Institute on Aging to study methodological issues of internet interviewing among an older population. Part of the study concentrated on comparing internet interviewing with CATI (Computer Assisted Telephone Interviewing). To that end, RAND recruited both a small internet panel and a parallel telephone panel. Both subpanels were obtained from the University of Michigan, as described above. Once the experiments comparing internet interviewing with CATI were complete, the members of the CATI sample were invited to join the internet panel, and about 80 of the original 500 CATI panel members agreed to do so. In the ALP, this group is called the SRG sample, after RAND's Survey Research Group, which administered the CATI study.

After August 2008, the ALP did not receive new respondents from the University of Michigan. Instead, participants in the Face-to-Face Recruited Internet Survey Platform (FFRISP) were offered the opportunity to join the ALP. The FFRISP was an NSF-funded panel of Stanford University and the research firm Abt SRBI, Inc. Respondents were sampled from June to October 2008 in a multi-stage procedure based on address lists. The sample was representative of a target population of individuals 18 years or older who resided in a household in the 48 contiguous states or the District of Columbia and who were reportedly comfortable speaking

and reading English. They were recruited in a face-to-face interview. Recruits were offered a laptop (worth $500) and a broadband internet subscription, or $200 upfront and $25 per month (for 12 months) if they already had a computer and internet access. Additionally, they were paid $5 per monthly survey. The FFRISP recruited 1,000 respondents from a gross sample of 2,554 addresses that were not known to be ineligible. The panel was terminated after September 2009, but participants were offered the opportunity to join the ALP under the same conditions (laptop, high-speed internet, but with monetary compensation according to standard ALP conventions). From the 1,000 participants in the Stanford sample, 457 agreed to join the American Life Panel.

In addition to the directly sampled panel members, the ALP also invites (adult) household members of the sampled panel members to join, thus allowing intra-household comparisons. These panel members are called "added members" in the data. However, this part of the ALP is still very small, with fewer than 10 percent of the households having more than one panel member, so the ALP cannot be used as a proper household survey and should still be considered an individual survey.

The ALP also includes some respondents who were recruited by giving official ALP respondents the opportunity to suggest friends or acquaintances who might want to participate in the ALP. RAND then contacted those friends and invited them to participate. Because this "snowball" sample is not randomly selected or representative of U.S. consumers, it is used only to test survey modules. ALP snowball recruits tested the 2008 SCPC but were not included among the official respondents.

Once in the ALP, participants tend to remain indefinitely; approximately three participants leave the ALP each month. However, there are panel members who have not formally left but also have not responded to any survey over a prolonged period of time. About once a year, RAND attempts to contact these members to ask them whether they are still interested in participating, and if contact attempts fail, removes them from the ALP. Because this is done infrequently, the set of panel members who are invited to respond to a survey will

typically include a number of panel members who should be considered inactive. Therefore, in computing response rates for an individual survey, these should not be considered part of the panel. Below we discuss how we dealt with this.

Sample for the 2009 SCPC and response rates

Of the 1,010 respondents to the 2008 SCPC, 997 were invited to answer the 2009 SCPC. (The other 13 either died or quit the panel.) In addition, panel members who did not participate in the 2008 SCPC were also invited to answer the 2009 SCPC. These included members recruited through Michigan (before and after November 2006, including the SRG sample mentioned above) and Stanford, as well as added family members of panel members.

The survey was fielded in November 2009, and kept open until July 2010. However, the sample used in this report was frozen on March 15, 2010. Although there were a small number of respondents who filled out the questionnaire between March and July 2010, and their data are included in the online dataset on the ALP website, these are considered nonrespondents for the current report. The vast majority of respondents (76 percent) filled out the questionnaire in November 2009, and another 18 percent did so in December 2009, with only 6 percent doing so in the January–March 2010 period.

As indicated above, the set of invited panel members includes members who are inactive and thus effectively no longer members of the panel; these inactive panelists should not be included in the computations for the response rates of this particular study. For defining response rates in the 2009 SCPC, we define "active members" as members who participated in the panel between the start of the 2008 SCPC and the closing date of the 2009 SCPC (March 15, 2010), so it by definition includes all respondents to the 2008 SCPC and the 2009 SCPC. The following table gives the resulting response rates.

Table B.1 Response rates for the 2009 SCPC and sample composition by recruitment source.

Source	Number of active members eligible for the 2009 SCPC	Number participating in the 2009 SCPC	Response rate (%)
2008 SCPC	*997*	*876*	*87.9*
Michigan	942	827	87.8
Added member	55	49	89.1
Not in 2008 SCPC	*1,523*	*1,293*	*84.9*
Michigan	871	704	80.8
Stanford	457	412	90.2
SRG	33	28	84.8
Added member	162	149	92.0
Total	2,520	2,169	86.1

Survey instrument

The questionnaire for the *2009 Survey of Consumer Payment Choice* was developed primarily by the Consumer Payments Research Center (CPRC) of the Federal Reserve Bank of Boston. The online survey instrument was programmed and hosted by the RAND Corporation. The 2009 SCPC is the fifth in a series of surveys focusing on U.S. consumer payment behavior that have been developed and implemented by the CPRC or AARP since 2003. The 2003, 2004, 2008, and 2009 SCPC can be downloaded from the CPRC website.[55] The 2006 version of the survey can be downloaded from the AARP website.[56] See **Appendix C** for a detailed description of the changes in the questionnaire between 2008 and 2009.

Item nonresponse and extreme observations

As with all surveys, the SCPC contains two types of problematic responses: (1) missing responses due to the nonresponse of consumers to survey questions (called "item

[55] See http://www.bostonfed.org/economic/cprc/scpc/index.htm.
[56] See http://www.aarp.org/research/surveys/money/credit/debt/articles/consumer_payment.html.

nonresponse"); and (2) contaminated responses due to respondent error, ambiguity in the survey question or survey instrument, and/or other factors (known as measurement error). This subsection explains briefly how each of these issues was handled in compiling the aggregate statistics in this document. For more information on item nonresponse see Groves et al. (2009).

Many statistical agencies mitigate the effects of item nonresponse by imputing missing values. The statistics in this document reflect a limited set of imputations for item nonresponse and data cleaning of a small number of extreme outlier responses. Missing values were resolved by performing consistency edits and using information from other survey questions wherever possible. Otherwise, statistics were calculated by excluding missing values. The CPRC anticipates performing more rigorous and comprehensive imputation procedures in the future and revising data as appropriate. For a further discussion of survey imputation, see Kalton and Kasprzyk (1982).

Overall, nonresponse bias is likely to have a relatively small impact on the statistics presented in this document. Most SCPC questions outside of the payment use section have nonresponse rates of less than 5 percent and most use questions have nonresponse rates in the single digits. Several survey design features were chosen to minimize nonresponse. Some of the key survey questions included online verification of nonresponses. Also, the survey instrument solicited zero responses where it was difficult to distinguish a nonresponse from a zero response. The latter problem was largest in the payment use section. Missing values for payment use were treated as zeros in the calculation of aggregate statistics and percentage shares, so higher nonresponse rates in the payment use questions are less troubling.

The data underlying the statistics in this document have been partially cleaned for extreme outliers. Many survey questions produce categorical or bounded responses that do not allow for extreme outliers. Consequently, all of the outliers identified were associated with continuous variables whose responses were expressed in dollar values (for example, cash holdings) or in terms of the number of payments in a typical period. In some cases the survey instrument discouraged outliers by prompting respondents to verify their answer if they answered an unusually large value or a value that seemed inconsistent with earlier responses.

Outliers were identified by extensive investigation and analysis using a variety of quantitative and qualitative methods that exploit the structure and interrelationships of the entire SCPC. In addition to the survey itself, the analysis of outliers used evidence from outside the SCPC, including logic as well as economic and statistical theory. For dollar values, the distributions of both individual variables and the linear combinations of variables reported in the tables were evaluated for outliers.

In some cases, outliers could be cleaned by correcting obvious and logical errors. In most cases, however, extreme outlier observations were set to missing and then imputed. (Note that only missing values resulting from outliers were imputed; missing values resulting from item nonresponse, described above, were not imputed.) The imputed values were obtained from simple cell means for similar consumers. In most cases, the cell means were constructed with one or two demographic variables (often including income) and one other economic variable. The variables used to construct the cell means were chosen according to their correlation with the data for the imputed variable and hence accounted for a high proportion of variance in the data.

In theory, the sampling weights used to construct the statistics presented here (see the next subsection) should be adjusted to account for item nonresponse, and standard errors should be adjusted for the imputation of extreme outliers. In the future, the statistics may be revised to account more fully for these issues and republished. At present, each aggregate statistic is constructed with the same set of unadjusted sampling weights without adjustment for nonresponse on specific questions.

Other data adjustments

In order to reconcile some differences between the 2008 SCPC questionnaire and the 2009 version, CPRC staff adjusted some 2008 estimates for retail payments and money order payments. These adjustments were made in order to enable sensible comparisons between the 2008 and 2009 estimates.

In 2008, the SCPC asked respondents to report in-person, nonbill payments in three categories: retail basic goods, retail other goods, and retail services/other. For the 2009 survey, these in-person, nonbill categories were changed to retail goods, services, and person-to-person.

Adjustments were made by taking the ratio of the 2009 estimates for retail payments over the sum of all in-person, nonbill payments. These ratios were created for cash, check, debit card, credit card, and prepaid card, in-person, nonbill payments. Then the ratios were applied to the 2008 estimates for in-person, nonbill payments for the same payment instruments. A similar technique was used to adjust money order payments for point-of-sale transactions.

Further details on the adjustments and the SAS code are available from CPRC staff upon request.

Sampling weights

As in all surveys based on random samples, the composition of the unweighted sample differs from the composition of the population. RAND constructs sampling weights to correct for this sampling error and to make the sample as representative of the population of interest as possible, so that the SCPC statistics presented in this document will be unbiased estimates of characteristics of the U.S. noninstitutionalized population 18 years of age and older. The benchmark distributions against which the ALP is weighted are derived from the *Current Population Survey* (CPS). This choice follows common practice in surveys of consumers, for example, the *Health and Retirement Study* (HRS). The sampling weights for the 2009 SCPC were constructed using the March 2009 CPS, which includes the annual income supplement.

Three weighting methods have been implemented for the ALP: cell-based post-stratification, logistic regression, and raking.[57] After some experimentation, raking was found to give the best results for the SCPC. This method allows finer categorizations of variables of interest (in particular, age) than cell-based post-stratification does, while still matching these distributions exactly. Variables were created that account for interactions with gender, so all

[57] Each of these methods has advantages and disadvantages. For a detailed description of these (and other) weighting methods, see Kalton and Flores-Cervantes (2003) for example.

distributions are matched separately for males and females. The resulting set of variables whose distributions are matched exactly is as follows:

- Gender × age, with 14 categories: (1) male, 18–24; (2) male, 25–34; (3) male, 35–44; (4) male, 45–54; (5) male, 55–64; (6) male, 65–74; (7) male, 75+. Categories (8) – (14) are the same as (1) – (7), except that they are for females instead of males.
- Gender × race/ethnicity, with six categories: (1) male, non-Hispanic white; (2) male, non-Hispanic African American; (3) male, Hispanic and other; (4) female, non-Hispanic white; (5) female, non-Hispanic African American; (6) female, Hispanic and other.
- Gender × (household) income, with eight categories: (1) male, <$25,000; (2) male, $25,000–$49,999; (3) male, $50,000–$74,999; (4) male, $75,000+; (5) female, <$25,000; (6) female, $25,000–$49,999; (7) female, $50,000–$74,999; (8) female, $75,000+.
- Gender × education, with six categories: (1) male, high school or less; (2) male, some college or a bachelor's degree; (3) male, more than a bachelor's degree; (4) female, high school or less; (5) female, some college or a bachelor's degree; (6) female, more than a bachelor's degree.

All aggregate U.S. statistics for the SCPC were weighted using the sampling weights constructed in this manner.

As with all sample weighting schemes, it is possible that the weights do not provide representative estimates of the primary measures of interest—in this case, adoption and use of payment instruments; this issue can arise if there are variables correlated with payment choice that were not included in the construction of the weights. For example, the respondent's income rank within the household may be more important than the household income, although we did not find statistical evidence in favor of this particular hypothesis (or for the financial responsibility measures). Research on consumer payment choice is still relatively new and the existing theoretical and empirical guidance for the construction of weights is limited, so further research may be needed to produce better weighting schemes.

Standard errors and hypothesis testing

Standard errors of the estimates reported in the 2009 SCPC tables were calculated using conventional methods but are not included in this document. Tables containing the complete set of standard errors can be downloaded from the CPRC website.[58]

The 2009 SCPC tables report two types of estimates: means (averages) and medians. Median statistics are reported alongside the mean statistics for questions for which the distribution of responses indicates large differences between the mean and median. These questions include the dollar values of cash (Tables 9–12).

Standard errors of the estimates were calculated using the SAS software package. Weighted standard errors of the estimates were computed using the SAS procedure "SURVEYMEANS" with the SCPC weighting variable (r_weight). All standard errors were calculated after the treatment of item nonresponse and the data cleaning had been completed.[59]

The 95-percent confidence intervals for the estimates are obtained from the formula $\hat{\theta} \pm 1.96 \times SE$, where $\hat{\theta}$ is the estimated statistic and SE is the standard error of our estimate. For some types of survey estimates that are bounded, such as percentages, the 95-percent confidence intervals may contain the bound (0 percent or 100 percent). For example, the percentage of consumers who have adopted cash as a payment instrument is 99.8 percent (Table 4) and the 95-percent confidence interval for this estimate includes the 100 percent bound. This inclusion is an imperfection of the method of approximation by the normal distribution that underlies these confidence intervals. There are ways to avoid such anomalies, such as computing confidence intervals for a nonlinear transformation of the statistics and then retransforming them back to the original scale. Instead of making such transformations, we simply interpret our confidence intervals as implying that "very high" percentages are not excluded on statistical grounds, although an estimate of exactly 100 percent is excluded on logical grounds.

Another way to measure the precision of the estimates is to construct the relative standard error (RSE), which is defined as $SE / \hat{\theta}$. The RSE is a normalized statistic, like the

[58] See http://www.bostonfed.org/economic/cprc/scpc/index.htm.

[59] The data cleaning and imputation process has a very minor effect on a small number of the standard errors.

coefficient of variation (CV), which can be used to determine the relative precision and reliability of an estimate in terms of the percentage deviation of the standard error from the estimate. A common standard of precision for the RSE is 30 percent (RSE × 100). For estimates (mean or median) that are very near zero, the RSE can be particularly sensitive to small changes in the SE. Users of the SCPC should exercise caution when interpreting data results with an RSE of 30 percent or greater.

We tested for statistical significance of the changes in the average number of payments for each instrument from 2008 to 2009. To account for the sampling weights and the fact that there are two observations for some respondents and only one for others, we implemented this test by estimating weighted linear regressions with the explanatory variables being the constant and a dummy for the second wave, with standard errors clustered by individual. Furthermore, to correct for multiple testing bias, we used a simple Bonferroni correction. We performed 10 tests: one for each payment instrument (cash, checks, money orders, travelers checks, debit card, credit card, prepaid card, OBBP, and BANP) averaged over all respondents, and one for prepaid cards for adopters only. Thus, with the Bonferroni correction a change in the average number of payments is statistically significant at the 5 percent level if the p-value of the coefficient of the wave-2 dummy is less than 0.05/10 = 0.005. If the number of payments in 2008 and 2009 are statistically significantly different, then the 2009 growth rate is statistically significantly different from zero.

The change (growth) in payments is statistically significant for about half of the payment instruments. Prior to the Bonferroni correction, the changes in the number payments for cash, checks, credit card, OBBP, and BANP are statistically significant at the 5 percent level. After the Bonferroni correction, however, the change for cash has a p-value of 0.025, which would be statistically significant in a single-testing context but fails to meet the significance threshold after the Bonferroni correction. Changes for the other four payment instruments (money orders, travelers checks, debit cards, and prepaid cards) were not statistically significant in either case.

Appendix C: Survey Changes, 2008–2009

Between 2008 and 2009, the CPRC made numerous detailed improvements to the survey. This appendix describes the changes to the economic definitions and scope, which improved and clarified the measurement of many consumer payment concepts, and the changes to the questionnaire design and methodology, which improved the measurement of consumer payment concepts. A detailed listing of all changes in questionnaire content also is provided.

Economic definitions and scope: bank and payment accounts

Improvements and additions were made to questions that identify accounts that fund consumer payments. The definitions and categories of savings accounts were expanded, and respondents were asked to explain how they access their bank accounts. For the first time, questions were added about payment accounts managed by nonbanks called "online payment service providers" (OPSP), such as PayPal and Google Payments. The 2009 SCPC includes the following changes to its measurement of bank and payment accounts:

- *Saving accounts* – The 2008 category "savings account" was divided into traditional passbook accounts and money market accounts for 2009, as in the *Survey of Consumer Finances*. This survey change likely increases the estimated fraction of consumers holding savings accounts of any kind, which was 76.3 percent in 2009, relative to the single category in 2008. The 2009 survey also identified consumer holdings of money market accounts with checking privileges (16.1 percent).
- *Payment accounts* – Respondents were asked whether they had signed up for a payment account with an OPSP. Typically, these accounts can be used with payment cards and bank account number payments. Customers can also deposit money into an account with the OPSP that works like a bank account, but respondents were not asked whether they had done so. Respondents were asked whether they had used the account in the past year, as well as how much their typical payments were.

- *Bank account access* – The 2009 survey asked respondents how they had accessed their bank accounts during the previous 12 months. Visiting a bank branch (77.4 percent) was the most common response, followed by ATM (69.0 percent) and online banking (61.4 percent). Much less often, consumers stated that they accessed telephone banking (32.4 percent) or mobile banking (8.9 percent).

Economic definitions and scope: payment instruments

The payment instrument is the central concept in the SCPC, which measures the adoption and use of instruments by consumers. Thus, the definition of a payment instrument itself is a critical ingredient to measuring consumer payment behavior in a precise, comprehensive, and useful fashion. In 2009, the SCPC included nine common payment instruments used by consumers—the same as in 2008—but made the following specific improvements:

- *Cash* – Respondents were asked whether they had made at least one payment with cash during the past 12 months. Their answers were used to enhance the definition of cash adoption, which stood at 99.8 percent in 2009 (up from 98.5 in 2008 under a narrower definition). Thus, essentially all consumers adopt and use cash.
- *Check* – Respondents were asked whether they had any blank paper checks. Their answers were used to enhance the definition of adoption of checks by adding ownership of checks to the narrower definition based solely on incidence of use. Check adoption stood at 85.4 percent of consumers in 2009, compared with 91.8 percent of consumers having a checking account.[60] Thus, 6.4 percent of checking account owners did not even have blank checks to use, presumably because they rely on other related payment instruments, for example, a debit card. This percentage is likely to increase over time as the use of checks continues to trend downward.
- *Credit card* – Respondents were asked whether they had a credit card in each of three categories (general purpose, charge, or branded). If so, they were asked how many of

[60] The change in this check adoption number cannot be calculated because the 2008 SCPC did not ask about having blank checks.

the cards they had in each of these categories gave rewards. The categories add detail to credit card holding data relative to the 2008 survey, which asked only for total credit cards and rewards. This change probably did not affect the estimate of the rate of adoption of credit cards in 2009 (72.2 percent) because respondents in 2008 were probably already familiar with credit cards and therefore probably answered accurately. However, the new credit card categories may have caused estimates of the number of credit cards in 2009 (3.7 per adopter) to be higher than they would have been without the category detail reminding respondents to include more of their cards.

- *Prepaid card* – Respondents were asked whether they had a prepaid card in each of four categories (general purpose, specific purpose, payroll, or electronic benefits transfer (EBT)). If so, they were asked how many prepaid cards they had in each of these categories and whether any of these cards were reloadable (meaning the card owner can add monetary value to the card). The categories add detail to credit card holding data relative to the 2008 survey, which asked only whether prepaid cards were bought or received. Unlike the additional detail on credit cards, this change probably did affect the estimate of the adoption rate of prepaid cards in 2009 (32.3 percent). Because prepaid cards are not homogeneous and are less well known by consumers, the additional categories probably led significantly more respondents to claim ownership than in 2008 (17.2 percent), although prepaid card adoption by consumers is probably trending upward too. Like credit cards, the new prepaid card categories may have caused estimates of the number of prepaid cards in 2009 (2.3 per adopter) to be higher than they would have been without the category detail reminding respondents to include more of their cards.
- *Bank account number payment* (BANP) – The name of this payment instrument in 2008, "Electronic Bank Account Deduction" (EBAD), was changed and its definition was explained more clearly to respondents, but it is essentially the same payment instrument. The name EBAD was not clearly distinct from online banking bill payment (OBBP) and was potentially confusing to consumers who realized that

debit cards clear electronically, for instance. Furthermore, calling this concept BANP now makes it clear that these payments are initiated by consumers when they give their bank account and routing number to a third party (other than their bank), in any form (oral, written, or online) to initiate and authorize an electronic deduction from their bank accounts.[61] In addition, the 2008 SCPC did not handle BANP completely or consistently in all questions, so there were incremental changes in many questions involving BANP to address these shortcomings. BANP can be used for automatic bill payments, online bill payments that are not automatic, online payments for goods and services that are not bills, or person-to-person payments.

Economic definitions and scope: cash withdrawals

Before using cash for payment, consumers have to get (withdraw) it. The 2009 SCPC fixed problems in the 2008 question that asked respondents to rank the locations of their cash withdrawals. In 2009, the respondents were simply asked the one location where they get cash most often: ATM (53.5 percent), bank teller (22.6 percent), or five other options (check cashing store, retail store, employer, family/friend, or other). However, in 2009 respondents were then asked to report the average dollar value of cash withdrawals and the number of cash withdrawals for both the primary cash withdrawal location and for all other withdrawal locations. This change provided more detailed and accurate information about cash withdrawals than in the 2008 survey, when respondents were asked for the value and number of withdrawals for all locations at once.

Economic definitions and scope: mobile banking and mobile payments

To better track the emerging developments in mobile banking and mobile payments in the United States, the 2009 SCPC improved its measurement of these activities. Among the improvements are the following:

[61] In contrast, OBBP are made from inside the firewall of a bank's online banking web site and do not require the consumer to disclose personal information to a third party.

- *Cell phone* – In 2009, respondents were asked whether they have a cell phone (89.1 percent).
- *Mobile banking* – The definition of mobile banking was improved to make it clear to respondents that mobile banking involves using a mobile device to access a bank account in one of three ways: (1) through an internet browser (that is, online banking via a mobile device rather than a computer); (2) via text/SMS messaging; or (3) using a downloadable application ("app"). Cell phone adopters were asked in 2009 whether they had adopted mobile banking (10.1 percent) or used mobile banking (8.9 percent).
- *Mobile payments* – The concept of a mobile payment, as distinct from mobile banking, was introduced.[62] Two types of mobile payments were tracked: payments made by text message or SMS and contactless payments made with the mobile device. Contactless mobile payments are charged to a pre-existing payment instrument, such as a credit card or a bank account number.

Economic definitions and scope: other revisions and refinements

To improve the precision and quality of estimates of consumer use of payment instruments, the 2009 SCPC includes the following revisions and refinements:

- *Transaction types* – The categories of nonbill, in-person payments was redefined primarily to better track person-to-person (P2P) payments. In 2008, the three in-person payment categories were essential retail, nonessential retail, and other, the last category including nonretail and P2P. In 2009, retail was combined into one category called retail goods, because the essential/nonessential distinction was somewhat unclear. Also, the other category was divided into services and P2P, in order to better define and isolate these important categories. This change in categories affected the average levels of payments per month, so the 2009 SCPC results were adjusted to make the categories comparable to the 2008 results.

[62] A consumer can make payments with a mobile phone using online banking bill payment through his or her bank's online banking web site, but these are not included as mobile payments.

- *Instrument acceptance* – Respondents are asked simultaneously for the number of payments by payment instrument and transaction type. Consequently, the SCPC must decide which payment instruments to include in which transaction categories. In 2009, the survey expanded the list of instruments available to consumers for some of the transaction categories. For example, automatic bill payments made through online banking bill payment was added in 2009.
- *Incidence of use* – Some payment instruments or methods are nondurable in the sense that consumers no longer have them after using them. Thus, at any point in time, consumers may not have the payment instrument, but they may have used it previously. If this is the case, these consumers should be included as adopters of the payment instrument even if they do not have it at the time of the survey. To address this possibility, the 2009 SCPC included new questions asking respondents directly whether they had used a payment instrument or method during the past 12 months. Examples include cash, money orders, and travelers checks.

Economic definitions and scope: characteristics of payment instruments

The SCPC asks respondents to assess payment instrument characteristics, which have been found to be important explanatory variables of consumer demand for payment instruments.[63] In 2009, the SCPC included four characteristics: acceptance for payment, convenience, cost, and security. The survey asks respondents to rate the characteristics on a scale from 1 (least favorable) to 5 (most favorable) for *each* payment instrument, with characteristic-specific rating labels. Consequently, each characteristic question is challenging and very time consuming. Improvements to the survey in 2009 required substantial expansion of the section on adoption of bank accounts and payment instruments, so some of the 2008 characteristics were dropped to stay within the 30-minute time limit.

Five of the 2008 characteristics were dropped in 2009: acquisition and set up, control over payment timing, ease of use, payment speed, and record keeping. In 2008, these five

[63] For examples of this in recent research, see Schuh and Stavins (2010) and the references in it.

characteristics collectively replaced convenience, which had been in earlier versions of the SCPC. Previous research had found that convenience is the most statistically and economically important determinant of consumer demand for payment instruments. However, the concept of convenience is not well defined in economics, so the 2008 SCPC included these other five characteristics to test whether they might provide more insight and detail about what consumers mean by the term "convenience" when they apply it to payment instruments. Preliminary research with these five characteristics was inconclusive in establishing their relation to convenience, so they were dropped to help satisfy survey time constraints. In the 2009 survey, convenience may represent the combined effects of these five dropped characteristics. Much more research and development is needed in this area of the survey.

Questionnaire design and methodology

One of the major changes made between the 2008 SCPC and the 2009 SCPC was adding the definition of certain payment concepts to the screen. Studies show that as few as 8 percent of respondents will click on a link to see a definition, but up to 78 percent will read a definition if it is already on the screen (Galesic, Tourangeau, Couper, and Conrad 2008). To see a definition in the 2008 SCPC, the respondent had to click on the word, which was highlighted in the usual web hyperlink manner (blue text, underlined). For the 2009 SCPC we added the definition directly to the screen the first time a concept was introduced; for all other occurrences of that concept, the definition hyperlink was provided.

Another change to the 2009 survey was the disaggregation of several concepts in the 2008 survey. Two major disaggregation changes were in the credit card questions and the prepaid card questions. Another area that was disaggregated was the retail services and other category of the payment use section, which was split into retail services and person-to-person payments. The literature shows that question disaggregation is helpful to the respondent and more accurate in situations where a large number of items are to be estimated (Tourangeau, Riops, and Rasinski, 2000).

At the same time, essential retail purchases and nonessential retail purchases were aggregated into a category called retail goods. Finally, the CPRC added error checks to the

online survey instrument. These checks are in the form of queries to the respondent that are applied to the open-ended numerical response questions, such as those in the payment use section, the assets and liabilities section, and the cash in wallet/in house section. CPRC staff set some upper limits on what we believe to be reasonable amounts, and if the respondent answered with a value above those limits, the respondent was prompted to verify his or her answer as correct.

Details of changes to questionnaire content

The 2009 questionnaire changes described in this paper and in the preceding sections of this appendix occurred primarily in three ways: (1) 2008 questions were deleted; (2) new questions were added in 2009; and (3) 2008 questions were changed in 2009. The following three tables contain an exhaustive list of each type of change from the 2008 SCPC to the 2009 SCPC.

Summary of questions from the 2008 SCPC deleted in the 2009 SCPC, by section

Variable ID	*Question description*
Assessment of Characteristics section	
AS003	Acquisition & set-up
AS003	Control over payment timing
AS003	Payment records
AS003	Payment speed
AS003	Ease of use
AS011a	Most important characteristic
AS011b	Least important characteristic
Payment Adoption section	
PA021_a	Number of prepaid cards bought
PA021_b	Number of prepaid cards received
PA028	Time when respondent first got or adopted payment instruments
Payment Use section	
PU006b	Frequency of use of nonessential retail goods
PU007	Portion of retail purchases made online
PU008_a	Frequency of bill payments using money order
PU008_b	Frequency of nonbill payments using money order
PU012	How payment method use has changed
PU013	Expected changes in payment method use
PU014	Conversion of a paper check to an electronic payment
PU015	Response to paper check conversion
PU016	Would-be response if paper check is converted
PU017	Response to banks adding fees to paper checks
PU018	Response to elimination of check float
PU020	Response to banks not returning original paper checks
Payment History section	
PH001	Used self-service in the past year
PH003	Telephone privacy questions
PH010	Timing of payments for bills
PH011	Incidence of forgetting to pay bills on time
PH013	Not using membership privileges as much as expected
Demographics section	
DE001	Mother's highest level of education
DE006	Type of internet connection at home
DE017	Primary religion or secular philosophy
DE018	Referring to financial records while taking the survey

Summary of new questions in the 2009 SCPC, by section

Variable ID	*Question description*
Preliminaries	
cellphone	Adoption of cellphones
Assessment of Characteristics section	
AS003	Convenience
Payment Adoption section	
PA001_c	Number of money market accounts
PA001_d	Number of nonbank online payment instruments
PA017_b	Typical amount of cash gotten from secondary sources
PA018_2	Frequency of getting cash from secondary sources
PA029	Amount loaded to prepaid cards most often
PA030	Ever adopted money market account
PA031	Currently have blank unused checks
PA032	Visited bank branch or spoke to a bank teller in the past 12 months
PA033_a	Used telephone banking in the past 12 months
PA033_b	Used online banking in the past 12 months
PA033_c	Used mobile banking in the past 12 months
PA039	Adoption of reloadable prepaid cards
PA040	Used money order in the past 12 months
PA041	Ever used money order
PA042	Used travelers check in the past 12 months
PA043	Ever used travelers check
PA044	Used nonbank online payment in the past 12 months
PA045	Frequency of nonbank online payment
PA046	Typical amount spent in a nonbank online payment
PA047	Money market account allows check writing and bank account number payment
PA049	Used ATM in the past 12 months
PA050	Used cash in the past 12 months
PA051	Made mobile payment in the past 12 months
PA053	Adoption of credit cards
PA054	Number of rewards/nonrewards credit cards of different types
PA099	Adoption of prepaid cards of different types
PA100	Number of prepaid cards of different types
PA101	Most common way to reload prepaid cards
PA126	Ever set up access to mobile banking

Summary of new questions in the 2009 SCPC, by section (continued)

Variable ID	*Question description*
Payment Use section	
PU021	Frequency of person-to-person payments
Payment History section	
PH020	Financial difficulties in the past 7 years
PH021	Inflation estimation and expectation
Demographics section	
DE019	Debts excluding mortgage on primary home
DE020	Location of access to the internet for personal use

Summary of questions from the 2008 SCPC that were changed in the 2009 SCPC, by section

Variable ID	*Question description*	*Description of change*
Assessment of Characteristics section		
AS003	Assessment of all characteristics of 7 instruments	Definitions of 7 instruments were added to the screen. Payment characteristics categories were changed from 2008 to 2009.
AS012	Rank of payment characteristics	Respondents were asked to rank the 4 characteristics, while in 2008 they were asked to rate each payment method on a scale of 1 to 10.
Payment Adoption section		
PA002	Reason for no checking account	Response categories were changed.
PA004	Checking account earning interest	Specific ranges of interest rates were given.
PA005	Adoption of overdraft protection	Definition of overdraft protection was changed and added to screen.
PA006	Primary checking account institution	Response categories were changed.
PA007	Primary saving account institution	Response categories were changed.
PA008	Number of debit and ATM cards	Definitions of debit cards and ATM cards were added to the screen.
PA011	Debit cards with rewards	Definition of rewards was added to the screen.
PA012	Adoption of telephone banking	Definition was changed and added to the screen.
NEWTB	Ever adopted telephone banking	Definition was changed and added to the screen.

Summary of questions from the 2008 SCPC that were changed in the 2009 SCPC, by section (continued)

Variable ID	*Question description*	*Description of change*
PA013	Adoption of online banking	Definition was changed and added to the screen.
NEWOB	Ever adopted online banking	Definition was changed and added to the screen.
PA014	Adoption of online banking bill payment	Definition was added to the screen.
NEWOBBP	Ever adopted online banking bill payment	Definition was added to the screen.
PA016	Primary location of getting cash	One primary location was chosen in 2009, while in 2008 respondents were to rank top 3 primary locations.
PA017_a	Amount of cash per withdrawal	Amount of cash per withdrawal was changed to **primary** location only, not all locations.
PA018_1	Frequency of cash withdrawal	Frequency of cash per withdrawal was changed to **primary** location only, not all locations.
PA019	Adoption of credit cards	Yes or no question was asked in 2009; number of credit cards were asked in 2008.
PA024	Adoption of automatic bill payment	Definition was added to the screen.
PA026	Adoption of mobile banking	Definition was added to the screen.
PA027	Adoption of contactless cards	Definition was changed and added to the screen.
Payment Use section		
PU002	Frequency of automatic bill payment	Online banking bill payment was added as an option.
PU004	Frequency of bill payment by mail or in-person	Check and money order were separated as two options.
PU005	Frequency of online payment	Check and money order were separated as two options. Debit card question text was changed.
PU006a	Frequency of retail goods purchases	Check and money order were separated as two options; only essential goods purchases were included in 2008; all retail goods were included in 2009.
PU006c	Frequency of service and other purchases	Check and money order were separated as two options; person-to-person payments were dropped in 2009.

Summary of questions from the 2008 SCPC that were changed in the 2009 SCPC, by section (continued)

Variable ID	*Question description*	*Description of change*
Payment History section		
PH005	Have entered information on the internet	Address and phone number were removed from the response categories.
PH009	Financial difficulties in the past	Time frame was changed to the past 12 months; response categories were changed; different financial difficulties were asked separately.
PH012	Incidence of various shopping behaviors	Questions were asked separately for each type of shopping behavior.
Demographics section		
DE010	Household income	Response categories were changed.

Appendix D: Detailed Instructions for Data Users

Conversion of statistics for other uses

In the previous discussion paper about the 2008 SCPC (Foster, Meijer, Schuh, and Zabek 2009), it was suggested that data users could convert the statistical estimates for an average consumer presented in the tables to an estimate of the total for all U.S. consumers by multiplying the average consumer estimate times the total U.S. civilian noninstitutionalized population for residents age 18 or older. However, the CPRC reminded data users that any estimates derived from the reported SCPC estimates, such as this conversion to all U.S. consumers, should not be considered an official estimate.

This year, the CPRC continues to remind data users that derived estimates are unofficial. In addition, this year the CPRC explicitly recommends against converting estimates for the average consumer to an estimate for all U.S. consumers using an estimate of the population. We are in the process of trying to benchmark and reconcile the SCPC estimates to other related estimates from surveys, both those based on both households, such as the *Survey of Consumer Finances*, and those based on individual consumers. Additional time and research are needed to harmonize these estimates. In particular, we strongly recommend that the reader not try to convert the SCPC estimates of the number of payments into billions of U.S. payments for comparison with estimates of payment volumes from the recently released *2010 Federal Reserve Payments Study* (Federal Reserve System 2010). The CPRC is in the process of benchmarking the SCPC estimates to the FRPS and expects to release a detailed report on this work later in 2011.

Data analysis

Readers interested in performing their own data analysis on the SCPC can download the datasets for both the 2009 SCPC and the 2008 SCPC. It is recommended that data users read the Data User Manual before beginning their own analysis. Both datasets and the Data User Manual are available on the SCPC website.[64] Please note that no technical assistance is available from the CPRC for these datasets.

[64] See http://www.bostonfed.org/economic/cprc/SCPC/index.htm.

Longitudinal panel data

One important advantage of the 2009 SCPC is that the panel includes 876 consumers who also completed the 2008 SCPC. Data users can take advantage of this longitudinal feature for some types of analysis, but there is an important limitation: Data users should be aware that, as of April 2011, the 2009 SCPC data set does not contain representative sampling weights designed for use with the longitudinal panel. In particular, data users should not use the existing sampling weights for 2008 and 2009, which were designed for the entire cross-section of SCPC data in each year, to tabulate aggregate U.S. statistics using only the 876 panelists in the 2008–2009 surveys because these weights are not representative of the U.S. consumer population. The same caution applies to any weighted regression analysis using the 876 panelists. The CPRC staff recognizes the importance of longitudinal analysis and expects to develop and release longitudinal weights later in 2011.

Appendix E: Board of Advisors (2010)

Academia

Andrew Caplin	New York University
Richard Curtin	University of Michigan
David Humphrey	University of Florida
Peter Ireland	Boston College
Martha Starr	American University
Jay Zigorsky	The Ohio State University

Government

Carlos Arango	Bank of Canada
Paul Bauer	Federal Reserve Bank of Cleveland
Geoff Gerdes	Federal Reserve Board of Governors
Chad Harper	Federal Reserve Bank of San Francisco
Fumiko Hayashi	Federal Reserve Bank of Kansas City
Dan Littman	Federal Reserve Bank of Cleveland
Rich Oliver	Federal Reserve Bank of Atlanta
Adrienne Wells	Federal Reserve Bank of Atlanta

Industry

Peter Burns	Heartland Payment Systems
Roger Johnston	Fiserv
Leon Majors	Phoenix Marketing International
Bill McCracken	Synergistics Research Corporation
Aaron McPherson	International Data Corporation
Steve Mott	BetterBuyDesign
Tom Welander	Global Concepts
Jane Yao	American Bankers Association

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